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REVISED ENVIROCARE OF UTAH WESTERN LARW CELL INFILTRATION AND TRANSPORT MODELING

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1. INTRODUCTION

Envirocare of Utah, Inc. (Envirocare) operates a radioactive waste and mixed waste disposal facility in Tooele County, Utah. The Western LARW disposal cell will receive low-activity radioactive waste for permanent disposal in a clay-lined cell with a composite clay and rock cap. At completion, the cell will occupy approximately 73 acres in the western portion of Section 32 of T1S, R11W.

1.1 Purpose and Objective

The groundwater discharge permit for the Western LARW cell requires that environmental impacts to groundwater are kept within tolerable risk levels. In order to assess these risks, the flow of water and transport of constituents from the Western LARW disposal cell to a compliance well must be predicted for a period of 200 and 500 years after closure, for hazardous and radioactive constituents, respectively. The purpose of this document is to describe the assumptions, input parameters, and results of the infiltration and fate and transport modeling.

1.2 Background

Modeling of a similar nature has been performed previously for the existing LARW cell at the Envirocare Clive facility. Groundwater flow and contaminant transport models of the Envirocare facility have been generated by Rogers and Associates Engineering (1990), Bingham Environmental (1991, 1993a. 1993b, 1994a, 1995a, 1995c), Adrian Brown Consultants (1996a, 1996b, 1997a, 1997b, 1998), the Utah Department of Environmental Quality (DEQ) Division of Water Quality (1993, 1994), and Whetstone Associates (1999, 2000a, 2000c).

The most recent comprehensive modeling of the LARW cell is summarized in two documents prepared by Adrian Brown Consultants:

- Volume I. Final Report on Infiltration Modeling, dated December 4, 1997
- Volume II. LARW Groundwater Fate and Transport Modeling, dated February 12, 1998

The reader is encouraged to review these documents, which may be found as Appendix M to Envirocare's Radioactive Material License Renewal Application. The same methodology has been followed in this modeling as was previously used for the license renewal.

Infiltration and transport though the Western LARW cell was described in a report by Whetstone Associates on March 2, 2000 (Whetstone, 2000a). The DEQ Division of Radiation Control (DRC) reviewed the report and submitted comments to Envirocare on April 27 and May 12, 2000. Whetstone responded to DRC comments in a technical memorandum dated May 19, 2000, and a revised infiltration and transport modeling report was issued on June 12, 2000 (Whetstone, 2000c). DRC issued comments on the revised report on June 26, 2000.

The June 26, 2000 DRC comments have been incorporated in this revised report. For example, additional references which describe the source of the Class A concentration data have been added to text. The term "freeze/thaw" layer has been replaced with "sacrificial soil layer", for consistency. The half life of Si-32 was changed to 172 years, based on current literature references.

The horizontal aquifer velocity in the PATHRAE model was increased from 0.824 m/yr to 0.834 m/yr, based on a revised 90% upper confidence level on the site wide hydraulic conductivity. The revised value (6.09x10-4 cm/sec) resulted from collecting slug test data from new wells in June 2000 and replacing some of the slug test results taken from a June 1997 report with those in the October 1997 approved report.

In addition, 54 Class A nuclides were added to the comprehensive table, 17 of which were carried through to the PATHRAE modeling. The noble gas krypton was eliminated from the modeling, because no MCL exists for Kr-85, and a GWPL cannot be calculated because exposure parameters exist for inhalation only, not ingestion pathway. Sorption coefficient (K_d) values have been added for four nuclides (Dy-166, Nd-147, Pa-231, and Pt-193); no other K_d values have changed from the June 12, 2000 report. The source concentrations were changed to reflect the Class A limits, and the number of output times in the vertical PATHRAE modeling was increased from 90 to 115, to provide a smoother curve for input to the horizontal model, to accommodate the higher concentrations.

2. APPROACH

The potential migration of hazardous and radioactive constituents from the Western LARW cell were investigated using the EPA HELP model (Schroeder and Peyton, 1995), the Pacific Northwest Laboratories UNSAT-H model (Fayer and Jones, 1990; Fayer, 1999), and the PATHRAE-RAD model (Merrell, et al, 1995).

The modeling project was divided into the following four phases:

1. The infiltration through the closed LARW cell was predicted using the EPA HELP model;
2. Percolation rates predicted by the HELP model were input into the UNSAT-H model to predict the moisture content and time of travel from the bottom of the waste to the top of the aquifer;
3. A dispersive solution for contaminant transport from the base of the LARW cell to the top of the water table (vertical solution) was determined using the PATHRAE model; and
4. The horizontal migration of constituents through the saturated zone to a compliance well was modeled, again using PATHRAE.

The input to the infiltration (HELP) and moisture content (UNSAT-H) models are described in Section 3, and 4 of this report. The contaminant transport (PATHRAE) approach is described in Section 5. The PATHRAE vertical modeling input parameters and results are given in Section 6, while the horizontal modeling input parameters and results are given in Section 7.

3. INFILTRATION (HELP) MODELING

The infiltration modeling code and input are briefly described below. Again, for more detailed information on the infiltration modeling approach, code, and design in relation to the Envirocare site, refer to the document entitled Volume I. Final Report on Infiltration Modeling, dated December 4, 1997, which may be found as Appendix M to Envirocare's Radioactive Material License Renewal Application.

3.1 Code

Infiltration through the Western LARW cell was modeled using the EPA Hydrologic Evaluation of Landfill Performance (HELP) model (version 3.06). The HELP program is a quasi-two-dimensional code developed by Paul Schroeder (U.S. Army Corps of Engineers) and R. Lee Peyton (University of Missouri, Columbia). The model was adapted from the EPA HSSWDS model (Perrier and Gibson, 1980) and various codes from the US Agricultural Research Service, and National Weather Service, and uses weather, soil, and landfill design data to perform water balance analysis of the designed cell. Surface storage, snowmelt, runoff, infiltration, evapotranspiration, soil moisture storage, lateral subsurface drainage, and unsaturated surface drainage can all be modeled.

The HELP code is distributed by EPA and has widespread acceptance as a tool for the evaluation of the hydrologic performance of landfills. The HELP code was used previously in the prediction of infiltration through the existing LARW and 11e.(2) disposal cells, and accepted by the Utah Division of Radiation Control (DRC) as part of the LARW cell license renewal.

3.2 Weather Data Input

The HELP weather data input to the revised Western LARW cell model was updated to include the seven years of recorded precipitation available for the Clive site. The precipitation measured from 1993-1999 indicates that the mean monthly precipitation at Clive facility has been 100.4% of the precipitation at the Dugway meteorological station (see Section 3.2.2). As described in previous reports, the evapotranspiration, precipitation, temperature, and solar radiation data files were generated using a synthetic weather generator. The routine, developed by the USDA Agricultural Research Service (Richardson and Wright, 1984), generated 100 years of daily climate data based on site-specific monthly average precipitation and temperature coupled with the climate distribution parameters for a selected analog city. In this manner, the synthetic weather generator produced daily data which included extreme climatological events, but also reflected the mean and expected deviations from the mean.

The climatological input values are summarized in Table 1 and described briefly in the following sections.

3.2.1 Evapotranspiration

Evapotranspiration was calculated by HELP using the location, maximum leaf area, and evaporative zone depth (EZD) specified for the site.

Location. Salt Lake City is the most appropriate analog city for the Clive site DRC (1997a) and was used in the model as the analog city from which HELP generated synthetic evapotranspiration data. The default latitude for Salt Lake City (40.76°) was adjusted to 40.6858° (40°41'15") for the Clive site.

Evaporative Zone Depth (EZD). The EZD is defined as the depth to which evaporation and transpiration from the soil or rock can occur. Because the LARW cell will not be vegetated, the EZD represents the maximum depth of evaporation. Any water which percolates below the EZD can only be routed laterally, via a filter or lateral drainage layer, or vertically downward as percolation. The model determines the amount of evaporation based on the available energy in the system, according to the temperature, solar radiation, and wind speed for each given day.

The EZD was set to 18 inches. By setting EZD at this value, water is only allowed to evaporate from the rip rap layer, which is 18 inches thick. Water which percolates down to the lower filter layer or to the upper radon barrier layer will not be removed from the HELP model by evaporation. The 18-inch EZD is considered to be conservative, for reasons cited in previous reports.

Maximum Leaf Area Index. The maximum leaf area was set to zero, which is appropriate for bare ground. The Western LARW cell will not be vegetated.

Growing Season. The model is insensitive to the input values for the start and end of growing season, because the Western LARW cell will not be vegetated. The growing season for Salt Lake City (start day 117, end day 289) was left as the default input.

Wind Speed. The long-term average wind speed from Dugway, Utah (5 knots, or 5.75 mph) was used in the model. Previous sensitivity analyses indicate that the HELP model is insensitive to slight variations in wind speed.

Relative Humidity. The long-term relative humidity data from Dugway was used in the HELP model simulations. The data are based on a 20-year period of record of monthly mean relative humidity values, from 13:00 hours local standard time from the National Weather Service (NWS) National Oceanic and Atmospheric Administration (NOAA). The humidity data were not changed from the values used in the March 2, 2000 report (Whetstone, 2000a.) The quarterly values were derived as a simple average of the monthly values, and are shown in Table 2.

3.2.2 Precipitation

Precipitation data was generated using the HELP synthetic precipitation generator to stochastically generate 100 years of daily precipitation data. The mean monthly precipitation values, from which the 100 years of daily precipitation data were generated, were updated to include the seven years of recorded precipitation available for the Clive site.

The Clive facility received above-average precipitation in 1997 and 1998, as did the Dugway station. Wendover received abnormally high precipitation during 1998. Precipitation during 1999 was closer to normal, as summarized in Table 4. The monthly precipitation data for Wendover, Clive, and Dugway from 1993 – 1996 are shown in Table 7. The precipitation measured from 1993-1999 indicates that the mean monthly precipitation at Clive facility has been 100.4% of the precipitation at the Dugway meteorological station.

As shown in Table 5 and Figure 1 (below), the average monthly precipitation at Dugway and Clive is comparable in magnitude and seasonal trend. The annual average precipitation at the Dugway station over the past seven years has exceeded the long-term historical precipitation by approximately 25%. The 7-year average monthly precipitation for the month of June is almost double the historical average as the Dugway station. The historical averages at Dugway from 1950 – 1999 were calculated by the Western Regional Climate Center.

The precipitation used in the HELP model was derived by scaling the long-term historical Dugway data (1950-1999) by 100.4%. The sum of the long-term monthly mean precipitation input to the model was 7.85 inches, and the HELP synthetic weather generator returned a mean precipitation of 7.92 inches/year for the 100-year synthetic data set. Previous modeling (Whetstone, 2000a) used an annual average precipitation of 7.05 inches as input to the HELP model, and the HELP synthetic weather generator returned a mean precipitation of 7.12 inches/year for the 100-year synthetic data set.

Two precipitation sensitivity analyses were performed (Table 6). The first used the average of the highest two years of precipitation data recorded at Clive (12.78 in/yr). The second used the average of the lowest two years of precipitation data recorded at Clive (7.01 in/yr).

The base case (7.92 inches/yr) synthetic data set is considered conservative because 1) the mean precipitation in the HELP data set exceeds the calculated annual mean (7.85 inches), and 2) the data set captures extreme precipitation events.

3.2.3 Temperature

One hundred years of temperature data were created using the HELP synthetic temperature generator, based on coefficients for Salt Lake City and the monthly average temperature at Dugway, based on the 36-year period of record from the NOAA climatological records. For infiltration modeling purposes, the approximate long-term mean monthly temperatures from Dugway was assumed to be representative of temperature at the Clive site. The data set indicates an average annual temperature at Dugway of 51.67 °F. The monthly mean temperature input to the model are given in Table 3.

3.2.4 Solar Radiation Data

The synthetic generation of solar radiation data is a strong function of precipitation, therefore the precipitation data sets were generated first, followed by temperature, followed by solar radiation.

The solar radiation data set was generated by first generating precipitation data (based on the expected long-term average of 7.05 inches /year), then generating synthetic temperature data (based on long-term mean monthly temperatures at Dugway), then generating the solar radiation data using the location coefficients for Salt Lake City and the latitude (40°41'15", 40.6858°) for the Clive site.

3.3 Landfill Soil and Design Data

The design of the Western LARW cell is very similar to that of the existing LARW cell. At completion, the Western LARW disposal cell will be approximately 1,400 x 2,250 feet, covering approximately 73 acres. The cell will be excavated into native soils, and lined with compacted clay materials. The waste will be placed above the liner and will be covered with a layered engineered cover constructed of natural (no man-made) materials. The cell cover will be a layered composite which includes rip rap, filter material, sacrificial soil, and a clay radon barrier. The top slopes of the cell will be finished at a 2% - 4% grade, with side slopes no steeper than 5:1 (20%).

3.3.1 Layer Design

From bottom to top, the Western LARW disposal cell layers for the top slope areas are as follows:

- Lower Liner. The cell will be lined with a 2-foot thick layer of compacted clayey soil. This bottom clay liner has been constructed with a field hydraulic conductivity of 1.0×10^{-6} cm/sec or less.
- Waste. The waste layer will reach a maximum thickness of approximately 54 feet[1] above the top of the clay bottom liner at the crest. The height of waste at the shoulder of the top slope (the contact between the top slope and side slope) will be 32 feet. Therefore the average waste height will be 43 feet in the top slope area ((54+32)/2). Since the moisture contents of the waste are initialized to steady state (no moisture goes into or out of storage in the waste), the model is completely insensitive to waste thickness. A unit thickness of 100 inches was used for the waste in all HELP model runs.
- Radon Barrier. The proposed uniform waste cover design will consist of an upper 12 inches of radon barrier with a maximum hydraulic conductivity of 5×10^{-8} cm/sec and a lower 6 feet of radon barrier having a hydraulic conductivity of 1×10^{-6} cm/sec or less.
- Filter Zone (Lower). Six inches of Type-B filter material will be incorporated in the top slope cover design. This filter material ranges in size from 0.2 inches to 1.5 inches, with 100% passing a 1 ½-inch sieve, less than 40% passing a 3/8-inch sieve, and not more than 10% passing a 4.75 mm sieve. The Type-B size gradation corresponds to a coarse sand and fine gravel mix, according to the Universal Soil Classification System.
- Sacrificial Soil (freeze/thaw) Layer. A 12-inch thick layer of silty sand and gravel will be used in the top slope cover, above the lower filter zone, in order to protect the lower layers of the cover from freeze/thaw effects. The engineering design specifies a D_{15} grain size of 1.68 mm, a D_{60} of 3/8 inch, and a $D_{100} \leq 3/4$ inch.

[1] Maximum waste height of 54 ft assumes a 4% top slope.

- Filter Zone (Upper). Six inches of Type-A filter material will be used on the top slope. The Type-A filter material ranges in size from 0.08 inches (2 mm) to 6.0 inches, with 100% passing a 6-inch sieve, 70% passing a 3-inch sieve, and not more than 10% passing a 2 mm sieve. The Type-A size gradation corresponds to a poorly sorted mixture of coarse sand to coarse gravel and cobble, according to the Universal Soil Classification System.

- Rip Rap Layer. Approximately 18-inches of rip rap will be placed on the top slopes, above the upper (Type A) filter zone. The Type-B rip rap to be used on the top slopes will range in size from 0.75-4.50 inches, with the D_{100} grain size ≤4.5 inch, D_{50}≥1.25 inch, and D_{10}≥0.75 inch. The coarser Type-A rip rap, used on the side slopes, will range in size from 2-16 inches (equivalent to coarse gravel to boulders), with the D_{100} grain size ≤16 inch, D_{50}≥4.5 inch, and D_{10}≥2 inch.

The design for the side slopes includes a sacrificial soil layer, which functions as a freeze/thaw barrier. Infiltration modeling of the side slopes was performed for the following two cases:

- Side slopes with sacrificial soil layer. The side slopes are 160 feet in horizontal length, with a slope of 5:1. From bottom to top, this side slope design includes a 2-ft thick lower liner, waste, radon barrier, 12-inch upper radon barrier, 6-inch Type-B filter zone, 12-inch sacrificial soil (consisting of silty sand and gravel), 6-inch Type-A filter zone, and 18-inch Type-A rip rap (Table 8). The material used for the Type-A filter and Type-A rip rap are described above. The thickness of waste will range from zero at the edge of the cell to 32 feet at the shoulder, for an average waste height of 16 feet ((0+32)/2). The side-slope infiltration modeling used a unit waste thickness of 100 inches, as discussed above for the top-slope simulations.

- Side slopes without sacrificial soil layer. This design requires only one filter layer. From bottom to top, this side slope design includes the lower liner, waste, radon barrier, 12 inches of Type-A filter material, and 18 inches of Type-A rip rap. Although the waste will average 16 ft in thickness, the side-slope infiltration modeling used a unit waste thickness of 100 inches, as discussed above for the top-slope simulations. The side slopes are 160 feet in horizontal length, with a slope of 5:1.

  In this side slope sensitivity analysis, the permeability of the top 5 inches of the side-slope upper radon barrier was increased by two orders of magnitude (100-fold) to simulate freeze/thaw damage effects.

The layers and material properties used in the HELP infiltration modeling of the top slope and side slope modeling are given in Table 7 and Table 8, respectively.

3.3.2 Comparison with Existing LARW Cell

The proposed design of the Western LARW cell is similar to that of the existing LARW cell, with respect to the thickness and hydraulic properties of the cover materials. The significant[2] design differences between the two cells include the following:

- Top-Slope Length—540 ft in the Western LARW cell, 400 ft in the existing LARW cell;
- Top-Slope Grade—according to design drawings, the slope may range from 2%-4% in the Western LARW cell, and was set at 2.6% in the existing LARW cell. A 3% slope was used in the modeling for this report;

[2] Significant with respect to infiltration modeling.

- Upper radon Barrier Thickness—12 inches at $5x10^{-8}$ cm/sec in the Western LARW cell, 6 inches in the existing LARW cell;
- Sacrificial soil thickness—12 inches in the Western LARW cell, modeled as 16.5 inches in the existing LARW cell.
- Side slope frost protection—the side slopes of the Western LARW cell will be constructed with a sacrificial soil layer and additional filter layer to prevent damage from freezing and thawing. Frost protection layers are not included in existing LARW cell side slopes.

3.3.3 Side-Slope Run-On

The side-slope modeling includes the effects of run-on from the filter layers in the top-slope. As described in previous reports, run-on or drainage from up-slope can be simulated by adjusting the slope length to an effective length (L'). The procedure is summarized as follows:

1. Run the simulation on the up-slope panel (in this case the mobile cell). Note the initial volume estimate of drainage (D_u).
2. Run the simulation on the receiving (down-slope) panel using the actual slope length (L) for that section. Note the initial volume estimate of drainage (D_{d1}).
3. Determine an incremental increase in slope length (ΔL):

$$\Delta L = L \cdot \left(\frac{D_u}{D_d} \right)$$

4. Add the incremental increase in slope length to the initial slope length to determine the effective slope length:

$$L' = \Delta L + L$$

5. If the new estimate of drainage (D_{d2}) is significantly different from the previous estimate (D_{d1}), repeat the process to calculate a new effective length (L') and run the simulation again to compute a final estimate of drainage (Dd), runoff, evapotranspiration, and percolation.

The effective slope length calculations are shown in Table 9.

3.4 HELP Infiltration Modeling Results

3.4.1 Top Slope Infiltration Results

The top slope infiltration modeling indicates that an average of 0.104 inches per year (0.265 cm/yr) would infiltrate through the Western LARW cell top-slope under long-term quasi-steady state conditions[3]. In comparison, the March 2, 2000 modeling of the Western LARW cell (using 7.05 inches/year precipitation) predicted an infiltration of 0.088 inches per year (0.223 cm/yr) through the top slope. The difference is due to the increase in precipitation input to the model.

[3] Quasi-steady-state conditions would be reached after the moisture content of the waste and cover materials reached the long-term steady-state moisture content. If the waste were placed under a moisture deficit, moisture would be taken into storage in the waste for years or decades until these conditions were reached. Likewise, if the waste contained excess moisture at the time of cell closure, slow drain-down would occur until the steady-state moisture content was reached.

Previous modeling of the existing LARW cell predicted that infiltration through a 400-foot top-slope would be 0.078 in/yr (0.198 cm/yr). The difference results from the longer top slope length for the Western LARW cell than for the existing LARW cell. In all cases, the infiltration represents the average across the entire slope length. The HELP modeling runs, including sensitivity analyses, are summarized in Table 10 and a detailed water balance is given in Table 11.

3.4.2 Side Slope Infiltration Results

Side Slope with Frost-Protection (Model Run SP1-R3). The predicted infiltration through the frost-protected side-slope is 0.143 in/yr (0.364 cm/yr), which includes the effects of run-on from the top-slope. Without run-on, the expected infiltration would be 0.076 in/yr (0.193 cm/yr).

Previous modeling of the existing LARW cell predicted that infiltration through a 160-foot side-slope located below 400 feet of top-slope would be 0.592 inches/year (1.504 cm/yr). The differences result from the change in precipitation input, the increase in run-on which results from a longer top-slope for the Western LARW cell, and the greater permeability contrast which contributes to additional lateral drainage from the frost-protected cover. The short slope length, steep slope, and frost protection serve to efficiently route water off the side slope, as shown in the model.

Degraded Side Slope (Model Run S1-R3). The predicted infiltration through the side-slope without a sacrificial soil layer is 0.676 in/yr (1.717 cm/yr), assuming that the permeability of the upper radon barrier were degraded 100 times, due to freeze/thaw effects. This infiltration rate includes the effects of run-on from the top-slope[4]. In comparison, the March 2, 2000 Western LARW cell modeling predicted an infiltration rate of 0.637 in/yr (1.62 cm/yr) for the side slope without frost protection. The difference is due to the change in precipitation input.

In general, infiltration through the unprotected side-slope is greater than infiltration through the top-slope due to 1) the added run-on from the top-slope and 2) the higher permeability of the upper radon barrier, which was modeled to account for degradation due to freezing and thawing ($5x10^{-8}$ cm/sec degraded to $5x10^{-6}$ cm/sec).

3.5 Sensitivity Analyses

Sensitivity analyses were run for the high and low precipitation scenarios and to evaluate the use of a 1-, 2-, or 3-ft thick lower radon barrier. These sensitivity analyses are shown in Table 10. The conclusions from the sensitivity analyses are as follows:

- The top slope high precipitation sensitivity analysis results in a 17% increase in infiltration over the base case analysis. Based on a precipitation rate of 12.78 inches/yr, the HELP model indicates that 0.122 inches/yr (0.310 cm/yr) would infiltrate through the Western LARW cell top slope.
- The high precipitation sensitivity analysis for the unprotected side slope results in a 22% increase in infiltration. Based on a precipitation rate of 12.78 inches/yr, the HELP model indicates that 0.827 inches/yr (2.102 cm/yr) would infiltrate through the unprotected Western LARW cell side slope.
- Adjusting the thickness of the lower radon barrier has no effect on infiltration through the cell. Three top slope sensitivity analyses were conducted using thicknesses of 1, 2 and 3 feet. The infiltration through the top slope was identical to the base case infiltration (0.104 inches/yr, 0.265 cm/yr).

[4] In the absence of run-on, the model predicts that infiltration through the side slopes would be 0.403 inches/year (1.024 cm/yr).

Additional sensitivity analyses were run previously for the Western LARW cell (Whetstone, 2000a) to evaluate the cover design with respect to the thickness of the upper radon barrier, the permeability of the lateral drainage layer, and the percent top slope. Although the precipitation data set was lower (7.12 in/yr), the relationships and conclusions of the sensitivity analysis are valid. The conclusions from these sensitivity analyses are as follows:

- The thickness of the upper ($5x10^{-8}$ cm/s) radon barrier could be decreased from 12 inches to 4 inches or even less. The controlling factor may be the minimum thickness which Envirocare can reliably construct, to ensure that the permeability does not exceed $5x10^{-8}$ cm/s in any location.
- The permeability contrast between the lower (Type B) filter zone and the upper radon barrier is critical. Decreasing the permeability of the filter zone by a factor of 2 causes the infiltration through the top-slope to almost double (0.146 in/yr; 0.371 cm/yr). Greater decreases in filter zone permeability result in greater infiltration.
- Varying the top slope grade between 2% and 4% would affect the infiltration rate. Sensitivity analyses yielded infiltration rates ranging from 0.060 (4% slope) to 0.112 inches/year (2% slope). Note that modeling a 2% slope would be conservative with respect to the top slope infiltration, as more infiltration would be predicted. However, a 2% top slope would be unconservative with respect to the side slopes, because less run-on would occur. Likewise, a 4% top slope would be conservative with respect to side-slope run-on, but unconservative with respect to top slope infiltration.
- Increasing the hydraulic conductivity of the lower (Type B) filter zone below the sacrificial soil (freeze/thaw) layer on the side slopes by a factor of 3 would also result in less infiltration. These sensitivity analysis included HELP model runs SSF-K3, SSF-K3R1, SSF-K3R2, and SSF-K3R3, in the March 2, 2000 modeling report (Whetstone, 2000a). The results indicated that tripling the hydraulic conductivity of the lower drainage layer (from 3.5 cm/sec to 10.5 cm/sec) would decrease infiltration from 0.254 inches/yr (0.645 cm/yr) to 0.130 inches/yr (0.330 cm/yr) for the frost-protected side slopes.

In addition, numerous sensitivity analyses were run for the existing LARW cell. These analyses are described in detail in the Volume I. Final Report on Infiltration Modeling (December 4, 1997). The results of those sensitivity analyses are summarized below:

- Wind Speed— The wind speed sensitivity analysis indicates that the model is insensitive to slight changes in wind speed. Therefore, all runs of the Western LARW cell infiltration model used the base case 5.75 mph wind speed.
- Evaporative Zone Depth— The EZD sensitivity analysis indicated that, while a decreased EZD causes less water to be lost to evaporation, more water drains through the second filter zone (Layer 4). The difference in infiltration from the base case (18"EZD) and the lowest EZD modeled (1") was very low (0.041 in/yr; 0.104 cm/yr). The range of reasonable values for the evaporative zone depth is 18-24 inches. All runs of the Western LARW cell infiltration model used an EZD of 18 inches.
- Increased Precipitation— Several sensitivity analyses were performed using variations of the precipitation data from the Clive facility. The high-precipitation (7.99 in/yr) sensitivity analysis had higher runoff, evapotranspiration and lateral drainage rates than those of the base case. As a result, the total infiltration through the cell was *lower* in the high-precipitation sensitivity analysis case. A second high-precipitation case (8.3 in/yr) resulted in a 0.01 in/yr increase in infiltration. All runs of the Western LARW cell infiltration model used the base case synthetic weather data sets, which produce an annual precipitation of 7.12 inches.

- Upper Radon Barrier Thickness— A sensitivity analysis of the thickness of the upper portion of the radon barrier indicated that increasing the thickness of the $5x10^{-8}$ cm/s radon barrier from 6 inches to 12 inches resulted in no difference in infiltration from the base case run (CTS-1). Sensitivity analyses were also run for the Western LARW cell, to determine whether other factors might affect this relationship. As described above, the infiltration is sensitive to the permeability but essentially insensitive to the thickness of the upper radon barrier.
- Sacrificial Soil Layer Thickness— A sensitivity analysis of the thickness for the sacrificial soil (freeze/thaw) layer indicated that increasing the thickness of the sacrificial soil layer from 16.5 inches to 18 inches resulted in only a slight decrease in infiltration from the base case run. The sacrificial soil layer modeled for the Western LARW cell was 12 inches thick.
- Waste Layer Thickness— Sensitivity analyses indicated that the HELP model is insensitive to variations in waste layer thickness, with respect to predicted infiltration, because the model is run to achieve a quasi-steady-state infiltration. No moisture is taken into (or released from) storage in the waste. All runs of the Western LARW cell used a "unit" waste thickness of 100 inches.

The sensitivity analyses performed on the Western LARW cell, coupled with previous sensitivity analyses, provide satisfactory assurance that the predicted infiltration is reasonable estimate of the future conditions.

4. MOISTURE CONTENT (UNSAT-H) MODELING

The UNSAT-H model was used to predict the moisture content and time of travel in the radon barrier, waste, clay liner, and Unit 3 sand to the top of the aquifer. The final moisture content from UNSAT-H is used as input to the contaminant transport modeling (PATHRAE). Although the HELP model does report the final moisture content in each model layer for each simulation, the UNSAT-H model is considered to be more accurate with regard to predicting moisture content.

4.1 UNSAT-H Code

The UNSAT-H code was developed at Pacific Northwest Laboratory for assessing the water dynamics of arid sites which are used or proposed for near-surface waste disposal. The code can be used to estimate recharge/percolation rates and to assist in optimizing barrier design. Groundwater flow in the vadose zone is modeled using a one-dimensional finite-difference analysis.

The UNSAT-H code models groundwater flow in the unsaturated zone using a modified form of the Richards equation (Richards, 1931), which describes the change in water storage and redistribution at every point within the soil profile. The flow across the boundaries of the profile are represented by specified fluxes (precipitation, evaporation, and drainage). The Richards equation is given by:

$$C(h)\frac{\partial h}{\partial t} = \frac{\partial}{\partial z}\left(K_l(h)\frac{\partial H}{\partial z}\right)$$

where $C(h)$ represents the negative of the specific moisture capacity (L^3/L^3T)
h is the negative of ψ, the matric (or suction) head potential (L/T)
$K(\theta)$ is the hydraulic conductivity function (L/T)
$K_l(h)$ is the unsaturated hydraulic conductivity function
H is the total hydraulic head (L)

To solve the flow equation, UNSAT-H was supplied with van Genuchten parameters, which define the soil water retention curve, and saturated hydraulic conductivity values. Given the relationships for both hydraulic conductivity and water content as functions of suction head (h), UNSAT-H calculates the capacity term (C). Simply stated, where the volumetric water content in a soil exceeds the soil capacity, water flows downward in response to gravity.

UNSAT-H also has the ability to model heat flow and vapor diffusion. These features were not invoked in the Western LARW model, because the vadose zone modeled below the Western LARW cell is considered to be below the influence of surface heat flux and above any significant geothermal gradient.

UNSAT-H calculates the unsaturated hydraulic conductivity at each node, at each timestep, based on user specifications for the hydraulic conductivity model. The Mualem hydraulic conductivity model, the Mualem [$m = 1-(1/n)$] restriction was imposed during this modeling exercise, in part because it is recommended for all data sets except for those having a very well-defined soil water retention data set. [The primary data set for the Unit 4 compacted clay consisted of five pressure head / moisture content measurements, a reasonable number, but not excessive.] Also, it is necessary to invoke one of the restrictions ([$m = 1-(1/n)$], [$m = 1-(2/n)$] or $n \rightarrow \infty$) for structured (clay) or coarse-textured (filter zone) soils, and the Mualem [$m = 1-(1/n)$] restriction is consistent with previous modeling.

The degraded and undegraded portions of the upper radon barrier were combined into a single degraded material.

4.2 UNSAT-H Node Geometry

The UNSAT-H model node geometry began at the top of the radon barrier and included the waste, clay liner, and the Unit 3 sand. In the top slope area, the waste was modeled with a thickness of 40 feet[5]. In the side slope area, the waste layer was modeled with a thickness of 15.5 feet. The node spacing was arranged such that the distance between discontinuities (layer boundaries) was 0.1 cm, and the spacing between adjacent nodes did not exceed about a factor of 2.

The thicknesses of the upper radon barrier, lower radon barrier, top slope waste, and clay liner are 12 inches, 72 inches, and 24 inches, respectively, as shown in Table 14. With the exception of the waste layers[6], all layer thicknesses in UNSAT-H are identical to those used in the HELP modeling.

The Unit 3 sand underlying the Western LARW cell was modeled with a thickness of 13.39 feet, which is the distance from the base of the clay liner to the top of the aquifer. The top and base of the clay liner occur at design elevations of 4,265 and 4,263 ft, respectively. The top of the aquifer occurs at an average elevation of 4,249.61 ft, based on saline heads from twelve water level measurements through April, 2000 Table 12). The use of the average water level is conservative, because the length of the capillary zone calculated by UNSAT-H was subtracted from the vertical transport distance in the PATHRAE model, thus decreasing the vertical transport distance even further.

4.3 Boundary Conditions

The lower boundary of the model was set to a constant head of zero cm, to represent the top of the water table. The upper boundary represents the top of the radon barrier, which is located below the zones of

[5] The approximate average waste height for the top and side slopes are 42.8 feet and 16 feet, respectively.

[6] The waste layers in the HELP model were set to a uniform thickness of 100 inches, because the HELP model is not sensitive to the waste thickness.

evaporation and drainage. Therefore, evaporation at the upper boundary was set to zero and precipitation was set to equal the percolation rate predicted by the HELP model.

The upper boundary of the model received moisture as a constant, steady-state application to the top of the radon barrier. The average annual infiltration predicted by HELP was distributed over 24 hours per day, 365 days per year. For the top slope simulation, the infiltration was applied at a rate of 0.00073 cm/day, which produces 0.265 cm/yr of total applied water. The infiltration was applied at rates of 0.001 and 0.0047 cm/day, for the frost-protected and degraded side slope simulations, respectively. These rates correspond 0.364 cm/yr (0.143 in/yr), and 1.717 cm/yr (0.676 in/yr) side slope infiltration rates predicted by the HELP model. Six additional infiltration rates were modeled as well (Table 17).

According to Meyer, et al. (1996), the UNSAT-H program predicts a higher infiltration rate when the precipitation is distributed as a 24-hour total. Therefore, this approach was conservative, and all of the applied water had the greatest opportunity to infiltrate into the radon barrier.

4.4 Initial Head Conditions

The suction head (Ψ) was iterated to quasi-steady state, in order to predict the long-term moisture content and velocity in the cover, waste, liner, and underlying soil. The suction head from each run was used as input to the next simulation. Each series was run for an adequate time (typically 30 years), until quasi-steady state head conditions were achieved.

4.5 Material Properties

The UNSAT-H model, with the van Genuchten option, required the input of θ_r, θ_s, K_s, α, n, and m for each material modeled. These included the radon barrier, waste, clay liner, and underlying Unit 3 Sand and Unit 2 Clay. The material properties are similar to those used in previous (LARW cell) modeling. However, the approximate[7] site-wide geometric mean hydraulic conductivity of the shallow aquifer (5.78×10^{-4} cm/sec) was used for K_s in material 4 of the UNSAT-H model.

The approximate geometric mean hydraulic conductivity of the shallow aquifer (5.78×10^{-4} cm/sec) was based on the site-wide hydraulic conductivity results for wells tested prior to June 2000 (Table 13). A total of 81 wells were used in the calculation, and the site-wide statistics were calculated for all wells, without differentiating between hydrostratigraphic units[8].

The material properties used in the UNSAT-H modeling of the Western LARW cell are given in Table 14.

4.6 UNSAT-H Modeling Results

The UNSAT-H model was run several times for each case, to approach quasi-steady-state conditions. Quasi-steady-state is achieved by running the model for sufficient time that moisture contents stabilize, and water is not taken into or released from storage. These moisture contents represent the long-term expected moisture contents in the Western LARW cell materials and the underlying subsurface.

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[7] The geometric mean hydraulic conductivity of 5.78x10-4 cm/sec is based on 81 wells tested prior to June, 2000. Eleven additional wells were tested on June 21 and 22, 2000, resulting in a site-wide geometric mean hydraulic conductivity of 6.09×10^{-4} cm/sec.

[8] DRC (May 2000) recommended that the model not differentiate between the Unit 2 Clay and the Unit 3 Sand, because the hydraulic conductivity data did not indicate a clear correlation in the two units.

4.6.1 Moisture Content

The moisture content with depth for the Western LARW top slope is listed in Table 15. The moisture content results are shown graphically in Figure 2. Clearly, the clay layers in the cover and liner of the Western LARW cell retain high moisture contents (approximately 0.42). The moisture contents stabilized at 0.058 in the waste and 0.042 in the native soil below the cell. The soil suction head with depth for the Western LARW top slope is shown in Figure 3.

The moisture content with depth for the Western LARW side slope (frost-protected) is listed in Table 16 and shown graphically in Figure 4. Since the modeled side slope infiltration rate (0.364 cm/yr) was greater than that of the top slope (0.265 cm/yr), the moisture contents predicted by UNSAT-H were slightly higher. The moisture contents stabilized at 0.06 in the waste and 0.045 in the native soil below the cell. The predicted soil suction heads (Figure 5) were lower for the Western LARW cell side slope than for the top slope.

The moisture content with depth for the Western LARW side slope without frost protection is listed in Table 16 and shown graphically in Figure 6. The degraded side slope (with a 100-fold increase in permeability) had an infiltration rate of 1.717 cm/yr, which resulted in higher moisture contents than in the base case top slope and side slope scenarios. The moisture contents stabilized at 0.078 in the waste and 0.057 in the native soil below the cell. The predicted soil suction heads for the frost-protected side slope (Figure 7) were also lower than those of the base case top and side slopes.

The volumetric moisture contents predicted by the UNSAT-H model for the six additional infiltration rates (9 cases in all) are summarized in Table 17. The relationship between moisture content and infiltration rate can be approximated using a third order polynomial curve, as shown in Figure 8. Under the modeled conditions, the moisture content in the waste can be defined as:

$$y = 0.0032x^3 - 0.0162x^2 + 0.0344x + 0.05$$

The moisture content in the underlying silty sand can be defined as:

$$y = 0.0015x^3 - 0.0086x^2 + 0.0215x + 0.0376$$

where y is the moisture content and x is the infiltration rate.

4.6.2 Capillary Fringe

The moisture content of the Unit 3 sand was determined for the zone from the bottom of the clay liner to the top of the capillary fringe. This approach is conservative because 1) a higher vadose zone velocity is calculated using the lower moisture content ($v_v=q/n_e$) and 2) the length of the vertical path was decreased in the PATHRAE model to exclude the capillary fringe.

The UNSAT-H results for the top slope area (Figure 2) illustrate that the capillary fringe may extend as far as 25 cm above the water table. The height of the capillary fringe was similar in all three model cases. To account for this phenomenon, the distance from the bottom of the waste to the water table was decreased by 0.85 feet in PATHRAE runs, and the moisture contents from the vadose zone (omitting the capillary fringe) were used.

5. FATE AND TRANSPORT MODELING APPROACH

5.1 PATHRAE Code

5.1.1 Model Version

Transport modeling was performed using the PATHRAE-RAD Performance Assessment Code for the Land Disposal of Radioactive Wastes (Merrell, et. al, 1995). The PATHRAE code was first developed for the US EPA in the 1980s, for use in assessing the maximum annual dose to a critical population group resulting from the disposal of "below regulatory concern" (BRC) wastes. The Western LARW cell modeling used the PATHRAE-RAD version of the code, which was released on February 9, 1995 (code) and March 1995 (documentation). A modification to the code to allow for more than 10 output times was made by Adrian Brown Consultants in 1997, and is documented in Appendix M of Envirocare's license renewal application.

Recompiling the code to allow for more than 10 output times did not affect the model solution. In order to demonstrate, the example problem in the PATHRAE user's manual (Merrell, *et al.*, 1995) was run using the sample input data and the recompiled PATHRAE code. The model was run using 20 output times instead of the original 10. The output file is provided in Attachment 5. The predicted nuclide doses using the recompiled code exactly match those from the original code, for the same output times. An example is shown in the following figure, which presents the direct gamma exposure from Th-234 for the original and recompiled versions of the code.

The sample problem presented in the Users Manual showed that the nuclide doses in the groundwater to a well pathway were zero. The output concentrations using the recompiled code are indeed zero for all of the timesteps modeled after 50 years. However, the recompiled model shows that the slug of radionuclides in the sample problem passed the well and could be detected at year 25. The output timesteps in the original sample problem were spaced such that they missed the plume. That is, the plume flowed past the well sometime between year 0 and Year 50. The recompiled PATHRAE code can be much more conservative than the original PATHRAE code, because numerous output timesteps can be selected, in order to 'detect' both early- and late-time releases. The Western LARW cell modeling used 115 output timesteps in simulating the vertical pathway.

5.1.2 Model Components

The PATHRAE code is generally made up of three components: release, transport, and uptake solutions. The model calculates a closed form solution for dose (or concentration) at a point in each pathway at a user-specified set of times. The code can be used to simulate multiple transport/receptor pathways. In the Western LARW cell model, the groundwater to a river pathway was applied, in order to determine the concentration at a compliance point located 90 feet from the edge of the disposal cell. The three PATHRAE components are described below:

- *Release.* PATHRAE uses a constant rate for predicting the release of contaminants from the waste, in the current modeling exercise. That is, the model assumes that the quantity of contaminant released each year is a constant fraction of the amount of waste initially present[9].

[9] The assumption that the release rate (leach rate) is constant over time is conservative. The release rate would actually decrease over time as the source term concentration decreases.

- *Transport.* The transport component of PATHRAE is similar to that in many other groundwater contaminant transport models. PATHRAE solves the advection/dispersion equation, includes aquifer diffusion, assumes that diffusion is Fickian, allows for retardation of contaminants using a blanket K_d (retardation coefficient), and includes radioactive decay.
- *Uptake.* PATHRAE also calculates the maximum annual doses to a receptor consuming river or well water and crops grown using that water. However, the groundwater protection levels for the Envirocare site are given as concentrations derived from dose/uptake conversions. Therefore, PATHRAE was used to determine concentrations, rather than dose.

Both a vertical transport path and a horizontal transport path were modeled. The vertical model was run first, to determine the arrival time and concentrations of constituents at the water table. The output from the vertical model was then input into the horizontal model, using the discrete dispersed source method.

The discrete dispersed source method involves a vertically dispersed source term which is discretized over time and space. The PATHRAE transport model was run first for the dispersive vertical (unsaturated zone) solution. The procedure for applying the discrete dispersed source method is described in detail in previous reports. Concentration output was obtained for approximately 115 output times, including the time of peak concentration for each nuclide of interest. The total mass (or activity) of each constituent at the water table during a given time "slice" was summed from the output file. The time of arrival was converted to a distance by which to shorten (or lengthen) the vertical path as a result of positive (or negative) dispersion and retardation (Figure 10). The horizontal model was then run 115± times, using the initial concentration and distance for each time "slice". The 115± resulting concentrations at the compliance point were summed, to determine total concentration, which was then compared to the groundwater protection levels established for the Western LARW cell monitoring wells.

5.2 Groundwater Protection Levels

The final output from the PATHRAE model was compared to the Groundwater Protection Levels (GWPLs) to determine the year in which the GWPL is first exceeded. The year to exceed is conservatively reported as the next *lowest* model output time.

GWPLs are listed in Table 18, for all constituents modeled. The GWPL values were derived from several sources (including UDEQ and EPA), which are listed in Table 18. The source for each GWPL is also identified in Table 18. These sources include:

- Maximum contaminant levels (MCLs) and secondary MCLs (SMCLs) in drinking water established by UDEQ and the US EPA.
- Proposed drinking water standards for alpha emitters, as published in the EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix C - Alpha Emitters. The EPA's proposed standards for beta, gamma, and alpha emitters were also published in the Federal Register on April 21, 2000.
- Proposed drinking water standards for beta emitters, as published in the - EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix B - Beta Particle and Photon Emitters.
- Site specific GWPLs established by UDEQ for the existing LARW cell monitoring wells. These standards are listed in Table 1B of Envirocare's GWDP. Since the water quality is not expected to vary significantly across the site, the well-specific GWPLs from the existing LARW cell are assumed to apply to the new Western LARW cell. These values are considered to be interim GWPLs, used here

for comparison purposes only. Statistical background values will be established in the future for the Western LARW cell monitoring wells.

- GWPLs used in previous modeling performed by UDEQ DRC.
- Calculated values using FGR 11 or FGR 13. The most conservative (lowest) value calculated by Loren Morton (UDEQ DRC) in a spreadsheet provided to Envirocare were selected for nuclides which were not included in EPA's proposed rules or for which background GWPLs had not been established. GWPLs for two nuclides which were not were provided in the spreadsheet from Loren Morton were calculated by Wayne Johns of Envirocare of Utah, using FGR 11. Both DRC's Loren Morton and Envirocare's Wayne Johns calculated the GWPL using the following equation:

$$GWPL = \frac{4mrem(CEDE)}{Year} = \frac{1ALI(\mu Ci)}{5000mrem} \times \frac{10^6\,pCi}{\mu Ci} \times \frac{1year}{365days} \times \frac{1day}{2Liters} = \frac{pCi}{Liter}$$

- The GWPL for Nb-94 was also used for Nb-91 and Nb-92, because no values for these two nuclides are listed in MCLs, FGR 11, or FGR 13. The Nb-94 GWPL would be lower than those of Nb-91, Nb-92 based on radioactive half-life, decay products, and decay energies.
- GWPLs estimated using ICRP 30 (for Po-208, Po-209).

6. VERTICAL FATE AND TRANSPORT MODELING

The transport of constituents from the waste to the water table was modeled using PATHRAE. The input parameters for the vertical model are shown in the model output (Attachment 6) and are described in detail below. The vertical model results (Section 6.3) serve as input to the horizontal PATHRAE model.

6.1 Vertical Input Parameters for Contaminant Release

PATHRAE requires five input files, which define the waste release, transport conditions, and uptake.

6.1.1 Waste Source Term Concentrations

A total of 261 isotopes were evaluated. Two hundred and one (201) of those nuclides are listed in the current Radioactive Material License (UT# 2300249, Amendment #09). Table 19 provides source concentrations, half lives, and K_d values for each nuclide.

The waste source term concentrations for the Western LARW cell were developed from data supplied by the Manifest Information Management System (MIMS). MIMS is managed by the Department of Energy (DOE), and is a summary of national low-level radioactive waste disposal information.

The initial information supplied by MIMS consisted of disposal data from 1986 to the present. This data was compiled from the disposal facilities at Barnwell, South Carolina, Beatty, Nevada and Richland, Washington. This spreadsheet, WasteClAcVolBC (original), was divided into various waste classes, i.e., Class A-stable, Class B, etc. Each waste class or combination of waste classes was further delineated by radioisotope, volume in cubic feet and activity in curies.

Due to limitations with MIMS, it is not possible to divide the waste classes for received material that was manifested with multiple waste classes, i.e., A-stable, A-unstable, B and C. Therefore, some combined categories, such as, A-stable/B or A-unstable/A-stable/C were deleted. The deleted portions comprised only 2.5 % of the total volume of waste disposed (14,774,626 cubic feet) from 1986 to present. The radioisotopes, volumes, and activities were arranged into two categories, Class A, which includes stable and unstable, and Class B/C. This was the natural break between stable and unstable waste forms.

Attachment WasteClAcVolBC (original) was edited as follows:

1) Obvious typographical errors, such as, radioisotopes listed by atomic mass number only with no element identification were deleted.
2) Radioisotopes with a half-life less than five years were deleted. The exception to this was radioisotopes that decayed to daughters with half-lives greater than five years. In addition, radioisotopes that are included on Table I or Table II of Utah Radiation Control Rule R313-15-1008, Classification of Radioactive Waste for Land Disposal, were not deleted.
3) Certain conservative assumptions were used, such as:
   a) The activity for "Pu-239+" was combined with the Pu-239 activity. It was unclear what the "+" defined. This occurred also with "Cm-243+."
   b) The activity of Nb-93 was added to Nb-93m since Nb-93 is stable.
   c) The activity for natural thorium was added to the activity for Th-232 since natural thorium is essentially 100% Th-232.
   d) The activities for depleted uranium and natural uranium were added to the activity of U-238 since both are essentially 100% U-238.
   e) The activities for Nb-94 AM and Ni-63 AM were each added to their respective radioisotopes, Nb-94 and Ni-63. The annotation of "AM" is indicative of activated metals, which have specific waste class categories in Table I and II of R313-15-1008.
   f) The activity for Ba-137 was added to the activity of Ba-137m since Ba-137 is stable.

The list of the remaining radioisotopes established by the above criteria was then classified by R313-15-1008 and their respective maximum Class A concentrations determined. If a radioisotope was not listed on Table I or Table II, it is Class A in accordance with R313-15-1008(2)(f). In these cases, the waste source term in the model was set at the specific activity. The specific activity, in pCi/g, was calculated for 46 nuclides using the following formula:

$$SA = \frac{\ln(2)}{t_{1/2}}\left(6.02x10^{23}\,\frac{molecules}{Mole}\right)\left(\frac{1}{GMW_{g/m}}\right)\left(3.7x10^{-2}\right)$$

where SA = Specific activity in pCi/g
t1/2 = Half life in seconds
GMW= Gram molecular weight in grams per mole

Based on the side slope infiltration (0.364 cm/yr), at the Class A/specific activity limits, nine nuclides exceeded the GWPLs within 500 years at a compliance well located 90 feet from the edge of the waste. The maximum acceptable concentrations of these nine nuclides were determined based on the PATHRAE model results. The concentration values which passed on an individual basis for each of the nine nuclides are summarized in the following table. Although a higher concentration would be successful in the top slope (0.265 cm/yr, 150 ft distance) case, the top slope concentrations were not calculated.

		SIDE SLOPE (0.364 cm/yr) ANALYSIS	
ELEMENT	NUCLIDE	Concentration (pCi/gm)	Concentration (Ci/m3)
Aluminum	Al-26	0.067	1.206E-07
Berkelium	Bk-247	0.000099	1.782E-10
Calcium	Ca-41	1.611	2.8998E-06
Californium	Cf-249	0.00015	2.7E-10
Californium	Cf-250	85	0.000153
Chlorine	Cl-36	0.2828	5.0904E-07
Rhenium	Re-187	8800	0.01584
Terbium	Tb-157	5.51	0.000009918
Terbium	Tb-158	0.59	0.000001062

The 93 nuclides selected for modeling are indicated with a check-mark listed in Table 19. Nuclides which are not modeled directly are represented by a synthetic (dummy) surrogate nuclide. The surrogates are not real nuclides, but have the K_d, half life, and concentration properties appropriate for a conservative surrogate for the real nuclide.

The radionuclide concentrations in picocuries per gram (pCi/g)) were converted to Ci/m^3 using the waste bulk density of 1.8 gm/cm^3 for input to the PATHRAE model. The initial source term concentrations for the were the same all model cases, as shown in Table 22 through Table 23.

6.1.2 Waste Bulk Density

A value of 1.8 gm/cm^3 was used for the bulk density of the waste. This value is consistent with previous modeling and the range of density determined by Envirocare (1.75 to 1.80 gm/cm^3) for the compacted, in-place waste.

6.1.3 Partitioning Coefficients (K_d)

The partitioning coefficient (a.k.a. distribution coefficient, or K_d) is the equilibrium ratio of the adsorbed contaminant concentration in soil or waste (mg/kg) to the concentration in the pore water or leachate (mg/l). Higher K_d values indicate that the constituent is more likely to partition to the soil and less likely to be released into groundwater.

The most conservative (lowest) K_d values found in the literature (Sheppard and Thibault, 1990; Looney et. al, 1987), were applied to all nuclides, except those having site-specific values. Site-specific K_d values were available for Cs, Co, C-14, I-129, Np-237, Tc-99, and U. The K_d values and data sources are listed in Table 20.

6.1.4 Fractional Release Rate

The annual fractional release rate, or "leach rate", was calculated using the following equation (Kozak 1990):

$$L = \frac{q_{in}}{d\theta\left(1 + \frac{\rho K_d}{\theta}\right)}$$

where L = fractional annual contaminant release rate (yr^{-1})
q_{in} = water infiltration rate (m/yr)
θ = volumetric moisture content of waste
d = waste layer thickness (meters)
ρ = waste density (g/cm^3)
K_d = waste distribution coefficient (ml/g)

This method of determining the leachate concentration is environmentally-conservative for several reasons. First, PATHRAE assumes that the release rate is constant throughout time. The constituent is leached from the waste at a constant rate, until the initial source concentration is totally mobilized. In reality, the leach rate will decrease as the source concentration decreases. Second, the use of K_d to determine contaminant release rates assumes that all of the constituent is adsorbed and will eventually be completely desorbed (or leached out) by percolating water. In reality, some of the constituent may occur in the refractory phase, which would render it less mobile. Last, the Western LARW cell modeling used the lowest literature K_d values, for constituents without site-specific K_ds.

The annual fractional release rates from the waste (vertical simulation) were calculated based on the infiltration rate (q_{in}) from the HELP modeling and the moisture content (θ) from the UNSAT-H modeling. The annual fractional release rates for each nuclide, for the top slope and side slope infiltration rates, are shown in Table 22 and Table 23.

6.1.5 Container Life

The container life was set to zero, in both the horizontal and vertical PATHRAE modeling. However, in the previous modeling (ABC 1996a, ABC 1997b, ABC 1998), the container life was defined as the travel time for a molecule of water to migrate through the cover material. It was assumed that no water is available to leach constituents from the waste until incident precipitation first penetrates the base of clay cap. Further, it was assumed that when the first molecule penetrates the base of the clay cover barrier, constituents would begin migrating from the base of the waste. The travel time through the cover was determined according to the equation for average linear velocity in the vadose zone, which was given by $v = q/\theta_e$ (Stephens, 1996).

The base case Western LARW cell models disregard the time required for the water to percolate through the cover and that water moves through the cover instantaneously. This is an extremely conservative assumption, since the average time of travel through the cover and waste could be several hundred years (Table 26).

6.1.6 Decay Chain Computation

The natural uranium decay chain (U-238→Th-230→U-234) and the plutonium-241 decay chain (Pu-241→Am-241→Np-237) were calculated by the model. PATHRAE has the ability to model five other decay chains, but these were not modeled.

6.2 Vertical Input Parameters for Flow and Transport

6.2.1 Infiltration

The infiltration rate through the Western LARW cell was determined from the HELP3 modeling described in Section 3 above. Five infiltration rates (0.265 cm/yr, 0.310 cm/yr, 0.364 cm/yr, 1.717 cm/yr and 2.102 cm/yr) were used to evaluate transport through the top slope, high-precipitation top slope, frost-protected side slope, degraded side slope (100-fold permeability increase), and high-precipitation degraded side slope, respectively.

DESCRIPTION	INFILTRATION RATE (cm/yr)
Top Slope, Base Case	0.265
Side Slope, Frost Protected	0.364
Top Slope, High Precipitation	0.310
Side Slope Base Case (w/o Protection)	1.717
Side Slope, High Precipitation	2.102

The base case top slope and frost-protected side slope input parameters and results are discussed in the main body of this report. The remaining three cases are sensitivity analyses, and are presented in Attachment 7.

6.2.2 Single Homogeneous Medium

PATHRAE is limited to solving the contaminant transport equation in one homogeneous medium for the vertical zone and one for the horizontal zone. In reality, particles migrating out of the landfill cell along the vertical pathway may travel through the waste, the bottom clay liner, the Unit 3 sand, and potentially the Unit 2 clay, all of which have differing hydraulic properties.

For the vertical pathway, the characteristics of individual units were converted to a single equivalent porous medium based on the thickness-weighted averages for moisture content, density, and porosity of the individual units. The equivalent moisture content and soil moisture velocity were calculated using the infiltration rate from the HELP modeling and UNSAT-H modeling. This approach is identical to that used in previous modeling (of the LARW cell). The characteristics of the equivalent porous medium are given in Table 24 and Table 25 for the top slope and frost-protected side slope.

6.2.3 Aquifer Velocity

The aquifer velocity in the vertical model was calculated according to the equation for average linear velocity in the vadose zone (Stephens, 1996):

$$v = q / \theta_e$$

where v = average linear velocity (L/T)

q = infiltration rate (L/T)

θ_e = effective water content that participates in carrying the flow (L^3/L^3)

In this equation, the infiltration rate (q) was determined using the HELP3 model. The moisture content (θ) was determined using the UNSAT-H model for each vadose zone material. For example, the UNSAT-H model used a hydraulic conductivity of 5.78×10^{-4} cm/sec for the Unit 3 sand (as described in Section 4.5), to determine the moisture content on which the vadose zone velocity is based.

The moisture content (θ_e) of the layered vertical profile was calculated as a thickness-weighted average of the clay liner and Unit 3 sand (the equivalent porous media for the materials underlying the Western LARW waste materials.) The vadose zone velocities calculated for the equivalent porous media (liner and silty sand) underlying the top and side slopes are 0.028 and 0.038 m/yr, as shown in Table 24 and Table 25.

6.2.4 Vertical Transport Distance

The vertical pathway represents the distance from the bottom of the waste to the aquifer, including the 2-foot thick clay liner and excluding the capillary fringe. The distance from the bottom of the waste to the top of the aquifer is 15.4 feet, based on the cell design and the measured water levels through April, 2000. Using the measured elevations (Table 12), not adjusting for freshwater head, the distance was calculated as follows:

$$\text{Adjusted Distance} = H_{clay} - H_{aq} - cf$$

$$\text{Adjusted Distance} = 4265.0 - 4249.61 - 0.85 = 14.54 \text{ feet}$$

where H_{clay} = Elevation of the top of the clay (4265.0, based on engineering drawing 9821-02)
H_{aq} = Elevation of the top of the aquifer (4259.61, see Table 12)
cf = Capillary fringe (0.85 feet, determined from UNSAT-H modeling)

The PATHRAE model requires distances in meters. The 14.54 feet was converted to 4.43 meters, for the vertical transport distance.

6.2.5 Dispersivity

Dispersivity is an empirical index of the magnitude of variations of the pore velocities in the soil. Dispersivity in the vadose zone tends to be lower than that in the saturated zone (See Appendix M of the license renewal application for a discussion). A vertical dispersivity of 0.1 meters was applied to transport along the vertical pathway. This value was also used in the previous (existing LARW cell) modeling.

6.2.6 River Flow Rate

The river flow rate in the vertical model was set equal to the infiltration rate, in order to prevent any dilution of concentrations. For the top slope PATHRAE simulations, the river flow rate was set to 0.00265 m^3/year. The river flow rate was set to 0.00364 m^3/yr for the frost-protected side slope.

6.3 Vertical Transport Model Results

6.3.1 Vertical Top Slope Analysis (0.265 cm/yr)

Fifteen of the 100 nuclides[10] modeled exceeded the GWPLs at the water table in less than 500 years, based on the top slope cover design infiltration rate of 0.265 cm/yr (0.104 in/yr). The time to exceed the GWPL, peak nuclide concentration, and year in which the peak concentration occurs are listed in Table 27, for all nuclides which arrived at the water table. The "Year To Exceed" is conservatively reported as the next *lowest* model output time. The concentrations of each constituent at each model output time are given in Table 29. The peak concentrations for the fifteen nuclides are summarized in the following table.

[10] 93 real nuclides and 7 synthetic surrogate nuclides

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Al-26	160	5.19E-07	5.19E+02	180.1
Bk-247	155	6.99E-10	6.99E-01	179.6
Ca-41	260	0.00000678	6780	332.9
Cf-249	150	8.14E-10	0.814	177.9
Cf-250	80	0.000000167	167	138.1
Cl-36	160	0.00000218	2180	180.1
H-3	155	0.000148	148000	198.8
I-129	200	0.0128	12800000	551.3
K-40	205	15.3	15300000000	644.7
Re-187	235	0.03	30000000	411.1
Si-32	285	649000	6.49E+14	1081.8
Sr-90	130	0.0000875	87500	263.8
Tb-157	125	0.00000773	7730	169.7
Tb-158	140	0.00000229	2290	175.6
Tc-99	200	0.507	507000000	520.6

Most of the nuclides did not exceed GWPLs at the water table, due to a high K_d value, low starting concentration, or short half-life. The constituents whose modeled concentrations did not exceed GWPLs include the following:

- Radionuclides whose concentrations peak at the water table in less than 500 years, but whose peak concentrations are below GWPLs. (e.g. Cf-252 and Na-22, as shown in Figure 11.)
- Radionuclides whose concentrations peak or begin to peak after 500 years. (e.g. Bi-207, Am-242m, Am-243, as shown in Figure 12).

None of the surrogate nuclides exceeded a benchmark standard of 1 pCi/L.

The radionuclides which exceeded GWPLs within 500 years are generally characterized by low K_ds and relatively long half lives. Some of these reach maximum (peak) concentrations in less than 500 years (Figure 13) while others begin to increase toward their peaks, resulting in an exceedance in less than 500 years (Figure 14). The time and concentration curves show generally smooth concentration curves, with dispersion evident by the leading and trailing edges of the concentration curves. A smooth curve is desirable, for defining the discrete source for input to the horizontal modeling.

All 29 nuclides that reached the water table at any concentration within 500 years in the *side slope* (0.365 cm/yr infiltration) model were carried through to the horizontal PATHRAE modeling. This included the fifteen nuclides which exceeded GWPLs at the water table in the top slope model, an additional fourteen nuclides which were carried through to the horizontal PATHRAE modeling.

6.3.2 Vertical Side Slope Analysis (0.364 cm/yr)

Seventeen of the 100 nuclides modeled exceeded the GWPLs at the water table in less than 500 years, in the frost-protected side slope cover design with an infiltration rate of 0.364 cm/yr (0.0.143 in/yr). The time to exceed the GWPL, peak nuclide concentrations, and years in which the peak concentrations occur are listed in Table 28, for all nuclides which arrived at the water table. The concentrations of each constituent at each model output time are given in Table 30. All 29 nuclides that reached the water table at any concentration within 500 years were carried through to the horizontal PATHRAE modeling.

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Al-26	115	5.12E-07	5.12E+02	132.9
Bk-247	115	7.06E-10	0.706	132.7
Ca-41	190	0.00000676	6760	243.3
Cf-249	105	8.8E-10	0.88	131.6
Cf-250	55	0.00000118	1180	108
Cf-252	50	0.000000131	131	69.2
Cl-36	115	0.00000216	2160	132.9
H-3	95	0.00339	3390000	158.7
I-129	145	0.0128	12800000	401.3
K-40	150	15.3	15300000000	468.8
Pd-107	450	382	3.82E+11	1371.4
Re-187	170	0.03	30000000	299.6
Si-32	205	2220000	2.22E+15	815.9
Sr-90	90	0.000504	504000	203.6
Tb-157	85	0.0000118	11800	127.1
Tb-158	100	0.0000027	2700	130.6
Tc-99	145	0.508	508000000	378.5

Of the seven surrogate nuclides modeled, only two arrived at the water table in the side slope PATHRAE model. The concentrations of the other five surrogate nuclides fell below the lower limits of the model, before the nuclides could reach the water table. The concentrations of the two surrogate nuclides that arrived at the water table were negligible, ranging from $5x10^{-11}$ to $6x10^{-9}$ pCi/L, as shown in the following summary table. Based on these concentrations, none of the surrogate nuclides were carried forward to the horizontal modeling.

SURROGATE	STARTING CONCENTRATION (pCi/g)	SORPTION COEFFICIENT (Kd)	HALF LIFE (Years)	CONCENTRATION AT THE WATER TABLE (pCi/L)
Ks-20	4.4E+09	0.001	1	5.8E-09
Ks-21	4.4E+09	0.01	1	5.4E-11

7. HORIZONTAL FATE AND TRANSPORT MODELING

7.1 Horizontal Input Parameters for Contaminant Release

7.1.1 Waste Source Term Concentrations

The source term concentration for the horizontal model was calculated from the output from the vertical model, as described in Section 5.1. The method will involve calculating the concentration in each of the 115± "slices" using the following equation:

$$C = \frac{(C_t + C_{t+n})}{2} \cdot ((t+n) - t)$$

where:
- C = Mass/activity of nuclide in a given time slice [Ci·yrs]
- C_t = Output concentration at time t [Ci/m^3]
- C_{t+n} = Output concentration at time t+n [Ci/m^3]
- t = Time at beginning of "time slice" [years]
- t+n = Time at end of "time slice" [years]
- n = Duration of "time slice" [years]

The leachate concentration in water (Ci/m^3) was converted to a sorbate concentration on aquifer soil (Ci/m^3). The mass ascribed to one cubic meter of aquifer was determined using the following equation:

$$C_{aq} = \frac{C_l(q_{in})}{V_{soil}} = \frac{C_l(q_{in})}{(1\ m^3)}$$

where:
- C_{aq} = Concentration of constituent sorbed onto 1 m^3 of aquifer soil [Ci/m^3 soil]
- C_l = Concentration in leachate (output of vertical slice) [Ci/m^3 water]
- q_{in} = Infiltration rate [m/yr]

7.1.2 Aquifer Bulk Density

The aquifer bulk density in the horizontal model was set equal to that in the vertical model (1.566 gm/cm^3.)

7.1.3 Aquifer Moisture Content

The aquifer is saturated, with a moisture content equal to the saturated porosity of 29%. The effective porosity value of 0.29 has been used in previous modeling (DWQ, 1994 August), and is based on site specific data.

7.1.4 Partitioning Coefficients (K_d)

The distribution coefficients (K_ds) used in the horizontal model were identical to those used in the vertical model. The K_d values used in the modeling are summarized in Table 20.

7.1.5 Fractional Release Rate

The contaminant release rate (or leach rate) for the horizontal simulation was set to 1/yr for all constituents modeled. In this manner, the entire waste concentration in each "time slice" was released "instantaneously". The K_d-limited leach rate was already accounted for in the vertical simulation and the resulting time offset for the "time slices" which was input to the horizontal model.

7.2 Horizontal Input Parameters for Flow and Transport

7.2.1 Hydraulic Conductivity

The geologic materials underlying the Western LARW cell include the Unit 3 sand and Unit 2 clay. The hydraulic conductivity of these two units is not clearly distinct, based on recent slug test results.

The aquifer hydraulic conductivity (K) has been tested in monitoring wells surrounding the Western LARW cell, and in wells across the site. The results of slug tests performed and analyzed by Adrian Brown Consultants (1997c), EarthFax Engineering (1999), and Whetstone Associates (2000) are compiled in Table 13. The data from 96 wells indicate that the site wide geometric mean hydraulic conductivity in the shallow aquifer is 6.09×10^{-4} cm/sec. The 90% upper confidence level (UCL) about the geometric mean is 7.67×10^{-4} cm/sec. The 90% UCL was used in the horizontal PATHRAE modeling.

7.2.2 Hydraulic Gradient

Hydraulic gradients have been calculated monthly for the unconfined shallow groundwater beneath the Western LARW cell. The gradients were calculated from water level measurements[11] collected in 1998, 1999, and 2000. The Surfer program was used to calculate the gradients on 50-ft centers, using kriging (similar to the 3-point method.) The monthly minimum, maximum, and average gradients are shown in Table 31. This current data set (through April 2000) indicates that the average hydraulic gradient below the Western LARW cell is 9.42×10^{-4} ft/ft.

The value used in the modeling, 1.0×10^{-3} ft/ft, is higher and therefore more conservative than the average monthly gradient. Previous (LARW cell) modeling used the average hydraulic gradient, rather than the conservative overestimate of the average.

7.2.3 Effective Porosity

The effective porosity value of 0.29 was used in the calculation of aquifer velocity for all calculations in the saturated zone / horizontal pathway.

7.2.4 Aquifer Average Linear Velocity

The aquifer velocity (v_a) was calculated based on the Darcy equation, such that:

$$\bar{v} = \frac{Ki}{n_e}$$

where v = average linear velocity in the aquifer (L/T)
K = hydraulic conductivity (L/T)
i = hydraulic gradient (L/L)
n_e = aquifer effective porosity (L^3/L^3)

Using the effective porosity (0.29), 90% UCL hydraulic conductivity (7.67×10^{-4} cm/sec), and a conservative hydraulic gradient (1.0×10^{-3}) described in the previous sections, the average groundwater linear velocity is 0.834 m/yr (1.0 ft/yr), as shown below:

[11] The gradients shown are based on actual water level measurements in the Western LARW cell monitoring wells. The gradients that were calculated by Surfer by extending the trend from other monitoring wells (as during January 1999, when the Western LARW wells were not measured) are not included in Table 31.

$$\bar{v} = \frac{Ki}{n_e} = \frac{(7.67x10^{-4}\ \text{cm/sec})(1.0x10^{-3})}{0.29} = 2.64x10^{-6}\ \text{cm/sec} = 0.834\ \text{m/yr}$$

The March 2, 2000 modeling report used a lower aquifer velocity (0.317 m/yr, 1.0 ft/yr), which was based on the average hydraulic gradient and 69 site-wide hydraulic conductivity tests. The June 12, 2000 modeling report used a lower aquifer velocity (0.824 cm/yr), which was based on the conservative estimate of hydraulic gradient and hydraulic conductivity tests from 81 wells site-wide.

7.2.5 Horizontal Transport Distance

The horizontal distance was modeled as the distance from the edge of the waste to the nearest compliance monitoring well. The side slope modeling used a horizontal distance of 90 ft (27.4 m).

The waste under the top slope is placed a minimum of 20 feet from the shoulder of the cell, for a total distance of 250 feet from the waste to the compliance monitoring well. The top slope modeling used this 250 ft (76.2 m) distance.

7.2.6 River Flow Rate

The river flow rate in the horizontal model was set equal to the aquifer flux through a square meter (cross-sectional area) of aquifer. The aquifer flux was calculated based on the hydraulic gradient and hydraulic conductivity:

$$q = Ki$$

This aquifer flux rate was used as the "infiltration rate" and "river flow rate." The river flow rate was set to 0.00265 m^3/yr and 0.00364 m^3/yr for the two model cases.

7.3 Horizontal Transport Model Results

Horizontal PATHRAE modeling was conducted for the top slope and side slope infiltration rates. The model results are summarized in Table 32, which shows the time to exceed the GWPLs for the base cases and the three sensitivity analyses. The "Year To Exceed" is conservatively reported as the next *lowest* model output time.

Note that all nuclides that exceeded GWPLs at the water table (in the vertical modeling) were carried forward to the horizontal modeling. The PATHRAE code only produces output for nuclides that arrive at the compliance point. Therefore, many of the nuclides which were input to the horizontal model are not included by PATHRAE in the output files (described below). The output concentration of these nuclides is essentially zero.

7.3.1 Horizontal Top Slope Analysis (0.265 cm/yr)

None of the nuclides modeled exceeded the GWPLs at the compliance well in less than 500 years, based on horizontal modeling of the top slope cover design infiltration rate of 0.265 cm/yr (0.104 in/yr). The concentrations of each constituent at each model output time are given in Table 33.

As described in Section 6.1.1, nine radionuclides (Al-26, Bk-247, Ca-41, Cf-249, Cf-250, Cl-36, Re-187, Tb-157, and Tb-158) would be limited in concentration, in order to meet the GWPL. All other modeled constituents would meet the standard if placed at Class A limits.

7.3.2 Horizontal Frost-Protected Side Slope Analysis (0.364 cm/yr)

None of the nuclides exceeded the GWPLs at the compliance well in less than 500 years, based on the side slope cover design infiltration rate of 0.364 cm/yr (0.637 in/yr). The concentrations of each constituent at each model output time are given in Table 34.

As described in Section 6.1.1, nine radionuclides (Al-26, Bk-247, Ca-41, Cf-249, Cf-250, Cl-36, Re-187, Tb-157, and Tb-158) would be limited in concentration, in order to meet the GWPL. All other modeled constituents would meet the standard if placed at Class A limits.

7.4 Sensitivity Analysis Results

Sensitivity analyses were conducted in the vertical and horizontal pathways, for the following cases:

- Top slope with high precipitation (0.310 cm/yr infiltration)
- Side slope with a 100-fold permeability increase (1.717 cm/yr infiltration)
- Side slope with a 100-fold permeability increase and high precipitation (2.10 cm/yr infiltration)

The results are given in Attachment 7 and are summarized in Table 32. All nuclides would meet GWPLs at the compliance well for 500 years, in the high-precipitation top slope (0.310 cm/yr) case. In the both of the unprotected side slope cases, however, eleven nuclides would exceed GWPLs at the compliance well: Cf-252, H-3, I-129, K-40, Na-22, Re-187, Si-32, Sr-90, Tb-157, and Tc-99. A twelfth nuclide, Cf-251, would also exceed in the 2.10 cm/yr infiltration sensitivity case.

Previously, sensitivity analyses were performed for the Western LARW cell to investigate the effects of horizontal dispersivity and a range of saturated hydraulic conductivity values. In addition, sensitivity analyses were performed for the existing LARW cell indicated that the vertical PATHRAE model was somewhat sensitive to vertical dispersivity and very sensitive to horizontal hydraulic conductivity. (See Appendix M of Envirocare's Radioactive Material License Application for a discussion of the previous sensitivity analyses.)

8. METALS MODELING

Wastes containing heavy metals may be placed anywhere in the LARW cell. That is, placement of metal-containing wastes will not be restricted to the top slope cover. These metals are assumed to leach from the waste and theoretically move with groundwater flow, by the same processes governing the fate and transport of radionuclides. Metals concentrations in groundwater must not exceed the GWPLs at a compliance well within 200 years.

8.1 Metals Modeling Approach

The metals modeling was performed using infiltration rates of 0.364 and 1.717 cm/year, which correspond to the base case (frost-protected) side slope, and the unprotected (100-fold permeability increase) side slope. The results of the base case (0.364 cm/yr) modeling are presented in the main body of this report. (The results for both cases are provided on the accompanying CD.)

The metals modeling differs from the radionuclide modeling in two major ways: 1) the metal concentrations were required to meet the GWPL for the first 200 years, rather than 500 years; and 2) the maximum waste source term concentrations were derived based on the density of each metal. Additionally, the metals were modeled using units of mg/m^3 waste (input) and mg/m^3 groundwater (output), rather than in Ci/m^3.

8.1.1 TCLP Metals Modeling

The concentrations of some metals in incoming waste are limited by the License. The TCLP test limits given in the License are shown in the following table:

METAL	Maximum Regulatory TCLP Leachate Concentration (mg/l)	Maximum Waste Concentration (mg/kg)
Arsenic	5.0	ncls
Barium	100.0	ncls
Cadmium	1.0	ncls
Chromium	5.0	ncls
Lead	5.0	ncls
Mercury	0.2	ncls
Selenium	1.0	ncls
Silver	5.0	ncls
Zinc	n/a	967

Note: ncls = no concentration limit specified

Previous modeling (Bingham, 1993a, 1993b) used a TCLP limit as a starting point, then calculated the waste source term for the PATHRAE model according to the following equation, which was detailed in an August 6, 1993 DWQ memorandum (DWQ, 1993):

$$C_w = \frac{C_l \cdot q}{D \cdot \rho_w \cdot L}$$

where C_w = concentration in mg/kg
C_l = contaminant concentration in leachate
q = water flux through the waste
D = waste thickness
ρ_w = density of the waste
L = fractional release rate

The calculated waste concentration was modeled using PATHRAE, and the time to exceed the GWPL was reported. This method verifies that the regulatory limits for TCLP metals are also protective of groundwater, by demonstrating that waste which meets the TCLP limits for metals will also meet the GWPL at a compliance well for at least 200 years.

8.1.2 GWPL-Based Back-calculation

The current modeling used the GWPL (and metal density) to determine the maximum allowable (or possible) heavy metals concentrations in the waste. Groundwater protection was therefore evaluated independent of the TCLP. This approach is identical to the approach used in the license renewal application (see Appendix M of the license renewal application, Adrian Brown Consultants, 1998).

The starting concentrations in the model were determined by calculating the maximum possible metals concentration, based on the density of each metal. Those metal densities, and corresponding concentration in mg/m^3 are given in the following table.

Element	Symbol	Density (gm/cc)	Maximum Possible Metal Concentration (mg/m^3)
Silver	Ag	10.5	1.05E+10
Arsenic	As	5.73	5.73E+09
Barium	Ba	3.5	3.50E+09
Beryllium	Be	1.848	1.85E+09
Cadmium	Cd	8.65	8.65E+09
Chromium	Cr	8.96	8.96E+09
Copper	Cu	8.92	8.92E+09
Mercury	Hg	13.54	1.35E+10
Molybdenum	Mo	10.22	1.02E+10
Nickel	Ni	8.4	8.40E+09
Lead	Pb	11.35	1.14E+10
Selenium	Se	4.79	4.79E+09
Zinc	Zn	7.13	7.13E+09

The PATHRAE model was run using these source term concentrations, *in the vertical* (unsaturated) domain, using the method described in Section 5.0. These maximum concentrations were given suffix "-a" in the input and output files. Each metal was also modeled using decreased concentrations from the maximum, identified by suffixes "-b", "-c", and "-d". In the case of zinc, which has a relatively low K_d of 0.1 L/Kg, the maximum possible concentration (based on density) was decreased repeatedly, such that an array of 12 starting zinc concentrations were run (suffixes "-a" through "-l".)

The output from the vertical model was input to the linked horizontal model, using the discrete dispersed source method (Section 5), and the time to exceed the GWPL was evaluated.

8.2 Vertical Metals Modeling

Thirteen metals were modeled at their *maximum possible source term* concentration (based on density constraints) and at lower concentrations. A total of 60 starting concentrations were modeled. Table 35 gives the waste source term concentrations, K_ds, and fractional release rates for all metals modeled. A half-life of 1.0×10^{14} years was used for all metals. The PATHRAE output files for the vertical metals modeling are provided on the compact disc (CD) which accompanies this report.

Concentration vs. Time. The starting concentrations and time to exceed the GWPL at the water table are given in Table 36. Only the highest possible source concentrations of metals with K_ds less than or equal to one would not meet the criteria at the water table. These tables indicate that the incoming waste could contain essentially any concentration of Ag, As, Ba, Be, Cd, Cr, Cu, Hg, Mo, Ni, Pb, and Se, without exceeding the GWPL at the water table within 200 years.

For zinc, the *waste concentration* would have to be less than 2.23×10^3 mg Zn per cubic meter of waste (source term Zn-f or lower), in order to meet the GWPL at the water table in the frost-protected side slope case. Horizontal modeling was performed to determine what levels of zinc would be acceptable, in order to meet the GWPL at a compliance well located 90 feet from the edge of the cell.

8.3 Horizontal Metals Modeling

All 60 starting constituents (13 metals at various starting concentrations) were carried into the horizontal modeling. Table 37 gives the output concentrations and year to exceed the GWPL at the compliance well. None of the metals exceed the GWPL at the compliance well, based on the maximum possible starting concentration.

9. CONCLUSIONS

The infiltration, fate, and transport modeling for Envirocare's Western LARW cell was based on previous modeling of the existing LARW cell. The input parameters have been selected to provide conservative (environmentally protective) estimates for infiltration through the cell and for fate and transport of constituents from the waste.

The infiltration modeling results indicate that 0.265 cm/yr infiltration would occur through the Western LARW cell top slope and 0.364 cm/yr would infiltrate through the frost-protected side slope. Decreasing the thickness of the lower radon barrier would not affect these infiltration rates.

The model results indicate that 0.364 cm/yr infiltration would occur through the Western LARW cell frost-protected side slope. Based on this infiltration rate, all radionuclides modeled would remain below the GWPLs within 500 years at a compliance well located 90 feet from the edge of the waste. Nine radionuclides (Al-26, Bk-247, Ca-41, Cf-249, Cf-250, Cl-36, Re-187, Tb-157, and Tb-158) would be accepted in limited concentrations. All other modeled constituents would meet the standard if placed in the side slope area at Class A limits.

Given the 0.265 cm/yr infiltration rate, the waste characteristics, and the hydraulic properties for the geologic media below the cell, the radionuclides will remain below the groundwater protection levels for 500 years, as required. The concentrations of nine radionuclides would be restricted, based on the side slope model performance. All other modeled constituents would meet the standard if placed at Class A limits.

If the side slopes were not protected from freezing thawing and if the permeability of the upper radon barrier were immediately degraded by two orders of magnitude as a result, the model indicates that 1.717 cm/yr would infiltrate. At this infiltration rate, up to 12 nuclides would exceed GWPLs at the compliance well within 500 years. These nuclides (Cf-250, Cf-251, Cf-252, H-3.\, I-129, K-40, Na-22, Re-187, Si-32, Sr-90, Tb-157, and Tc-99) would be considered to be mobile nuclides if placed under the side slope without frost protection.

The transport of heavy metals from waste in the frost-protected side slope area was modeled using vertical and horizontal PATHRAE model runs. The results indicated that the 13 metals can be accepted essentially any concentration, with the exception of zinc which would be limited to 2,230 mg/m^3.

July 18, 2000

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10. REFERENCES

Adrian Brown Consultants, 1996a. Envirocare LARW Groundwater Modeling. Prepared for Envirocare of Utah, Inc. January 22, 1996.

Adrian Brown Consultants, 1996b. LARW Open Cell Modeling. Prepared for Envirocare of Utah, Inc. February 12, 1996.

Adrian Brown Consultants, 1996c. ABCFEM Version 5.0.3, Adrian Brown Consultants Finite Element Method, Groundwater Flow and Solute Transport Modeling Software, User's Guide, 129 p. plus appendices.

Adrian Brown Consultants, 1996d. Memorandum from S. Wyman to Ken Alkema Regarding Hydraulic Parameters for Pathrae Transport Modeling. December, 23, 1996.

Adrian Brown Consultants, Inc., 1997a. Volume I. LARW Infiltration Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 41 pp plus tables, figures, and attachments. May 15, 1997.

Adrian Brown Consultants, Inc., 1997b. Volume II. LARW Groundwater Fate and Transport Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 37 pp. plus tables, figures and attachments. June 26, 1997.

Adrian Brown Consultants, Inc., 1997c. Final Slug Test Results, prepared for Envirocare of Utah, Inc. 19 pp. plus attachments. October 14, 1997.

Adrian Brown Consultants, Inc., 1997d. Volume I. LARW Infiltration Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 45 pp plus tables, figures, and attachments. December 4, 1997.

Adrian Brown Consultants, Inc., 1998. Volume II. LARW Groundwater Fate and Transport Modeling Input Parameters and Results, prepared for Envirocare of Utah, Inc. 44 pp. plus tables, figures and attachments. February 12, 1998.

Adrian Brown Consultants, Inc., 1999. 11e.(2) Disposal Cell Infiltration and Transport Model Input Parameters, prepared for Envirocare of Utah, Inc. 19 pp. plus tables and figures. July 16, 1999.

Baes, C. F. III, Sharp, R.D, Sjoreen, A.L, and Shor, R.W. , 1984. "A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides Through Agriculture". Oak Ridge National Laboratory for US DOE. ORNL-5786.

Bingham Environmental, 1991. Hydrogeologic Report - Appendix D. Prepared for Envirocare of Utah. October 1992.

Bingham Environmental, 1992. Hydrogeologic Report - Mixed Waste Disposal Area. Prepared for Envirocare of Utah. January 31, 1992.

Bingham Environmental, 1993a. Report on Technical Demonstration Study, Envirocare Waste Disposal Facility, South Clive, Utah. May 6, 1993.

Bingham Environmental, 1993b. Report on Contaminant Transport Modeling at Envirocare of Utah Waste Disposal Facility, South Clive, Utah. August 3.

Bingham Environmental, 1994a. Containment Justification Study of Additional Contaminants in 11e.(2) Waste, 11e.(2) Waste Disposal Facility, Envirocare of Utah, South Cilve, Utah, South Clive, Utah. 29 pp. plus figures and appendices. June 30, 1994

Bingham Environmental, 1994b. Hydrogeologic Report - Mixed Waste Disposal Area. Prepared for Envirocare of Utah. November 18, 1994.

Bingham Environmental, 1995a. *Memorandum to George Hellstrom, Envirocare of Utah, Inc. from David Cline and David Waite, Regarding Hydrologic Evaluation of Active Cell LARW Mobile Waste Disposal Cell Clive, Utah.* August 15, 1995.

Bingham Environmental, 1995b. *Memorandum to George Hellstrom, Envirocare of Utah, Inc. from David Cline and David Waite, Regarding Summary of Results Radionuclide K_d Tests, Envirocare Disposal Landfills, Clive, Utah,* 14 pp plus figures and appendices.

Bingham Environmental, 1995c. Memorandum to Vern Andrews, Envirocare of Utah, Inc. from David Cline and David Waite, Regarding PATHRAE Modeling [of] Additional LARW Radionuclides, 4 pp plus appendices. June 1, 1995

Buchter B., Davidoff, B., Amacher, M.C.,Hinz, C., Iskandar, I.K., Selim H.M. (1989) Correlation of Freundlich Kd and n Retention Parameters With Soils and Elements. Soil Sci. 148: pp. 370-380

Del Debbio, J.A. (1991) Sorption of Strontium, Selenium, Cadmium, and Mercury in Soil. Radiochimica Acta, Vol. 52/53, pp. 181-186

Division of Radiation Control, 1995. Memorandum from Loren Morton (DRC) to Charles Judd (Envirocare) regarding May 16, 1995 Bingham Environmental Report Regarding Unit 3 Sand Ground Water Velocity: DRC Conclusions and Request for Additional Information. July10, 1995.

Division of Radiation Control, 1995. Memorandum from Loren Morton (DRC) to Charles Judd (Envirocare) Regarding Unit 3 Sand Ground Water Velocity: DRC Conclusions and Request for Additional Information. July 10, 1995.

Division of Radiation Control, 1996. Memorandum from Loren Morton (DRC) to Envirocare Ground-water Permit File regarding Shallow Aquifer Permeability At Envirocare LARW, 11e(2) And Mixed Waste Disposal Facility, Clive, Utah. October 1, 1996.

Division of Radiation Control, 1997a. Memorandum from Loren Morton (DRC) to Envirocare RE-Licensing File through Dane Finerfrock, regarding Envirocare HELP Model Weather Data: Staff Evaluation of Precipitation and Temperature Analog for Clive, Utah. 12 pp. plus attachments. September 19, 1997.

Division of Radiation Control, 1997b. Memorandum from Loren Morton (DRC) to Envirocare RE-Licensing File through Dane Finerfrock, regarding Envirocare May 15, 1997 HELP Model Infiltration Report: Staff Findings on Miscellaneous HELP Model Weather Input Variables. 3 pp. plus attachments. September 19, 1997.

Division of Radiation Control, 1998. Memorandum from Loren Morton (DRC) to Dane Finerfrock regarding December 4, 1997 Adrian Brown Consultants Infiltration Model Report: DRC Staff Conclusions and Findings for HELP Model Analysis of Envirocare LARW Cell. April 14, 1998.

Division of Radiation Control, 1999. Letter from William J. Sinclair to Daniel B. Shrum (Envirocare) regarding July 16, 1999 Adrian Brown Consultants (ABC) Draft 11e.(2) Disposal Cell Model Input Parameters Report and August 20, 1999 ABC 11e.(2) Disposal Cell Infiltration Modeling Input Parameters and Results: November 2, 1999 Utah Division of Water Quality Stipulation and

Consent Order, Docket No. GW-98-06: Notice of Deficiency, and Request for Additional Information. November 4, 1999.

Division of Water Quality (DWQ), 1992. Memorandum from Loren Morton Regarding Groundwater Flow Models Required by Part I.H.8 of Groundwater Discharge Permit No. UGW450005, January 13, 1992.

Division of Water Quality, 1993. Memorandum from Loren Morton (DRC) to Dane Finerfrock (DRC) regarding HELP Model Analysis to Determine the Effect of Frost Damage on Predicted Infiltration: Envirocare LARW Disposal Facility. December 15, 1993.

Division of Water Quality, 1994. Memorandum from Loren Morton (DWQ) to Dane Finerfrock (DRC) regarding DWQ/USU PATHRAE Contaminant Modeling: Evaluation of Envirocare of Utah's August 30, 1993 Proposed Changes to Embankment Cover Design, February 25, 1994

Dragun J., 1988. The Soil chemistry of Hazardous Materials. Hazardous Materials Control Research Institute, pp. 157 and 158.

EarthFax Engineering, 1999. Final Report for Slug Withdrawal Testing at Envirocare's Clive, Utah Facility, consultants report prepared for Envirocare of Utah, Inc.

Fayer, M.J., 1999 (April). *UNSAT-H version 2.05,* available for down load from website http://etd.pnl.gov:2080/~mj_fayer/topv205.htm, updated April 23, 1999.

Fayer, M.J., and Jones, T.L., 1990 (April). *UNSAT-H version 2.0: Unsaturated Soil Water and Heat Flow Model*, PNL-6779, Battelle Memorial Institute.

Isherwood, D. (1981) Geoscience Database Handbook for Modeling A Nuclear Waste Repository. Washington D.C., U.S. Nuclear Regulatory Commission: NUREG/CR-0912, Vol. 1; UCRI-52719

Kocher, David C. Radioactive Decay Data Tables, A Handbook of Decay Data for Application to Radiation Dosimetry and Radiological Assessments, Technical Information Center, US DOE, DOE-TIC-11026.

Looney, BB., Grant, M.W., and King, C.M., 1987 (March). "Estimation of Geochemical Parameters for Assessing Subsurface Transport at the Savannah River Plant", DuPont DPST-85-904.

McKinley, I.G., Grogan, H.A., 1991. Radionuclide Sorption Database for Swiss Repository Safety Assessments. Raidochimica Acta, Vol. 52/53, pp. 415-420

Merrell, G.B., Rogers, V.C., and Chau, T.K., 1995. The PATHRAE-RAD Performance Assessment Code for the Land Disposal of Radioactive Wastes, Rogers & Associates Engineering Corporation, RAE-9500/2-1. March 1995.

Meyer, P.D., Rockhold, M.L., Nichols, W.E., and Gee, G.W, 1996. Hydrologic Evaluation Methodology for Estimating Water Movement Through the Unsaturated Zone at Commercial Low-Level Radioactive Waste Disposal Sites, prepared for U.S. Nuclear Regulatory Commission, NUREG/CR-6346, PNL-10843, 102 p. plus appendices.

Mualem, Y., 1976. A new Model For Predicting the hydraulic Conductivity of Unsaturated Porous Media. *Water Resour. Res.* 12, 513-522.

Nichols, W.E., 1991. "Comparative Simulation of a Two-layer Landfill Barrier Using the HELP Version 2.0 and UNSAT-H Version 2.0 Computer Codes," PNL-7583, Pacific Northwest Laboratory, Richland, WA.

NTIS, National Technical Information Service, 1981. Geoscience Data Base Handbook for Modeling a Nuclear Waste Repository, Volume I. NTIS report NUREG/CR-0912-V-1, prepared for the U.S. Nuclear Regulatory Commission, January 1981.

Pentacore Resources, LLC, 1999. Revised Hydrogeologic Report for the Envirocare Waste Disposal Facility, Clive, Utah. October, 1999.

Perrier, E.R., and Gibson, A.C., 1980. Hydrologic simulation on Solid Waste Disposal Sites, Technical Resource Document EPA-SW-868, U.S. Environmental Protection Agency, Cincinnati, OH 111 pp.

Richards, L.A. 1931. Capillary Conduction of Liquids in Porous Mediums. *Physics 1,* 318-313.

Richardson, C.W., and Wright, D.A. 1984. WGEN: A Model for Generating Daily Weather Variables. ARS-8, Agricultural Research Service, USDA. 83pp.

Rogers and Associates Engineering Corporation, 1990. Evaluation of the Potential Public Health Impacts Associated With Radioactive waste Disposal at a Site Near Clive, Utah, Rogers and Associates Engineering Corporation, RAE-9004/2-1, June 1990.

Schroeder, P.R., and Peyton, R.L., 1995. *HELP Modeling Workshop, IGWMC Ground-Water Modeling Short Courses*, Colorado School of Mines, Golden, CO.

Schroeder, P.R., Aziz, N.M., Lloyd, C.M., and Zappi, P.A., 1994a. *The Hydrologic Evaluation of Landfill Performance (HELP) Model: User's Guide for Version 3,* EPA/600/R-94/168A; US EPA Office of Research and Development, Washington, D.C.

Schroeder, P.R., Dozier, T.S., Zappi, P.A., McEnroe, B.M., Sjostrom, J.W., and Peyton, R.L., 1994b. *The Hydrologic Evaluation of Landfill Performance (HELP) Model: Engineering Guide for Version 3,* EPA/600/R-94/168B; US EPA Office of Research and Development, Washington, D.C.

Sheppard, M.I, and Thibault, D.H., 1990. Default soil solid/liquid partition coefficients, K_ds, for four major soil types: a compendium, Health Physics, vol. 59, No. 4 (October), pp. 471-482.

Stephens, D.B., 1996. Vadose Zone Hydrology, CRC Press, Inc., 339 pp.

Whetstone Associates, Inc, 2000a. Envirocare Of Utah Western LARW Cell Infiltration And Transport Modeling, consultants report dated March 2, 2000. Document Number 4104M.000302

Whetstone Associates, Inc, 2000b. Soil Distribution Coefficient for Thallium. Technical Memorandum to Tim Orton dated March 29, 2000. Document Number 4104M.000329

Whetstone Associates, Inc, 2000c. Envirocare Of Utah Revised Western LARW Cell Infiltration And Transport Modeling, consultants report dated June 12, 2000. Document Number 4104M.000612

Whetstone Associates, Inc, 1999. Envirocare of Utah 11e.(2) Cell Infiltration and Transport Modeling Input Parameters, document 4101M.991215, December 15, 1999.

DIVIDER PAGE

Table 1. Summary of HELP Model Weather and Climate Input

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                    EVAPOTRANSPIRATION AND WEATHER DATA
-------------------------------------------------------------------------------
   NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM SALT LAKE CITY UTAH
         STATION LATITUDE                            =  40.69 DEGREES
           MAXIMUM LEAF AREA INDEX                   =   0.00
           START OF GROWING SEASON (JULIAN DATE)     =    117
           END OF GROWING SEASON (JULIAN DATE)       =    289
           EVAPORATIVE ZONE DEPTH                    =  18.0  INCHES
           AVERAGE ANNUAL WIND SPEED                 =   5.75 MPH
           AVERAGE 1ST QUARTER RELATIVE HUMIDITY     =  50.50 %
           AVERAGE 2ND QUARTER RELATIVE HUMIDITY     =  28.60 %
           AVERAGE 3RD QUARTER RELATIVE HUMIDITY     =  22.70 %
           AVERAGE 4TH QUARTER RELATIVE HUMIDITY     =  47.90 %

     NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
              COEFFICIENTS FOR    SALT LAKE CITY      UTAH

              NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
  JAN/JUL      FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
  -------      -------     -------     -------     -------     -------
    0.54         0.61        0.79        0.81        1.01        0.58
    0.53         0.56        0.59        0.72        0.55        0.56

     NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
              COEFFICIENTS FOR    SALT LAKE CITY      UTAH

         NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
  JAN/JUL      FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
  -------      -------     -------     -------     -------     -------
   27.00        34.00       40.00       50.00       60.00       69.00
   78.00        76.00       65.00       53.00       39.00       29.00

     NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
              COEFFICIENTS FOR    SALT LAKE CITY      UTAH
                 AND STATION LATITUDE  =  40.69 DEGREES
```

Table 2. Quarterly Relative Humidity at Dugway Proving Ground (summarized from NOAA internet site data)

	Dugway, Utah			
Quarter	Month 1	Month 2	Month 3	Quarterly Average
1st (Jan., Feb., Mar.)	57.9	52.8	40.9	50.5
2nd (Apr., May, June)	33.4	27.5	25	28.6
3rd (July, Aug., Sept.)	19.8	21.8	26.7	22.7
4th (Oct., Nov., Dec.)	34.3	47.2	62.4	47.9

Note: Dugway average monthly relative humidity data from 13:00 hours local standard time from NWS, NOAA

Table 3. Mean Monthly Temperature for Dugway – Applied to the Envirocare Site

Dugway Average Monthly Temperature (9/21/1950 – 12/31/2000)				HELP MODEL INPUT VALUES
	Average Maximum	Average Minimum	Average	
January	38.0	16.0	27.0	27.0
February	45.2	22.7	34.0	34.0
March	53.8	28.6	41.2	40.0
April	62.9	35.4	49.2	50.0
May	73.5	44.2	58.9	60.0
June	84.8	53.2	69.0	69.0
July	94.5	61.3	77.9	78.0
August	91.9	59.5	75.7	76.0
September	81.0	48.2	64.6	65.0
October	67.1	35.9	51.5	53.0
November	50.8	25.9	38.4	39.0
December	39.3	17.7	28.5	29.0
Average Annual	65.2	37.4	51.3	51.7

Table 4. Average Annual Precipitation (in inches) at the Clive, Dugway, and Wendover Stations, 1993 - 1999

YEAR	Clive	Dugway	Wendover
1993	5.79	7.74	3.23
1994	8.34	9.66	2.69
1995	9.81	9.98	4.17
1996	9.65	8.85	2.56
1997	11.57	12.09	2.56
1998	13.98	12.23	7.44
1999	8.24	6.53	2.32

Table 5. Monthly Precipitation At Wendover, Clive And Dugway Stations 1993-1999 With Comparison To Long-Term Mean

YEAR	STATION	J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL
1993	Wendover	1.00	0.13b	0.19a	0.04	0.13c	0.37	0.6	0.01	0.24	0.51	0.01	0.00	3.23
1993	Clive	1.17	0.40	0.67	0.17	0.99	0.70	0.03	0.10	0.27	0.78	0.33	0.18	5.79
1993	Dugway	1.32	0.72	0.98	0.15	1.26	0.55	0.60	0.09	0.20	1.45	0.04	0.38	7.74
1994	Wendover	0.02	0.01	0.47	0.29a	0.33	0.00	0.15	0.35	0.88	0.06b	0.13a	0.00z	2.69
1994	Clive	0.13	0.63	1.14	1.65	0.79	0.02	0.06	0.39	0.51	0.89	1.91	0.22	8.34
1994	Dugway	0.03	1.12	1.37	1.82	1.35	0.00	0.22	0.51	0.64	0.93	1.42	0.25	9.66
1995	Wendover	0.22	0.04	0.30	0.90	0.85	1.16	0.03	0.00	0.37	0.11	0.14	0.05a	4.17
1995	Clive	0.95	0.78	1.74	0.44	2.58	1.88	0.17	0.04	0.15	0.06	0.24	0.78	9.81
1995	Dugway	0.92	0.26	1.66	1.53	2.08	1.25	0.34	0.80	0.27	0.02	0.33	0.52a	9.98
1996	Wendover	0.76x	0.23a	0.18	0.09	0.55a	0.01b	0.25	0.00	0.09	0.00	0.09	0.31a	2.56
1996	Clive	1.31	0.78	0.88	0.91	1.90	0.29	1.10	0.01	0.41	0.69	0.60	0.77	9.65
1996	Dugway	0.61	0.88a	0.92	0.78	1.52	0.00	0.68	0.00	0.59	0.57	1.02a	1.28	8.85
1997	Wendover	0.12z	0.05	0.00	0.09f	0.06a	0.86	0.61	0.16a	0.25	0.10a	0.26	0.00	2.56
1997	Clive	1.56	0.87	0.17	1.42	0.98	2.36	1.19	0.32	0.90	0.47	0.72	0.60	11.57
1997	Dugway	1.27a	1.42	0.24	1.47	0.97	2.64	0.31	0.67	1.09	0.58	1.03	0.40	12.09
1998	Wendover	0.06	0.71	0.79	0.19	1.21	1.03	0.20	0.06	1.37	1.81	0.01	0.00	7.44
1998	Clive	0.71	2.21	1.67	1.63	1.04	2.91	0.43	0.28	0.52	1.94	0.10	0.54	13.98
1998	Dugway	0.57	1.63	1.75	0.81	0.63	2.37	0.98	0.50	0.69	1.76	0.32	0.22	12.23
1999	Wendover	0.36	0.11	0.07	0.43	0.21	0.45	0.28	0.14	0.27	0.00	0.00	0.00	2.32
1999	Clive	0.81	0.64	0.46	2.65	0.41	1.84	0.06	0.68	0.12	0.04	0.13	0.40	8.24
1999	Dugway	0.98	0.20	0.18	2.05	1.10	1.06	0.13	0.30	0.46	0.00	0.05	0.02	6.53
7 YR. AVG.	Wendover	0.36	0.18	0.29	0.29	0.48	0.55	0.30	0.10	0.50	0.37	0.09	0.05	3.57
7 YR. AVG.	Clive	0.95	0.90	0.96	1.27	1.24	1.43	0.43	0.26	0.41	0.69	0.58	0.50	9.62
7 YR. AVG.	Dugway	0.81	0.89	1.01	1.23	1.27	1.12	0.47	0.41	0.56	0.76	0.60	0.44	9.58
1924-1999 Avg.	Wendover	0.27	0.30	0.40	0.51	0.74	0.55	0.28	0.35	0.37	0.49	0.32	0.25	4.99
1950-1999 Avg.	Dugway	0.54	0.61	0.79	0.81	1.01	0.58	0.53	0.56	0.59	0.72	0.55	0.56	7.64
Dugway 7yr avg./Long-term		1.51	1.46	1.28	1.52	1.26	1.94	0.88	0.73	0.95	1.05	1.09	0.78	1.25
Clive fraction of Dugway		1.16	1.01	0.95	1.03	0.98	1.27	0.93	0.64	0.73	0.92	0.96	1.13	1.004
Clive long-term		0.54	0.61	0.79	0.81	1.01	0.58	0.53	0.56	0.59	0.72	0.55	0.56	7.674
Clive long-term (sum of monthly means)														7.850

NOTES:

Precipitation data reported in inches.

Data Qualification: a = 1 day missing, b = 2 days missing, c = 3 days missing ....etc. z = 26 or more days missing

Average = *Monthly average* is based on mean monthly value for all available years. Annual average is calculated as the sum of the mean monthly values, except for long term statistics (See note below.)

Long-term avg. = Values from Western Regional Climate Center (WRCC). Note that long-term annual mean precipitation does not equal the sum of the long-term monthly means.

% of long-term = Calculated by dividing seven year average at Dugway by the long term average at Dugway

Clive Fraction = Calculated by dividing seven year average at Clive by the seven year average at Dugway; Determined that on an annualized basis, the precipitation at Clive is 100.4% of that at Dugway

Clive long-term = Calculated by multiplying the long-term average at Dugway by the annualized conversion factor (100.4%).

DATA SOURCES:

Wendover and Dugway data for 1993-1999 from Western Regional Climate Center (WRCC)

Clive data received from Envirocare (Meteorological Solutions Inc, 2000)

Long-term statistics for Wendover and Dugway calculated by WRCC

Table 6. Precipitation Values for High and Low Precipitation Sensitivity Analyses (in Inches)

	BASE CASE	HIGH PRECIPITATION SENSITIVITY ANALYSIS			LOW PRECIPITATION SENSITIVITY ANALYSIS		
		1997	1998	MODEL AVG	1993	1999	MODEL AVG
J	0.54	1.56	0.71	1.13	1.17	0.81	0.99
F	0.61	0.87	2.21	1.54	0.40	0.64	0.52
M	0.79	0.17	1.67	0.92	0.67	0.46	0.57
A	0.81	1.42	1.63	1.53	0.17	2.65	1.41
M	1.01	0.98	1.04	1.01	0.99	0.41	0.70
J	0.58	2.36	2.91	2.64	0.70	1.84	1.27
J	0.53	1.19	0.43	0.81	0.03	0.06	0.04
A	0.56	0.32	0.28	0.30	0.10	0.68	0.39
S	0.59	0.90	0.52	0.71	0.27	0.12	0.19
O	0.72	0.47	1.94	1.21	0.78	0.04	0.41
N	0.55	0.72	0.10	0.41	0.33	0.13	0.23
D	0.56	0.60	0.54	0.57	0.18	0.40	0.29
ANNUAL	7.85	11.57	13.98	12.78	5.79	8.24	7.01

TABLE 7. WESTERN LARW CELL TOP SLOPE HELP INFILTRATION MODEL LAYERS AND MATERIAL PROPERTIES

WESTERN LARW CELL TOP SLOPE LAYERS												
Layer	Material	Thickness (inches)	n (vol/vol)	θ_{fc} (vol/vol)	θ_{wp} (vol/vol)	Available Moisture (vol/vol)	θ_i (vol/vol)	K_s (cm/sec)	Layer Type n/a	Size Range (inches)	Material Description n/a	Notes:
Layer 1	Type-B Rip Rap	18	0.190	0.024	0.007	0.017	initialized to ss	42	vertical percolation	0.75-4.5	1.25 inches	Size is nominal diameter
Layer 2	Type-A Filter (upper)	6	0.190	0.024	0.007	0.017	initialized to ss	42	vertical percolation	*0.08-6.0*	Coarse *Sand - Fine* Cobble	
Layer 3	Sacrificial Soil	12	0.31	0.2	0.025	0.175	initialized to ss	4.00E-03	vertical percolation	<0.75	Silty Sand and Gravel	Placed at $4x10^{-4}$ cm/sec; freeze/thaw reduces K to $4x10^{-3}$ cm/sec.
Layer 4	Type-B Filter (lower)	6	0.28	0.032	0.013	0.019	initialized to ss	3.5	lateral drainage	0.2-1.5	Coarse Sand -Fine Gravel	
Layer 5	Upper Radon Barrier	12	0.430	0.390	0.28	0.11	0.43	5.00E-08	barrier soil	n/a	Clay	
Layer 6	*Lower Radon* Barrier	72	0.430	0.390	*0.28*	*0.11*	0.39	1.00E-06	vertical percolation	n/a	Clay	
Layer 7	Waste	100	0.437	0.062	0.024	0.038	initialized to ss	5.00E-04	vertical percolation	n/a	Sand	Unit thickness for waste. Model is insensitive to waste thickness variation.
Layer 8	Clay Liner	24	0.430	0.390	0.28	0.11	0.43	1.00E-06	barrier soil	n/a	Clay	

n = Porosity
θfc = Field Capacity
θwp = Wilting Point

θi = Initial Moisture Content
K_s = Saturated Hydraulic Conductivity
θ_i = Value for initialized steady-state moisture content are given in the model output files.
Available Moisture: = Moisture available to be evaporated is only applicable in the upper 18 inches of the model

TABLE 8. WESTERN LARW CELL SIDE SLOPE
HELP INFILTRATION MODEL LAYERS AND MATERIAL PROPERTIES

WESTERN LARW CELL SIDE SLOPE LAYERS -- WITH FROST PROTECTION												
Layer	Material	Thickness (inches)	n (vol/vol)	θ_{fc} (vol/vol)	θ_{wp} (vol/vol)	Available Moisture (vol/vol)	θ_i (vol/vol)	K_s (cm/sec)	Layer Type n/a	Size Range (inches)	Material Description n/a	Notes:
Layer 1	Type-A Rip Rap	18	0.170	0.007	0.003	0.004	initialized to ss	80	vertical percolation	2.0-16.0	12 inches	Size is nominal diameter
Layer 2	Type-A Filter (upper)	6	0.190	0.024	0.007	0.017	initialized to ss	42	lateral drainage	0.08-6.0	Coarse Sand - Fine Cobble	
Layer 3	Sacrificial Soil	12	0.31	0.2	0.025	0.175	initialized to ss	4.00E-03	barrier soil	<0.75	Silty Sand and Gravel	Placed at $4x10^{-4}$ cm/sec; freeze/thaw reduces K to $4x10^{-3}$ cm/sec.
Layer 4	Type-B Filter (lower)	6	0.28	0.032	0.013	0.019	initialized to ss	3.5	lateral drainage	0.2-1.5	Coarse Sand -Fine Gravel	
Layer 5	Upper Radon Barrier	12	0.430	0.390	0.28	0.11	0.43	5E-08	barrier soil	n/a	Clay	
Layer 6	Lower Radon Barrier	72	0.430	0.390	0.28	0.11	0.39	1.00E-06	vertical percolation	n/a	Clay	
Layer 7	Waste (Side Slopes)	100	0.437	0.062	0.024	0.038	initialized to ss	5.00E-04	vertical percolation	n/a	Sand	Unit thickness for waste. Model is insensitive to waste thickness variation.
Layer 8	Clay Liner (Side Slope)	24	0.430	0.390	0.28	0.11	0.43	1.00E-06	barrier soil	n/a	Clay	

WESTERN LARW CELL SIDE SLOPE LAYERS -- NO FROST PROTECTION												
Layer	Material	Thickness (inches)	n (vol/vol)	θ_{fc} (vol/vol)	θ_{wp} (vol/vol)	Available Moisture (vol/vol)	θ_i (vol/vol)	K_s (cm/sec)	Layer Type n/a	Size Range (inches)	Material Description n/a	Notes:
Layer 1	Type-A Rip Rap	18	0.170	0.007	0.003	0.004	initialized to ss	80	vertical percolation	2.0-16.0	12 inches	Size is nominal diameter
Layer 2	Type-A Filter (upper)	12	0.190	0.024	0.007	0.017	initialized to ss	42	lateral drainage	0.08-6.0	Coarse Sand - Fine Cobble	
Layer 3	Upper Radon Barrier (degraded)	7	0.430	0.390	0.28	0.11	0.43	5E-06	barrier soil	n/a	Clay	Placed at $5x10^{-8}$ cm/sec; freeze/thaw reduces K to $5x10^{-6}$ or $1.5x10^{-5}$ cm/sec.
Layer 4	Upper Radon Barrier	5	0.430	0.390	0.28	0.11	0.43	5E-08	barrier soil	n/a	Clay	
Layer 5	Lower Radon Barrier	72	0.430	0.390	0.28	0.11	0.39	1.00E-06	vertical percolation	n/a	Clay	
Layer 6	Waste (Side Slopes)	100	0.437	0.062	0.024	0.038	initialized to ss	5.00E-04	vertical percolation	n/a	Sand	Unit thickness for waste. Model is insensitive to waste thickness variation.
Layer 7	Clay Liner (Side Slope)	24	0.430	0.390	0.28	0.11	0.43	1.00E-06	barrier soil	n/a	Clay	

n = Porosity
θfc = Field Capacity
θwp = Wilting Point

θi = Initial Moisture Content
K_s = Saturated Hydraulic Conductivity
θi = Value for initialized steady-state moisture content are given in the model output files.
Available Moisture: = Moisture available to be evaporated is only applicable in the upper 18 inches of the model

Table 9. Western LARW Cell HELP Infiltration Modeling – Effective Slope Length For Lateral Drainage Run-On To Side Slopes

RUN	DESCRIPTION	SLOPE LENGTH ft.	WIDTH ft.	AREA acres	PERC. in.	LATERAL DRAINAGE			DL	L'
							in.	ft³/yr		
Side Slope, without Frost Protection, 100-fold Permeability Increase										
T1	Upslope Drainage	540	100	1.308	0.104	D_u	3.100	13954		
S1	Downslope Drainage, Without Run-on	160	100	0.37	0.431	D_{d1}	2.548	3394	658	818
S1-R1	Downslope Drainage, 1st Iteration	818	100	0.37	0.659	D_{d2}	2.320	3091	722	882
S1-R2	Downslope Drainage, 2nd Iteration	882	100	0.37	0.675	D_{d3}	2.304	3069	727	887
S1-R3	Downslope Drainage, 3rd Iteration	887	100	0.37	0.676	D_{d4}	2.303	3068	728	888
S1-R4	Downslope Drainage, 4th Iteration	887	100	0.37	0.676	D_{d5}	2.303	3068	728	888
Side Slope, with Sacrificial Soil Layer for Frost Protection										
T1	Upslope Drainage	540	100	1.308	0.104	D_u	3.100	13954		
SP1	Downslope Drainage, Without Run-on	160	100	0.37	0.076	D_{d1}	2.934	3908	571	731
SP1-R1	Downslope Drainage, 1st Iteration	731	100	0.37	0.142	D_{d2}	2.858	3807	586	746
SP1-R2	Downslope Drainage, 2nd Iteration	746	100	0.37	0.143	D_{d2}	2.857	3806	587	747
SP1-R3	Downslope Drainage, 3rd Iteration	747	100	0.37	0.143	D_{d3}	2.857	3806	587	747
Side Slope With 100-Fold Degradation and High Precipitation										
HT1	Upslope Drainage	540	100	1.308	0.122	D_u	6.668	30015		
SH1	Downslope Drainage, Without Run-on	160	100	0.37	0.574	D_{d1}	6.037	8042	597	757
SH1-R1	Downslope Drainage, 1st Iteration	757	100	0.37	0.824	D_{d2}	5.787	7709	623	783
SH1-R2	Downslope Drainage, 2nd Iteration	783	100	0.37	0.827	D_{d3}	5.784	7705	623	783
SH1-R3	Downslope Drainage, 3rd Iteration	783	100	0.37	0.827	D_{d3}	5.784	7705	623	783
S300-R4	Downslope Drainage, 4th Iteration	1073	100	0.37	0.997	D_{d5}	1.556	2073	914	1074
Side Slope With 100-Fold Degradation and Low Precipitation										
ST1	Upslope Drainage	540	100	1.308	0.090	D_u	2.856	12855		
SL1	Downslope Drainage, Without Run-on	160	100	0.37	0.386	D_{d1}	2.442	3254	632	792
SL1-R1	Downslope Drainage, 1st Iteration	792	100	0.37	0.583	D_{d2}	2.246	2992	687	847
SL1-R2	Downslope Drainage, 2nd Iteration	847	100	0.37	0.593	D_{d3}	2.236	2978	691	851
SL1-R3	Downslope Drainage, 2nd Iteration	851	100	0.37	0.594	D_{d3}	2.235	2977	691	851
SL1-R4	Downslope Drainage, 3rd Iteration	851	100	0.37	0.594	D_{d3}	2.235	2977	691	851
Side Slope with Sacrificial Soil Layer for Frost Protection, with Thicker Drainage Layer										
T1	Upslope Drainage	540	100	1.308	0.104	D_u	3.100	13954		
ST1	Downslope Drainage, Without Run-on	160	100	0.37	0.057	D_{d1}	2.919	3889	574	734
ST1-R1	Downslope Drainage, 1st Iteration	734	100	0.37	0.093	D_{d2}	2.884	3842	581	741
ST1-R2	Downslope Drainage, 2nd Iteration	741	100	0.37	0.093	D_{d3}	2.883	3841	581	741
ST1-R3	Downslope Drainage, 3rd Iteration	741	100	0.37	0.093	D_{d3}	2.883	3841	581	741
Side Slope W/O Frost Protection, with Thicker Drainage Layer										
T2	Upslope Drainage	540	100	1.308	0.106	D_u	3.099	13949		
S2	Downslope Drainage, Without Run-on	160	100	0.37	0.393	D_{d1}	2.580	3437	649	809
S2-R1	Downslope Drainage, 1st Iteration	809	100	0.37	0.573	D_{d2}	2.400	3197	698	858
S2-R2	Downslope Drainage, 2nd Iteration	858	100	0.37	0.577	D_{d3}	2.396	3192	699	859
S2-R3	Downslope Drainage, 2nd Iteration	859	100	0.37	0.577	D_{d3}	2.396	3192	699	859
S2-R4	Downslope Drainage, 3rd Iteration	859	100	0.37	0.577	D_{d3}	2.396	3192	699	859

TABLE 10. WESTERN LARW CELL HELP INFILTRATION MODEL RESULTS FOR BASE CASE AND SENSITIVITY ANALYSES

TOP SLOPE:

RUN:	CASE:	UPPER RADON BARRIER THICKNESS (inches)	UPPER RADON BARRIER K_s (cm/sec)	LATERAL DRAINAGE LAYER THICKNESS (inches)	FREEZE/ THAW LAYER THICKNESS (inches)	AVERAGE PRECIP. (in./year)	SLOPE LENGTH (feet)	INFILTRATION (inches)	INFILTRATION (cm)
T1	Top Slope, 540 ft length, 3% slope	12	5.0E-08	6	12.0	7.92	540	0.104	0.265
T2	Top Slope, increase drainage layer thickness to 12"	12	5.0E-08	12	12.0	7.92	540	0.106	0.268
HT1	*High Precipitation sensitivity analysis*	12	5.0E-08	6	12.0	13.21	540	0.122	0.310
LT1	Low Precipitation sensitivity analysis	12	5.0E-08	6	12.0	7.14	540	0.090	0.229
TTR_3	Top Slope, Decrease lower radon barrier thickness to 3 ft	12	5.0E-08	6	12.0	7.92	540	0.104	0.265
TTR_2	Top Slope, Decrease lower radon barrier thickness to 2 ft	12	5.0E-08	6	12.0	7.92	540	0.104	0.265
TTR_1	Top Slope, Decrease lower radon barrier thickness to 1 ft	12	5.0E-08	6	12.0	7.92	540	0.104	0.265

SIDE SLOPE:

RUN:	CASE:	UPPER RADON BARRIER THICKNESS (inches)	UPPER RADON BARRIER K_s (cm/sec)	LATERAL DRAINAGE LAYER THICKNESS (inches)	FREEZE/ THAW LAYER THICKNESS (inches)	AVERAGE PRECIP. (in./year)	SLOPE LENGTH (feet)	INFILTRATION (inches)	INFILTRATION (cm)
S1	Side-slope, degraded 100x, length 160 ft, no run-on	7	5.0E-06	6	n/a	7.92	160	0.431	1.096
S1-R1	Side-slope, degraded 100x, length 818 ft, with run-on	7	5.0E-06	6	n/a	7.92	818 a	0.659	1.673
S1-R2	Side-slope, degraded 100x, length 882 ft, with run-on	7	5.0E-06	6	n/a	7.92	882 a	0.675	1.715
S1-R3	Side-slope, degraded 100x, length 887 ft, with run-on	7	5.0E-06	6	n/a	7.92	887 a	0.676	1.717
S1-R4	Side-slope, degraded 100x, length 887 ft, with run-on	7	5.0E-06	6	n/a	7.92	887 a	0.676	1.717
SP1	Side-slope, sacrificial soil layer, length 160 ft, no run-on	12	5.0E-08	6	12.0	7.92	160	0.076	0.193
SP1-R1	Side-slope, sacrificial soil layer, length 731 ft, with run-on	12	5.0E-08	6	12.0	7.92	731 a	0.142	0.361
SP1-R2	Side-slope, sacrificial soil layer, length 746 ft, with run-on	12	5.0E-08	6	12.0	7.92	746 a	0.143	0.364
SP1-R3	Side-slope, sacrificial soil layer, length 747 ft, with run-on	12	5.0E-08	6	12.0	7.92	747 a	0.143	0.364
SH1	Side-slope, High Precip., degraded 100x, 160', no run-on	7	5.0E-06	6	n/a	13.21	160	0.574	1.459
SH1-R1	Side-slope, High Precip., degraded 100x, 757', with run-on	7	5.0E-06	6	n/a	13.21	757 a	0.824	2.094
SH1-R2	Side-slope, High Precip., degraded 100x, 787', with run-on	7	5.0E-06	6	n/a	13.21	783 a	0.827	2.102
SH1-R3	Side-slope, High Precip., degraded 100x, 787', with run-on	7	5.0E-06	6	n/a	13.21	783 a	0.827	2.102
SL1	Side-slope, Low Precip., degraded 100x, 160', no run-on	7	5.0E-06	6	n/a	7.14	160	0.386	0.980
SL1-R1	Side-slope, Low Precip., degraded 100x, 757', with run-on	7	5.0E-06	6	n/a	7.14	792 a	0.583	1.480
SL1-R2	Side-slope, Low Precip., degraded 100x, 757', with run-on	7	5.0E-06	6	n/a	7.14	847 a	0.593	1.506
SL1-R3	Side-slope, Low Precip., degraded 100x, 757', with run-on	7	5.0E-06	6	n/a	7.14	851 a	0.594	1.508
SL1-R4	Side-slope, Low Precip., degraded 100x, 757', with run-on	7	5.0E-06	6	n/a	7.14	851 a	0.594	1.508
ST1	Side-slope, sacrificial soil layer, thicker filter, no run-on	12	5.0E-08	12	12.0	7.92	160 a	0.057	0.146
ST1-R1	Side-slope, sacrificial soil layer, thicker filter, 734', with run-on	12	5.0E-08	12	12.0	7.92	734 a	0.093	0.236
ST1-R2	Side-slope, sacrificial soil layer, thicker filter, 741', with run-on	12	5.0E-08	12	12.0	7.92	741 a	0.093	0.237
ST1-R3	Side-slope, sacrificial soil layer, thicker filter, 741', with run-on	12	5.0E-08	12	12.0	7.92	741 a	0.093	0.237
S2	Side-slope, degraded 100x, thicker filter, no run-on	7	5.0E-06	18	n/a	7.92	160 a	0.393	0.998
S2-R1	Side-slope, degraded 100x, thicker filter, 809', with run-on	7	5.0E-06	18	n/a	7.92	809 a	0.573	1.454
S2-R2	Side-slope, degraded 100x, thicker filter, 858', with run-on	7	5.0E-06	18	n/a	7.92	858 a	0.577	1.465
S2-R3	Side-slope, degraded 100x, thicker filter, 859', with run-on	7	5.0E-06	18	n/a	7.92	859 a	0.577	1.464
S2-R4	Side-slope, degraded 100x, thicker filter, 859', with run-on	7	5.0E-06	18	n/a	7.92	859 a	0.577	1.464

a = effective slope length calculated as described in modeling report

n/a = not applicable; frost damage was accounted for by increasing K by 2 orders of magnitude in upper portion of side-slope radon barrier

TABLE 11. WESTERN LARW CELL HELP INFILTRATION MODEL WATER BALANCE SUMMARY

HELP Results	Western LARW Top Slope Simulations				Top Slope with Thinner Lower Radon Barrier			
(inches of water)	T1 (Base Case Top)	T2 (Thicker Drain Layer)	HT1 (High Precipitation)	LT1 (Low Precipitation)	T1	TTR_3	TTR_2	TTR_1
Precipitation	7.92	7.92	13.21	7.14	7.92	7.92	7.92	7.92
Runoff	0.007	0.007	0.272	0.022	0.007	0.007	0.007	0.007
Evapotranspiration	4.711	4.711	6.149	4.169	4.711	4.711	4.711	4.711
Lateral Drainage From Layer 4	3.09996	3.09892	6.66823	2.85587	3.09996	3.09996	3.09996	3.09996
Percolation/Leakage Through Layer 5	0.10448	0.10553	0.12201	0.09028	0.10448	0.10448	0.10448	0.10448
Average Head On Top of Layer 5	0.008	0.008	0.017	0.007	0.008	0.008	0.008	0.008
Percolation/Leakage Through Clay Liner	0.10444	0.10551	0.12205	0.09027	0.10444	0.10444	0.10444	0.10444
Average Head On Top Of Clay Liner	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Change In Water Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

HELP Results	Side Slope with Sacrificial Soil				Side Slope with 100-fold Permeability Increase				Side Slope, Sacrificial Soil, Thicker B Filter			
(inches of water)	SP1	SP1-R1	SP1-R2	SP1-R3	S1	S1-R1	S1-R2	S1-R3	ST1	ST1-R1	ST1-R2	ST1-R3
Precipitation	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92
Runoff	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Evapotranspiration	4.905	4.914	4.914	4.914	4.935	4.935	4.935	4.935	4.937	4.937	4.937	4.937
Lateral Drainage From Layer 4	2.93356	2.85803	2.85655	2.85655	2.54766	2.32035	2.30404	2.30304	2.91915	2.88374	2.88331	2.88331
Percolation/Leakage Through Layer 5	0.07584	0.14205	0.14352	0.14352	0.43149	0.6588	0.67511	0.67611	0.05747	0.09288	0.09332	0.09332
Average Head On Top of Layer 5	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.003	0.003	0.003	0.003
Percolation/Leakage Through Clay Liner	0.07584	0.14204	0.14348	0.14348	0.43148	0.65892	0.67514	0.67607	0.05746	0.09289	0.09329	0.09329
Average Head On Top Of Clay Liner	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000
Change In Water Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

HELP Results	Side Slope, 100-fold Permeability Increase, High Precip				Side Slope, 100-fold Permeability Increase, Low Precip				Side Slope, 100-fold K increase, Thicker Type A Filter				
(inches of water)	SH1	SH1-R1	SH1-R2	SH1-R3	SL1	SL1-R1	SL1-R2	SL1-R3	S2	S2-R1	S2-R2	S2-R3	S2-R4
Precipitation	13.21	13.21	13.21	13.21	7.14	7.14	7.14	7.14	7.92	7.92	7.92	7.92	7.92
Runoff	0.308	0.308	0.308	0.308	0.025	0.025	0.025	0.025	0.009	0.009	0.009	0.009	0.009
Evapotranspiration	6.292	6.292	6.292	6.292	4.283	4.283	4.283	4.283	4.941	4.941	4.941	4.941	4.941
Lateral Drainage From Layer 4	6.03659	5.78665	5.78356	5.78356	2.44246	2.24585	2.23557	2.23485	2.57989	2.40009	2.39598	2.39603	2.39603
Percolation/Leakage Through Layer 5	0.57436	0.8243	0.82739	0.82739	0.38603	0.58265	0.59293	0.59365	0.39272	0.57252	0.57663	0.57658	0.57658
Average Head On Top of Layer 5	0.003	0.003	0.003	0.003	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
Percolation/Leakage Through Clay Liner	0.5744	0.82426	0.82737	0.82737	0.38599	0.58263	0.59297	0.59367	0.39276	0.57251	0.57661	0.57656	0.57656
Average Head On Top Of Clay Liner	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Change In Water Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TABLE 12. WATER LEVEL ELEVATIONS USED IN CALCULATING THE THICKNESS OF THE UNSATURATED ZONE BELOW THE WESTERN LARW CELL

	EASTING	NORTHING	CASING	April-99		June-99		July-99		August-99		September-99	
WELL ID	(ft)	(ft)	ELEVATION (ft)	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE
GW-81	1,550,242.17	862,999.31	4276.70	28.43	4248.27	27.62	4249.08	27.61	4249.18	27.72	4248.98	27.59	4249.11
GW-82	1,550,573.37	862,992.28	4276.72	28.26	4248.46	27.54	4249.18	27.55	4249.26	27.58	4249.14	27.53	4249.19
GW-83	1,550,902.77	862,985.98	4276.82	27.65	4249.17	27.59	4249.23	27.59	4249.32	27.59	4249.23	27.52	4249.30
GW-84	1,551,235.63	862,979.53	4277.14	28.58	4248.56	27.82	4249.32	27.82	4249.40	27.82	4249.32	27.81	4249.33
GW-85	1,551,559.04	862,973.14	4277.79	29.18	4248.61	28.38	4249.41	28.37	4249.53	28.37	4249.42	28.36	4249.43
GW-86	1,551,955.18	862,965.78	4278.23	29.44	4248.79	28.66	4249.57	28.66	4249.67	28.7	4249.53	28.68	4249.55
GW-88	1,552,343.08	862,958.18	4279.45	30.51	4248.94	29.61	4249.84	29.63	4249.91	29.74	4249.71	29.74	4249.71
GW-89	1,552,337.53	862,564.41	4279.28	30.09	4249.19	29.27	4250.01	29.24	4250.09	29.31	4249.97	29.71	4249.57
GW-90	1,552,331.49	862,173.19	4278.77	29.34	4249.43	28.72	4250.05	28.55	4250.30	28.59	4250.18	28.58	4250.19
GW-91	1,552,325.45	861,778.51	4278.68	28.96	4249.72	28.57	4250.11	28.17	4250.60	28.25	4250.43	28.27	4250.41
GW-92	1,552,318.54	861,379.65	4278.95	28.82	4250.13	28.01	4250.94	28.09	4250.89	28.25	4250.70	28.28	4250.67
GW-93	1,551,930.99	861,389.47	4277.85	28.02	4249.83	27.08	4250.77	27.09	4250.83	27.17	4250.68	27.17	4250.68
GW-94	1,551,131.92	861,405.32	4276.25	26.56	4249.69	25.78	4250.47	25.79	4250.81	25.77	4250.48	25.77	4250.48
GW-95	1,550,303.22	861,419.95	4274.65	25.51	4249.14	24.75	4249.90	24.77	4249.91	24.74	4249.91	24.67	4249.98
GW-99	1,549,885.08	861,825.67	4273.67	24.99	4248.68	24.27	4249.40	24.29	4249.58	24.29	4249.38	24.28	4249.39
GW-100	1,549,893.66	862,218.82	4274.21	25.86	4248.35	25.15	4249.06	25.18	4249.08	25.19	4249.02	25.16	4249.05
GW-101	1,549,901.93	862,612.18	4275.01	26.73	4248.28	26.05	4248.96	26.05	4249.02	26.07	4248.94	26.05	4248.96
GW-102	1,549,910.78	863,006.22	4275.40	27.46	4247.94	26.48	4248.92	26.48	4249.02	26.51	4248.89	26.45	4248.95
MONTHLY AVERAGE SALINE WATER ELEVATION:					4248.95		4249.68		4249.80		4249.66		4249.66

OVERALL AVERAGE SALINE WATER ELEVATION:	4249.61

TABLE 12. WATER LEVEL ELEVATIONS USED IN CALCULATING THE THICKNESS OF THE UNSATURATED ZONE BELOW THE WESTERN LARW CELL

	October-99		November-99		December-99		January-00		February-00		March-00		April-00	
WELL ID	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE	DTW	Saline WLE
GW-81	27.52	4249.18	27.65	4249.05	27.49	4249.21	27.57	4249.13	27.59	4249.11	27.59	4249.11	27.57	4249.13
GW-82	27.5	4249.22	27.55	4249.17	27.42	4249.30	27.53	4249.19	27.52	4249.20	27.51	4249.21	27.53	4249.19
GW-83	27.57	4249.25	27.59	4249.23	27.55	4249.27	27.57	4249.25	27.55	4249.27	27.54	4249.28	27.53	4249.29
GW-84	27.79	4249.35	27.83	4249.31	27.75	4249.39	27.82	4249.32	27.79	4249.35	27.79	4249.35	27.76	4249.38
GW-85	28.33	4249.46	28.71	4249.08	28.33	4249.46	28.37	4249.42	28.36	4249.43	28.34	4249.45	28.34	4249.45
GW-86	28.69	4249.54	28.37	4249.86	28.66	4249.57	28.72	4249.51	28.71	4249.52	28.7	4249.53	28.69	4249.54
GW-88	29.79	4249.66	29.8	4249.65	29.71	4249.74	29.86	4249.59	29.85	4249.60	29.82	4249.63	29.79	4249.66
GW-89	29.33	4249.95	29.38	4249.90	29.33	4249.95	29.42	4249.86	29.44	4249.84	29.43	4249.85	29.41	4249.87
GW-90	28.61	4250.16	29.65	4249.12	28.63	4250.14	28.68	4250.09	28.72	4250.05	28.67	4250.10	28.67	4250.10
GW-91	28.29	4250.39	28.35	4250.33	28.28	4250.40	28.39	4250.29	28.41	4250.27	28.15	4250.53	28.31	4250.37
GW-92	28.29	4250.66	28.39	4250.56	28.37	4250.58	28.46	4250.49	28.35	4250.60	28.17	4250.78	28.24	4250.71
GW-93	27.19	4250.66	27.27	4250.58	27.18	4250.67	27.19	4250.66	27.37	4250.48	27.11	4250.74	27.19	4250.66
GW-94	25.81	4250.44	25.89	4250.36	25.83	4250.42	25.98	4250.27	26.02	4250.23	26.05	4250.20	26.00	4250.25
GW-95	24.63	4250.02	24.67	4249.98	24.51	4250.14	24.62	4250.03	24.63	4250.02	24.63	4250.02	24.61	4250.04
GW-99	24.27	4249.40	24.24	4249.43	24.23	4249.44	24.24	4249.43	24.22	4249.45	24.21	4249.46	24.21	4249.46
GW-100	25.18	4249.03	25.17	4249.04	25.03	4249.18	25.18	4249.03	25.13	4249.08	25.136	4249.07	25.136	4249.07
GW-101	26.07	4248.94	26.05	4248.96	26.02	4248.99	26.05	4248.96	26.03	4248.98	26.02	4248.99	26.02	4248.99
GW-102	26.45	4248.95	26.5	4248.90	26.42	4248.98	26.42	4248.98	26.43	4248.97	26.45	4248.95	26.46	4248.94
MONTHLY		4249.68		4249.58		4249.71		4249.64		4249.64		4249.68		4249.67

TABLE 13. SITE-WIDE HYDRAULIC CONDUCTIVITY TEST RESULTS

Well/Test	Cell	Test Unit	Static Water Level (ft.btc)	Total Depth (ft)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Well Hydraulic Conductivity (cm/sec)	Log Hydraulic Conductivity (log[cm/sec])	Well Hydraulic Conductivity (log[cm/sec])
PZ-1#1		Unit 2 Clay	14.75	30.4	3.49	1.23E-03		-2.910	
PZ-1#2		Unit 2 Clay	14.75	30.4	3.56	1.26E-03	1.24E-03	-2.901	-2.905
DH-31B1	MW	Unit 2 Clay	31.69	34.18	1.598	5.64E-04		-3.249	
DH-31B2	MW	Unit 2 Clay	31.69	34.18	1.702	6.00E-04		-3.222	
DH-31B3	MW	Unit 2 Clay	31.69	34.18	1.158	4.08E-04	5.24E-04	-3.389	-3.286
DH-32A1	LARW	Unit 2 Clay	28.63	33.26	0.012	4.18E-06		-5.379	
DH-32A2	LARW	Unit 2 Clay	28.63	33.26	0.016	5.79E-06	4.98E-06	-5.237	-5.308
DH-33A1	MW	Unit 2 Clay	31.03	33.83	0.015	5.24E-06	5.24E-06	-5.280	-5.280
DH-62A1	11.e(2)	Unit 3 Sand	21.37	27.59	1.296	4.57E-04		-3.340	
DH-62A1	11.e(2)	Unit 3 Sand	21.37	27.59	1.564	5.52E-04		-3.258	
DH-62A1	11.e(2)	Unit 3 Sand	21.37	27.59	1.486	5.24E-04	5.11E-04	-3.280	-3.293
GW-16R-A1	LARW	Unit 2 Clay	31.81	36.94	0.607	2.14E-04		-3.670	
GW-16R-B1	LARW	Unit 2 Clay	31.81	36.94	0.646	2.28E-04		-3.642	
GW-16R-B2	LARW	Unit 2 Clay	31.81	36.94	0.647	2.28E-04	2.23E-04	-3.642	-3.651
GW-17AA1	VITRO	Unit 2 Clay	27.95	34.61	1.218	4.30E-04		-3.367	
GW-17AB1	VITRO	Unit 2 Clay	27.95	34.61	1.227	4.33E-04		-3.364	
GW-17AB2	VITRO	Unit 2 Clay	27.95	34.61	1.106	3.90E-04	4.18E-04	-3.409	-3.380
GW-19AA1	11.e(2)	Unit 3 Sand	20.4	29.44	0.113	3.99E-05		-4.399	
GW-19AB1	11.e(2)	Unit 3 Sand	20.4	29.44	0.096	3.38E-05		-4.471	
GW-19AB2	11.e(2)	Unit 3 Sand	20.4	29.44	0.136	4.79E-05	4.05E-05	-4.320	-4.396
GW-20-A1	LARW	Unit 2 Clay	25.92	36.05	1.901	6.71E-04		-3.174	
GW-20-A2	LARW	Unit 2 Clay	25.92	36.05	2.730	9.63E-04		-3.016	
GW-20-A3	LARW	Unit 2 Clay	25.92	36.05	2.687	9.48E-04	8.61E-04	-3.023	-3.071
GW-21A1	VITRO	Unit 2 Clay	35.51	44.26	2.635	9.30E-04		-3.032	
GW-21A2	VITRO	Unit 2 Clay	35.51	44.26	2.065	7.28E-04		-3.138	
GW-21A3	VITRO	Unit 2 Clay	35.51	44.26	3.007	1.06E-03	9.06E-04	-2.974	-3.048
GW-22-A1	LARW	Unit 2 Clay	27.64	33.3	1.037	3.66E-04		-3.437	
GW-22-A2	LARW	Unit 2 Clay	27.64	33.3	1.080	3.81E-04		-3.419	
GW-22-A3	LARW	Unit 2 Clay	27.64	33.3	1.132	3.99E-04	3.82E-04	-3.399	-3.418
GW-23-A3	LARW	Unit 2 Clay	26.66	33.28	0.725	2.56E-04		-3.592	
GW-23-B1	LARW	Unit 2 Clay	26.66	33.28	0.779	2.75E-04	2.65E-04	-3.561	-3.577
GW-24-A1	LARW	Unit 2 Clay	26.32	33.18	0.277	9.78E-05		-4.009	
GW-24-B1	LARW	Unit 2 Clay	26.32	33.18	0.460	1.62E-04		-3.790	
GW-24-B2	LARW	Unit 2 Clay	26.32	33.18	0.330	1.16E-04	1.25E-04	-3.934	-3.911
GW-25-B1	11.e(2)	Unit 3 Sand	25.65	35	2.316	8.17E-04		-3.088	
GW-25-B2	11.e(2)	Unit 3 Sand	25.65	35	3.326	1.17E-03		-2.931	
GW-25-B3	11.e(2)	Unit 3 Sand	25.65	35	3.568	1.26E-03		-2.900	
GW-25-B4	11.e(2)	Unit 3 Sand	25.65	35	2.557	9.02E-04		-3.045	
GW-25-B5	11.e(2)	Unit 3 Sand	25.65	35	3.110	1.10E-03	1.05E-03	-2.960	-2.985
GW-26-A1	11.e(2)	Unit 3 Sand	24.83	31	0.470	1.66E-04		-3.780	
GW-26-A2	11.e(2)	Unit 3 Sand	24.83	31	0.420	1.48E-04	1.57E-04	-3.829	-3.805
GW-27A1	11.e(2)	Unit 3 Sand	23.35	32	0.055	1.93E-05		-4.714	
GW-27B1	11.e(2)	Unit 3 Sand	23.35	32	0.034	1.21E-05		-4.917	
GW-27B2	11.e(2)	Unit 3 Sand	23.35	32	0.049	1.73E-05	1.62E-05	-4.762	-4.798
GW-28A1	11.e(2)	Unit 3 Sand	21.35	31.41	0.281	9.91E-05		-4.004	
GW-28B1	11.e(2)	Unit 3 Sand	21.35	31.41	0.231	8.14E-05		-4.089	
GW-28B2	11.e(2)	Unit 3 Sand	21.35	31.41	0.176	6.22E-05	8.09E-05	-4.206	-4.100
GW-36A1	11.e(2)	Unit 3 Sand	20.81	31.64	1.382	4.88E-04		-3.312	
GW-36A2	11.e(2)	Unit 3 Sand	20.81	31.64	1.728	6.10E-04		-3.215	
GW-36A3	11.e(2)	Unit 3 Sand	20.81	31.64	1.840	6.49E-04	5.82E-04	-3.188	-3.238
GW-37A1	11.e(2)	Unit 3 Sand	19.37	31.74	0.950	3.35E-04		-3.475	
GW-37B1	11.e(2)	Unit 3 Sand	19.37	31.74	1.028	3.63E-04		-3.440	
GW-37B2	11.e(2)	Unit 3 Sand	19.37	31.74	1.071	3.78E-04	3.59E-04	-3.423	-3.446
GW-38A1	11.e(2)	Unit 3 Sand	21.99	32.14	1.788	6.31E-04		-3.200	
GW-38B1	11.e(2)	Unit 3 Sand	21.99	32.14	1.572	5.55E-04		-3.256	
GW-38B2	11.e(2)	Unit 3 Sand	21.99	32.14	1.572	5.55E-04	5.80E-04	-3.256	-3.237
GW-41A1	MW	Unit 2 Clay	30.15	37.48	0.477	1.68E-04		-3.774	
GW-41B1	MW	Unit 2 Clay	30.15	37.48	0.899	3.17E-04		-3.499	
GW-41B2	MW	Unit 2 Clay	30.15	37.48	0.759	2.68E-04	2.51E-04	-3.572	-3.615
GW-42A1	MW	Unit 2 Clay	29.96	37.06	0.994	3.51E-04		-3.455	
GW-42B1	MW	Unit 2 Clay	29.96	37.06	0.862	3.04E-04		-3.517	
GW-42B2	MW	Unit 2 Clay	29.96	37.06	0.850	3.00E-04	3.18E-04	-3.523	-3.498
GW-43A1	MW	Unit 2 Clay	31.22	37.68	1.348	4.75E-04		-3.323	
GW-43B1	MW	Unit 2 Clay	31.22	37.68	1.434	5.06E-04		-3.296	
GW-43B2	MW	Unit 2 Clay	31.22	37.68	1.296	4.57E-04	4.80E-04	-3.340	-3.320
GW-44A1	MW	Unit 2 Clay	29.67	36.82	0.631	2.23E-04		-3.653	
GW-44B1	MW	Unit 2 Clay	29.67	36.82	1.097	3.87E-04		-3.412	
GW-44B2	MW	Unit 2 Clay	29.67	36.82	1.037	3.66E-04	3.25E-04	-3.437	-3.501
GW-45A1	MW	Unit 2 Clay	29.87	36.85	0.197	6.95E-05		-4.158	
GW-45B1	MW	Unit 2 Clay	29.87	36.85	0.308	1.09E-04		-3.963	
GW-45B2	MW	Unit 2 Clay	29.87	36.85	0.308	1.09E-04	9.56E-05	-3.965	-4.029
GW-46A1	MW	Unit 2 Clay	29.85	37.31	0.136	4.79E-05		-4.320	
GW-46B1	MW	Unit 2 Clay	29.85	37.31	0.130	4.60E-05		-4.337	
GW-46B2	MW	Unit 2 Clay	29.85	37.31	0.138	4.88E-05	4.75E-05	-4.312	-4.323
GW-56R-A1	LARW	Unit 2 Clay	29.71	36.5	1.331	4.69E-04		-3.328	
GW-56R-A2	LARW	Unit 2 Clay	29.71	36.5	3.249	1.15E-03		-2.941	
GW-56R-A3	LARW	Unit 2 Clay	29.71	36.5	4.225	1.49E-03		-2.827	
GW-56R-A4	LARW	Unit 2 Clay	29.71	36.5	3.603	1.27E-03	1.09E-03	-2.896	-2.998
GW-57A1	11.e(2)	Unit 3 Sand	22.38	32.13	0.270	9.54E-05		-4.020	
GW-57B1	11.e(2)	Unit 3 Sand	22.38	32.13	0.176	6.22E-05		-4.206	
GW-57B2	11.e(2)	Unit 3 Sand	22.38	32.13	0.277	9.78E-05	8.51E-05	-4.009	-4.079
GW-58A1	11.e(2)	Unit 3 Sand	20.58	31.77	0.725	2.56E-04		-3.592	
GW-58B1	11.e(2)	Unit 3 Sand	20.58	31.77	0.392	1.38E-04		-3.859	
GW-58B2	11.e(2)	Unit 3 Sand	20.58	31.77	0.426	1.50E-04	1.81E-04	-3.823	-3.758
GW-60-A1	11.e(2)	Unit 3 Sand	23.71	29.44	5.322	1.88E-03		-2.726	
GW-60-A2	11.e(2)	Unit 3 Sand	23.71	29.44	7.180	2.53E-03		-2.596	

TABLE 13. SITE-WIDE HYDRAULIC CONDUCTIVITY TEST RESULTS

Well/Test	Cell	Test Unit	Static Water Level (ft.btc)	Total Depth (ft)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Well Hydraulic Conductivity (cm/sec)	Log Hydraulic Conductivity (log[cm/sec])	Well Hydraulic Conductivity (log[cm/sec])
GW-60-A3	11.e(2)	Unit 3 Sand	23.71	29.44	6.748	2.38E-03	2.26E-03	-2.623	-2.649
GW-60-A3	11.e(2)	Unit 3 Sand	20.75	31.1	1.184	4.18E-04		-3.379	
GW-63-A2	11.e(2)	Unit 3 Sand	20.75	31.1	1.158	4.08E-04		-3.389	
GW-63-A3	11.e(2)	Unit 3 Sand	20.75	31.1	1.210	4.27E-04	4.18E-04	-3.370	-3.379
GW-64-A1	LARW	Unit 2 Clay	29.08	36.61	2.048	7.22E-04		-3.141	
GW-64-B1	LARW	Unit 2 Clay	29.08	36.61	1.875	6.61E-04		-3.180	
GW-64-B2	LARW	Unit 2 Clay	29.08	36.61	2.981	1.05E-03	8.12E-04	-2.978	-3.100
GW-66A1	MW	Unit 2 Clay	29.74	37.36	0.105	3.69E-05		-4.433	
GW-66B1	MW	Unit 2 Clay	29.74	37.36	0.689	2.43E-04		-3.615	
GW-66B2	MW	Unit 2 Clay	29.74	37.36	0.132	4.66E-05	1.09E-04	-4.331	-4.126
GW-67A1	MW	Unit 2 Clay	32.85	39.63	0.454	1.60E-04		-3.795	
GW-67B1	MW	Unit 2 Clay	32.85	39.63	0.520	1.83E-04		-3.736	
GW-67B2	MW	Unit 2 Clay	32.85	39.63	0.531	1.87E-04		-3.727	
GW-67 #1	MW	Unit 2 Clay	32.54	40.83	1.98	6.99E-04		-3.156	
GW-67 #2	MW	Unit 2 Clay	32.54	40.83	1.97	6.95E-04	3.85E-04	-3.158	-3.514
GW-67R#1	MW	Unit 2 Clay	31.8	39.3	4.96	1.75E-03		-2.757	
GW-67R#2	MW	Unit 2 Clay	31.8	39.3	4.9	1.73E-03	1.74E-03	-2.762	-2.760
GW-68A1	MW	Unit 2 Clay	33.23	42.09	0.151	5.33E-05		-4.273	
GW-68B1	MW	Unit 2 Clay	33.23	42.09	0.127	4.48E-05		-4.349	
GW-68B2	MW	Unit 2 Clay	33.23	42.09	0.118	4.15E-05		-4.382	
GW-68 #1	MW	Unit 2 Clay	32.75	43.96	0.94	3.32E-04		-3.479	
GW-68 #2	MW	Unit 2 Clay	32.75	43.96	0.9	3.18E-04	1.58E-04	-3.498	-3.996
GW-68R#1	MW	Unit 2 Clay	32.62	39.15	7.84	2.77E-03		-2.558	
GW-68R#2	MW	Unit 2 Clay	32.62	39.15	7.4	2.61E-03	2.69E-03	-2.583	-2.571
GW-69B1	MW	Unit 2 Clay	32.44	40.68	0.054	1.92E-05		-4.717	
GW-69A1	MW	Unit 2 Clay	32.44	40.68	0.052	1.82E-05		-4.740	
GW-69 #1	MW	Unit 2 Clay	32.11	42.35	2.82	9.95E-04		-3.002	
GW-69 #2	MW	Unit 2 Clay	32.11	42.35	2.12	7.48E-04	4.45E-04	-3.126	-3.896
GW-69R#1	MW	Unit 2 Clay	32.13	39.4	3.93	1.39E-03		-2.858	
GW-69R#2	MW	Unit 2 Clay	32.13	39.4	2.21	7.80E-04	1.08E-03	-3.108	-2.983
GW-70A1	MW	Unit 2 Clay	32.82	42.36	0.200	7.04E-05		-4.152	
GW-70B1	MW	Unit 2 Clay	32.82	42.36	0.283	1.00E-04		-4.000	
GW-70B2	MW	Unit 2 Clay	32.82	42.36	0.219	7.71E-05		-4.113	
GW-70 #1	MW	Unit 2 Clay	32.46	42.45	7.98	2.82E-03		-2.550	
GW-70 #2	MW	Unit 2 Clay	32.46	42.45	7.79	2.75E-03	1.16E-03	-2.561	-3.475
GW-71A1	MW	Unit 2 Clay	32.51	42.4	1.987	7.01E-04		-3.154	
GW-71B1	MW	Unit 2 Clay	32.51	42.4	1.071	3.78E-04		-3.423	
GW-71B2	MW	Unit 2 Clay	32.51	42.4	1.140	4.02E-04		-3.395	
GW-71 #1	MW	Unit 2 Clay	32.08	43.97	8.89	3.14E-03		-2.504	
GW-71 #2	MW	Unit 2 Clay	32.08	43.97	8.86	3.13E-03	1.55E-03	-2.505	-2.996
GW-77 #1		Unit 2 Clay	32.7	40	2.56	9.03E-04		-3.044	
GW-77 #2		Unit 2 Clay	32.7	40	2.5	8.82E-04	8.93E-04	-3.055	-3.049
GW-78 #1		Unit 2 Clay	30.98	40	5.08	1.79E-03		-2.747	
GW-78 #2		Unit 2 Clay	30.98	40	4.15	1.46E-03	1.63E-03	-2.834	-2.791
GW-79 #1		Unit 2 Clay	30.32	36.5	4.5	1.59E-03		-2.799	
GW-79 #2		Unit 2 Clay	30.32	36.5	4.12	1.45E-03	1.52E-03	-2.838	-2.818
GW-80 #1		Unit 2 Clay	26.04	36.18	4.91	1.73E-03		-2.761	
GW-80 #2		Unit 2 Clay	26.04	36.18	5.01	1.77E-03	1.75E-03	-2.753	-2.757
GW-81 #1	WLARW	Unit 2 Clay	28.12	36.71	1.490	5.26E-04		-3.279	
GW-81 #2	WLARW	Unit 2 Clay	28.12	36.71	1.470	5.19E-04	5.22E-04	-3.285	-3.282
GW-82 #1	WLARW	Unit 2 Clay	27.68	36.44	1.820	6.42E-04		-3.192	
GW-82 #2	WLARW	Unit 2 Clay	27.68	36.44	1.450	5.12E-04	5.77E-04	-3.291	-3.242
GW-83 #1	WLARW	Unit 3 Sand	27.71	36.45	8.540	3.01E-03		-2.521	
GW-83 #2	WLARW	Unit 3 Sand	27.71	36.45	8.760	3.09E-03	3.05E-03	-2.510	-2.516
GW-84 #1	WLARW	Unit 2 Clay	27.95	36.76	10.950	3.86E-03		-2.413	
GW-84 #2	WLARW	Unit 2 Clay	27.95	36.76	10.300	3.63E-03	3.75E-03	-2.440	-2.426
GW-85 #1	WLARW	Unit 2 Clay	28.47	37.34	11.140	3.93E-03		-2.406	
GW-85 #2	WLARW	Unit 2 Clay	28.47	37.34	11.180	3.94E-03	3.94E-03	-2.404	-2.405
GW-86 #1	WLARW	Unit 2 Clay	28.73	41.4	4.800	1.69E-03		-2.771	
GW-86 #2	WLARW	Unit 2 Clay	28.73	41.4	4.570	1.61E-03	1.65E-03	-2.793	-2.782
GW-88 #1	WLARW	Unit 2 Clay	29.86	36.78	2.660	9.38E-04		-3.028	
GW-88 #2	WLARW	Unit 2 Clay	29.86	36.78	2.920	1.03E-03	9.84E-04	-2.987	-3.007
GW-89 #1	WLARW	Unit 2 Clay	29.43	37.02	1.670	5.89E-04		-3.230	
GW-89 #2	WLARW	Unit 2 Clay	29.43	37.02	1.880	6.63E-04	6.26E-04	-3.178	-3.204
GW-90 #1	WLARW	Unit 2 Clay	28.64	36.84	8.860	3.13E-03		-2.505	
GW-90 #2	WLARW	Unit 2 Clay	28.64	36.84	7.780	2.74E-03	2.94E-03	-2.562	-2.533
GW-91 #1	WLARW	Unit 2 Clay	28.37	36.92	5.730	2.02E-03		-2.694	
GW-91 #2	WLARW	Unit 2 Clay	28.37	36.92	5.480	1.93E-03	1.98E-03	-2.714	-2.704
GW-92 #1	WLARW	Unit 2 Clay	28.33	36.93	2.450	8.64E-04		-3.063	
GW-92 #2	WLARW	Unit 2 Clay	28.33	36.93	2.470	8.71E-04	8.68E-04	-3.060	-3.062
GW-93 #1	WLARW	Unit 2 Clay	27.28	37.49	11.680	4.12E-03		-2.385	
GW-93 #2	WLARW	Unit 2 Clay	27.28	37.49	11.780	4.16E-03	4.14E-03	-2.381	-2.383
GW-94 #1	WLARW	Unit 2 Clay	26.15	36.91	12.730	4.49E-03		-2.348	
GW-94 #2	WLARW	Unit 2 Clay	26.15	36.91	13.710	4.84E-03	4.66E-03	-2.315	-2.332
GW-95 #1	WLARW	Unit 3 Sand	26.9	31.99	1.040	3.67E-04		-3.435	
GW-95 #2	WLARW	Unit 3 Sand	26.9	31.99	1.010	3.56E-04	3.62E-04	-3.448	-3.442
GW-99 #1	WLARW	Unit 3 Sand	24.43	31.8	0.850	3.00E-04		-3.523	
GW-99 #2	WLARW	Unit 3 Sand	24.43	31.8	0.820	2.89E-04	2.95E-04	-3.539	-3.531
GW-100 #1	WLARW	Unit 3 Sand	25.24	32.95	1.780	6.28E-04		-3.202	
GW-100 #2	WLARW	Unit 3 Sand	25.24	32.95	1.870	6.60E-04	6.44E-04	-3.181	-3.191
GW-101 #1	WLARW	Unit 3 Sand	26.1	36.53	2.360	8.33E-04		-3.080	
GW-101 #2	WLARW	Unit 3 Sand	26.1	36.53	1.910	6.74E-04	7.53E-04	-3.171	-3.126
GW-102 #1	WLARW	Unit 3 Sand	26.85	36.8	2.370	8.36E-04		-3.078	
GW-102 #2	WLARW	Unit 3 Sand	26.85	36.8	2.460	8.68E-04	8.52E-04	-3.062	-3.070
GW-103	LARW	Unit 2 Clay	27.79	41.32	11.45	4.04E-03		-2.394	
GW-103	LARW	Unit 2 Clay	27.79	41.32	11.67	4.12E-03		-2.386	

TABLE 13. SITE-WIDE HYDRAULIC CONDUCTIVITY TEST RESULTS

Well/Test	Cell	Test Unit	Static Water Level (ft.btc)	Total Depth (ft)	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Well Hydraulic Conductivity (cm/sec)	Log Hydraulic Conductivity (log[cm/sec])	Well Hydraulic Conductivity (log[cm/sec])
GW-103	LARW	Unit 2 Clay	27.79	41.32	17.83	6.29E-03		-2.201	
GW-103	LARW	Unit 2 Clay	27.79	41.32	8.85	3.12E-03	4.39E-03	-2.505	-2.372
GW-104	LARW	Unit 2 Clay	28.39	40.28	7.17	2.53E-03		-2.597	
GW-104	LARW	Unit 2 Clay	28.39	40.28	10.39	3.66E-03		-2.436	
GW-104	LARW	Unit 2 Clay	28.39	40.28	8.89	3.14E-03	3.11E-03	-2.503	-2.512
GW-105	LARW	Unit 2 Clay	28.92	38.58	15.72	5.55E-03		-2.256	
GW-105	LARW	Unit 2 Clay	28.92	38.58	15.18	5.35E-03		-2.271	
GW-105	LARW	Unit 2 Clay	28.92	38.58	15.80	5.57E-03	5.49E-03	-2.254	-2.260
I-1-30A1	MW	Unit 2 Clay	29.71	37.72	1.054	3.72E-04		-3.430	
I-1-30A2	MW	Unit 2 Clay	29.71	37.72	1.140	4.02E-04		-3.395	
I-1-30A3	MW	Unit 2 Clay	29.71	37.72	1.132	3.99E-04	3.91E-04	-3.399	-3.408
I-2-30A1	LARW	Unit 2 Clay	30.37	40.22	5.720	2.02E-03		-2.695	
I-2-30A2	LARW	Unit 2 Clay	30.37	40.22	5.823	2.05E-03	2.04E-03	-2.687	-2.691
I-3-30A1	MW	Unit 2 Clay	32.29	37.12	0.684	2.41E-04		-3.617	
I-3-30A2	MW	Unit 2 Clay	32.29	37.12	0.295	1.04E-04		-3.983	
I-3-30A3	MW	Unit 2 Clay	32.29	37.12	0.365	1.29E-04	1.58E-04	-3.891	-3.830
GW-106	A,B&C		27.26		1.75	6.18E-04		-3.209	
GW-106	A,B&C		27.26		1.68	5.94E-04		-3.226	
GW-106	A,B&C		27.26		1.72	6.06E-04	6.06E-04	-3.218	-3.218
GW-107	A,B&C		26.98		1.41	4.96E-04		-3.305	
GW-107	A,B&C		26.98		1.54	5.45E-04		-3.264	
GW-107	A,B&C		26.98		1.48	5.21E-04	5.21E-04	-3.283	-3.284
GW-108	A,B&C		26.56		1.82	6.41E-04		-3.193	
GW-108	A,B&C		26.56		1.74	6.13E-04		-3.213	
GW-108	A,B&C		26.56		1.78	6.27E-04	6.27E-04	-3.203	-3.203
GW-109	A,B&C		27.38		1.84	6.50E-04		-3.187	
GW-109	A,B&C		27.38		1.71	6.04E-04		-3.219	
GW-109	A,B&C		27.38		1.78	6.27E-04	6.27E-04	-3.203	-3.203
GW-110	A,B&C		27.55		2.27	8.00E-04		-3.097	
GW-110	A,B&C		27.55		2.10	7.41E-04		-3.130	
GW-110	A,B&C		27.55		2.18	7.70E-04	7.70E-04	-3.114	-3.114
GW-111	A,B&C		27.81		0.54	1.90E-04		-3.721	
GW-111	A,B&C		27.81		4.39	1.55E-03		-2.810	
GW-111	A,B&C		27.81		4.90	1.73E-03	1.16E-03	-2.762	-3.098
GW-112	A,B&C		28.31		5.95	2.10E-03		-2.678	
GW-112	A,B&C		28.31		6.49	2.29E-03		-2.640	
GW-112	A,B&C		28.31		6.24	2.20E-03	2.20E-03	-2.658	-2.659
GW-113	A,B&C		29.56		3.12	1.10E-03		-2.959	
GW-113	A,B&C		29.56		2.69	9.50E-04		-3.022	
GW-113	A,B&C		29.56		2.89	1.02E-03	1.02E-03	-2.991	-2.991
GW-114	A,B&C		30.04		3.03	1.07E-03		-2.971	
GW-114	A,B&C		30.04		3.37	1.19E-03		-2.924	
GW-114	A,B&C		30.04		3.20	1.13E-03	1.13E-03	-2.947	-2.947
GW-115	A,B&C		30.46		3.94	1.39E-03		-2.857	
GW-115	A,B&C		30.46		4.11	1.45E-03		-2.839	
GW-115	A,B&C		30.46		4.03	1.42E-03	1.42E-03	-2.848	-2.848
GW-116	A,B&C		31.35		6.72	2.37E-03		-2.625	
GW-116	A,B&C		31.35		7.06	2.49E-03		-2.604	
GW-116	A,B&C		31.35		6.89	2.43E-03	2.43E-03	-2.614	-2.614
GW-117	A,B&C		30.46		5.75	2.03E-03		-2.693	
GW-117	A,B&C		30.46		6.32	2.23E-03		-2.652	
GW-117	A,B&C		30.46		6.04	2.13E-03	2.13E-03	-2.672	-2.672
GW-118	AB&C		35.05	46.6	6.98	2.46E-03		-2.608	
GW-118	AB&C		35.05	46.6	6.70	2.36E-03	2.41E-03	-2.627	-2.618
GW-119	AB&C		35.55	46.6	0.78	2.73E-04		-3.563	
GW-119	AB&C		35.55	46.6	3.04	1.07E-03	6.72E-04	-2.970	-3.267
GW-120	AB&C		36.31	46.5	5.76	2.03E-03		-2.692	
GW-120	AB&C		36.31	46.5	6.88	2.43E-03	2.23E-03	-2.615	-2.654
GW-121	AB&C		36.75	46.22	0.34	1.21E-04		-3.919	
GW-121	AB&C		36.75	46.22	0.34	1.18E-04	1.20E-04	-3.927	-3.923
GW-122	AB&C		36.54	44.53	2.21	7.79E-04		-3.108	
GW-122	AB&C		36.54	44.53	2.35	8.28E-04	8.04E-04	-3.082	-3.095
GW-123	AB&C		39.91	51.4	5.45	1.92E-03		-2.716	
GW-123	AB&C		39.91	51.4	1.82	6.43E-04	1.28E-03	-3.192	-2.954
GW-124	AB&C		29.19	42.44	0.80	2.84E-04		-3.547	
GW-124	AB&C		29.19	42.44	0.72	2.55E-04	2.69E-04	-3.594	-3.571
GW-38R	11e.(2)		24.55	37.33	0.28	1.00E-04		-3.999	
GW-38R	11e.(2)		24.55	37.33	0.29	1.04E-04	1.02E-04	-3.983	-3.991
P3-95 NEC	Pond		33.78	41.92	0.98	3.46E-04		-3.461	
P3-95 NEC	Pond		33.78	41.92	0.81	2.87E-04		-3.542	
P3-95 NEC	Pond		33.78	41.92	0.85	3.01E-04	3.11E-04	-3.522	-3.508
P3-95 SWC	Pond		31.15	39.3	0.13	4.53E-05		-4.344	
P3-95 SWC	Pond		31.15	39.3	0.10	3.48E-05	4.01E-05	-4.458	-4.401
P3-97 NEC	Pond		32.95	36.96	0.73	2.58E-04		-3.589	
P3-97 NEC	Pond		32.95	36.96	0.32	1.13E-04	1.86E-04	-3.945	-3.767

		Mean log[K]	-3.272
Mean K (cm/s)	1.10E-03	Geo Mean K:	5.35E-04

Site-wide mean K	1.10E-03
Site-wide Geometric Mean K	5.35E-04
90% UCL Site-wide Geometric Mean K	6.82E-04
90% LCL Site-wide Geometric Mean K	4.19E-04

Table 14. UNSAT-H Model Material Input Parameters

Model	Van Genuchten Parameter	Upper Radon Barrier	Lower Radon Barrier	Waste	Clay Liner	Unit 3 Sand
Moisture Retention	θ_s	0.432	0.432	0.35	0.432	0.34
	θ_r	0.1	0.1	0.02	0.100	0.02
	α	0.003	0.003	0.115	0.003	0.055
	n	1.172	1.172	2.013	1.172	2.518
	m	Mualem	Mualem	Mualem	Mualem	Mualem
Conductivity	K_s (cm/sec)	5.00E-08	1.00E-06	5.00E-04	1.00E-06	5.78E-04
	α	0.003	0.003	0.115	0.003	0.055
	n	1.172	1.172	2.013	1.172	2.518
	m	Mualem	Mualem	Mualem	Mualem	Mualem
	l	4.5	4.5	0.5	4.5	0.5
Layer Thickness	Top Slope (in)	12	72	480	24	160.7
	Top Slope (cm)	30.5	182.9	1219	61.0	408.1
	Side Slope (in)	12	72	186	24	160.7
	Side Slope (cm)	30.5	182.9	472.4	61.0	408.1

NOTES:
θ_s = saturated moisture content (vol/vol)
θ_r = residual moisture content (vol/vol)
α = air entry pressure (bubbling pressure)
n = van Genuchten's n, fitting parameter
K_s = saturated hydraulic conductivity (cm/sec)
m = Mualem's m
l = pore connectivity parameter

TABLE 15. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL TOP SLOPE

	Total Time ->	20 years		30 years		40 years		50 years	
	RUN ->	TOP_01		TOP_02		TOP_03		TOP_04	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ	θ	AVG θ	θ	AVG θ
1	0	0.4253		0.4253		0.4253		0.4253	
2	0.1	0.4253		0.4253		0.4253		0.4253	
3	0.3	0.4252		0.4252		0.4252		0.4252	
4	0.6	0.4252		0.4252		0.4252		0.4252	
5	1.1	0.4251		0.4251		0.4251		0.4251	
6	2	0.4249		0.4249		0.4249		0.4249	
7	3.5	0.4246		0.4246		0.4246		0.4246	
8	6.5	0.4238		0.4238		0.4238		0.4238	
9	11.5	0.4224		0.4224		0.4224		0.4224	
10	19	0.4195		0.4195		0.4195		0.4195	
11	24	0.4169		0.4169		0.4169		0.4169	
12	27	0.4149		0.4149		0.4149		0.4149	
13	28.5	0.4137		0.4137		0.4137		0.4137	
14	29.4	0.4130		0.4130		0.4130		0.4130	
15	29.9	0.4125		0.4125		0.4125		0.4125	
16	30.2	0.4123		0.4123		0.4123		0.4123	
17	30.4	0.4121		0.4121		0.4121		0.4121	
18	30.5	0.4120	0.419404885	0.4120	0.419405	0.4120	0.419405	0.4120	0.419405
19	30.6	0.4120		0.4120		0.4120		0.4120	
20	30.8	0.4120		0.4120		0.4120		0.4120	
21	31.1	0.4120		0.4120		0.4120		0.4120	
22	31.6	0.4120		0.4120		0.4120		0.4120	
23	32.5	0.4121		0.4121		0.4121		0.4121	
24	34	0.4121		0.4121		0.4121		0.4121	
25	37	0.4123		0.4123		0.4123		0.4123	
26	42	0.4125		0.4125		0.4125		0.4125	
27	52	0.4130		0.4130		0.4130		0.4130	
28	72	0.4140		0.4140		0.4140		0.4140	
29	102	0.4158		0.4158		0.4158		0.4158	
30	141.8	0.4185		0.4185		0.4185		0.4185	
31	171.8	0.4209		0.4209		0.4209		0.4209	
32	191.8	0.4226		0.4226		0.4226		0.4226	
33	201.8	0.4235		0.4235		0.4235		0.4235	
34	206.8	0.4240		0.4240		0.4240		0.4240	
35	209.8	0.4242		0.4242		0.4242		0.4242	
36	211.3	0.4244		0.4244		0.4244		0.4244	
37	212.2	0.4245		0.4245		0.4245		0.4245	
38	212.7	0.4245		0.4245		0.4245		0.4245	
39	213	0.4245		0.4245		0.4245		0.4245	
40	213.2	0.4246		0.4246		0.4246		0.4246	
41	213.3	0.4246		0.4246		0.4246		0.4246	
42	213.4	0.4246	0.41836218	0.4246	0.418363	0.4246	0.418362	0.4246	0.418362
43	213.5	0.0584		0.0584		0.0584		0.0584	
44	213.7	0.0584		0.0584		0.0584		0.0584	
45	214	0.0584		0.0584		0.0584		0.0584	
46	214.5	0.0584		0.0584		0.0584		0.0584	
47	215.4	0.0584		0.0584		0.0584		0.0584	
48	216.9	0.0584		0.0584		0.0584		0.0584	
49	219.9	0.0584		0.0584		0.0584		0.0584	
50	224.9	0.0584		0.0584		0.0584		0.0584	
51	234.9	0.0584		0.0584		0.0584		0.0584	
52	254.9	0.0584		0.0584		0.0584		0.0584	
53	294.9	0.0582		0.0584		0.0585		0.0584	
54	374.9	0.0590		0.0584		0.0582		0.0584	
55	524.9	0.0579		0.0589		0.0586		0.0583	
56	744.9	0.0569		0.0578		0.0587		0.0586	
57	964.9	0.0574		0.0572		0.0581		0.0586	
58	1114.9	0.0582		0.0572		0.0575		0.0584	
59	1264.9	0.0590		0.0576		0.0573		0.0579	
60	1344.9	0.0596		0.0580		0.0574		0.0579	
61	1384.9	0.0592		0.0574		0.0567		0.0570	
62	1404.9	0.0568		0.0550		0.0542		0.0545	
63	1414.9	0.0533		0.0516		0.0508		0.0511	
64	1419.9	0.0500		0.0484		0.0477		0.0479	
65	1422.9	0.0468		0.0454		0.0448		0.0449	
66	1424.4	0.0445		0.0433		0.0427		0.0429	

TABLE 15. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL TOP SLOPE

	Total Time ->	20 years		30 years		40 years		50 years	
	RUN ->	TOP_01		TOP_02		TOP_03		TOP_04	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ	θ	AVG θ	θ	AVG θ
67	1425.3	0.0428		0.0417		0.0411		0.0413	
68	1425.8	0.0416		0.0406		0.0401		0.0402	
69	1426.1	0.0408		0.0398		0.0394		0.0395	
70	1426.3	0.0402		0.0393		0.0389		0.0390	
71	1426.4	0.0399		0.0390		0.0386		0.0387	
72	1426.5	0.0396	0.057885816	0.0387	0.057605	0.0383	0.057784	0.0384	0.058073
73	1426.6	0.4172		0.4165		0.4162		0.4162	
74	1426.8	0.4172		0.4165		0.4162		0.4163	
75	1427.1	0.4172		0.4165		0.4162		0.4163	
76	1427.6	0.4172		0.4166		0.4162		0.4163	
77	1428.3	0.4173		0.4166		0.4163		0.4164	
78	1429.3	0.4173		0.4167		0.4164		0.4164	
79	1430.8	0.4174		0.4168		0.4165		0.4165	
80	1432.5	0.4175		0.4169		0.4166		0.4166	
81	1436.5	0.4178		0.4172		0.4169		0.4169	
82	1442.5	0.4182		0.4176		0.4173		0.4174	
83	1452.5	0.4189		0.4183		0.4181		0.4181	
84	1461.5	0.4195		0.4190		0.4187		0.4188	
85	1471.5	0.4203		0.4198		0.4195		0.4196	
86	1477.5	0.4207		0.4203		0.4200		0.4201	
87	1481.5	0.4210		0.4206		0.4204		0.4204	
88	1483.2	0.4212		0.4207		0.4205		0.4205	
89	1484.7	0.4213		0.4209		0.4206		0.4207	
90	1485.7	0.4214		0.4209		0.4207		0.4208	
91	1486.4	0.4214		0.4210		0.4208		0.4208	
92	1486.9	0.4214		0.4210		0.4208		0.4209	
93	1487.2	0.4215		0.4211		0.4209		0.4209	
94	1487.4	0.4215		0.4211		0.4209		0.4209	
95	1487.5	0.4215	0.419472736	0.4211	0.418956	0.4209	0.418696	0.4209	0.418737
96	1487.6	0.0437		0.0425		0.0419		0.0420	
97	1487.8	0.0437		0.0425		0.0419		0.0420	
98	1488.1	0.0437		0.0425		0.0419		0.0420	
99	1488.6	0.0438		0.0425		0.0419		0.0420	
100	1489.3	0.0438		0.0425		0.0419		0.0420	
101	1490.3	0.0438		0.0425		0.0419		0.0420	
102	1491.8	0.0438		0.0425		0.0419		0.0420	
103	1493.5	0.0438		0.0425		0.0419		0.0420	
104	1497.5	0.0438		0.0425		0.0419		0.0420	
105	1503.5	0.0438		0.0425		0.0419		0.0419	
106	1513.5	0.0438		0.0426		0.0419		0.0419	
107	1527.5	0.0439		0.0426		0.0419		0.0419	
108	1547.5	0.0439		0.0426		0.0419		0.0419	
109	1576.5	0.0440		0.0427		0.0420		0.0419	
110	1614.5	0.0441		0.0428		0.0420		0.0419	
111	1665.5	0.0443		0.0429		0.0421		0.0419	
112	1717.5	0.0444		0.0430		0.0421		0.0417	
113	1768.5	0.0446	0.044211261	0.0435	0.042919	0.0427	0.04213	0.0425	0.041968
114	1806.5	0.0509		0.0505		0.0502		0.0501	
115	1835.5	0.0713		0.0712		0.0711		0.0711	
116	1855.5	0.1096		0.1096		0.1095		0.1095	
117	1869.5	0.1714		0.1714		0.1714		0.1714	
118	1879.5	0.2504		0.2504		0.2504		0.2504	
119	1885.5	0.3036		0.3036		0.3036		0.3036	
120	1889.5	0.3287		0.3287		0.3287		0.3287	
121	1891.2	0.3350		0.3350		0.3350		0.3350	
122	1892.7	0.3383		0.3383		0.3383		0.3383	
123	1893.7	0.3394		0.3394		0.3394		0.3394	
124	1894.4	0.3398		0.3398		0.3398		0.3398	
125	1894.9	0.3400		0.3400		0.3400		0.3400	
126	1895.2	0.3400		0.3400		0.3400		0.3400	
127	1895.4	0.3400		0.3400		0.3400		0.3400	
128	1895.5	0.3400		0.3400		0.3400		0.3400	

TABLE 16. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE

	Total Time ->	10 years		20 years		30 years		40 years	
	RUN ->	fpss_01		fpss_02		fpss_03		fpss_04	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ	θ	AVG θ	θ	AVG θ
1	0.0	0.411196		0.411176		0.411176		0.411176	
2	0.1	0.411204		0.411184		0.411184		0.411184	
3	0.3	0.41122		0.4112		0.4112		0.4112	
4	0.6	0.411244		0.411224		0.411224		0.411224	
5	1.1	0.411284		0.411264		0.411264		0.411264	
6	2.0	0.411357		0.411336		0.411336		0.411336	
7	3.5	0.411478		0.411457		0.411457		0.411457	
8	6.5	0.411721		0.4117		0.4117		0.4117	
9	11.3	0.412114		0.412093		0.412093		0.412093	
10	14.3	0.412361		0.41234		0.41234		0.41234	
11	15.8	0.412486		0.412465		0.412465		0.412465	
12	16.7	0.412561		0.41254		0.41254		0.41254	
13	17.2	0.412603		0.412582		0.412582		0.412582	
14	17.5	0.412628		0.412607		0.412607		0.412607	
15	17.7	0.412645		0.412623		0.412623		0.412623	
16	17.8	0.412653		0.412632		0.412632		0.412632	
17	17.9	0.412661		0.41264		0.41264		0.41264	
18	18.1	0.412678		0.412657		0.412657		0.412657	
19	18.4	0.412703		0.412682		0.412682		0.412682	
20	18.9	0.412745		0.412724		0.412724		0.412724	
21	19.8	0.412821		0.412799		0.412799		0.412799	
22	21.3	0.412947		0.412926		0.412926		0.412926	
23	24.1	0.413184		0.413163		0.413163		0.413163	
24	27.0	0.413431		0.41341		0.41341		0.41341	
25	28.5	0.41356		0.413538		0.413538		0.413538	
26	29.4	0.413637		0.413615		0.413616		0.413616	
27	29.9	0.41368		0.413658		0.413659		0.413659	
28	30.2	0.413706		0.413684		0.413684		0.413684	
29	30.4	0.413723		0.413702		0.413702		0.413702	
30	30.5	0.413732	0.412545	0.41371	0.412524	0.41371	0.412524	0.41371	0.412524
31	30.6	0.413739		0.413717		0.413717		0.413717	
32	30.8	0.413746		0.413725		0.413725		0.413725	
33	31.1	0.413758		0.413736		0.413736		0.413736	
34	31.6	0.413776		0.413754		0.413754		0.413754	
35	32.5	0.41381		0.413788		0.413788		0.413788	
36	34.0	0.413866		0.413844		0.413845		0.413845	
37	37.0	0.413981		0.413959		0.413959		0.413959	
38	42.0	0.414177		0.414154		0.414154		0.414154	
39	52.0	0.414586		0.414563		0.414563		0.414563	
40	72.0	0.415478		0.415455		0.415455		0.415455	
41	102.0	0.417019		0.416996		0.416996		0.416996	
42	141.8	0.419477		0.419456		0.419456		0.419456	
43	171.8	0.421651		0.421633		0.421633		0.421633	
44	191.8	0.423255		0.423239		0.423239		0.423239	
45	201.8	0.424102		0.424086		0.424087		0.424087	
46	206.8	0.424535		0.424521		0.424521		0.424521	
47	209.8	0.424799		0.424784		0.424785		0.424785	
48	211.3	0.424931		0.424917		0.424917		0.424917	
49	212.2	0.425011		0.424997		0.424997		0.424997	
50	212.7	0.425056		0.425042		0.425042		0.425042	
51	213.0	0.425082		0.425068		0.425068		0.425068	
52	213.2	0.4251		0.425086		0.425086		0.425086	
53	213.3	0.425109		0.425095		0.425095		0.425095	
54	213.4	0.425118	0.419612	0.425104	0.419592	0.425104	0.419592	0.425104	0.419592
55	213.5	0.061197		0.06112		0.06112		0.061121	
56	213.7	0.061197		0.06112		0.061121		0.061121	
57	214.0	0.061197		0.06112		0.061121		0.061121	
58	214.5	0.061198		0.06112		0.061121		0.061121	
59	215.4	0.061199		0.06112		0.061121		0.061121	
60	216.9	0.061201		0.06112		0.061121		0.061121	
61	219.9	0.061205		0.061119		0.061121		0.061121	
62	224.9	0.061212		0.061119		0.061121		0.061121	
63	234.9	0.061228		0.061117		0.061121		0.061121	
64	254.9	0.061272		0.061106		0.061123		0.061122	
65	294.9	0.061316		0.061203		0.061101		0.061107	
66	374.9	0.061442		0.061045		0.06116		0.061143	
67	524.2	0.063835		0.060972		0.061091		0.061095	
68	604.2	0.065324		0.061239		0.061191		0.061212	

TABLE 16. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE

	Total Time ->	10 years		20 years		30 years		40 years	
	RUN ->	fpss_01		fpss_02		fpss_03		fpss_04	
69	644.2	0.065598		0.060747		0.060561		0.060593	
70	664.2	0.063543		0.058332		0.058077		0.058114	
71	674.2	0.059857		0.05474		0.05447		0.054506	
72	679.2	0.056077		0.051266		0.051005		0.051039	
73	682.2	0.052337		0.047919		0.047674		0.047705	
74	683.7	0.049647		0.045538		0.045308		0.045336	
75	684.6	0.047555		0.043696		0.043477		0.043504	
76	685.1	0.046152		0.042462		0.042251		0.042276	
77	685.4	0.045193		0.04162		0.041414		0.041438	
78	685.6	0.044492		0.041003		0.040802		0.040825	
79	685.7	0.04412		0.040676		0.040476		0.040499	
80	685.8	0.043731	0.063015	0.040334	0.060482	0.040136	0.060485	0.040159	0.060493
81	685.9	0.419724		0.417693		0.417555		0.417571	
82	686.1	0.419732		0.417704		0.417567		0.417582	
83	686.4	0.419744		0.417721		0.417584		0.4176	
84	686.9	0.419765		0.41775		0.417614		0.417629	
85	687.6	0.419794		0.417791		0.417655		0.41767	
86	688.6	0.419836		0.41785		0.417714		0.417729	
87	690.1	0.419899		0.417938		0.417803		0.417818	
88	691.8	0.419971		0.418038		0.417905		0.41792	
89	695.8	0.420144		0.418279		0.418149		0.418163	
90	701.8	0.420411		0.418648		0.418523		0.418537	
91	710.8	0.420831		0.419223		0.419106		0.419118	
92	721.8	0.421378		0.41996		0.419852		0.419864	
93	730.8	0.421852		0.420591		0.420491		0.420501	
94	736.8	0.422183		0.421026		0.420931		0.420941	
95	740.8	0.422411		0.421322		0.421231		0.42124	
96	742.5	0.422509		0.421449		0.42136		0.421369	
97	744.0	0.422597		0.421562		0.421474		0.421483	
98	745.0	0.422656		0.421638		0.421551		0.42156	
99	745.7	0.422697		0.421691		0.421605		0.421614	
100	746.2	0.422727		0.421729		0.421643		0.421652	
101	746.5	0.422744		0.421752		0.421666		0.421675	
102	746.7	0.422756		0.421768		0.421682		0.421691	
103	746.8	0.422762	0.417412	0.421775	0.415904	0.42169	0.415792	0.421698	0.415804
104	746.9	0.048544		0.044693		0.044398		0.044428	
105	747.1	0.048545		0.044694		0.044398		0.044428	
106	747.4	0.048548		0.044694		0.044398		0.044428	
107	747.9	0.048552		0.044696		0.044398		0.044428	
108	748.6	0.048559		0.044697		0.044398		0.044428	
109	749.6	0.048567		0.0447		0.044398		0.044428	
110	751.1	0.048581		0.044703		0.044398		0.044428	
111	752.8	0.048596		0.044707		0.044398		0.044428	
112	756.8	0.048631		0.044717		0.044397		0.044428	
113	762.8	0.048684		0.044731		0.044396		0.044428	
114	772.8	0.048771		0.044756		0.044395		0.044428	
115	786.8	0.048894		0.044792		0.044394		0.044428	
116	806.8	0.049069		0.044847		0.044392		0.044427	
117	835.8	0.04932		0.044931		0.04439		0.044426	
118	873.8	0.049652		0.045054		0.044387		0.044423	
119	923.8	0.050052		0.045226		0.044393		0.044427	
120	978.0	0.050582		0.045453		0.044373		0.044395	
121	1028.0	0.050664		0.045622		0.04454		0.044544	
122	1066.0	0.054004	0.050386	0.051378	0.045943	0.050892	0.045200	0.050892	0.045223
123	1095.0	0.072072		0.071394		0.071278		0.071278	
124	1115.0	0.109749		0.109602		0.109578		0.109578	
125	1129.0	0.17145		0.171415		0.171409		0.171409	
126	1139.0	0.250392		0.250383		0.250381		0.250381	
127	1145.0	0.303583		0.30358		0.30358		0.30358	
128	1149.0	0.328724		0.328723		0.328723		0.328723	
129	1150.7	0.334994		0.334994		0.334993		0.334993	
130	1152.2	0.338277		0.338277		0.338277		0.338277	
131	1153.2	0.339431		0.339431		0.339431		0.339431	
132	1153.9	0.339835		0.339835		0.339835		0.339835	
133	1154.4	0.339964		0.339964		0.339964		0.339964	
134	1154.7	0.339994		0.339994		0.339994		0.339994	
135	1154.9	0.34		0.34		0.34		0.34	
136	1155	0.34		0.34		0.34		0.34	

Table 17. UNSAT-H Model Summary Results – Moisture Content for Waste, Clay Liner, and Unit 3 Sand

Modeled Results:			Volumetric Moisture Content (v/v)				
MODEL RUN	DESCRIPTION	INFILTR. (cm/yr)	Radon Barrier (Upper)	Radon Barrier (Lower)	Waste	Clay Liner	Unit 3 Sand
TOP_04	Top Slope, Base Case	0.265	0.4194	0.4184	0.0581	0.4187	0.0420
HTOP_04	Top Slope, High Precip.	0.310	0.4207	0.4189	0.0594	0.4191	0.0426
LTOP_04	Top Slope, Low Precip.	0.229	0.4183	0.4180	0.0573	0.4188	0.0422
FPSS_04	Side Slope, Frost Protected	0.364	0.4125	0.4196	0.0605	0.4158	0.0452
SID_02	Degraded Side Slope (w/o Protection)	1.717	0.4234	0.4259	0.0776	0.4206	0.0568
SH_02	Side Slope, High Precip.	2.102	0.4248	0.4268	0.0804	0.4214	0.0587
SL_03	Side Slope, Low Precip.	1.508	0.4225	0.4253	0.0760	0.4202	0.0556
ST_03	Side Slope, 18" Filter	1.464	0.4223	0.4252	0.0756	0.4201	0.0554
STP_04	Side Slope, 12" filter, Frost Protected	0.237	0.4102	0.4182	0.0568	0.4147	0.0430

TABLE 18. INTERIM GROUNDWATER PROTECTION LEVELS (GWPLs) FOR WESTERN LARW CELL MONITORING WELLS

Non-radiological Constituents:

PARAMETER	GWPL (mg/l)	GWPL (kg/m^3)
Arsenic	0.05	5.00E-05
Barium	2	2.00E-03
Beryllium	0.004	4.00E-06
Cadmium	0.005	5.00E-06
Chromium	0.1	1.00E-04
Copper	1.3	1.30E-03
Lead	0.015	1.50E-05
Mercury	0.002	2.00E-06
Molybdenum	0.04	4.00E-05
Nickel	0.1	1.00E-04
Selenium	0.05	5.00E-05
Silver	0.1	1.00E-04
Zinc	5	5.00E-03

Radiological Constituents:

PARAMETER		GWPL (pCi/L)	GWPL (Ci/m^3)	Ref.
Actinium	Ac-227	1.27E+00	1.27E-09	2
Silver-108m	Ag-108m	7.23E+02	7.23E-07	2
Silver-110m	Ag-110m	5.12E+02	5.12E-07	2
Aluminum-26	Al-26	4.38E+02	4.38E-07	8
Americium-241	Am-241	6.45E+00	6.45E-09	1
Americium-242m	Am-242m	1.27E+00	1.27E-09	2
Americium-243	Am-243	6.49E+00	6.49E-09	1
Barium-133	Ba-133	1.52E+03	1.52E-06	2
Beryllium-7	Be-7	4.35E+04	4.35E-05	2
Beryllium-10	Be-10	1.10E+03	1.10E-06	8
Bismuth-207	Bi-207	1.01E+03	1.01E-06	2
Bismuth-210m	Bi-210m	3.46E+01	3.46E-08	7
Berkelium-247	Bk-247	5.48E-01	5.48E-10	7
Carbon-14	C-14	3.20E+03	3.20E-06	2
Calcium-41	Ca-41	3.29E+03	3.29E-06	8
Calcium-45	Ca-45	1.73E+03	1.73E-06	2
Cadmium-109	Cd-109	2.27E+02	2.27E-07	2
Cadmium-113	Cd-113	2.19E+01	2.19E-08	8
Cadmium-113m	Cd-113m	2.19E+01	2.19E-08	7
Californium-249	Cf-249	5.48E-01	5.48E-10	7
Californium-250	Cf-250	1.10E+00	1.10E-09	7
Californium-251	Cf-251	5.48E-01	5.48E-10	7
Californium-252	Cf-252	1.70E+01	1.70E-08	1
Chlorine-36	Cl-36	1.85E+03	1.85E-06	2
Curium-242	Cm-242	1.45E+02	1.45E-07	1
Curium-243	Cm-243	8.47E+00	8.47E-09	1
Curium-244	Cm-244	1.00E+01	1.00E-08	1
Curium-245	Cm-245	6.35E+00	6.35E-09	1
Curium-246	Cm-246	6.38E+00	6.38E-09	1
Curium-247	Cm-247	6.93E+00	6.93E-09	1
Curium-248	Cm-248	1.71E+00	1.71E-09	1
Cobalt-57	Co-57	4.87E+03	4.87E-06	2
Cobalt-60	Co-60	2.18E+02	2.18E-07	2
Cesium-134	Cs-134	8.13E+01	8.13E-08	2
Cesium-135	Cs-135	7.94E+02	7.94E-07	2
Cesium-137	Cs-137	1.19E+02	1.19E-07	2
Europium-152	Eu-152	8.41E+02	8.41E-07	2
Europium-154	Eu-154	5.73E+02	5.73E-07	2
Europium-155	Eu-155	3.59E+03	3.59E-06	2
Iron-55	Fe-55	9.25E+03	9.25E-06	2
Iron-60	Fe-60	7.96E+00	7.96E-09	7
Gadolinium-148	Gd-148	1.10E+01	1.10E-08	7
Tritium H-3	H-3	6.09E+04	6.09E-05	2
Mercury-194	Hg-194	2.19E+01	2.19E-08	7
Holmium-166m	Ho-166m	6.58E+02	6.58E-07	8
Iodine-129	I-129	2.10E+01	2.10E-08	2
Potassium-40	K-40	5.60E+02	5.60E-07	3
Manganese-53	Mn-53	5.48E+04	5.48E-05	8
Sodium-22	Na-22	4.66E+02	4.66E-07	2
Niobium-91	Nb-91	7.07E+02	7.07E-07	9
Niobium-92	Nb-92	7.07E+02	7.07E-07	9
Niobium-93m	Nb-93m	1.05E+04	1.05E-05	2
Niobium-94	Nb-94	7.07E+02	7.07E-07	2
Nickel-59	Ni-59	2.70E+04	2.70E-05	2
Nickel-63	Ni-63	9.91E+03	9.91E-06	2
Neptunium-237	Np-237	7.19E+00	7.19E-09	1
Osmium-194	Os-194	1.28E+02	1.28E-07	7
Protactinium-231	Pa-231	1.02E+01	1.02E-08	1
Pb-202	Pb-202	5.48E+00	5.48E-09	8
Pb-203	Pb-203	5.05E+03	5.05E-06	2
Pb-210	Pb-210	1.01E+00	1.01E-09	2
Palladium=107	Pd-107	3.66E+04	3.66E-05	2
Promethium-145	Pm-145	1.10E+04	1.10E-05	8
Promethium-147	Pm-147	5.24E+03	5.24E-06	2
Polonium-208	Po-208	1.64E+00	1.64E-09	10
Polonium-209	Po-209	1.48E+00	1.48E-09	7
Platinum-193	**Pt-193**	4.61E+04	4.61E-05	2
Plutonium-236	**Pu-236**	3.33E+01	3.33E-08	1
Plutonium-238	Pu-238	7.15E+00	7.15E-09	1
Plutonium-239	Pu-239	6.49E+01	6.49E-08	1
Plutonium-240	Pu-240	6.49E+01	6.49E-08	1
Plutonium-241	Pu-241	1.60E+03	1.60E-06	6
Plutonium-242	Pu-242	6.83E+01	6.83E-08	1

TABLE 18. INTERIM GROUNDWATER PROTECTION LEVELS (GWPLs) FOR WESTERN LARW CELL MONITORING WELLS

Radiological Constituents:

PARAMETER		GWPL (pCi/L)	GWPL (Ci/m^3)	Ref.
Plutonium-244	Pu-244	7.02E+00	7.02E-09	1
Radium-226 + Radium-228	Ra-226	5.30E+00	5.30E-09	4
Rhenium-187	Re-187	5.82E+05	5.82E-04	2
Rubidium-83	Rb-83	6.58E+02	6.58E-07	8
Ruthenium-106	Ru-106	2.03E+02	2.03E-07	2
Selenium-79	Se-79	2.16E+02	2.16E-07	7
Silicon-32	Si-32	5.65E+02	5.65E-07	7
Samarium-151	Sm-151	1.41E+04	1.41E-05	2
Tin-121m	Sn-121m	2.26E+03	2.26E-06	2
Tin-126	Sn-126	2.29E+02	2.29E-07	2
Strontium-90	Sr-90	4.20E+01	4.20E-08	2
Tantalum-182	Ta-182	8.42E+02	8.42E-07	2
Terbium-157	Tb-157	2.19E+03	2.19E-06	8
Terbium-158	Tb-158	1.25E+03	1.25E-06	2
Technicium-99	Tc-99	3.79E+03	3.79E-06	2
Tellurium-123	Te-123	5.48E+02	5.48E-07	8
Thorium-229	Th-229	6.58E-01	6.58E-10	7
Thorium-230	Th-230	6.50E+00	6.50E-09	5
Thorium-232	Th-232	9.18E+01	9.18E-08	1
Titanium-44	Ti-44	7.26E+01	7.26E-08	7
Thallium-204	Tl-204	1.68E+03	1.68E-06	2
Thulium-170	Tm-170	1.03E+03	1.03E-06	2
Uranium-232	U-232	1.02E+01	1.02E-08	1
Uranium-233	U-233	2.56E+01	2.56E-08	1
Uranium-234	U-234	2.59E+01	2.59E-08	1
Uranium-235	U-235	2.65E+01	2.65E-08	1
Uranium-236	U-236	2.74E+01	2.74E-08	1
Uranium-238	U-238	2.62E+01	2.62E-08	1
Vanadium-50	V-50	2.19E+03	2.19E-06	8
Yttrium-88	Y-88	1.60E+02	1.60E-07	6
Zirconium-93	Zr-93	5.09E+03	5.09E-06	2
Zirconium-95	Zr-95	1.46E+03	1.32E-06	8

References:

1- EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix C - Alpha Emitters.

2- EPA 1991 Proposed Rules, Federal Register, Vol. 56, No. 138, 40 CFR Parts 141 and 142, Appendix B - Beta Particle and Photon Emitters.

3- State Standard Groundwater Protection Level Exceptions - LARW Wells, Table 1B, Permit No. UGW450005. Lowest value at well I-2-30.

4- State Standard Groundwater Protection Level Exceptions - LARW Wells, Table 1B, Permit No. UGW450005. Lowest value at well GW-24.

5- State Standard Groundwater Protection Level Exceptions - LARW Wells, Table 1B, Permit No. UGW450005. Lowest value at well GW-16R.

6- Used in previous modeling by UDEQ DRC.

7- Most conservative (lowest) value provided in spreadsheet from Loren Morton (UDEQ DRC).

8- Calculated based on FGR-11

9- Not listed in MCLs, FGR 11, or FGR 13. The Ni-94 GWPL was used, and would be lower than Ni-91, -92 based on radioactive half-life, decay products, and decay energies.

10- Calculated using ICRP 30.

TABLE 19. WESTERN LARW CELL TRANSPORT MODEL RADIONUCLIDES AND SURROGATES

ELEMENT	NUCLIDE	Maximum Concent. (pCi/gm)	Maximum Concentration (Ci/m3)	Concentration Data Source	Distribution Coefficient (Kd) (L/Kg)	1/2 life		1/2 life (Years)	Isotope to be Modeled	Model Surrogate
Actinium	Ac-225	440000000	792	Class A	4.5	10	d	2.74E-02		Ks-23
Actinium	Ac-227	72300000000000	130140000	SA	4.5	21.77	y	2.18E+01	✓	
Silver	Ag-105	440000000	792	Class A	2.7	41.3	d	1.13E-01		Ks-23
Silver	Ag-108	440000000	792	Class A	2.7	2.37		4.51E-06		Ks-23
Silver	Ag-108m	26081000000000	46945800	SA	2.7	418	y	4.18E+02	✓	
Silver	Ag-110m	440000000	792	Class A	2.7	249.8	d	6.84E-01		Ks-23
Silver	Ag-111	440000000	792	Class A	2.7	7.45	d	2.04E-02		Ks-23
Aluminum	Al-26	0.067	1.206E-07	Model	0.001	740000	y	7.40E+05	✓	
Americium	Am-241	10000	0.018	Class A	1	432.2	y	4.32E+02	✓	
Americium	Am-242	440000000	792	Class A	1	0.67	d	1.83E-03		Ks-23
Americium	Am-242m	10000	0.018	Class A	1	141	y	1.41E+02	✓	
Americium	Am-243	10000	0.018	Class A	1	7370	y	7.37E+03	✓	
Americium	Am-244	440000000	792	Class A	1	10.1	h	1.15E-03		Ks-23
Americium	Am-245	440000000	792	Class A	1	2.05	h	2.34E-04		Ks-23
Arsenic	As-73	440000000	792	Class A	1	80.3	d	2.20E-01		Ks-23
Arsenic	As-74	440000000	792	Class A	1	17.77	d	4.87E-02		Ks-23
Gold	Au-195	440000000	792	Class A	0.25	186.1	d	5.10E-01		Ks-22
Gold	Au-198	440000000	792	Class A	0.25	2.695	d	7.38E-03		Ks-22
Gold	Au-199	440000000	792	Class A	0.25	3.14	d	8.60E-03		Ks-22
Barium	Ba-133	256160000000000	461088000	SA	10	10.51	y	1.05E+01	✓	
Barium	Ba-140	440000000	792	Class A	10	12.75	d	3.49E-02		Ks-22
Beryllium	Be-10	22000000000	39600	SA	2.5	1510000	y	1.51E+06	✓	
Beryllium	Be-7	440000000	792	Class A	2.5	53.29	d	1.46E-01		Ks-23
Bismuth	Bi-205	440000000	792	Class A	1	15.31	d	4.19E-02		Ks-23
Bismuth	Bi-206	440000000	792	Class A	1	6.243	d	1.71E-02		Ks-23
Bismuth	Bi-207	53670000000000	96606000	SA	1	31.55	y	3.16E+01	✓	
Bismuth	Bi-210m	567820000	1022.076	SA	1	3040000	y	3.04E+06	✓	
Bismuth	Bi-214	440000000	792	Class A	1	19.9		3.79E-05		Ks-23
Berkelium	Bk-247	0.00010	1.782E-10	Model	0.001	1400	y	1.40E+03	✓	
Berkelium	Bk-249	440000000	792	Class A	0.001	320	d	8.77E-01		Ks-20
Berkelium	Bk-250	440000000	792	Class A	0.001	0.134	d	3.68E-04		Ks-20
Carbon	C-14	5000000	9	Class A	6.52	5730	y	5.73E+03	✓	
Calcium	Ca-41	1.611	2.8998E-06	Model	0.05	103000	y	1.03E+05	✓	
Calcium	Ca-45	440000000	792	Class A	0.05	162.61	d	4.46E-01		Ks-21
Calcium	Ca-47	440000000	792	Class A	0.05	4.536	d	1.24E-02		Ks-21
Cadmium	Cd-105	440000000	792	Class A	1	55.5		1.06E-04		Ks-23
Cadmium	Cd-107	440000000	792	Class A	1	6.5	h	7.42E-04		Ks-23
Cadmium	Cd-109	440000000	792	Class A	1	462.6	d	1.27E+00		Ks-26
Cadmium	Cd-113	0.4303	7.74613E-07	SA	1	9.3E+15	y	9.30E+15	✓	
Cadmium	Cd-113m	224520000000000	404136000	SA	1	14.1	y	1.41E+01	✓	
Cerium	Ce-129	440000000	792	Class A	1	3.5		6.66E-06		Ks-23
Cerium	Ce-133	440000000	792	Class A	1	1.6167	h	1.85E-04		Ks-23
Cerium	Ce-137	440000000	792	Class A	1	9	h	1.03E-03		Ks-23
Cerium	Ce-139	440000000	792	Class A	1	137.6	d	3.77E-01		Ks-23
Cerium	Ce-141	440000000	792	Class A	1	32.5	d	8.90E-02		Ks-23
Cerium	Ce-143	440000000	792	Class A	1	1.377	d	3.77E-03		Ks-23
Cerium	Ce-144	440000000	792	Class A	1	284.9	d	7.81E-01		Ks-23
Cerium	Ce-147	440000000	792	Class A	1	56.44944	s	1.79E-06		Ks-23
Californium	Cf-248	440000000	792	Class A	0.001	333.5	d	9.14E-01		Ks-20
Californium	Cf-249	0.00015	2.7E-10	Model	0.001	351	y	3.51E+02	✓	
Californium	Cf-250	85	0.000153	Model	0.001	13.08	y	1.31E+01	✓	
Californium	Cf-251	10000	0.018	Class A	0.001	898	d	2.46E+00	✓	
Californium	Cf-252	440000000	792	Class A	0.001	2.65	y	2.65E+00	✓	
Chlorine	Cl-36	0.2828	5.0904E-07	Model	0.001	301000	y	3.01E+05	✓	
Curium	Cm-241	440000000	792	Class A	93.3	32.8	d	8.99E-02		Ks-24
Curium	Cm-242	440000000	792	Class A	93.3	162.8	d	4.46E-01		Ks-24
Curium	Cm-243	10000	0.018	Class A	93.3	29.1	y	2.91E+01	✓	
Curium	Cm-244	10000	0.018	Class A	93.3	18.1	y	1.81E+01	✓	
Curium	Cm-245	10000	0.018	Class A	93.3	8500	y	8.50E+03	✓	
Curium	Cm-246	10000	0.018	Class A	93.3	4730	y	4.73E+03	✓	
Curium	Cm-247	10000	0.018	Class A	93.3	1.56E+07	y	1.56E+07	✓	
Curium	Cm-248	10000	0.018	Class A	93.3	340000	y	3.40E+05	✓	
Curium	Cm-249	440000000	792	Class A	93.3	1.07	h	1.22E-04		Ks-23
Cobalt	Co-56	440000000	792	Class A	370	77.3	d	2.12E-01		Ks-25
Cobalt	Co-57	440000000	792	Class A	370	271.8	d	7.45E-01		Ks-25
Cobalt	Co-58	440000000	792	Class A	370	70.86	d	1.94E-01		Ks-25
Cobalt	Co-60	440000000	792	Class A	370	5.27	y	5.27E+00	✓	
Cobalt	Co-63	440000000	792	Class A	370	27.4	s	8.69E-07		Ks-25
Chromium	Cr-51	440000000	792	Class A	1	27.7	d	7.59E-02		Ks-23
Cesium	Cs-134	440000000	792	Class A	133	2.065	y	2.07E+00		Ks-25
Cesium	Cs-135	1152100000	2073.78	SA	133	2300000	y	2.30E+06	✓	
Cesium	Cs-136	440000000	792	Class A	133	13.16	d	3.61E-02		Ks-25
Cesium	Cs-137	630000	1.134	Class A	133	30.07	y	3.01E+01	✓	
Copper	Cu-67	440000000	792	Class A	1	61.83	d	1.69E-01		Ks-23
Dysprosium	Dy-166	440000000	792	Class A	6.5	3.4	d	9.32E-03		Ks-23
Einsteinium	Es-253	440000000	792	Class A	0.001	20.47	d	5.61E-02		Ks-20
Einsteinium	Es-254	440000000	792	Class A	0.001	275.7	d	7.55E-01		Ks-20
Europium	Eu-152	173050000000000	311490000	SA	1	13.54	y	1.35E+01	✓	
Europium	Eu-154	270420000000000	486756000	SA	1	8.59	y	8.59E+00	✓	
Europium	Eu-155	440000000	792	Class A	1	4.76	y	4.76E+00	✓	
Europium	Eu-156	440000000	792	Class A	1	15.2	d	4.16E-02		Ks-23
Iron	Fe-52	440000000	792	Class A	1.4	0.345	d	9.45E-04		Ks-23
Iron	Fe-53	440000000	792	Class A	1.4	8.51		1.62E-05		Ks-23
Iron	Fe-55	440000000	792	Class A	1.4	2.73	y	2.73E+00	✓	
Iron	Fe-59	440000000	792	Class A	1.4	44.5	d	1.22E-01		Ks-23
Iron	Fe-60	3974800000	7154.64	SA	1.4	1500000	y	1.50E+06	✓	
Fermium	Fm-252	440000000	792	Class A	0.001	1.058	d	2.90E-03		Ks-20
Gallium	Ga-67	440000000	792	Class A	15	3.26	d	8.93E-03		Ks-23
Gadolinium	Gd-148	32228000000000	58010400	SA	1	74.6	y	7.46E+01	✓	
Gadolinium	Gd-151	440000000	792	Class A	1	124	d	3.40E-01		Ks-23
Gadolinium	Gd-153	440000000	792	Class A	1	241.6	d	6.62E-01		Ks-23
Germanium	Ge-68	440000000	792	Class A	0.001	270.8	d	7.42E-01		Ks-20
Hydrogen	H-3	25000000	45	Class A	0.04	12.33	y	1.23E+01	✓	

TABLE 19. WESTERN LARW CELL TRANSPORT MODEL RADIONUCLIDES AND SURROGATES

ELEMENT	NUCLIDE	Maximum Concent. (pCi/gm)	Maximum Concentration (Ci/m3)	Concentration Data Source	Distribution Coefficient (Kd) (L/Kg)	1/2 life		1/2 life (Years)	Isotope to be Modeled	Model Surrogate
Hafnium	Hf-172	440000000	792	Class A	4.5	1.87	y	1.87E+00		Ks-26
Hafnium	Hf-175	440000000	792	Class A	4.5	70	d	1.92E-01		Ks-23
Hafnium	Hf-181	440000000	792	Class A	4.5	42.4	d	1.16E-01		Ks-23
Mercury	Hg-194	3546100000000	6382980	SA	10	444	y	4.44E+02	✓	
Mercury	Hg-203	440000000	792	Class A	10	46.6	d	1.28E-01		Ks-23
Holmium	Ho-166	440000000	792	Class A	2.5	1.115	d	3.05E-03		Ks-23
Holmium	Ho-166m	1800000000000	3240000	SA	2.5	1200	y	1.20E+03	✓	
Iodine	I-123	440000000	792	Class A	0.12	13.3	h	1.52E-03		Ks-22
Iodine	I-125	440000000	792	Class A	0.12	59.4	d	1.63E-01		Ks-22
Iodine	I-126	440000000	792	Class A	0.12	13.11	d	3.59E-02		Ks-22
Iodine	I-129	5000	0.009	Class A	0.12	15700000	y	1.57E+07	✓	
Iodine	I-131	440000000	792	Class A	0.12	8.02	d	2.20E-02		Ks-22
Iodine	I-133	440000000	792	Class A	0.12	0.867	d	2.37E-03		Ks-22
Iodine	I-135	440000000	792	Class A	0.12	6.57	h	7.50E-04		Ks-22
Iodine	I-137	440000000	792	Class A	0.12	24.5	s	7.77E-07		Ks-22
Indium	In-111	440000000	792	Class A	15	2.8047	d	7.68E-03		Ks-23
Indium	In-113m	440000000	792	Class A	15	0.069	d	1.89E-04		Ks-23
Indium	In-114	440000000	792	Class A	15	0.00083	d	2.28E-06		Ks-23
Indium	In-114m	440000000	792	Class A	15	49.51	d	1.36E-01		Ks-23
Iridium	Ir-192	440000000	792	Class A	5	73.8	d	2.02E-01		Ks-23
Potassium	K-40	7003370	12.606066	SA	0.15	1277000000	y	1.28E+09	✓	
Lanthanum	La-140	440000000	792	Class A	6.5	1.678	d	4.60E-03		Ks-23
Manganese	Mn-52	440000000	792	Class A	6.4	5.591	d	1.53E-02		Ks-23
Manganese	Mn-52m	440000000	792	Class A	6.4	0.0147	d	4.01E-05		Ks-23
Manganese	Mn-53	1800000000	3240	SA	6.4	3740000	y	3.74E+06	✓	
Manganese	Mn-54	440000000	792	Class A	6.4	312.3	d	8.56E-01		Ks-23
Molybdenum	Mo-99	440000000	792	Class A	1	2.748	d	7.53E-03		Ks-23
Sodium	Na-22	440000000	792	Class A	0.001	2.602	y	2.60E+00	✓	
Niobium	Nb-91	5780000000000	10404000	SA	1.6	680	y	6.80E+02	✓	
Niobium	Nb-92	112000000	201.6	SA	1.6	34700000	y	3.47E+07	✓	
Niobium	Nb-93m	263460000000000	474228000	SA	1.6	16.13	y	1.61E+01	✓	
Niobium	Nb-94	13000	0.0234	Class A	1.6	20300	y	2.03E+04	✓	
Neodymium	Nd-144	4.27	7.6917E-06	SA	6.5	2.29E+15	y	2.29E+15		stable
Neodymium	Nd-147	440000000	792	Class A	6.5	10.98	d	3.01E-02		Ks-23
Nickel	Ni-59	14000000	25.2	Class A	10	76000	y	7.60E+04	✓	
Nickel	Ni-63	2200000	3.96	Class A	10	100.1	y	1.00E+02	✓	
Neptunium	Np-235	440000000	792	Class A	3	1.085	y	1.09E+00		Ks-26
Neptunium	Np-237	10000	0.018	Class A	3	2144000	y	2.14E+06	✓	
Osmium	Os-191	440000000	792	Class A	5	15.4	d	4.22E-02		Ks-23
Osmium	Os-191m	440000000	792	Class A	5	0.548	d	1.50E-03		Ks-23
Osmium	Os-194	307330000000000	553194000	SA	5	6	y	6.00E+00	✓	
Phosphorous	P-32	440000000	792	Class A	0.035	14.28	d	3.91E-02		Ks-21
Phosphorous	P-33	440000000	792	Class A	0.035	25.3	d	6.93E-02		Ks-21
Protactinium	Pa-231	47000000000	84600	SA	5.5	32760	y	3.28E+04	✓	
Protactinium	Pa-233	440000000	792	Class A	5.5	26.967	d	7.39E-02		Ks-23
Protactinium	Pa-234	440000000	792	Class A	5.5	6.7014	h	7.65E-04		Ks-23
Protactinium	Pa-234m	440000000	792	Class A	5.5	1.172088		2.23E-06		Ks-23
Lead	Pb-202	3400000000	6120	SA	19	52500	y	5.25E+04	✓	
Lead	Pb-203	440000000	792	Class A	19	2.1614	d	5.92E-03		Ks-23
Lead	Pb-210	76000000000000	136800000	SA	19	22.3	y	2.23E+01	✓	
Lead	Pb-214	440000000	792	Class A	19	26.8		5.10E-05		Ks-23
Palladium	Pd-103	440000000	792	Class A	0.55	16.991	d	4.66E-02		Ks-22
Palladium	Pd-107	510000000	918	SA	0.55	6500000	y	6.50E+06	✓	
Promethium	Pm-143	440000000	792	Class A	6.5	265	d	7.26E-01		Ks-23
Promethium	Pm-145	140000000000000	252000000	SA	6.5	17.7	y	1.77E+01	✓	
Promethium	Pm-147	440000000	792	Class A	6.5	2.6234	y	2.62E+00	✓	
Polonium	Po-208	440000000	792	Class A	9	2.9	y	2.90E+00	✓	
Polonium	Po-209	167810000000000	302058000	SA	9	102	y	1.02E+02	✓	
Polonium	Po-210	440000000	792	Class A	9	138.4	d	3.79E-01		Ks-23
Polonium	Po-214	440000000	792	Class A	9	164.3	u	5.21E-12		Ks-23
Platinum	Pt-193	37000000000000	66600000	SA	0.9	50	y	5.00E+01	✓	
Plutonium	Pu-236	500	0.0009	Class A	10	2.86	y	2.86E+00	✓	
Plutonium	Pu-238	10000	0.018	Class A	10	87.7	y	8.77E+01	✓	
Plutonium	Pu-239	10000	0.018	Class A	10	24110	y	2.41E+04	✓	
Plutonium	Pu-240	10000	0.018	Class A	10	6564	y	6.56E+03	✓	
Plutonium	Pu-241	350000	0.63	Class A	10	14.35	y	1.44E+01	✓	
Plutonium	Pu-242	10000	0.018	Class A	10	373300	y	3.73E+05	✓	
Plutonium	Pu-243	500	0.0009	Class A	10	4.956	h	5.66E-04		Ks-23
Plutonium	Pu-244	500	0.0009	Class A	10	8.08E+07	y	8.08E+07	✓	
Radium	Ra-225	440000000	792	Class A	10	14.9	d	4.08E-02		Ks-23
Radium	Ra-226	10000	0.018	Class A	10	1600	y	1.60E+03	✓	
Radium	Ra-228	272396000000000	490312800	SA	10	5.75	y	5.75E+00	✓	
Rubidium	Rb-82	440000000	792	Class A	0.55	0.0009	d	2.38E-06		Ks-22
Rubidium	Rb-83	440000000	792	Class A	0.55	86.2	d	2.36E-01		Ks-22
Rubidium	Rb-84	440000000	792	Class A	0.55	32.8	d	8.98E-02		Ks-22
Rubidium	Rb-86	440000000	792	Class A	0.55	18.63	d	5.10E-02		Ks-22
Rhenium	Re-183	440000000	792	Class A	0.075	70	d	1.92E-01		Ks-21
Rhenium	Re-184	440000000	792	Class A	0.075	38	d	1.04E-01		Ks-21
Rhenium	Re-184m	440000000	792	Class A	0.075	169	d	4.63E-01		Ks-21
Rhenium	Re-186	440000000	792	Class A	0.075	3.719	d	1.02E-02		Ks-21
Rhenium	Re-187	8800	0.01584	Model	0.075	43500000000	y	4.35E+10	✓	
Rhenium	Re-188	440000000	792	Class A	0.075	0.709	d	1.94E-03		Ks-21
Rhodium	Rh-103m	440000000	792	Class A	0.001	0.039	d	1.07E-04		Ks-20
Ruthenium	Ru-103	440000000	792	Class A	5	39.26	d	1.08E-01		Ks-23
Ruthenium	Ru-106	440000000	792	Class A	5	1.02	y	1.02E+00		Ks-26
Sulfur	S-35	440000000	792	Class A	0.075	87.5	d	2.40E-01		Ks-21
Antimony	Sb-122	440000000	792	Class A	100	2.7	d	7.40E-03		Ks-25
Antimony	Sb-124	440000000	792	Class A	100	60.2	d	1.65E-01		Ks-25
Antimony	Sb-125	440000000	792	Class A	100	2.76	y	2.76E+00		Ks-25
Antimony	Sb-126	440000000	792	Class A	100	12.5	d	3.42E-02		Ks-25
Antimony	Sb-126m	440000000	792	Class A	100	0.013	d	3.61E-05		Ks-25
Antimony	Sb-129	440000000	792	Class A	100	4.4	h	5.02E-04		Ks-25
Scandium	Sc-41	440000000	792	Class A	10	0.596	s	1.89E-08		Ks-23

ELEMENT	NUCLIDE	Maximum Concent. (pCi/gm)	Maximum Concentration (Ci/m3)	Concentration Data Source	Distribution Coefficient (Kd) (L/Kg)	1/2 life		1/2 life (Years)	Isotope to be Modeled	Model Surrogate
Scandium	Sc-44	440000000	792	Class A	10	0.164	d	4.48E-04		Ks-23
Scandium	Sc-46	440000000	792	Class A	10	83.8	d	2.30E-01		Ks-23
Scandium	Sc-47	440000000	792	Class A	10	3.349	d	9.18E-03		Ks-23
Selenium	Se-75	440000000	792	Class A	1	119.8	d	3.28E-01		Ks-23
Selenium	Se-79	69700000000	125460	SA	1	65000	y	6.50E+04	✓	
Selenium	Se-85	440000000	792	Class A	1	31.7	s	1.01E-06		Ks-23
Silicon	*Si-32*	65000000000000	117000000	SA	0.35	172	y	1.72E+02	✓	
Samarium	Sm-145	440000000	792	Class A	2.45	340	d	9.32E-01		Ks-23
Samarium	Sm-151	263200000000000	47376000	SA	2.45	90	y	9.00E+01	✓	
Samarium	Sm-153	440000000	792	Class A	2.45	1.928	d	5.28E-03		Ks-23
Tin	Sn-113	440000000	792	Class A	50	115.1	d	3.15E-01		Ks-24
Tin	Sn-117m	440000000	792	Class A	50	13.6	d	3.73E-02		Ks-24
Tin	Sn-119m	440000000	792	Class A	50	293.1	d	8.03E-01		Ks-24
Tin	Sn-121	440000000	792	Class A	50	1.128	d	3.09E-03		Ks-24
Tin	Sn-121m	537540000000000	96757200	SA	50	55	y	5.50E+01	✓	
Tin	Sn-126	283910000000	51103.8	SA	50	100000	y	1.00E+05	✓	
Strontium	Sr-81	440000000	792	Class A	0.05	22.3		4.24E-05		Ks-21
Strontium	Sr-82	440000000	792	Class A	0.05	25.55	d	7.00E-02		Ks-21
Strontium	Sr-85	440000000	792	Class A	0.05	64.8	d	1.78E-01		Ks-21
Strontium	Sr-87m	440000000	792	Class A	0.05	168.18		3.20E-04		Ks-21
Strontium	Sr-89	440000000	792	Class A	0.05	50.53	d	1.38E-01		Ks-21
Strontium	Sr-90	25000	0.045	Class A	0.05	28.78	y	2.88E+01	✓	
Tantalum	Ta-182	440000000	792	Class A	2.2	114.43	d	3.14E-01		Ks-23
Terbium	Tb-157	5.51	0.000009918	Model	0.001	71	y	7.10E+01	✓	
Terbium	Tb-158	0.59	0.000001062	Model	0.001	180	y	1.80E+02	✓	
Terbium	Tb-160	440000000	792	Class A	0.001	72.3	d	1.98E-01		Ks-23
Technetium	Tc-95	440000000	792	Class A	0.11	0.833	d	2.28E-03		Ks-22
Technetium	Tc-95m	440000000	792	Class A	0.11	61	d	1.67E-01		Ks-22
Technetium	Tc-99	187500	0.3375	Class A	0.11	211100	y	2.11E+05	✓	
Technetium	Tc-99m	440000000	792	Class A	0.11	0.250	d	6.86E-04		Ks-22
Tellurium	Te-123	291	0.0005238	SA	1.25	1E+13	y	1.00E+13	✓	
Tellurium	Te-123m	440000000	792	Class A	1.25	119.7	d	3.28E-01		Ks-23
Tellurium	Te-125m	440000000	792	Class A	1.25	57.4	d	1.57E-01		Ks-23
Tellurium	Te-129	440000000	792	Class A	1.25	0.048	d	1.32E-04		Ks-23
Tellurium	Te-129m	440000000	792	Class A	1.25	33.6	d	9.21E-02		Ks-23
Thorium	Th-229	212830000000	383094	SA	10	7880	y	7.88E+03	✓	
Thorium	Th-230	20628000000	37130.4	SA	10	75380	y	7.54E+04	✓	
Thorium	Th-231	440000000	792	Class A	10	1.063	d	2.91E-03		Ks-23
Thorium	Th-232	110000	0.198	SA	10	14050000000	y	1.41E+10	✓	
Thorium	Th-234	440000000	792	Class A	10	24.1	d	6.60E-02		Ks-23
Titanium	Ti-44	156350000000000	281430000	SA	10	63	y	6.30E+01	✓	
Thallium	Tl-201	440000000	792	Class A	0.15	3.038	d	8.32E-03		Ks-22
Thallium	Tl-202	440000000	792	Class A	0.15	12.23	d	3.35E-02		Ks-22
Thallium	Tl-204	440000000	792	Class A	0.15	3.78	y	3.78E+00	✓	
Thallium	Tl-210	440000000	792	Class A	0.15	1.3		2.47E-06		Ks-22
Thulium	Tm-170	440000000	792	Class A	1	128.6	d	3.52E-01	✓	
Thulium	Tm-171	440000000	792	Class A	1	1.92	y	1.92E+00		Ks-26
Uranium	U-228	440000000	792	Class A	6	9.1		1.73E-05		Ks-23
Uranium	U-230	440000000	792	Class A	6	20.8	d	5.70E-02		Ks-23
Uranium	U-232	220280000000000	39650400	SA	6	68.9	y	6.89E+01	✓	
Uranium	U-233	75000	0.135	Class A	6	159200	y	1.59E+05	✓	
Uranium	U-234	6210000000	11178	SA	6	245500	y	2.46E+05	✓	
Uranium	U-235	1900	0.00342	Class A	6	703800000	y	7.04E+08	✓	
Uranium	U-236	64720000	116.496	SA	6	23420000	y	2.34E+07	✓	
Uranium	U-238	336260	0.605268	SA	6	4470000000	y	4.47E+09	✓	
Uranium	U-depleted	370000	0.666	A+ (Class A)	6					U-isotopes
Uranium	U-natural	680000	1.224	A+ (Class A)	6					U-isotopes
Vanadium	V-48	440000000	792	Class A	10	15.98	d	4.38E-02		Ks-23
Vanadium	V-50	0.0511	9.198E-08	SA	10	1.4E+17	y	1.40E+17	✓	
Tungsten	W-181	440000000	792	Class A	1.5	121.2	d	3.32E-01		Ks-23
Tungsten	W-185	440000000	792	Class A	1.5	75.1	d	2.06E-01		Ks-23
Tungsten	W-187	440000000	792	Class A	1.5	23.72	h	2.71E-03		Ks-23
Tungsten	W-188	440000000	792	Class A	1.5	69.4	d	1.90E-01		Ks-23
Xenon	Xe-127	440000000	792	Class A	0.001	36.4	d	9.97E-02		Ks-20
Xenon	Xe-131m	440000000	792	Class A	0.001	11.934	d	3.27E-02		Ks-20
Xenon	Xe-133	440000000	792	Class A	0.001	5.245	d	1.44E-02		Ks-20
Xenon	Xe-133m	440000000	792	Class A	0.001	2.19	d	6.00E-03		Ks-20
Yttrium	Y-88	440000000	792	Class A	1.7	106.7	d	2.92E-01		Ks-23
Yttrium	Y-91	440000000	792	Class A	1.7	58.5	d	1.60E-01		Ks-23
Yttrium	Y-99	440000000	792	Class A	1.7	1.47	s	4.66E-08		Ks-23
Ytterbium	Yb-169	440000000	792	Class A	6.5	32.03	d	8.78E-02		Ks-23
Zinc	Zn-65	440000000	792	Class A	0.1	244.3	d	6.69E-01		Ks-22
Zirconium	Zr-88	440000000	792	Class A	10	83.4	d	2.28E-01		Ks-23
Zirconium	Zr-93	25141000000	4525.38	SA	10	1530000	y	1.53E+06	✓	
Zirconium	Zr-95	440000000	792	Class A	10	64.02	d	1.75E-01		Ks-23
SYNTHETIC (DUMMY) NUCLIDES:										
Surrogate	Ks-20	440000000	792		0.001	1	y	1.00E+00	✓	
Surrogate	Ks-21	440000000	792		0.01	1	y	1.00E+00	✓	
Surrogate	Ks-22	440000000	792		0.1	1	y	1.00E+00	✓	
Surrogate	Ks-23	440000000	792		1	1	y	1.00E+00	✓	
Surrogate	Ks-24	440000000	792		50	4	y	4.00E+00	✓	
Surrogate	Ks-25	440000000	792		100	4	y	4.00E+00	✓	
Surrogate	Ks-26	440000000	792		1	2	y	2.00E+00	✓	

NOTES:
Class A = Class A limits
SA = Concentration represents the Specific Activity (maximum possible concentration) of the nuclide, rounded to approx 4 significant figures
Model = Maximum concentration which meets the GWPL for 500 years, under the frost-protected Western LARW cell side slope

TABLE 20. SORPTION COEFFICIENT (K_d) VALUES AND DATA SOURCES

Ac-225	4.5	Sheppard, M.I. and Thibault, D.H. 1990 gave a calculated Kd value = 450 L/kg, which was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. In the model, the Kd value was conservatively set two orders of magnitude lower than calculated value by Sheppard and Thibault Lowest value from McKinley, I.G., et al. 1991, in surficial sediments is 250 L/kg.
Ag-105 Ag-108m Ag-110m Ag-111	2.7	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 12 reported values in sand was 2.7 to 1,000 L/kg, with a mean value of 90 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 10 L/kg. Recommended value is 100 L/kg.
Al-26	0.001	Kd assigned a conservatively low value of 0.001 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 1500 L/kg (Baes et al. 1984).
Am-241 Am-242 Am-242m Am-243	1	Lowest Kd value from "Estimation of Geochemical Parameters for Assessing Subsurface Transport at the Savannah River Plant," by B.B. Looney, M.W. Grant, and C.M. King, DuPont DPST-85-904, March 1987, Table 1, is 1 L/kg. Recommended value is 100 L/kg. Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 100 to 100,000 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 8.2 L/kg. The range of 29 reported values in sand was 8.2 to 300,000 L/kg, with a mean value of 1,900 L/kg.
As-73 As-74	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 10 L/kg. Reported range is 1-10. Recommended value is 3.16 L/kg.
Au-195 Au-198 Au-199	0.25	Default Kd estimated to be 25 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Ba-133 Ba-140	10	Kd Value from DRC, no citation. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 60 L/kg (Baes et al. 1984).
Be-7	2.5	Sheppard, M.I. and Thibault, D.H. (1990) calculated Kd value = 250 L/kg, which was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. In the model, the Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard and Thibault The CR values used were taken from Baes et al. (1984)
Bk-249 Bk-250	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg. Berkelium is a member of the actinide rare earth series. All rare earth elements have similar physical and chemical properties. ("General Chemistry" by Nebergall, et al., 1976.) Kd values are available for Np, Am and Cm, which are also actinide rare earth elements. Consequently, it is reasonable to assign the lowest Kd value from these three elements (Am) to berkelium, Kd = 1 L/kg.
Bi-205 Bi-206 Bi-207 Bi-210m	1	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 100 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
C-14	8.52	Kd value from site-specific measurements. See the Response to Interrogatories (ABC 1997) which includes a re-evaluation of the Bingham (1995) Kd values. (Summary of Results, Radionuclide Kd Tests, Bingham Environmental, Inc. August 3, 1995). The lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 1.7 L/kg. The range of 3 reported values in sand was 1.7 to 7.1 L/kg, with a mean value of 5 L/kg.
Ca-45 Ca-47	0.05	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 50 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Cd-109 Cd-113m	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 6.3 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 2.7 L/kg. The range of 14 reported values in sand was 2.7 to 625 L/kg, with the mean value at 80 L/kg.
Ce-139 Ce-141 Ce-143 Ce-144	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 1000 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 40 L/kg. The range of 12 reported values in sand was 40 to 3,968 L/kg, with a mean value of 500 L/kg.
Cf-248 Cf-249 Cf-250 Cf-251 Cf-252	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg. Californium is a member of the actinide rare earth series. All rare earth elements have similar physical and chemical properties. ("General Chemistry" by Nebergall, Schmidt, and Holtzclaw, D.C. Health and Company, 1976, p. 905). Kd values are available for Np, Am and Cm, which are also actinide rare earth elements. Consequently, it would be reasonable to assign the lowest Kd value from these three elements (Am) to Californium, Kd = 1 L/kg.
Cl-36	0.001	Kd assigned a conservatively low value of 0.001 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 0.25 L/kg (Baes et al. 1984).
Cm-241 Cm-242 Cm-243 Cm-244 Cm-245 Cm-246 Cm-247 Cm-248	93.3	Lowest Kd value found in Baes, C.F. and Sharp, R.D. (1983) is 93.3. The range of the 31 reported values was 93.3 to 51,900 L/kg in agricultural soils and clays. The lowest Kd value found in Looney, et al., March, 1987, Table 1 is 100 L/kg. Recommended value is 3162 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 780 L/kg. The range of 2 reported values in sand was 780 to 22,970 L/kg, with a mean value of 4,000 L/kg.

TABLE 20. SORPTION COEFFICIENT (K_d) VALUES AND DATA SOURCES

Co-56 Co-57 Co-58 Co-60	370	Site-specific Kd, reported by Bingham, 1996. Consistent with range of values in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1. The range of 33 reported values in sand was 0.07 to 9,000 L/kg, with a mean value of 60 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 0.1 L/kg. Recommended value is 1 L/kg.
Cr-51	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 39.8 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 1.7 L/kg . The range of 15 reported values in sand was 1.7 to 1,729 L/kg, with a mean value of 70 L/kg.
Cs-134 Cs-135 Cs-136 Cs-137	133	Site-specific Kd, reported by Bingham, 1996. Consistent with range of values in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (Range of 81 reported values in sand was 0.2 to 10,000 L/kg, with a mean value of 280 L/kg.) Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 10 L/kg. Recommended value is 501.1 L/kg.
Cu-67	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 25.11 L/kg.
Dy-166	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Es-253 Es-254	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.
Eu-152 Eu-154 Eu-155 Eu-156	1	Europium was assigned a Kd value equal to the Kd of Ce based on the chemical similarity between rare earth elements. ("General Chemistry" Nebergall, Schmidt, and Holtzclaw, D.C. Health and Company, 1976, p.905) The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 650 L/kg (Baes et al. 1984).
Fe-52 Fe-55 Fe-59 Fe-60	1.4	Lowest Kd value found in Baes, C.F. and Sharp, R.D. (1983) is 1.4. The range of the 30 reported values was 1.4 to 1,000 L/kg in agricultural soils and clays. Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values) is 5 L/kg. The range of 16 reported values in sand was 5 to 6,000 L/kg, with a mean value of 280 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg.
Fm-252	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.
Ga-67	15	Default Kd estimated to be 1500 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Gd-153 Gd 148	1	Gadolinium was assigned a Kd value equal to the Kd of Ce based on the chemical similarity between rare earth elements. ("General Chemistry" Nebergall, Schmidt, and Holtzclaw, D.C. Health and Company, 1976, p.905) The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 650 L/kg (Baes et al. 1984).
Ge-68	0.001	Kd assigned a conservatively low value of 0.001 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 650 L/kg (Baes et al. 1984).
H-3	0.04	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values).
Hf-172 Hf-175 Hf-181	4.5	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 450 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Hg-194 Hg-203	10	Kd value from DRC, taken from Bingham Environmental value for stable mercury. (May, 1993 Report, Table 4-2 and August, 1993 Report, Table 3-4. Lowest Kd value found in Buchter et al., 1989, Table 3, for a sandy loam soil is 19.6 L/kg. The range of 11 reported values in various soil types was 19.6 to 299.2 L/kg. Kd values in interbed sediment range from 80.8 to 998 L/kg (Del Debbio, J.A., 1991).
Ho-166m	2.5	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 250 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd.
I-125 I-126 I-129 I-131 I-133	0.12	Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Inc. August 3, 1995) was 0.7 L/Kg. Re-evaluated in Response to Interrogatories (ABC 1997), with a recommended value of 0.46. Lowest slope of curve is 0.12 L/kg. The lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 0.04 L/kg. The range of 22 reported values in sand was 0.04 to 81 L/kg, with a mean value of 1.0 L/kg.
In-111 In-113m In-114 In-114m	15	Default Kd estimated to be 1500 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Ir-192	5	Kd assigned the lowest available Kd for Ruthium (5 L/kg) based on proximity to Ru in the Periodic Table. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 150 L/kg (Baes et al. 1984).
K-40	0.15	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 15 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984) The lowest published Kd value for potassium is 2.0, found in Dragun (1988)
Kr-85	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.
La-140	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.

TABLE 20. SORPTION COEFFICIENT (K_d) VALUES AND DATA SOURCES

Mn-52 Mn-52m Mn-54	6.4	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 54 reported values was 6.4 to 5,000 L/kg, with a mean value of 50 L/kg.
Mo-99	1.0	Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 1.0 L/kg. The range of 15 reported values in sand was 1.0 to 32 L/kg, with a geometric mean value of 10 L/kg.
Na-22	0.001	Kd assigned a conservatively low value of 0.001 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 100 L/kg (Baes et al. 1984).
Nb-93m Nb-94	1.6	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 160 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Nd-144 Nd-147	6.5	Kd assigned a conservatively low value of 6.5 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 650 L/kg (Baes et al. 1984).
Ni-59 Ni-63	10	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 60 L/kg. The range of 11 reported values was 60 to 3,600 L/kg, with a mean value of 400 L/kg.
Np-235 Np-237	3	Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Inc. August 3, 1995) was 400. Re-evaluation of the data (ABC 1997 Response to Interrogatories) calculated a Kd of 425. DRC recommended using the literature value. Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kds), is 0.5 L/kg, but applies to pH 2.0 solutions. Lowest value for pH>4.0 is greater than 3 L/kg. For pH = 7, Kd is over 20.
Os-191 Os-191m Os-194	5	Kd assigned the lowest available Kd for Ruthium (5 L/kg) based on proximity to Ru in the Periodic Table. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 450 L/kg (Baes et al. 1984).
Pa-231 Pa-233 Pa-234 Pa-234m	5.5	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 550 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
P-32 P-33	0.035	Default Kd estimated to be 3.5 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Pb-203 Pb-210	19	Note: Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 19 L/kg. The range of 3 reported values in sand was 19 to 1,405 L/kg, with a mean value of 150 L/kg. Geometric mean Kd is 270 L/kg. Default Kd estimated to be 900 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984).
Pd-103	0.55	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 55 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Pm-143 Pm-147	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Po-208 Po-210	9	Note: Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 9 L/kg. The range of 36 reported values in sand was 9 to 7,020 L/kg, with a mean value of 150 L/kg.
Pu-236 Pu-238 Pu-239 Pu-240 Pu-241 Pu-242 Pu-243 Pu-244	10	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 27 L/kg. The range of 39 reported values in sand was 27 to 36,000 L/kg, with a mean value of 550 L/kg.
Pt-193	0.9	Kd assigned a conservatively low value of 0.9 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 90 L/kg (Baes et al. 1984).
Ra-225 Ra-226 Ra-228	10	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 57 L/kg. The range of 3 reported values in sand was 57 to 21,000 L/kg, with a mean value of 500 L/kg.
Re-183 Re-184 Re-184m Re-186 Re-188	0.075	Default Kd estimated to be 7.5 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Rb-82 Rb-83 Rb-84 Rb-86	0.55	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 55 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Rh-103m	0.001	Kd not reported in literature. Therefore assigned a value of 0.001 L/kg.

Ru-103 Ru-106	5	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 7 reported values in sand was 5 to 490 L/kg, with a mean value of 55 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 100 L/kg. *Recommended value is* 158 L/kg.
S-35	0.075	Default Kd estimated to be 7.5 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Sb-122 Sb-124 Sb-125 Sb-126 Sb-126m	100	Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 3162 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 45 L/kg, from one reported observation in sand.
Sc-44 Sc-46 Sc-47	10	Default Kd estimated to be 1000 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Se-75 Se-79	1	Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 1 L/kg. Recommended value is 2.5 L/kg. Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 1 to 50 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 36 L.kg. The range of 3 reported values in sand was 36 to 70 L/kg, with a mean value of 55 L/kg. Lowest Kd value found for Se (IV) in Baes, C.F. and Sharp, R.D. (1983) is 1.2. The range of the 19 reported values was 1.2 to 8.6 L/kg.
Si-32	0.35	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 35 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd.
Sm-145 Sm-151 Sm-153	2.45	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 245 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Sn-113 Sn-117m Sn-119m Sn-121 Sn-121m Sn-126	50	Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 50 to 700 L/kg. Sheppard, M.I. and Thibault, D.H. *(1990) calculated Kd value* = 130 L/kg; calculated using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984) Recommended Kd value found in Looney, et al., March, 1987, Table 1, is 100 L/kg.
Sr-82 Sr-85 Sr-89 Sr-90	0.05	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 81 reported values in sand was 0.05 to 190 L/kg, with a mean value of 15 L/kg. Average Kd in near-neutral pH, saline brines is 0.66 L/kg, based on data from NTIS (1981) and Serne, et al. (1977). Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 1 L/kg. Recommended value is 2.5 L/kg.
Ta-182	2.2	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 220 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Te-123m Te-125m Te-129 Te-129m	1.25	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 125 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Tb-160	0.001	Kd assigned a conservatively low value of 0.001 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 650 L/kg (Baes et al. 1984).
Tc-95 Tc-95m Tc-99 Tc-99m	0.11	Site-specific Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Inc. August 3, 1995) was 0.07 L/kg. Re-evaluated in Response to Interrogatories (ABC 1997), result 0.11 L/kg . The lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 0.01 L/kg. The range of 19 reported values in sand was 0.01 to 16 L/kg, with a mean value of 0.1 L/kg.
Th-229 Th-230 Th-231 Th-232	10	Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 80 to 60,000 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1. Recommended value is 100 L/kg. Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 207 L/kg. The range of 10 reported values in sand was 207 to 150,000 L/kg, with a mean value of 3,200 L/kg.
Ti-44	10	Kd assigned a conservatively low value of 10 L/kg. The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 100 L/kg (Baes et al. 1984).
Tl-201 Tl-202 Tl-204	0.15	Based on similarities between ionic radii and valance, thallium Kd estimated using lowest published potassium *value of 2.0* found in Dragun, 1988 (Whetstone Associates, 2000). The 'Kd value for potassium was conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 15 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. Due to similarities in ionic structure, thallium Kd values would be similar to potassium
Tm-170 Tm-171	1	Thulium was assigned a Kd value equal to the Kd of Ce based on the chemical similarity between rare earth elements. ("General Chemistry" Nebergall, Schmidt, and Holtzclaw, D.C. Health and Company, 1976, p.905) The contaminant transport modeling code "TERRA" developed by ORNL uses a default value of 650 L/kg (Baes et al. 1984).

TABLE 20. SORPTION COEFFICIENT (K_d) VALUES AND DATA SOURCES

U-232 U-233 U-234 U-235 U-236 U-238 U-238	6	Site-specific Kd value from Summary of Results, Radionuclide Kd Tests (Bingham Environmental, Aug 3, 1995). Lowest Kd value found in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values), is 0.03 L/kg. The range of 24 reported values in sand was 0.03 to 2,200 L/kg, with a mean value of 35 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is 0.1 L/kg. Recommended value is 39.8 L/kg.
V-48	10	Default Kd estimated to be 1000 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
W-181 W-185 W-188	1.5	Default Kd estimated to be 150 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Xe-127 Xe-133 Xe-131m Xe-133m	0.001	Kd unknown, therefore conservatively assigned a value of 0.001 L/kg.
Y-88 Y-91	1.7	Kd value conservatively set two orders of magnitude lower than calculated value by Sheppard, M.I. and Thibault, D.H. 1990. Calculated Kd value = 170 L/kg, was determined using the soil-to-plant ratio (CR), which is strongly correlated with Kd. The CR values used were taken from Baes et al. (1984)
Yb-169	6.5	Default Kd estimated to be 650 L/kg for contaminant transport modeling code "TERRA" developed by ORNL (Baes et al. 1984). In the model, the Kd value is conservatively set two orders of magnitude lower than the default value used by TERRA.
Zn-65	0.1	Lowest Kd value in Sheppard, M.I. and Thibault, D.H., 1990, Table A-1 (sand soil Kd values). The range of 22 reported values in sand was 0.1 to 8,000 L/kg, with a mean value of 200 L/kg. Lowest Kd value found in Looney, et al., March, 1987, Table 1, is also 0.1 L/kg. Recommended value is 15.8 L/kg.
Zr-88 Zr-93 Zr-95	10	Lowest Kd value for soil/surface sediments found in McKinley, I.G. and Scholtis, A., 1993, Table 4. Kd values for soil/surface sediments ranged from 10 to 8,300 L/kg. Sheppard, M.I. and Thibault, D.H. (1990) calculated a Kd value of 600 L/kg. Calculation was based on the soil-to-plant ratio (CR), which is strongly correlated with Kd.

TABLE 21. RADIONUCLIDE HALF-LIVES AND DATA SOURCES

Nuclide	HALF-LIFE (years)	DATA SOURCE
Ag-108	4.5E-06	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ag-110m	0.684	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Al-26	740,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Am-241	432.2	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Am-243	7,370	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Au-195	0.510	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ba-133	10.51	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Be-7	1.46E-01	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Bi-207	32	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Bi-210m	3,040,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Bk-247	1,400	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
C-14	5730	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ca-45	0.446	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cd-109	1.267	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cd-113m	14.1	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Ce-139	0.377	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ce-141	0.089	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ce-144	0.781	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cf-249	351	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cf-250	13.08	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Cf-251	2.46	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cl-36.	301,000	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cm-242	0.446	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cm-243	29.10	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cm-244	18.10	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cm-245	8,500	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Cm-246	4,730	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cm-247	15,600,000	Kocher, David C. Radioactive Decay Data Tables, A Handbook of Decay Data for Application to Radiation Dosimetry and Radiological Assessments, Technical Information Center, US DOE
Cm-248	340,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Co-56	0.212	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Co-57	0.745	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Co-58	0.194	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Co-60	5.270	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Cr-51	0.076	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cs-134	2.065	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cs-135	2,300,000	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cs-137	30.07	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Cu-67	0.169	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Eu-152	13.54	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Eu-154	8.59	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Eu-155	4.76	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Fe-55	2.73	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Fe-59	0.122	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Fe-60	1,500,000	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Gd-148	74.6	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Gd-153	0.662	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ge-68	0.742	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
H-3	12.33	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Hf-181	0.116	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Hg-194	444	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Hg-203	0.128	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ho-166m	1,200	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
I-125	0.163	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
I-129	1.57E+07	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ir-192	0.202	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
K-40	1.28E+09	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Mn-54	0.856	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Na-22	2.6	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.

TABLE 21. RADIONUCLIDE HALF-LIVES AND DATA SOURCES

Nuclide	HALF-LIFE (years)	DATA SOURCE
Nb-93m	16.13	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Nb-94	20,300	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ni-59	76,000	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ni-63	100	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Np-237	2,144,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Os-194	6	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Pb-210	22.30	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pm-147	2.62	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Po-209	102	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Po-210	0.379	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Pu-236	2.86	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-238	87.70	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-239	24,110	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-240	6,564	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-241	14.35	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-242	373,300	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Pu-243	0.00057	Kocher, David C. Radioactive Decay Data Tables, A Handbook of Decay Data for Application to Radiation Dosimetry and Radiological Assessments, Technical Information Center, US DOE
Pu-244	80,800,000	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ra-226	1,600	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ra-228	5.75	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Rb-83	0.236	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Ru-106	1.02	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
S-35	0.240	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sb-124	1.65E-01	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sb-125	2.76	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Sc-46	0.230	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Se-75	0.328	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Se-79	65,000	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Si-32	172	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Sm-151	90	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sn-113	0.315	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sn-121m	55	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Sn-126	100,000	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Sr-85	0.178	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sr-89	0.138	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Sr-90	28.8	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ta-182	0.314	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Tc-99	211,100	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Th-229	7,880	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Th-230	75,380	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Th-232	1.41E+10	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Ti-44	63	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
Tl-204	3.78	Integrated Data Base for 1989, Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics, Prepared for U.S. Dept. of Energy. Nov. 1989.
Tm-170	0.352	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
U-232	68.9	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-233	159,200	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-234	245,500	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-235	7.04E+08	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-236	2.34E+07	National Nuclear Data Center, Brookhaven National Laboratory, August 1996
U-238	4.47E+09	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Y-88	0.292	F.W. Walker, et. al., "Nuclides and Isotopes, Fourteenth Edition", General Electric Co. (1989)
Y-91	0.160	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Zn-65	0.669	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.
Zr-95	0.175	Chart of the Nuclides Knolls Atomic Power Laboratory Naval Reactors, DOE, Rev. 1996.

TABLE 22. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, BASED ON 0.265 CM/YEAR INFILTRATION

Waste Characteristics:	Infiltration Rate:	0.00265	m/yr
	Waste Thickness:	1	m
	Waste Moisture Content:	0.058	cm^3/cm^3
	Waste Bulk Density:	1.8	gm/cm^3
Soil Characteristics:	Soil Thickness:	4.432	m
	Soil Moisture Content:	0.094	cm^3/cm^3
	Soil Bulk Density:	1.566	gm/cm^3
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3
	Hydraulic Conductivity:	6.82E-04	cm/sec
	Gradient:	1.00E-03	m/m
	Aquifer Velocity:	0.742	m/yr
	Aquifer Flux Rate:	0.215	$m^3/m^2/yr$

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	3.25E-04	75.968	21.77 y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	5.39E-04	45.981	418 y	4.18E+02
103	Aluminum	Al-26	0.0670	1.21E-07	0.001	4.42E-02	1.017	740000 y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	1.43E-03	17.660	432 y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	1.43E-03	17.660	141 y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	1.43E-03	17.660	7370 y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	1.47E-04	167.596	11 y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	5.81E-04	42.649	1,510,000 y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	1.43E-03	17.660	31.55 y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	1.43E-03	17.660	3040000 y	3.04E+06
110	Berkelium	Bk-247	0.00010	1.78E-10	0.001	4.42E-02	1.017	1400 y	1.40E+03
111	Carbon	C-14	5,000,000	9.00E+00	8.52	1.72E-04	142.940	5730 y	5.73E+03
112	Calcium	Ca-41	1.6110	2.90E-06	0.05	1.79E-02	1.833	103,000 y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	1.43E-03	17.660	9300000000000000 y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	1.43E-03	17.660	14.1 y	1.41E+01
115	Californium	Cf-249	0.00015	2.70E-10	0.001	4.42E-02	1.017	351 y	3.51E+02
116	Californium	Cf-250	85	1.53E-04	0.001	4.42E-02	1.017	13.08 y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	0.001	4.42E-02	1.017	898 d	2.46E+00
118	Californium	Cf-252	440,000,000	7.92E+02	0.001	4.42E-02	1.017	2.65 y	2.65E+00
119	Chlorine	Cl-36	0.2828	5.09E-07	0.001	4.42E-02	1.017	301,000 y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	1.58E-05	1555.338	29 y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	1.58E-05	1555.338	18 y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	1.58E-05	1555.338	8,500 y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	1.58E-05	1555.338	4730 y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	1.58E-05	1555.338	15600000 y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	1.58E-05	1555.338	340000 y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	3.98E-06	6165.043	5 y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	1.11E-05	2216.723	2,300,000 y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	1.11E-05	2216.723	30.07 y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	1	1.43E-03	17.660	14 y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	1	1.43E-03	17.660	9 y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	1	1.43E-03	17.660	4.76 y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	1.03E-03	24.323	2.73 y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	1.03E-03	24.323	1500000 y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	1	1.43E-03	17.660	75 y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	2.04E-02	1.666	12 y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	1.47E-04	167.596	444 y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	5.81E-04	42.649	1,200 y	1.20E+03
137	Iodine	I-129	5,000	9.00E-03	0.12	9.67E-03	2.999	15,700,000 y	1.57E+07
138	Potassium	K-40	7,003,370	1.26E+01	0.15	8.08E-03	3.499	1,277,000,000 y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	2.29E-04	107.621	3,740,000.00 y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	0.001	4.42E-02	1.017	3 y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	9.02E-04	27.655	680 y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	9.02E-04	27.655	34,700,000 y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	9.02E-04	27.655	16.13 y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	9.02E-04	27.655	20300 y	2.03E+04

TABLE 22. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, BASED ON 0.265 CM/YEAR INFILTRATION

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
146	Nickel	Ni-59	14,000,000	2.52E+01	10	1.47E-04	167.596	76000 y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	1.47E-04	167.596	100.1 y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	4.86E-04	50.979	2144000 y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	5	2.93E-04	84.298	6 y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	2.66E-04	92.628	32760 y	3.28E+04
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	7.74E-05	317.532	52500 y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	7.74E-05	317.532	22.3 y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	2.53E-03	10.163	6500000 y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	2.25E-04	109.287	17.7 y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	2.25E-04	109.287	2.6234 y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	1.63E-04	150.936	2.9 y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	1.63E-04	150.936	102 y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	1.58E-03	15.994	50 y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	1.47E-04	167.596	2.86 y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	1.47E-04	167.596	87.7 y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	1.47E-04	167.596	24110 y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	1.47E-04	167.596	6564 y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	1.47E-04	167.596	14.35 y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	1.47E-04	167.596	373300 y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	1.47E-04	167.596	80800000 y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	1.47E-04	167.596	1600 y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	1.47E-04	167.596	5.75 y	5.75E+00
164	Rhenium	Re-187	8,800	1.58E-02	0.075	1.37E-02	2.249	43500000000 y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	1.43E-03	17.660	65000 y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	3.85E-03	6.831	172 y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	5.93E-04	41.816	90 y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	2.94E-05	833.979	55 y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	2.94E-05	833.979	100000 y	1.00E+05
170	Strontium	Sr-90	25,000	4.50E-02	0.05	1.79E-02	1.833	28.78 y	2.88E+01
171	Terbium	Tb-157	5.510	9.92E-06	0.001	4.42E-02	1.017	71 y	7.10E+01
172	Terbium	Tb-158	0.590	1.06E-06	0.001	4.42E-02	1.017	180 y	1.80E+02
173	Technetium	Tc-99	187,500	3.38E-01	0.11	1.03E-02	2.833	211100 y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	1.15E-03	21.824	1E+13 y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	1.47E-04	167.596	7880 y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	1.47E-04	167.596	75380 y	7.54E+04
176	Thorium	Th-232	110,000	1.98E-01	10	1.47E-04	167.596	14050000000 y	1.41E+10
177	Titanium	Ti-44	156,350,000,000,000	2.81E+08	10	1.47E-04	167.596	63 y	6.30E+01
178	Thallium	Tl-204	440,000,000	7.92E+02	0.15	8.08E-03	3.499	3.78 y	3.78E+00
179	Thulium	Tm-170	440,000,000	7.92E+02	1	1.43E-03	17.660	128.6 d	3.52E-01
180	Uranium	U-232	22,028,000,000,000	3.97E+07	6	2.44E-04	100.957	68.9 y	6.89E+01
181	Uranium	U-233	75,000	1.35E-01	6	2.44E-04	100.957	159200 y	1.59E+05
182	Uranium	U-234	6,210,000,000	1.12E+04	6	2.44E-04	100.957	245500 y	2.46E+05
183	Uranium	U-235	1,900	3.42E-03	6	2.44E-04	100.957	703800000 y	7.04E+08
40	Uranium	U-236	64,720,000	1.16E+02	6	2.44E-04	100.957	23420000 y	2.34E+07
41	Uranium	U-238	336,260	6.05E-01	6	2.44E-04	100.957	4470000000 y	4.47E+09
184	Vanadium	V-50	0.0511	9.20E-08	10	1.47E-04	167.596	1.4E+17 y	1.40E+17
185	Zirconium	Zr-93	2,514,100,000	4.53E+03	10	1.47E-04	167.596	1530000 y	1.53E+06
186	Surrogate	Ks-20	440,000,000	7.92E+02	0.001	4.42E-02	1.017	1 y	1.00E+00
187	Surrogate	Ks-21	440,000,000	7.92E+02	0.01	3.48E-02	1.167	1 y	1.00E+00
188	Surrogate	Ks-22	440,000,000	7.92E+02	0.1	1.11E-02	2.666	1 y	1.00E+00
189	Surrogate	Ks-23	440,000,000	7.92E+02	1	1.43E-03	17.660	1 y	1.00E+00
190	Surrogate	Ks-24	440,000,000	7.92E+02	50	2.94E-05	833.979	4 y	4.00E+00
191	Surrogate	Ks-25	440,000,000	7.92E+02	100	1.47E-05	1666.957	4 y	4.00E+00
192	Surrogate	Ks-26	440,000,000	7.92E+02	1	1.43E-03	17.660	2 y	2.00E+00

TABLE 23. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, BASED ON 0.364 CM/YEAR INFILTRATION

Waste Characteristics:	Infiltration Rate:	0.00364	m/yr
	Waste Thickness:	1	m
	Waste Moisture Content:	0.061	cm^3/cm^3
	Waste Bulk Density:	1.8	gm/cm^3
Soil Characteristics:	Soil Thickness:	4.432	m
	Soil Moisture Content:	0.096	cm^3/cm^3
	Soil Bulk Density:	1.566	gm/cm^3
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3
	Hydraulic Conductivity:	7.67E-04	cm/sec
	Gradient:	1.00E-03	m/m
	Aquifer Velocity:	0.8341	m/yr
	Aquifer Flux Rate:	0.2419	$m^3/m^2/yr$

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	4.46E-04	74.341	21.77 y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	7.40E-04	45.004	418 y	4.18E+02
103	Aluminum	Al-26	0.0670	1.21E-07	0.001	5.80E-02	1.016	740000 y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	1.96E-03	17.298	432 y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	1.96E-03	17.298	141 y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	1.96E-03	17.298	7370 y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	2.02E-04	163.979	11 y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	7.98E-04	41.745	1,510,000 y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	1.96E-03	17.298	31.55 y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	1.96E-03	17.298	3040000 y	3.04E+06
110	Berkelium	Bk-247	0.00010	1.78E-10	0.001	5.80E-02	1.016	1400 y	1.40E+03
111	Carbon	C-14	5,000,000	9.00E+00	8.52	2.36E-04	139.858	5730 y	5.73E+03
112	Calcium	Ca-41	1.6110	2.90E-06	0.05	2.41E-02	1.815	103,000 y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	1.96E-03	17.298	9.30E+15 y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	1.96E-03	17.298	14.1 y	1.41E+01
115	Californium	Cf-249	0.00015	2.70E-10	0.001	5.80E-02	1.016	351 y	3.51E+02
116	Californium	Cf-250	85	1.53E-04	0.001	5.80E-02	1.016	13.08 y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	0.001	5.80E-02	1.016	898 d	2.46E+00
118	Californium	Cf-252	440,000,000	7.92E+02	0.001	5.80E-02	1.016	2.65 y	2.65E+00
119	Chlorine	Cl-36	0.2828	5.09E-07	0.001	5.80E-02	1.016	301,000 y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	2.17E-05	1521.598	29 y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	2.17E-05	1521.598	18 y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	2.17E-05	1521.598	8,500 y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	2.17E-05	1521.598	4730 y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	2.17E-05	1521.598	15600000 y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	2.17E-05	1521.598	340000 y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	5.46E-06	6031.237	5 y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	1.52E-05	2168.626	2,300,000 y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	1.52E-05	2168.626	30.07 y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	1	1.96E-03	17.298	14 y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	1	1.96E-03	17.298	9 y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	1	1.96E-03	17.298	4.76 y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	1.41E-03	23.817	2.73 y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	1.41E-03	23.817	1500000 y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	1	1.96E-03	17.298	75 y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	2.74E-02	1.652	12 y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	2.02E-04	163.979	444 y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	7.98E-04	41.745	1,200 y	1.20E+03
137	Iodine	I-129	5,000	9.00E-03	0.12	1.31E-02	2.956	15,700,000 y	1.57E+07
138	Potassium	K-40	7,003,370	1.26E+01	0.15	1.10E-02	3.445	1,277,000,000 y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	3.14E-04	105.307	3,740,000.00 y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	0.001	5.80E-02	1.016	3 y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	1.24E-03	27.077	680 y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	1.24E-03	27.077	34,700,000 y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	1.24E-03	27.077	16.13 y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	1.24E-03	27.077	20300 y	2.03E+04

TABLE 23. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, BASED ON 0.364 CM/YEAR INFILTRATION

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
146	Nickel	Ni-59	14,000,000	2.52E+01	10	2.02E-04	163.979	76000 y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	2.02E-04	163.979	100.1 y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	6.67E-04	49.894	2144000 y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	5	4.02E-04	82.490	6 y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	3.65E-04	90.639	32760 y	3.28E+04
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	1.06E-04	310.661	52500 y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	1.06E-04	310.661	22.3 y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	3.46E-03	9.964	6500000 y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	3.09E-04	106.937	17.7 y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	3.09E-04	106.937	2.6234 y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	2.24E-04	147.681	2.9 y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	2.24E-04	147.681	102 y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	2.17E-03	15.668	50 y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	2.02E-04	163.979	2.86 y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	2.02E-04	163.979	87.7 y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	2.02E-04	163.979	24110 y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	2.02E-04	163.979	6564 y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	2.02E-04	163.979	14.35 y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	2.02E-04	163.979	373300 y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	2.02E-04	163.979	80800000 y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	2.02E-04	163.979	1600 y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	2.02E-04	163.979	5.75 y	5.75E+00
164	Rhenium	Re-187	8,800	1.58E-02	0.075	1.86E-02	2.222	43500000000 y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	1.96E-03	17.298	65000 y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	5.27E-03	6.704	172 y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	8.14E-04	40.930	90 y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	4.04E-05	815.897	55 y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	4.04E-05	815.897	100000 y	1.00E+05
170	Strontium	Sr-90	25,000	4.50E-02	0.05	2.41E-02	1.815	28.78 y	2.88E+01
171	Terbium	Tb-157	5.510	9.92E-06	0.001	5.80E-02	1.016	71 y	7.10E+01
172	Terbium	Tb-158	0.590	1.06E-06	0.001	5.80E-02	1.016	180 y	1.80E+02
173	Technetium	Tc-99	187,500	3.38E-01	0.11	1.41E-02	2.793	211100 y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	1.58E-03	21.372	1E+13 y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	2.02E-04	163.979	7880 y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	2.02E-04	163.979	75380 y	7.54E+04
176	Thorium	Th-232	110,000	1.98E-01	10	2.02E-04	163.979	14050000000 y	1.41E+10

Table 24. Calculation of Equivalent Porous Media Properties based on Western LARW Cell Top Slope Design (0.265 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (g/cm^3)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.058	0.0007	4.56	0.046	5.00E-04	157.7
1	Clay Liner	1.35	61	0.419	0.0007	0.63	0.006	1.00E-06	0.315
2	Unit 3 Sand	1.6	382	0.042	0.0007	6.31	0.063	3.71E-04	117.0
1+2	Weighted avg.	1.566		0.094		2.823	0.028	3.20E-04	100.9

Notes: Volumetric water content from UNSAT-H model runs TOP_04
Infiltration from HELP model, Western LARW top slope run T1
Vadose velocity = Infiltration/effective porosity
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

Table 25. Calculation of Equivalent Porous Media Properties based on Western LARW Cell Frost-Protected Side Slope Design (0.364 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (gm/cm^3)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.061	0.0010	5.97	0.060	5.00E-04	157.7
1	Clay Liner	1.35	61	0.416	0.0010	0.88	0.009	1.00E-06	0.315
2	Unit 3 Sand	1.6	382	0.045	0.0010	8.09	0.081	3.71E-04	117.0
1+2	Weighted avg.	1.566		0.096		3.788	0.038	3.20E-04	100.9

Notes: Volumetric water content from UNSAT-H model run FPSS_04
Infiltration from HELP model, Western LARW side slope run SP1-R3
Vadose velocity = Infiltration/effective porosity
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

Table 26. LARW Cell Container Life

	Thickness (feet)	Thickness (m)	Infiltration (inches)	Infiltration (cm)	Effective Porosity	Velocity (cm/yr)	Travel Time (years)
I. Western LARW Cell Top Slope, 0.265 cm/yr infiltration rate							
Upper radon barrier	1	0.33	0.143	0.364	0.413	0.883	51.9
Lower radon barrier	6	1.97	0.143	0.364	0.420	0.869	310.6
Waste at shoulder	32	10.50	0.143	0.364	0.060	6.024	229.9
Total Travel Time through radon barrier and waste:							592.4
Conservative input (Travel time through radon barrier only):							362.5
II. Frost-Protected Side Slope, 0.364 cm/yr infiltration rate							
Upper radon barrier	1	0.33	0.143	0.364	0.413	0.883	37.1
Lower radon barrier	6	1.97	0.143	0.364	0.420	0.869	226.6
Waste at shoulder	32	10.50	0.143	0.364	0.060	6.024	174.3
Total Travel Time through radon barrier and waste:							438.0
Conservative input (Travel time through radon barrier only):							263.8
III. Top Slope, *High Precipitation Sensitivity Analysis*, 0.310 cm/yr infiltration rate							
Upper radon barrier	1	0.33	0.122	0.310	0.421	0.737	44.5
Lower radon barrier	6	1.97	0.122	0.310	0.419	0.740	266.0
Waste at shoulder	32	10.50	0.122	0.310	0.059	5.216	201.3
Total Travel Time through radon barrier and waste:							511.8
Conservative input (Travel time through radon barrier only):							310.5
IV. Side Slope, 100-fold Permeability Increase, 1.717 cm/yr infiltration rate							
Upper radon barrier	1	0.33	0.676	1.717	0.423	4.056	8.1
Lower radon barrier	6	1.97	0.676	1.717	0.426	4.032	48.8
Waste at shoulder	32	10.50	0.676	1.717	0.078	22.121	47.5
Total Travel Time through radon barrier and waste:							104.4
Conservative input (Travel time through radon barrier only):							56.9
V. Side Slope, High Precipitation, 100-fold Permeability Increase, 2.10 cm/yr infiltration rate							
Upper radon barrier	1	0.33	0.827	2.102	0.42482	4.947	6.6
Lower radon barrier	6	1.97	0.827	2.102	0.427	4.924	40.0
Waste at shoulder	18.5	6.07	0.827	2.102	0.080	26.142	23.2
Total Travel Time through radon barrier and waste:							69.8
Conservative input (Travel time through radon barrier only):							46.6

TABLE 27.
PEAK RADIONUCLIDE CONCENTRATIONS AND TIME TO EXCEED GWPL AT THE WATER TABLE
VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL TOP SLOPE (0.265 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	-1	0		> 10,000
Ag-108m	-1	3.7E+01	3.68E+10	5,875
Al-26	160	5.2E-07	5.19E+02	180
Am-241	-1	3.3E-05	3.32E+04	2,796
Am-242m	-1	1.0E-08	9.95E+00	2,171
Am-243	-1	3.1E-03	3.14E+06	3,262
Ba-133	-1	0		> 10,000
Be-10	-1	3.9E+03	3.87E+12	7,983
Bi-207	-1	1.3E-10	1.32E-01	1,232
Bi-210m	900	2.4E+02	2.42E+11	3,297
Bk-247	155	7.0E-10	6.99E-01	180
C-14	-1	0		> 10,000
Ca-41	260	6.8E-06	6.78E+03	333
Cd-113	-1	1.8E-07	1.84E+02	3,297
Cd-113m	-1	—		
Cf-249	150	8.1E-10	8.14E-01	178
Cf-250	80	1.7E-07	1.67E+02	138
Cf-251	-1	1.4E-15	1.37E-06	81
Cf-252	-1	3.1E-10	3.14E-01	83
Cl-36	160	2.2E-06	2.18E+03	180
Cm-243	-1	0		> 10,000
Cm-244	-1	0		> 10,000
Cm-245	-1	0		> 10,000
Cm-246	-1	0		> 10,000
Cm-247	-1	0		> 10,000
Cm-248	-1	0		> 10,000
Co-60	-1	0		> 10,000
Cs-135	-1	0		> 10,000
Cs-137	-1	0		> 10,000
Eu-152	-1	—		
Eu-154	-1	—		
Eu-155	-1	—		
Fe-55	-1	—		
Fe-60	-1	1.2E+03	1.23E+12	4,544
Gd-148	800	6.8E-03	6.76E+06	1,746
H-3	155	1.5E-04	1.48E+05	199
Hg-194	-1	0		> 10,000
Ho-166m	-1	4.4E+03	4.42E+12	6,891
I-129	200	1.3E-02	1.28E+07	551
K-40	205	1.5E+01	1.53E+10	645
Mn-53	-1	0		> 10,000
Na-22	-1	2.1E-10	2.07E-01	83
Nb-91	-1	1.2E+04	1.24E+13	4,386
Nb-92	-1	3.1E+01	3.06E+10	5,167
Nb-93m	-1	—		
Nb-94	-1	3.0E-03	2.97E+06	5,140
Ni-59	-1	0		> 10,000
Ni-63	-1	0		> 10,000
Np-237	-1	1.5E-03	1.47E+06	9,542
Os-194	-1	0		> 10,000
Pa-231	-1	0		> 10,000
Pb-202	-1	0		> 10,000
Pb-210	-1	0		> 10,000
Pd-107	620	3.8E+02	3.80E+11	1,893
Pm-145	-1	0		> 10,000
Pm-147	-1	0		> 10,000
Po-208	-1	0		> 10,000
Po-209	-1	0		> 10,000
Pt-193	-1	4.0E-05	4.01E+04	1,408
Ks-20	-1	—		
Ks-21	-1	—		
Ks-22	-1	—		
Ks-23	-1	—		
Ks-24	-1	0		> 10,000
Ks-25	-1	0		> 10,000
Ks-26	-1	—		
Pu-236	-1	0		> 10,000
Pu-238	-1	0		> 10,000
Pu-239	-1	0		> 10,000
Pu-240	-1	0		> 10,000
Pu-241	-1	0		> 10,000
Pu-242	-1	0		> 10,000
Pu-244	-1	0		> 10,000
Ra-226	-1	0		> 10,000
Ra-228	-1	0		> 10,000
Re-187	235	3.0E-02	3.00E+07	411
Se-79	825	2.9E+04	2.87E+13	3,293
Si-32	285	6.5E+05	6.49E+14	1,082
Sm-151	-1	3.1E-09	3.07E+00	3,158
Sn-121m	-1	0		> 10,000
Sn-126	-1	0		> 10,000
Sr-90	130	8.8E-05	8.75E+04	264
Tb-157	125	7.7E-06	7.73E+03	170
Tb-158	140	2.3E-06	2.29E+03	176
Tc-99	200	5.1E-01	5.07E+08	521
Te-123	-1	1.0E-04	1.01E+05	4,076
Th-229	-1	0		> 10,000
Th-230	-1	0		> 10,000
Th-232	-1	0		> 10,000
Ti-44	-1	0		> 10,000
Tl-204	-1	—		
Tm-170	-1	—		
U-232	-1	0		> 10,000
U-233	-1	0		> 10,000
U-234	-1	0		> 10,000
U-235	-1	0		> 10,000
U-236	-1	0		> 10,000
U-238	-1	0		> 10,000
V-50	-1	0		> 10,000
Zr-93	-1	0		> 10,000

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled
— indicates that concentrations do not peak at the water table within 10,000 yrs.

TABLE 28.

PEAK RADIONUCLIDE CONCENTRATIONS AND TIME TO EXCEED GWPL AT THE WATER TABLE
VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	-1	0		—
Ag-108m	-1	6.2E+02	6.23E+11	4,629
Al-26	115	5.1E-07	5.12E+02	133
Am-241	900	1.2E-04	1.19E+05	2,106
Am-242m	975	2.2E-07	2.21E+02	1,722
Am-243	850	3.4E-03	3.44E+06	2,364
Ba-133	-1	0		> 10,000
Be-10	-1	3.9E+03	3.91E+12	5,765
Bi-207	-1	4.0E-07	4.02E+02	1,022
Bi-210m	650	2.4E+02	2.44E+11	2,383
Bk-247	115	7.1E-10	7.06E-01	133
C-14	-1	0		> 10,000
Ca-41	190	6.8E-06	6.76E+03	243
Cd-113	-1	1.9E-07	1.85E+02	2,383
Cd-113m	-1	0		—
Cf-249	105	8.8E-10	8.80E-01	132
Cf-250	55	1.2E-06	1.18E+03	108
Cf-251	-1	7.5E-13	7.49E-04	67
Cf-252	50	1.3E-07	1.31E+02	69
Cl-36	115	2.2E-06	2.16E+03	133
Cm-243	-1	0		> 10,000
Cm-244	-1	0		> 10,000
Cm-245	-1	0		> 10,000
Cm-246	-1	0		> 10,000
Cm-247	-1	0		> 10,000
Cm-248	-1	0		> 10,000
Co-60	-1	0		> 10,000
Cs-135	-1	0		> 10,000
Cs-137	-1	0		> 10,000
Eu-152	-1	0		—
Eu-154	-1	0		—
Eu-155	-1	0		—
Fe-55	-1	0		—
Fe-60	825	1.2E+03	1.24E+12	3,288
Gd-148	550	7.9E-01	7.91E+08	1,416
H-3	95	3.4E-03	3.39E+06	159
Hg-194	-1	0		> 10,000
Ho-166m	-1	1.4E+04	1.37E+13	5,170
I-129	145	1.3E-02	1.28E+07	401
K-40	150	1.5E+01	1.53E+10	459
Mn-53	-1	0		> 10,000
Na-22	-1	9.2E-08	9.23E+01	69
Nb-91	900	4.4E+04	4.44E+13	3,304
Nb-92	-1	3.1E+01	3.08E+10	3,738
Nb-93m	-1	0		—
Nb-94	-1	3.1E-03	3.14E+06	3,718
Ni-59	-1	0		> 10,000
Ni-63	-1	0		> 10,000
Np-237	-1	1.5E-03	1.49E+06	6,891
Os-194	-1	0		> 10,000
Pa-231	-1	0		> 10,000
Pb-202	-1	0		> 10,000
Pb-210	-1	0		> 10,000
Pd-107	450	3.8E+02	3.82E+11	1,371
Pm-145	-1	0		> 10,000
Pm-147	-1	0		> 10,000
Po-208	-1	0		> 10,000
Po-209	-1	0		> 10,000
Pt-193	690	1.3E-02	1.26E+07	1,152
Ks-20	-1	0		—
Ks-21	-1	0		—
Ks-22	-1	0		—
Ks-23	-1	0		—
Ks-24	-1	0		> 10,000
Ks-25	-1	0		> 10,000
Ks-26	-1	0		—
Pu-236	-1	0		> 10,000
Pu-238	-1	0		> 10,000
Pu-239	-1	0		> 10,000
Pu-240	-1	0		> 10,000
Pu-241	-1	0		> 10,000
Pu-242	-1	0		> 10,000
Pu-244	-1	0		> 10,000
Ra-226	-1	0		> 10,000
Ra-228	-1	0		> 10,000
Re-187	170	3.0E-02	3.00E+07	300
Se-79	610	2.9E+04	2.91E+13	2,383
Si-32	205	2.2E+06	2.22E+15	816
Sm-151	-1	4.2E-06	4.19E+03	2,606
Sn-121m	-1	0		> 10,000
Sn-126	-1	0		> 10,000
Sr-90	90	5.0E-04	5.04E+05	204
Tb-157	85	1.2E-05	1.18E+04	127
Tb-158	100	2.7E-06	2.70E+03	131
Tc-99	145	5.1E-01	5.08E+08	379
Te-123	-1	1.0E-04	1.01E+05	2,949
Th-229	-1	0		> 10,000
Th-230	-1	0		> 10,000
Th-232	-1	0		> 10,000
Ti-44	-1	0		> 10,000
Tl-204	-1	3.2E-17	3.20E-08	164
Tm-170	-1	0		—
U-232	-1	0		> 10,000
U-233	-1	0		> 10,000
U-234	-1	0		> 10,000
U-235	-1	0		> 10,000
U-236	-1	0		> 10,000
U-238	-1	0		> 10,000
V-50	-1	0		> 10,000
Zr-93	-1	0		> 10,000

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled
— indicates that concentrations do not peak at the water table within 10,000 yrs

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	30	35	40	45	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
Ac-227	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	160	0	0	0	2.0E-10	1.8E-05	2.3E-04	2.0E-03	1.2E-02	5.6E-02	2.1E-01	6.8E-01	1.8E+00	4.4E+00	9.5E+00	1.8E+01	3.3E+01	5.4E+01	8.3E+01	1.2E+02	1.7E+02	2.2E+02	2.7E+02	3.3E+02
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	155	0	0	0	0	2.6E-08	3.3E-07	2.8E-06	1.7E-05	8.0E-05	3.0E-04	9.6E-04	2.6E-03	6.2E-03	1.3E-02	2.6E-02	4.5E-02	7.5E-02	1.1E-01	1.7E-01	2.3E-01	3.0E-01	3.7E-01	4.5E-01
C-14	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	260	0	0	0	0	0	0	0	4.2E-11	1.0E-09	1.6E-08	1.8E-07	1.6E-06	1.1E-05	6.4E-05	3.1E-04	1.3E-03	4.5E-03	1.5E-02	4.2E-02	1.1E-01	2.7E-01	6.2E-01	1.3E+00
Cd-113	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	150	0	0	0	0	3.6E-08	4.5E-07	3.8E-06	2.3E-05	1.1E-04	4.0E-04	1.3E-03	3.4E-03	8.1E-03	1.7E-02	3.3E-02	5.8E-02	9.5E-02	1.4E-01	2.1E-01	2.8E-01	3.7E-01	4.6E-01	5.4E-01
Cf-250	80	0	0	8.7E-11	2.3E-08	9.6E-04	9.3E-03	6.1E-02	2.9E-01	1.0E+00	3.0E+00	7.3E+00	1.5E+01	2.8E+01	4.6E+01	6.9E+01	9.4E+01	1.2E+02	1.4E+02	1.6E+02	1.7E+02	1.7E+02	1.6E+02	1.5E+02
Cf-251	-1	0	0	0	9.3E-11	1.2E-07	3.8E-07	7.9E-07	1.2E-06	1.4E-06	1.3E-06	9.8E-07	6.5E-07	3.8E-07	2.0E-07	9.4E-08	4.1E-08	1.7E-08	6.2E-09	2.2E-09	7.5E-10	2.4E-10	7.3E-11	2.2E-11
Cf-252	-1	0	2.0E-10	1.1E-07	1.0E-05	1.8E-02	6.2E-02	1.4E-01	2.4E-01	3.0E-01	3.1E-01	2.7E-01	2.0E-01	1.3E-01	7.3E-02	3.8E-02	1.8E-02	8.2E-03	3.4E-03	1.3E-03	5.0E-04	1.8E-04	6.0E-05	2.0E-05
Cl-36	160	0	0	0	8.4E-10	7.6E-05	9.7E-04	8.2E-03	5.0E-02	2.4E-01	9.0E-01	2.9E+00	7.8E+00	1.9E+01	4.0E+01	7.7E+01	1.4E+02	2.3E+02	3.5E+02	5.1E+02	7.0E+02	9.1E+02	1.1E+03	1.4E+03
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	155	0	0	0	0	2.4E-08	1.6E-06	5.4E-05	1.1E-03	1.4E-02	1.3E-01	8.6E-01	4.5E+00	1.9E+01	6.8E+01	2.1E+02	5.5E+02	1.3E+03	2.7E+03	5.2E+03	9.3E+03	1.5E+04	2.4E+04	3.4E+04
Hg-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	200	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-11	2.0E-10	2.3E-09	2.3E-08	1.8E-07	1.2E-06	7.1E-06	3.6E-05	1.6E-04	6.6E-04
K-40	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-11	2.9E-10	4.3E-09	5.0E-08	4.8E-07	3.8E-06	2.6E-05	1.6E-04	8.4E-04
Mn-53	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	1.6E-10	8.8E-08	8.1E-06	1.3E-02	4.5E-02	1.0E-01	1.6E-01	2.0E-01	2.0E-01	1.7E-01	1.2E-01	7.6E-02	4.3E-02	2.2E-02	1.0E-02	4.5E-03	1.8E-03	7.0E-04	2.5E-04	8.8E-05	2.9E-05	9.2E-06
Nb-91	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	3.8E+02	4.3E+02	4.7E+02	5.0E+02	5.1E+02	5.2E+02	5.1E+02	5.0E+02	4.8E+02	4.5E+02	4.1E+02	3.8E+02	3.4E+02	3.0E+02	2.6E+02	2.3E+02	2.0E+02	1.7E+02	1.4E+02	1.2E+02	1.0E+02
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	5.2E-01	5.8E-01	6.3E-01	6.7E-01	6.9E-01	7.0E-01	6.9E-01	6.7E-01	6.4E-01	6.0E-01	5.5E-01	5.0E-01	4.5E-01	4.0E-01	3.5E-01	3.0E-01	2.6E-01	2.2E-01	1.9E-01	1.6E-01	1.3E-01
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.6E+00	5.0E+00	9.1E+00	1.6E+01	2.6E+01	4.2E+01	6.5E+01	9.8E+01	1.4E+02	2.0E+02	2.8E+02	3.8E+02	5.1E+02	6.6E+02	8.4E+02	1.1E+03	1.3E+03	1.6E+03	1.9E+03	2.2E+03	2.6E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	6.3E-01	7.0E-01	7.5E-01	7.9E-01	8.1E-01	8.1E-01	8.0E-01	7.7E-01	7.2E-01	6.7E-01	6.2E-01	5.6E-01	4.9E-01	4.4E-01	3.8E-01	3.3E-01	2.8E-01	2.3E-01	2.0E-01	1.6E-01	1.3E-01
Cf-250	1.3E+02	1.1E+02	9.5E+01	7.8E+01	6.2E+01	4.8E+01	3.6E+01	2.7E+01	2.0E+01	1.4E+01	1.0E+01	7.1E+00	4.9E+00	3.4E+00	2.3E+00	1.5E+00	1.0E+00	6.5E-01	4.2E-01	2.7E-01	1.7E-01
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	6.2E-06	1.9E-06	5.5E-07	1.6E-07	4.4E-08	1.2E-08	3.2E-09	8.5E-10	2.2E-10	5.6E-11	1.4E-11	0	0	0	0	0	0	0	0	0	0
Cl-36	1.6E+03	1.8E+03	2.0E+03	2.1E+03	2.2E+03	2.2E+03	2.2E+03	2.1E+03	2.0E+03	1.9E+03	1.7E+03	1.6E+03	1.4E+03	1.3E+03	1.1E+03	9.7E+02	8.3E+02	7.1E+02	6.0E+02	5.0E+02	4.2E+02
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	4.7E+04	6.2E+04	7.8E+04	9.4E+04	1.1E+05	1.2E+05	1.3E+05	1.4E+05	1.5E+05	1.5E+05	1.5E+05	1.4E+05	1.3E+05	1.2E+05	1.1E+05	9.9E+04	8.7E+04	7.6E+04	6.5E+04	5.4E+04	4.5E+04
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.4E-03	8.2E-03	2.6E-02	7.4E-02	2.0E-01	5.1E-01	1.2E+00	2.8E+00	6.2E+00	1.3E+01	2.6E+01	5.0E+01	9.4E+01	1.7E+02	3.0E+02	5.0E+02	8.3E+02	1.3E+03	2.1E+03	3.3E+03	4.9E+03
K-40	4.0E-03	1.7E-02	6.6E-02	2.3E-01	7.7E-01	2.4E+00	6.9E+00	1.9E+01	4.8E+01	1.2E+02	2.7E+02	6.0E+02	1.3E+03	2.6E+03	5.2E+03	1.0E+04	1.9E+04	3.3E+04	5.9E+04	1.0E+05	1.7E+05
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	2.8E-06	8.4E-07	2.4E-07	6.7E-08	1.8E-08	4.9E-09	1.3E-09	3.3E-10	8.3E-11	2.0E-11	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390	400	410	420
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	8.3E+01	6.8E+01	5.5E+01	4.5E+01	3.6E+01	2.9E+01	2.3E+01	1.8E+01	1.5E+01	9.0E+00	5.5E+00	3.3E+00	2.0E+00	1.2E+00	6.7E-01	3.9E-01	2.2E-01	1.2E-01	7.0E-02	3.9E-02	2.2E-02
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.1E-01	8.8E-02	7.1E-02	5.8E-02	4.6E-02	3.7E-02	3.0E-02	2.3E-02	1.9E-02	1.1E-02	6.9E-03	4.1E-03	2.4E-03	1.4E-03	8.3E-04	4.7E-04	2.7E-04	1.5E-04	8.5E-05	4.7E-05	2.6E-05
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.9E+03	3.3E+03	3.7E+03	4.1E+03	4.5E+03	4.9E+03	5.2E+03	5.5E+03	5.8E+03	6.3E+03	6.6E+03	6.8E+03	6.7E+03	6.5E+03	6.2E+03	5.8E+03	5.3E+03	4.8E+03	4.2E+03	3.7E+03	3.2E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.1E-01	9.0E-02	7.3E-02	5.8E-02	4.7E-02	3.7E-02	2.9E-02	2.3E-02	1.8E-02	1.1E-02	6.5E-03	3.9E-03	2.2E-03	1.3E-03	7.4E-04	4.2E-04	2.3E-04	1.3E-04	7.1E-05	3.9E-05	2.1E-05
Cf-250	1.1E-01	7.0E-02	4.4E-02	2.7E-02	1.7E-02	1.0E-02	6.4E-03	3.9E-03	2.4E-03	8.6E-04	3.1E-04	1.1E-04	3.8E-05	1.3E-05	4.5E-06	1.5E-06	5.2E-07	1.7E-07	5.7E-08	1.9E-08	6.1E-09
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.5E+02	2.9E+02	2.3E+02	1.9E+02	1.5E+02	1.2E+02	9.8E+01	7.8E+01	6.1E+01	3.8E+01	2.3E+01	1.4E+01	8.3E+00	4.9E+00	2.8E+00	1.6E+00	9.3E-01	5.2E-01	2.9E-01	1.6E-01	9.1E-02
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.7E+04	3.0E+04	2.4E+04	1.9E+04	1.5E+04	1.2E+04	9.1E+03	7.0E+03	5.3E+03	3.0E+03	1.6E+03	8.7E+02	4.5E+02	2.3E+02	1.2E+02	5.7E+01	2.8E+01	1.3E+01	6.2E+00	2.9E+00	1.3E+00
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	7.3E+03	1.1E+04	1.5E+04	2.1E+04	3.0E+04	4.1E+04	5.5E+04	7.2E+04	9.5E+04	1.6E+05	2.5E+05	3.8E+05	5.6E+05	8.0E+05	1.1E+06	1.5E+06	2.0E+06	2.5E+06	3.2E+06	3.9E+06	4.6E+06
K-40	2.7E+05	4.4E+05	6.8E+05	1.0E+06	1.6E+06	2.3E+06	3.4E+06	4.9E+06	6.9E+06	1.3E+07	2.4E+07	4.2E+07	6.9E+07	1.1E+08	1.7E+08	2.6E+08	3.8E+08	5.3E+08	7.3E+08	9.9E+08	1.3E+09
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	4.6E-11	4.0E-10	3.1E-09	2.1E-08	1.3E-07	6.9E-07	3.4E-06	1.6E-05	6.5E-05	2.5E-04	9.2E-04	3.1E-03
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	1.2E-02	6.6E-03	3.6E-03	2.0E-03	1.1E-03	5.7E-04	3.1E-04	1.6E-04	8.8E-05	4.7E-05	2.5E-05	1.3E-05	6.9E-06	3.7E-06	1.9E-06	1.0E-06	5.3E-07	2.8E-07	1.4E-07	7.5E-08	3.9E-08
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-11
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	2.3E-11	6.5E-11	1.8E-10	4.6E-10	1.1E-09	2.7E-09	6.3E-09	1.4E-08	3.0E-08	6.2E-08
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	3.4E-11	1.2E-10	4.0E-10	1.3E-09	4.0E-09	1.2E-08	3.4E-08	9.5E-08	2.5E-07	6.6E-07
Bk-247	1.4E-05	7.8E-06	4.2E-06	2.3E-06	1.2E-06	6.6E-07	3.5E-07	1.9E-07	1.0E-07	5.3E-08	2.8E-08	1.5E-08	7.8E-09	4.1E-09	2.1E-09	1.1E-09	5.8E-10	3.0E-10	1.6E-10	8.1E-11	4.2E-11
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.7E+03	2.3E+03	1.9E+03	1.6E+03	1.3E+03	1.0E+03	8.3E+02	6.6E+02	5.2E+02	4.1E+02	3.2E+02	2.5E+02	1.9E+02	1.5E+02	1.1E+02	8.6E+01	6.5E+01	4.9E+01	3.7E+01	2.8E+01	2.1E+01
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.1E-05	6.2E-06	3.3E-06	1.8E-06	9.4E-07	4.9E-07	2.6E-07	1.4E-07	7.2E-08	3.7E-08	1.9E-08	1.0E-08	5.2E-09	2.7E-09	1.4E-09	7.2E-10	3.7E-10	1.9E-10	9.6E-11	4.9E-11	2.5E-11
Cf-250	2.0E-09	6.5E-10	2.1E-10	6.7E-11	2.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	5.0E-02	2.8E-02	1.5E-02	8.2E-03	4.5E-03	2.4E-03	1.3E-03	6.9E-04	3.7E-04	2.0E-04	1.0E-04	5.5E-05	2.9E-05	1.5E-05	8.1E-06	4.2E-06	2.2E-06	1.2E-06	6.0E-07	3.1E-07	1.6E-07
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	1.7E-11	7.1E-11	2.8E-10	1.1E-09	3.8E-09	1.3E-08	4.1E-08	1.3E-07	3.7E-07	1.0E-06	2.8E-06	7.4E-06	1.9E-05	4.5E-05	1.1E-04
H-3	6.0E-01	2.7E-01	1.2E-01	5.3E-02	2.3E-02	1.0E-02	4.3E-03	1.9E-03	7.9E-04	3.3E-04	1.4E-04	5.9E-05	2.5E-05	1.0E-05	4.2E-06	1.7E-06	7.1E-07	2.9E-07	1.2E-07	4.8E-08	1.9E-08
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	5.5E+06	6.3E+06	7.2E+06	8.1E+06	9.0E+06	9.8E+06	1.1E+07	1.1E+07	1.2E+07	1.2E+07	1.2E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.2E+07	1.2E+07	1.2E+07	1.1E+07	1.1E+07	9.9E+06
K-40	1.7E+09	2.1E+09	2.7E+09	3.3E+09	3.9E+09	4.7E+09	5.5E+09	6.3E+09	7.2E+09	8.1E+09	9.0E+09	9.9E+09	1.1E+10	1.2E+10	1.2E+10	1.3E+10	1.4E+10	1.4E+10	1.5E+10	1.5E+10	1.5E+10
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	1.0E-02	3.1E-02	8.8E-02	2.4E-01	6.4E-01	1.6E+00	3.9E+00	9.0E+00	2.0E+01	4.4E+01	9.2E+01	1.9E+02	3.7E+02	7.2E+02	1.4E+03	2.5E+03	4.5E+03	8.0E+03	1.4E+04	2.3E+04	3.9E+04
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	1.1E-11	5.2E-11	2.2E-10	8.5E-10	3.1E-09	1.1E-08	3.6E-08	1.1E-07	3.3E-07	9.4E-07	2.5E-06	6.6E-06	1.7E-05	4.0E-05	9.2E-05	2.1E-04	4.5E-04	9.5E-04	1.9E-03

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	2.0E-08	1.0E-08	5.4E-09	2.8E-09	1.5E-09	7.5E-10	3.9E-10	1.0E-10	2.7E-11	0	0	0	0	0	0	0	0	0	0	0
Am-241	1.0E-11	2.5E-11	5.8E-11	1.3E-10	2.9E-10	6.3E-10	1.3E-09	5.5E-09	2.1E-08	7.5E-08	2.5E-07	7.7E-07	2.9E-06	1.0E-05	3.3E-05	9.8E-05	2.7E-04	7.2E-04	1.8E-03	4.3E-03
Am-242m	0	0	0	1.4E-11	3.1E-11	6.4E-11	1.3E-10	5.1E-10	1.8E-09	6.1E-09	1.9E-08	5.5E-08	1.9E-07	6.1E-07	1.8E-06	5.0E-06	1.3E-05	3.1E-05	7.1E-05	1.6E-04
Am-243	2.7E-11	6.7E-11	1.6E-10	3.6E-10	8.2E-10	1.8E-09	3.8E-09	1.6E-08	6.5E-08	2.4E-07	8.1E-07	2.6E-06	1.0E-05	3.7E-05	1.2E-04	3.8E-04	1.1E-03	3.0E-03	7.9E-03	1.9E-02
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	1.2E-07	2.4E-07	4.6E-07	8.6E-07	1.6E-06	2.7E-06	4.7E-06	1.3E-05	3.3E-05	7.9E-05	1.7E-04	3.6E-04	8.2E-04	1.7E-03	3.3E-03	5.9E-03	1.0E-02	1.6E-02	2.4E-02	3.4E-02
Bi-210m	1.6E-06	4.0E-06	9.5E-06	2.2E-05	4.9E-05	1.1E-04	2.3E-04	1.0E-03	3.9E-03	1.4E-02	4.9E-02	1.6E-01	6.2E-01	2.3E+00	7.6E+00	2.4E+01	6.9E+01	1.9E+02	4.9E+02	1.2E+03
Bk-247	2.2E-11	1.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.5E+01	1.1E+01	8.4E+00	6.2E+00	4.6E+00	3.4E+00	2.5E+00	1.3E+00	6.8E-01	3.6E-01	1.9E-01	9.5E-02	4.1E-02	1.8E-02	7.5E-03	3.2E-03	1.3E-03	5.6E-04	2.3E-04	9.6E-05
Cd-113	0	0	0	0	0	0	0	0	0	1.1E-11	3.8E-11	1.2E-10	4.7E-10	1.7E-09	5.7E-09	1.8E-08	5.2E-08	1.4E-07	3.7E-07	9.1E-07
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.3E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	8.5E-08	4.4E-08	2.3E-08	1.2E-08	6.1E-09	3.1E-09	1.6E-09	4.3E-10	1.1E-10	3.0E-11	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	1.7E-11	1.2E-10	7.5E-10	4.3E-09	2.2E-08	1.6E-07	9.7E-07	5.4E-06	2.7E-05	1.3E-04	5.3E-04	2.1E-03	7.7E-03
Gd-148	2.4E-04	5.4E-04	1.2E-03	2.5E-03	5.1E-03	1.0E-02	2.0E-02	7.0E-02	2.3E-01	7.0E-01	2.0E+00	5.3E+00	1.7E+01	4.8E+01	1.3E+02	3.1E+02	7.2E+02	1.6E+03	3.2E+03	6.3E+03
H-3	7.7E-09	3.1E-09	1.2E-09	5.0E-10	2.0E-10	7.9E-11	3.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	9.3E+06	8.7E+06	8.1E+06	7.5E+06	6.9E+06	6.3E+06	5.7E+06	4.7E+06	3.7E+06	3.0E+06	2.3E+06	1.8E+06	1.3E+06	8.8E+05	6.1E+05	4.1E+05	2.8E+05	1.8E+05	1.2E+05	7.8E+04
K-40	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.4E+10	1.4E+10	1.3E+10	1.2E+10	1.0E+10	9.2E+09	7.9E+09	6.5E+09	5.2E+09	4.1E+09	3.2E+09	2.4E+09	1.8E+09	1.3E+09	9.8E+08
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	4.0E-11	2.8E-10	1.8E-09	1.7E-08	1.3E-07	9.2E-07	5.7E-06	3.2E-05	1.7E-04	7.7E-04	3.4E-03
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.3E-11	2.8E-10	1.6E-09	8.4E-09	4.1E-08	1.8E-07
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0E-11
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	6.3E+04	1.0E+05	1.6E+05	2.5E+05	3.8E+05	5.7E+05	8.6E+05	1.8E+06	3.7E+06	7.3E+06	1.4E+07	2.5E+07	4.9E+07	9.4E+07	1.7E+08	3.0E+08	5.0E+08	8.1E+08	1.3E+09	1.9E+09
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	3.8E-03	7.4E-03	1.4E-02	2.6E-02	4.7E-02	8.2E-02	1.4E-01	4.0E-01	1.0E+00	2.5E+00	5.7E+00	1.2E+01	2.9E+01	6.6E+01	1.4E+02	2.7E+02	4.9E+02	8.4E+02	1.4E+03	2.2E+03

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	30	35	40	45	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
Ks-20	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	235	0	0	0	0	0	0	0	0	8.1E-11	2.6E-09	5.6E-08	8.6E-07	9.9E-06	8.9E-05	6.5E-04	4.0E-03	2.0E-02	9.1E-02	3.6E-01	1.3E+00	4.1E+00	1.2E+01	3.2E+01
Se-79	825	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	285	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sm-151	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	130	0	0	0	0	0	5.3E-11	3.2E-09	1.1E-07	2.3E-06	3.2E-05	3.3E-04	2.6E-03	1.6E-02	7.9E-02	3.4E-01	1.2E+00	3.9E+00	1.1E+01	2.9E+01	6.7E+01	1.5E+02	2.9E+02	5.5E+02
Tb-157	125	0	0	3.2E-11	1.1E-08	8.3E-04	1.0E-02	8.1E-02	4.7E-01	2.1E+00	7.7E+00	2.3E+01	6.0E+01	1.4E+02	2.8E+02	5.1E+02	8.7E+02	1.4E+03	2.0E+03	2.8E+03	3.6E+03	4.5E+03	5.4E+03	6.2E+03
Tb-158	140	0	0	0	1.5E-09	1.3E-04	1.6E-03	1.3E-02	7.9E-02	3.6E-01	1.4E+00	4.2E+00	1.1E+01	2.6E+01	5.5E+01	1.1E+02	1.8E+02	3.0E+02	4.5E+02	6.4E+02	8.6E+02	1.1E+03	1.4E+03	1.6E+03
Tc-99	200	0	0	0	0	0	0	0	0	0	0	0	3.6E-11	8.4E-10	1.4E-08	1.9E-07	1.9E-06	1.6E-05	1.1E-04	6.8E-04	3.5E-03	1.6E-02	6.7E-02	2.5E-01
Te-123	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	8.1E+01	1.9E+02	4.2E+02	8.8E+02	1.8E+03	3.3E+03	6.1E+03	1.1E+04	1.8E+04	3.0E+04	4.8E+04	7.4E+04	1.1E+05	1.6E+05	2.4E+05	3.3E+05	4.6E+05	6.2E+05	8.3E+05	1.1E+06	1.4E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	7.2E-11	6.3E-10	4.9E-09	3.4E-08	2.1E-07	1.2E-06	6.5E-06	3.2E-05	1.4E-04	6.1E-04	2.4E-03	8.9E-03	3.1E-02	1.0E-01	3.3E-01	9.8E-01
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	9.8E+02	1.7E+03	2.7E+03	4.1E+03	6.0E+03	8.6E+03	1.2E+04	1.6E+04	2.0E+04	2.6E+04	3.2E+04	3.8E+04	4.5E+04	5.1E+04	5.8E+04	6.4E+04	7.0E+04	7.6E+04	8.0E+04	8.3E+04	8.6E+04
Tb-157	6.9E+03	7.4E+03	7.7E+03	7.7E+03	7.6E+03	7.3E+03	6.9E+03	6.4E+03	5.8E+03	5.2E+03	4.6E+03	4.0E+03	3.4E+03	2.9E+03	2.4E+03	2.0E+03	1.6E+03	1.3E+03	1.1E+03	8.6E+02	6.8E+02
Tb-158	1.8E+03	2.0E+03	2.2E+03	2.3E+03	2.3E+03	2.3E+03	2.2E+03	2.1E+03	2.0E+03	1.8E+03	1.6E+03	1.5E+03	1.3E+03	1.1E+03	9.8E+02	8.3E+02	7.0E+02	5.9E+02	4.9E+02	4.0E+02	3.3E+02
Tc-99	8.4E-01	2.6E+00	7.6E+00	2.1E+01	5.2E+01	1.2E+02	2.8E+02	6.1E+02	1.3E+03	2.5E+03	4.8E+03	8.8E+03	1.6E+04	2.7E+04	4.6E+04	7.4E+04	1.2E+05	1.8E+05	2.8E+05	4.2E+05	6.1E+05
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE:

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL [illegible]RAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390	400	410	420
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.8E+06	2.2E+06	2.8E+06	3.4E+06	4.1E+06	4.9E+06	5.7E+06	6.7E+06	7.8E+06	1.0E+07	1.3E+07	1.5E+07	1.8E+07	2.1E+07	2.4E+07	2.6E+07	2.8E+07	2.9E+07	3.0E+07	3.0E+07	3.0E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	2.8E+00	7.8E+00	2.1E+01	5.3E+01	1.3E+02	3.1E+02	7.2E+02	1.6E+03	3.5E+03	1.5E+04	6.0E+04	2.2E+05	7.1E+05	2.2E+06	6.3E+06	1.7E+07	4.3E+07	1.0E+08	2.3E+08	5.1E+08	1.1E+09
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	8.7E+04	8.7E+04	8.7E+04	8.5E+04	8.2E+04	7.9E+04	7.5E+04	7.1E+04	6.6E+04	5.6E+04	4.7E+04	3.7E+04	2.9E+04	2.2E+04	1.7E+04	1.2E+04	8.8E+03	6.2E+03	4.3E+03	3.0E+03	2.0E+03
Tb-157	5.4E+02	4.2E+02	3.3E+02	2.5E+02	1.9E+02	1.5E+02	1.1E+02	8.5E+01	6.4E+01	3.6E+01	2.0E+01	1.1E+01	5.8E+00	3.1E+00	1.6E+00	8.5E-01	4.4E-01	2.3E-01	1.2E-01	5.9E-02	3.0E-02
Tb-158	2.7E+02	2.1E+02	1.7E+02	1.4E+02	1.1E+02	8.5E+01	6.7E+01	5.2E+01	4.0E+01	2.4E+01	1.4E+01	8.1E+00	4.7E+00	2.6E+00	1.5E+00	8.1E-01	4.5E-01	2.4E-01	1.3E-01	7.1E-02	3.8E-02
Tc-99	8.7E+05	1.2E+06	1.7E+06	2.3E+06	3.1E+06	4.2E+06	5.4E+06	7.0E+06	9.0E+06	1.4E+07	2.2E+07	3.2E+07	4.4E+07	6.1E+07	8.1E+07	1.0E+08	1.3E+08	1.6E+08	2.0E+08	2.3E+08	2.7E+08
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE:

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.9E+07	2.8E+07	2.7E+07	2.5E+07	2.3E+07	2.1E+07	1.9E+07	1.8E+07	1.6E+07	1.4E+07	1.2E+07	1.1E+07	9.1E+06	7.8E+06	6.6E+06	5.6E+06	4.7E+06	4.0E+06	3.3E+06	2.7E+06	2.3E+06
Se-79	0	0	0	0	0	0	0	1.6E-11	7.0E-11	2.9E-10	1.1E-09	4.1E-09	1.5E-08	4.9E-08	1.6E-07	4.9E-07	1.5E-06	4.2E-06	1.2E-05	3.1E-05	8.0E-05
Si-32	2.1E+09	4.1E+09	7.7E+09	1.4E+10	2.4E+10	4.1E+10	6.8E+10	1.1E+11	1.7E+11	2.7E+11	4.1E+11	6.0E+11	8.7E+11	1.2E+12	1.7E+12	2.4E+12	3.3E+12	4.4E+12	5.8E+12	7.6E+12	9.8E+12
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.4E+03	8.9E+02	5.8E+02	3.8E+02	2.4E+02	1.5E+02	9.8E+01	6.1E+01	3.8E+01	2.4E+01	1.4E+01	8.8E+00	5.4E+00	3.2E+00	1.9E+00	1.2E+00	6.9E-01	4.1E-01	2.4E-01	1.4E-01	8.4E-02
Tb-157	1.5E-02	7.4E-03	3.6E-03	1.8E-03	8.8E-04	4.3E-04	2.1E-04	1.0E-04	5.0E-05	2.4E-05	1.2E-05	5.5E-06	2.7E-06	1.3E-06	6.0E-07	2.9E-07	1.4E-07	6.5E-08	3.1E-08	1.4E-08	6.8E-09
Tb-158	2.0E-02	1.1E-02	5.6E-03	2.9E-03	1.5E-03	7.9E-04	4.1E-04	2.1E-04	1.1E-04	5.5E-05	2.8E-05	1.4E-05	7.3E-06	3.7E-06	1.9E-06	9.5E-07	4.8E-07	2.4E-07	1.2E-07	6.0E-08	3.0E-08
Tc-99	3.1E+08	3.4E+08	3.8E+08	4.1E+08	4.4E+08	4.6E+08	4.8E+08	5.0E+08	5.0E+08	5.1E+08	5.0E+08	5.0E+08	4.9E+08	4.7E+08	4.5E+08	4.3E+08	4.1E+08	3.8E+08	3.6E+08	3.3E+08	3.0E+08
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE:

TABLE 29. RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL TOP SLOPE (0.265 cm/yr INFILTRATION)

NUCLIDE:	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.9E+06	1.5E+06	1.2E+06	1.0E+06	8.2E+05	6.6E+05	5.3E+05	3.4E+05	2.2E+05	1.4E+05	8.4E+04	5.2E+04	2.8E+04	1.5E+04	7.8E+03	4.1E+03	2.1E+03	1.1E+03	5.5E+02	2.8E+02
Se-79	2.0E-04	4.9E-04	1.2E-03	2.7E-03	6.0E-03	1.3E-02	2.8E-02	1.2E-01	4.8E-01	1.8E+00	6.0E+00	1.9E+01	7.6E+01	2.7E+02	9.2E+02	2.9E+03	8.3E+03	2.3E+04	5.9E+04	1.5E+05
Si-32	1.2E+13	1.6E+13	1.9E+13	2.4E+13	2.9E+13	3.6E+13	4.3E+13	6.0E+13	8.1E+13	1.1E+14	1.4E+14	1.7E+14	2.2E+14	2.8E+14	3.4E+14	3.9E+14	4.5E+14	5.1E+14	5.5E+14	5.9E+14
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.9E-02	2.9E-02	1.7E-02	9.6E-03	5.6E-03	3.2E-03	1.8E-03	6.0E-04	2.0E-04	6.3E-05	2.0E-05	6.5E-06	1.5E-06	3.6E-07	8.4E-08	1.9E-08	4.5E-09	1.0E-09	2.3E-10	5.3E-11
Tb-157	3.2E-09	1.5E-09	7.1E-10	3.3E-10	1.6E-10	7.3E-11	3.4E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	1.5E-08	7.5E-09	3.7E-09	1.9E-09	9.3E-10	4.6E-10	2.3E-10	5.6E-11	1.4E-11	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.8E+08	2.5E+08	2.3E+08	2.1E+08	1.8E+08	1.6E+08	1.5E+08	1.1E+08	8.7E+07	6.6E+07	4.9E+07	3.6E+07	2.5E+07	1.6E+07	1.1E+07	6.9E+06	4.4E+06	2.8E+06	1.7E+06	1.1E+06
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	3.8E-11	1.7E-10	7.3E-10	2.8E-09	1.0E-08	3.5E-08	1.1E-07
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE:

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130
Ac-227	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	115	0	0	0	0	0	2.2E-09	5.1E-07	3.1E-05	7.9E-04	1.0E-02	8.1E-02	4.4E-01	1.8E+00	5.6E+00	1.5E+01	3.3E+01	6.3E+01	1.1E+02	1.7E+02	2.4E+02	3.1E+02	3.8E+02	4.4E+02	4.9E+02	5.1E+02
Am-241	900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	115	0	0	0	0	0	0	7.3E-10	4.5E-08	1.1E-06	1.5E-05	1.2E-04	6.3E-04	2.5E-03	8.0E-03	2.1E-02	4.6E-02	8.9E-02	1.5E-01	2.4E-01	3.3E-01	4.4E-01	5.3E-01	6.1E-01	6.7E-01	7.0E-01
C-14	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	190	0	0	0	0	0	0	0	0	0	5.3E-11	3.5E-09	1.2E-07	2.3E-06	2.9E-05	2.7E-04	1.8E-03	9.7E-03	4.3E-02	1.6E-01	5.1E-01	1.4E+00	3.6E+00	8.3E+00	1.8E+01	3.5E+01
Cd-113	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	105	0	0	0	0	0	0	1.0E-09	6.4E-08	1.6E-06	2.0E-05	1.6E-04	8.7E-04	3.5E-03	1.1E-02	2.8E-02	6.2E-02	1.2E-01	2.0E-01	3.1E-01	4.3E-01	5.6E-01	6.8E-01	7.8E-01	8.5E-01	8.8E-01
Cf-250	55	0	0	0	0	3.6E-10	4.4E-07	7.7E-05	3.7E-03	7.1E-02	7.0E-01	4.3E+00	1.8E+01	5.5E+01	1.4E+02	2.7E+02	4.6E+02	6.8E+02	9.0E+02	1.1E+03	1.2E+03	1.2E+03	1.1E+03	9.8E+02	8.2E+02	6.6E+02
Cf-251	-1	0	0	0	0	4.5E-11	1.7E-08	9.6E-07	1.5E-05	8.9E-05	2.8E-04	5.5E-04	7.3E-04	7.2E-04	5.6E-04	3.6E-04	1.9E-04	9.1E-05	3.8E-05	1.4E-05	5.0E-06	1.6E-06	4.8E-07	1.4E-07	3.7E-08	9.4E-09
Cf-252	50	0	0	3.5E-11	2.4E-08	3.6E-06	1.5E-03	9.5E-02	1.6E+00	1.1E+01	3.8E+01	8.1E+01	1.2E+02	1.3E+02	1.1E+02	7.9E+01	4.7E+01	2.5E+01	1.1E+01	4.8E+00	1.8E+00	6.5E-01	2.2E-01	6.8E-02	2.0E-02	5.7E-03
Cl-36	115	0	0	0	0	0	9.4E-09	2.1E-06	1.3E-04	3.3E-03	4.3E-02	3.4E-01	1.9E+00	7.5E+00	2.4E+01	6.2E+01	1.4E+02	2.7E+02	4.6E+02	7.1E+02	1.0E+03	1.3E+03	1.6E+03	1.9E+03	2.0E+03	2.1E+03
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	825	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	95	0	0	0	0	0	0	2.6E-10	2.5E-07	5.3E-05	3.8E-03	1.3E-01	2.2E+00	2.4E+01	1.8E+02	9.6E+02	4.0E+03	1.3E+04	3.7E+04	8.8E+04	1.8E+05	3.4E+05	5.8E+05	8.9E+05	1.3E+06	1.7E+06
Hg-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0E-10	5.8E-09	1.1E-07	1.6E-06	1.7E-05	1.4E-04	9.4E-04	5.4E-03	2.6E-02	1.1E-01	4.2E-01
K-40	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8E-11	9.2E-10	3.1E-08	6.9E-07	1.1E-05	1.4E-04	1.4E-03	1.1E-02	7.1E-02	4.0E-01	1.9E+00
Mn-53	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	0	3.1E-11	2.1E-08	3.1E-06	1.3E-03	7.7E-02	1.3E+00	8.4E+00	2.9E+01	6.0E+01	8.6E+01	9.2E+01	7.7E+01	5.3E+01	3.1E+01	1.6E+01	7.1E+00	2.9E+00	1.1E+00	3.8E-01	1.2E-01	3.7E-02	1.1E-02	3.0E-03
Nb-91	900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	690	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	-1	0	0	0	0	0	4.2E-10	3.0E-09	5.8E-09	4.6E-09	1.9E-09	4.6E-10	7.8E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	0	0	0	0	0	0	3.9E-11	5.4E-11	3.6E-11	1.3E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	5.1E+02	4.9E+02	4.6E+02	4.2E+02	3.7E+02	3.2E+02	2.7E+02	2.3E+02	1.8E+02	1.5E+02	1.2E+02	9.0E+01	6.9E+01	5.2E+01	3.9E+01	2.9E+01	2.2E+01	1.6E+01	1.1E+01	8.2E+00	5.9E+00	4.2E+00	2.9E+00
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	7.0E-01	6.8E-01	6.3E-01	5.7E-01	5.1E-01	4.4E-01	3.7E-01	3.0E-01	2.5E-01	2.0E-01	1.6E-01	1.2E-01	9.2E-02	7.0E-02	5.2E-02	3.9E-02	2.8E-02	2.1E-02	1.5E-02	1.1E-02	7.7E-03	5.4E-03	3.8E-03
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	6.4E+01	1.1E+02	1.8E+02	2.9E+02	4.3E+02	6.2E+02	8.7E+02	1.2E+03	1.5E+03	1.9E+03	2.4E+03	2.9E+03	3.4E+03	4.0E+03	4.5E+03	5.0E+03	5.5E+03	5.9E+03	6.2E+03	6.5E+03	6.6E+03	6.7E+03	6.8E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	8.7E-01	8.4E-01	7.8E-01	7.0E-01	6.1E-01	5.2E-01	4.4E-01	3.6E-01	2.9E-01	2.3E-01	1.8E-01	1.4E-01	1.0E-01	7.9E-02	5.9E-02	4.3E-02	3.1E-02	2.3E-02	1.6E-02	1.2E-02	8.2E-03	5.8E-03	4.0E-03
Cf-250	5.1E+02	3.8E+02	2.7E+02	1.9E+02	1.3E+02	8.6E+01	5.5E+01	3.5E+01	2.2E+01	1.4E+01	8.2E+00	4.9E+00	2.9E+00	1.7E+00	9.7E-01	5.5E-01	3.1E-01	1.7E-01	9.7E-02	5.4E-02	2.9E-02	1.6E-02	8.7E-03
Cf-251	2.3E-09	5.4E-10	1.2E-10	2.8E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	1.5E-03	4.0E-04	1.0E-04	2.5E-05	6.0E-06	1.4E-06	3.2E-07	7.2E-08	1.6E-08	3.4E-09	7.3E-10	1.5E-10	3.2E-11	0	0	0	0	0	0	0	0	0	0
Cl-36	2.1E+03	2.1E+03	1.9E+03	1.8E+03	1.6E+03	1.4E+03	1.1E+03	9.5E+02	7.7E+02	6.2E+02	4.9E+02	3.8E+02	2.9E+02	2.2E+02	1.7E+02	1.2E+02	9.1E+01	6.6E+01	4.8E+01	3.4E+01	2.5E+01	1.7E+01	1.2E+01
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.2E+06	2.6E+06	2.9E+06	3.2E+06	3.4E+06	3.4E+06	3.3E+06	3.1E+06	2.9E+06	2.6E+06	2.2E+06	1.9E+06	1.6E+06	1.3E+06	1.0E+06	8.1E+05	6.3E+05	4.8E+05	3.6E+05	2.7E+05	1.9E+05	1.4E+05	1.0E+05
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.4E+00	4.3E+00	1.2E+01	3.1E+01	7.5E+01	1.7E+02	3.7E+02	7.4E+02	1.4E+03	2.7E+03	4.7E+03	8.1E+03	1.3E+04	2.2E+04	3.4E+04	5.1E+04	7.5E+04	1.1E+05	1.5E+05	2.1E+05	2.9E+05	3.8E+05	5.0E+05
K-40	8.3E+00	3.2E+01	1.1E+02	3.5E+02	1.0E+03	2.8E+03	7.0E+03	1.7E+04	3.8E+04	8.0E+04	1.6E+05	3.2E+05	6.0E+05	1.1E+06	1.9E+06	3.2E+06	5.2E+06	8.4E+06	1.3E+07	2.0E+07	2.9E+07	4.3E+07	6.1E+07
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	7.8E-04	2.0E-04	4.9E-05	1.2E-05	2.8E-06	6.3E-07	1.4E-07	3.1E-08	6.6E-09	1.4E-09	2.9E-10	5.9E-11	1.2E-11	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	5.9E-11	2.7E-10	1.1E-09	4.5E-09	1.7E-08
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390	400	410	420
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	2.1E+00	1.4E+00	1.0E+00	6.9E-01	4.7E-01	3.3E-01	2.2E-01	1.5E-01	1.0E-01	6.9E-02	4.7E-02	2.1E-02	9.4E-03	4.1E-03	1.8E-03	7.8E-04	3.4E-04	1.5E-04	6.2E-05	2.6E-05	1.1E-05	4.6E-06	1.9E-06
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2E-11	1.2E-10	6.1E-10	2.8E-09	1.2E-08	4.4E-08
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-11	1.9E-10	9.8E-10	4.7E-09
Bk-247	2.7E-03	1.9E-03	1.3E-03	8.9E-04	6.1E-04	4.2E-04	2.8E-04	1.9E-04	1.3E-04	8.8E-05	5.9E-05	2.7E-05	1.2E-05	5.2E-06	2.2E-06	9.7E-07	4.2E-07	1.8E-07	7.5E-08	3.2E-08	1.3E-08	5.6E-09	2.3E-09
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	6.7E+03	6.6E+03	6.4E+03	6.1E+03	5.8E+03	5.5E+03	5.1E+03	4.8E+03	4.4E+03	4.0E+03	3.7E+03	3.0E+03	2.4E+03	1.8E+03	1.4E+03	1.1E+03	7.8E+02	5.7E+02	4.1E+02	2.9E+02	2.1E+02	1.4E+02	9.9E+01
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.8E-03	1.9E-03	1.3E-03	9.1E-04	6.2E-04	4.2E-04	2.9E-04	1.9E-04	1.3E-04	8.6E-05	5.8E-05	2.5E-05	1.1E-05	4.8E-06	2.1E-06	8.8E-07	3.7E-07	1.6E-07	6.5E-08	2.7E-08	1.1E-08	4.6E-09	1.9E-09
Cf-250	4.7E-03	2.5E-03	1.3E-03	7.1E-04	3.7E-04	2.0E-04	1.0E-04	5.4E-05	2.8E-05	1.5E-05	7.5E-06	2.0E-06	5.2E-07	1.4E-07	3.5E-08	9.0E-09	2.3E-09	5.8E-10	1.4E-10	3.6E-11	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	8.6E+00	6.0E+00	4.2E+00	2.9E+00	2.0E+00	1.4E+00	9.3E-01	6.4E-01	4.3E-01	2.9E-01	2.0E-01	8.8E-02	3.9E-02	1.7E-02	7.6E-03	3.3E-03	1.4E-03	6.1E-04	2.6E-04	1.1E-04	4.6E-05	1.9E-05	8.1E-06
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6E-11	2.0E-10	1.4E-09	9.0E-09	5.1E-08	2.6E-07	1.2E-06	5.4E-06
H-3	7.1E+04	5.0E+04	3.5E+04	2.4E+04	1.6E+04	1.1E+04	7.4E+03	4.9E+03	3.3E+03	2.2E+03	1.4E+03	6.0E+02	2.5E+02	1.0E+02	4.0E+01	1.6E+01	6.2E+00	2.4E+00	9.0E-01	3.4E-01	1.3E-01	4.7E-02	1.7E-02
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	6.5E+05	8.2E+05	1.0E+06	1.3E+06	1.5E+06	1.9E+06	2.2E+06	2.6E+06	3.1E+06	3.5E+06	4.0E+06	5.1E+06	6.3E+06	7.5E+06	8.7E+06	9.9E+06	1.1E+07	1.2E+07	1.2E+07	1.3E+07	1.3E+07	1.3E+07	1.2E+07
K-40	8.5E+07	1.2E+08	1.6E+08	2.1E+08	2.8E+08	3.6E+08	4.6E+08	5.7E+08	7.2E+08	8.8E+08	1.1E+09	1.6E+09	2.2E+09	2.9E+09	3.8E+09	4.8E+09	5.9E+09	7.1E+09	8.4E+09	9.6E+09	1.1E+10	1.2E+10	1.3E+10
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	5.9E-08	2.0E-07	6.4E-07	2.0E-06	5.8E-06	1.6E-05	4.4E-05	1.2E-04	2.9E-04	7.2E-04	1.7E-03	8.7E-03	4.0E-02	1.7E-01	6.5E-01	2.3E+00	7.5E+00	2.3E+01	6.6E+01	1.8E+02	4.6E+02	1.1E+03	2.6E+03
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	2.1E-11	1.9E-10	1.4E-09	9.9E-09	6.0E-08	3.3E-07	1.6E-06	7.4E-06	3.1E-05	1.2E-04	4.2E-04
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	8.1E-07	3.3E-07	1.4E-07	5.7E-08	2.3E-08	9.6E-09	3.9E-09	1.6E-09	6.5E-10	2.7E-10	1.1E-10	4.4E-11	1.8E-11	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	1.0E-11	3.5E-11	1.1E-10	3.5E-10	1.0E-09	2.8E-09	7.5E-09	1.9E-08	4.8E-08	1.1E-07	2.7E-07	6.0E-07	1.3E-06	2.7E-06	5.6E-06	1.1E-05	2.2E-05	4.2E-05	7.9E-05	1.4E-04
Am-242m	0	0	0	0	0	2.3E-11	6.8E-11	1.9E-10	5.2E-10	1.3E-09	3.4E-09	8.0E-09	1.9E-08	4.2E-08	9.0E-08	1.9E-07	3.9E-07	7.7E-07	1.5E-06	2.8E-06	5.3E-06	9.5E-06	1.7E-05
Am-243	0	0	0	2.1E-11	7.1E-11	2.3E-10	7.2E-10	2.1E-09	6.1E-09	1.7E-08	4.3E-08	1.1E-07	2.6E-07	6.2E-07	1.4E-06	3.1E-06	6.7E-06	1.4E-05	2.8E-05	5.7E-05	1.1E-04	2.1E-04	3.9E-04
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	1.6E-07	5.3E-07	1.6E-06	4.8E-06	1.3E-05	3.5E-05	8.8E-05	2.1E-04	4.7E-04	1.0E-03	2.2E-03	4.4E-03	8.6E-03	1.6E-02	3.0E-02	5.3E-02	9.1E-02	1.5E-01	2.5E-01	4.0E-01	6.2E-01	9.5E-01	1.4E+00
Bi-210m	2.1E-08	8.7E-08	3.4E-07	1.2E-06	4.2E-06	1.4E-05	4.3E-05	1.3E-04	3.6E-04	9.8E-04	2.6E-03	6.5E-03	1.6E-02	3.7E-02	8.4E-02	1.9E-01	4.0E-01	8.4E-01	1.7E+00	3.4E+00	6.6E+00	1.3E+01	2.3E+01
Bk-247	9.6E-10	4.0E-10	1.6E-10	6.7E-11	2.7E-11	1.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	6.8E+01	4.6E+01	3.1E+01	2.1E+01	1.4E+01	9.2E+00	6.1E+00	4.0E+00	2.6E+00	1.7E+00	1.1E+00	7.0E-01	4.5E-01	2.9E-01	1.8E-01	1.2E-01	7.4E-02	4.7E-02	2.9E-02	1.8E-02	1.2E-02	7.2E-03	4.5E-03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	2.8E-11	6.4E-11	1.4E-10	3.0E-10	6.4E-10	1.3E-09	2.6E-09	5.0E-09	9.5E-09	1.8E-08
Cd-113m	0	1.4E-11	3.3E-11	7.3E-11	1.5E-10	3.1E-10	5.9E-10	1.1E-09	1.9E-09	3.1E-09	4.9E-09	7.6E-09	1.1E-08	1.6E-08	2.3E-08	3.1E-08	4.0E-08	5.1E-08	6.4E-08	7.8E-08	9.3E-08	1.1E-07	1.2E-07
Cf-249	7.7E-10	3.1E-10	1.3E-10	5.1E-11	2.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.4E-06	1.4E-06	5.8E-07	2.4E-07	9.8E-08	4.0E-08	1.7E-08	6.7E-09	2.7E-09	1.1E-09	4.5E-10	1.8E-10	7.4E-11	3.0E-11	1.2E-11	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	2.1E-11	4.3E-11	8.4E-11	1.6E-10	2.8E-10	4.7E-10	7.6E-10	1.2E-09	1.8E-09	2.6E-09	3.7E-09	5.0E-09	6.6E-09	8.5E-09	1.1E-08	1.3E-08	1.5E-08	1.8E-08	2.0E-08	2.3E-08
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	1.7E-11	6.8E-11	2.5E-10	8.7E-10	2.9E-09	9.3E-09	2.9E-08	8.5E-08	2.4E-07	6.6E-07	1.8E-06	4.5E-06	1.1E-05	2.7E-05
Gd-148	2.2E-05	8.3E-05	2.9E-04	9.7E-04	3.1E-03	9.1E-03	2.6E-02	7.0E-02	1.8E-01	4.5E-01	1.1E+00	2.4E+00	5.4E+00	1.2E+01	2.4E+01	4.8E+01	9.5E+01	1.8E+02	3.4E+02	6.1E+02	1.1E+03	1.9E+03	3.2E+03
H-3	6.2E-03	2.2E-03	8.1E-04	2.9E-04	1.0E-04	3.6E-05	1.3E-05	4.4E-06	1.5E-06	5.3E-07	1.8E-07	6.3E-08	2.2E-08	7.4E-09	2.5E-09	8.6E-10	2.9E-10	9.9E-11	3.3E-11	1.1E-11	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.2E+07	1.1E+07	1.1E+07	9.8E+06	9.0E+06	8.1E+06	7.3E+06	6.4E+06	5.7E+06	4.9E+06	4.3E+06	3.7E+06	3.1E+06	2.6E+06	2.2E+06	1.9E+06	1.5E+06	1.3E+06	1.0E+06	8.6E+05	7.0E+05	5.7E+05	4.6E+05
K-40	1.4E+10	1.4E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.4E+10	1.4E+10	1.3E+10	1.2E+10	1.2E+10	1.1E+10	9.8E+09	8.9E+09	8.1E+09	7.2E+09	6.5E+09	5.7E+09	5.0E+09	4.4E+09	3.9E+09	3.3E+09
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	1.4E-11	5.9E-11	2.3E-10	8.7E-10	3.1E-09	1.1E-08	3.5E-08	1.1E-07	3.3E-07	9.7E-07	2.7E-06	7.5E-06
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	3.6E-11	1.0E-10	2.8E-10
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	5.9E+03	1.3E+04	2.6E+04	5.2E+04	1.0E+05	1.9E+05	3.4E+05	6.1E+05	1.1E+06	1.8E+06	2.9E+06	4.7E+06	7.4E+06	1.2E+07	1.8E+07	2.6E+07	3.9E+07	5.6E+07	8.0E+07	1.1E+08	1.6E+08	2.1E+08	2.9E+08
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	1.4E-03	4.3E-03	1.3E-02	3.6E-02	9.4E-02	2.4E-01	5.7E-01	1.3E+00	2.9E+00	6.3E+00	1.3E+01	2.6E+01	5.0E+01	9.3E+01	1.7E+02	3.0E+02	5.1E+02	8.6E+02	1.4E+03	2.3E+03	3.6E+03	5.5E+03	8.4E+03
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8E-11	1.5E-10	1.1E-09	6.8E-09	4.0E-08
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	2.6E-04	4.6E-04	7.9E-04	1.3E-03	2.2E-03	5.9E-03	1.5E-02	3.5E-02	7.9E-02	1.7E-01	4.2E-01	9.5E-01	2.1E+00	4.3E+00	8.4E+00	1.6E+01	2.9E+01	5.0E+01
Am-242m	2.9E-05	5.0E-05	8.3E-05	1.4E-04	2.2E-04	5.5E-04	1.3E-03	2.8E-03	6.0E-03	1.2E-02	2.7E-02	5.7E-02	1.1E-01	2.2E-01	3.9E-01	6.8E-01	1.1E+00	1.8E+00
Am-243	7.0E-04	1.3E-03	2.2E-03	3.8E-03	6.4E-03	1.8E-02	4.5E-02	1.1E-01	2.6E-01	5.7E-01	1.4E+00	3.4E+00	7.8E+00	1.7E+01	3.4E+01	6.7E+01	1.3E+02	2.3E+02
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2E-11	1.6E-10	1.0E-09	5.8E-09	3.1E-08
Bi-207	2.1E+00	3.0E+00	4.2E+00	5.8E+00	7.9E+00	1.4E+01	2.3E+01	3.7E+01	5.5E+01	7.9E+01	1.2E+02	1.6E+02	2.1E+02	2.6E+02	3.1E+02	3.5E+02	3.8E+02	4.0E+02
Bi-210m	4.2E+01	7.6E+01	1.3E+02	2.3E+02	3.9E+02	1.1E+03	2.8E+03	6.7E+03	1.6E+04	3.5E+04	8.8E+04	2.1E+05	4.8E+05	1.0E+06	2.1E+06	4.1E+06	7.8E+06	1.4E+07
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.8E-03	1.7E-03	1.1E-03	6.7E-04	4.1E-04	1.6E-04	6.0E-05	2.2E-05	8.4E-06	3.1E-06	9.1E-07	2.6E-07	7.5E-08	2.2E-08	6.1E-09	1.7E-09	4.9E-10	1.4E-10
Cd-113	3.2E-08	5.8E-08	1.0E-07	1.7E-07	3.0E-07	8.1E-07	2.1E-06	5.1E-06	1.2E-05	2.6E-05	6.7E-05	1.6E-04	3.6E-04	7.8E-04	1.6E-03	3.1E-03	5.9E-03	1.1E-02
Cd-113m	1.4E-07	1.5E-07	1.6E-07	1.7E-07	1.8E-07	1.8E-07	1.7E-07	1.6E-07	1.4E-07	1.1E-07	8.5E-08	6.0E-08	4.0E-08	2.5E-08	1.5E-08	8.5E-09	4.7E-09	2.5E-09
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	2.5E-08	2.7E-08	2.8E-08	2.9E-08	2.9E-08	2.9E-08	2.7E-08	2.3E-08	1.9E-08	1.5E-08	1.1E-08	7.2E-09	4.5E-09	2.7E-09	1.5E-09	8.2E-10	4.3E-10	2.2E-10
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	6.5E-05	1.5E-04	3.3E-04	7.2E-04	1.5E-03	6.6E-03	2.6E-02	9.4E-02	3.2E-01	1.0E+00	4.0E+00	1.4E+01	4.7E+01	1.5E+02	4.2E+02	1.2E+03	3.0E+03	7.3E+03
Gd-148	5.2E+03	8.5E+03	1.4E+04	2.1E+04	3.3E+04	7.6E+04	1.6E+05	3.3E+05	6.3E+05	1.2E+06	2.4E+06	4.5E+06	8.0E+06	1.4E+07	2.2E+07	3.4E+07	5.1E+07	7.4E+07
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	1.5E-11	1.4E-10	1.1E-09	7.5E-09	4.7E-08	2.7E-07	1.4E-06
I-129	3.7E+05	3.0E+05	2.4E+05	1.9E+05	1.5E+05	9.3E+04	5.8E+04	3.5E+04	2.1E+04	1.3E+04	6.7E+03	3.5E+03	1.8E+03	9.0E+02	4.5E+02	2.3E+02	1.1E+02	5.5E+01
K-40	2.9E+09	2.5E+09	2.1E+09	1.8E+09	1.5E+09	1.1E+09	7.7E+08	5.4E+08	3.7E+08	2.5E+08	1.5E+08	9.2E+07	5.5E+07	3.2E+07	1.9E+07	1.1E+07	6.1E+06	3.5E+06
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	2.0E-05	5.1E-05	1.3E-04	3.1E-04	7.3E-04	3.8E-03	1.8E-02	7.7E-02	3.1E-01	1.2E+00	5.4E+00	2.3E+01	9.0E+01	3.2E+02	1.1E+03	3.4E+03	9.8E+03	2.7E+04
Nb-92	7.6E-10	2.0E-09	4.9E-09	1.2E-08	2.9E-08	1.5E-07	7.4E-07	3.3E-06	1.3E-05	5.1E-05	2.4E-04	1.1E-03	4.3E-03	1.6E-02	5.4E-02	1.7E-01	5.2E-01	1.5E+00
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	1.7E-11	8.3E-11	3.7E-10	1.5E-09	5.7E-09	2.7E-08	1.2E-07	4.8E-07	1.8E-06	6.0E-06	1.9E-05	5.8E-05	1.6E-04
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	3.9E+08	5.1E+08	6.7E+08	8.8E+08	1.1E+09	1.8E+09	2.8E+09	4.2E+09	6.2E+09	8.8E+09	1.3E+10	1.9E+10	2.7E+10	3.7E+10	4.9E+10	6.4E+10	8.1E+10	1.0E+11
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pt-193	1.2E+04	1.8E+04	2.6E+04	3.7E+04	5.1E+04	9.5E+04	1.7E+05	2.8E+05	4.5E+05	6.8E+05	1.1E+06	1.7E+06	2.4E+06	3.3E+06	4.4E+06	5.6E+06	6.9E+06	8.2E+06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	170	0	0	0	0	0	0	0	0	0	0	4.4E-10	3.6E-08	1.5E-06	3.7E-05	6.1E-04	7.0E-03	6.0E-02	4.0E-01	2.2E+00	9.9E+00	3.9E+01	1.3E+02	4.0E+02	1.1E+03	2.7E+03
Se-79	610	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.4E-11
Sm-151	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	90	0	0	0	0	0	0	0	0	1.5E-09	2.2E-07	1.3E-05	3.8E-04	6.6E-03	7.5E-02	6.0E-01	3.6E+00	1.7E+01	6.7E+01	2.2E+02	6.3E+02	1.6E+03	3.5E+03	7.2E+03	1.3E+04	2.4E+04
Tb-157	85	0	0	0	0	8.6E-11	1.3E-07	2.8E-05	1.7E-03	4.0E-02	4.9E-01	3.7E+00	1.9E+01	7.4E+01	2.2E+02	5.5E+02	1.2E+03	2.2E+03	3.5E+03	5.2E+03	7.0E+03	8.8E+03	1.0E+04	1.1E+04	1.2E+04	1.2E+04
Tb-158	100	0	0	0	0	1.1E-11	1.7E-08	3.8E-06	2.3E-04	5.7E-03	7.3E-02	5.6E-01	3.0E+00	1.2E+01	3.7E+01	9.5E+01	2.1E+02	3.9E+02	6.6E+02	1.0E+03	1.4E+03	1.8E+03	2.2E+03	2.4E+03	2.6E+03	2.7E+03
Tc-99	145	0	0	0	0	0	0	0	0	0	0	0	0	8.5E-11	5.2E-09	1.9E-07	4.4E-06	7.2E-05	8.6E-04	7.8E-03	5.7E-02	3.5E-01	1.8E+00	7.7E+00	3.0E+01	1.0E+02
Te-123	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.8E-11	1.5E-10	4.7E-10	1.2E-09	2.8E-09	5.4E-09
Tm-170	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: *Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled*

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	6.3E+03	1.3E+04	2.7E+04	5.1E+04	9.2E+04	1.6E+05	2.6E+05	4.1E+05	6.3E+05	9.2E+05	1.3E+06	1.8E+06	2.5E+06	3.3E+06	4.2E+06	5.4E+06	6.7E+06	8.1E+06	9.8E+06	1.1E+07	1.3E+07	1.5E+07	1.7E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1.5E-09	2.3E-08	3.0E-07	3.3E-06	3.1E-05	2.5E-04	1.8E-03	1.1E-02	6.3E-02	3.2E-01	1.5E+00	6.4E+00	2.5E+01	9.2E+01	3.2E+02	1.0E+03	3.1E+03	8.9E+03	2.4E+04	6.3E+04	1.6E+05	3.8E+05	8.7E+05
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.8E+04	5.9E+04	8.6E+04	1.2E+05	1.6E+05	2.1E+05	2.5E+05	3.0E+05	3.5E+05	4.0E+05	4.4E+05	4.7E+05	4.9E+05	5.0E+05	5.0E+05	5.0E+05	4.8E+05	4.6E+05	4.3E+05	4.0E+05	3.6E+05	3.2E+05	2.9E+05
Tb-157	1.1E+04	1.0E+04	9.2E+03	8.0E+03	6.7E+03	5.5E+03	4.4E+03	3.5E+03	2.7E+03	2.1E+03	1.6E+03	1.2E+03	8.4E+02	6.1E+02	4.4E+02	3.1E+02	2.2E+02	1.5E+02	1.0E+02	7.1E+01	4.8E+01	3.3E+01	2.2E+01
Tb-158	2.7E+03	2.5E+03	2.3E+03	2.1E+03	1.8E+03	1.5E+03	1.3E+03	1.0E+03	8.2E+02	6.4E+02	5.0E+02	3.8E+02	2.9E+02	2.1E+02	1.6E+02	1.1E+02	8.2E+01	5.9E+01	4.2E+01	3.0E+01	2.1E+01	1.4E+01	1.0E+01
Tc-99	3.2E+02	8.9E+02	2.3E+03	5.7E+03	1.3E+04	2.7E+04	5.5E+04	1.1E+05	2.0E+05	3.5E+05	5.9E+05	9.6E+05	1.5E+06	2.3E+06	3.5E+06	5.1E+06	7.3E+06	1.0E+07	1.4E+07	1.9E+07	2.4E+07	3.2E+07	4.0E+07
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	9.3E-09	1.4E-08	2.0E-08	2.5E-08	2.9E-08	3.2E-08	3.2E-08	3.0E-08	2.7E-08	2.3E-08	1.9E-08	1.5E-08	1.1E-08	8.0E-09	5.6E-09	3.8E-09	2.5E-09	1.6E-09	9.9E-10	6.0E-10	3.6E-10	2.1E-10	1.2E-10
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390	400	410	420
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.9E+07	2.1E+07	2.3E+07	2.4E+07	2.6E+07	2.7E+07	2.8E+07	2.9E+07	3.0E+07	3.0E+07	3.0E+07	3.0E+07	2.8E+07	2.6E+07	2.4E+07	2.1E+07	1.9E+07	1.6E+07	1.4E+07	1.1E+07	9.3E+06	7.5E+06	6.0E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	9.5E-11	6.6E-10	4.1E-09	2.3E-08	1.2E-07	5.7E-07
Si-32	1.9E+06	4.2E+06	8.6E+06	1.7E+07	3.4E+07	6.5E+07	1.2E+08	2.2E+08	3.9E+08	6.7E+08	1.1E+09	3.1E+09	7.7E+09	1.8E+10	4.0E+10	8.5E+10	1.7E+11	3.2E+11	5.9E+11	1.0E+12	1.8E+12	2.9E+12	4.6E+12
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.5E+05	2.2E+05	1.9E+05	1.6E+05	1.4E+05	1.1E+05	9.5E+04	7.8E+04	6.4E+04	5.2E+04	4.2E+04	2.7E+04	1.7E+04	1.0E+04	6.1E+03	3.6E+03	2.1E+03	1.2E+03	6.8E+02	3.8E+02	2.1E+02	1.2E+02	6.3E+01
Tb-157	1.5E+01	9.8E+00	6.5E+00	4.3E+00	2.8E+00	1.8E+00	1.2E+00	7.7E-01	5.0E-01	3.2E-01	2.0E-01	8.4E-02	3.4E-02	1.4E-02	5.4E-03	2.1E-03	8.3E-04	3.2E-04	1.2E-04	4.8E-05	1.8E-05	6.9E-06	2.6E-06
Tb-158	6.9E+00	4.7E+00	3.2E+00	2.2E+00	1.5E+00	9.9E-01	6.6E-01	4.4E-01	2.9E-01	1.9E-01	1.3E-01	5.6E-02	2.4E-02	1.0E-02	4.3E-03	1.8E-03	7.4E-04	3.1E-04	1.3E-04	5.1E-05	2.1E-05	8.4E-06	3.4E-06
Tc-99	5.0E+07	6.2E+07	7.6E+07	9.1E+07	1.1E+08	1.3E+08	1.5E+08	1.7E+08	1.9E+08	2.2E+08	2.4E+08	2.9E+08	3.4E+08	3.9E+08	4.3E+08	4.7E+08	4.9E+08	5.0E+08	5.1E+08	5.0E+08	4.9E+08	4.6E+08	4.4E+08
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	6.6E-11	3.6E-11	2.0E-11	1.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	4.7E+06	3.7E+06	2.9E+06	2.2E+06	1.7E+06	1.3E+06	9.6E+05	7.2E+05	5.3E+05	3.9E+05	2.9E+05	2.1E+05	1.5E+05	1.1E+05	8.0E+04	5.7E+04	4.1E+04	2.9E+04	2.1E+04	1.5E+04	1.0E+04	7.2E+03	5.0E+03
Se-79	2.6E-06	1.1E-05	4.1E-05	1.5E-04	5.2E-04	1.7E-03	5.2E-03	1.6E-02	4.4E-02	1.2E-01	3.1E-01	7.9E-01	1.9E+00	4.5E+00	1.0E+01	2.3E+01	4.9E+01	1.0E+02	2.1E+02	4.1E+02	8.0E+02	1.5E+03	2.8E+03
Si-32	7.1E+12	1.1E+13	1.6E+13	2.3E+13	3.2E+13	4.4E+13	5.9E+13	7.8E+13	1.0E+14	1.3E+14	1.6E+14	2.0E+14	2.5E+14	3.0E+14	3.6E+14	4.3E+14	5.0E+14	5.8E+14	6.7E+14	7.6E+14	8.5E+14	9.5E+14	1.1E+15
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.4E+01	1.8E+01	9.6E+00	5.1E+00	2.7E+00	1.4E+00	7.1E-01	3.7E-01	1.9E-01	9.6E-02	4.9E-02	2.5E-02	1.2E-02	6.3E-03	3.1E-03	1.6E-03	7.8E-04	3.9E-04	1.9E-04	9.5E-05	4.7E-05	2.3E-05	1.1E-05
Tb-157	9.9E-07	3.7E-07	1.4E-07	5.2E-08	2.0E-08	7.3E-09	2.7E-09	1.0E-09	3.7E-10	1.4E-10	5.0E-11	1.8E-11	0	0	0	0	0	0	0	0	0	0	0
Tb-158	1.3E-06	5.4E-07	2.1E-07	8.5E-08	3.4E-08	1.3E-08	5.2E-09	2.0E-09	8.0E-10	3.1E-10	1.2E-10	4.8E-11	1.9E-11	0	0	0	0	0	0	0	0	0	0
Tc-99	4.0E+08	3.7E+08	3.3E+08	3.0E+08	2.6E+08	2.3E+08	2.0E+08	1.7E+08	1.4E+08	1.2E+08	1.0E+08	8.4E+07	7.0E+07	5.7E+07	4.7E+07	3.8E+07	3.1E+07	2.5E+07	2.0E+07	1.6E+07	1.2E+07	9.8E+06	7.7E+06
Te-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-11	2.7E-11	6.4E-11	1.5E-10	3.3E-10	7.3E-10
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 30. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR THE WESTERN LARW CELL SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.5E+03	2.4E+03	1.7E+03	1.2E+03	8.2E+02	3.9E+02	1.8E+02	8.6E+01	4.0E+01	1.9E+01	7.1E+00	2.7E+00	9.9E-01	3.7E-01	1.4E-01	5.0E-02	1.8E-02	6.7E-03
Se-79	5.2E+03	9.2E+03	1.6E+04	2.8E+04	4.7E+04	1.3E+05	3.4E+05	8.2E+05	1.9E+06	4.2E+06	1.1E+07	2.6E+07	5.8E+07	1.2E+08	2.6E+08	5.0E+08	9.4E+08	1.7E+09
Si-32	1.2E+15	1.3E+15	1.4E+15	1.5E+15	1.6E+15	1.8E+15	1.9E+15	2.1E+15	2.2E+15	2.2E+15	2.2E+15	2.2E+15	2.1E+15	1.9E+15	1.7E+15	1.6E+15	1.4E+15	1.2E+15
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-11	1.1E-10	6.1E-10	3.1E-09	1.4E-08	6.1E-08
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	5.5E-06	2.7E-06	1.3E-06	6.4E-07	3.1E-07	7.3E-08	1.7E-08	4.0E-09	9.2E-10	2.1E-10	3.4E-11	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	6.0E+06	4.7E+06	3.7E+06	2.8E+06	2.2E+06	1.3E+06	7.6E+05	4.4E+05	2.6E+05	1.5E+05	7.2E+04	3.5E+04	1.7E+04	8.1E+03	3.9E+03	1.8E+03	8.6E+02	4.0E+02
Te-123	1.6E-09	3.3E-09	6.7E-09	1.3E-08	2.6E-08	9.5E-08	3.2E-07	1.0E-06	3.0E-06	8.3E-06	2.8E-05	8.5E-05	2.5E-04	6.6E-04	1.7E-03	4.1E-03	9.4E-03	2.1E-02
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 31. Hydraulic Gradient for the Western LARW Cell Monitoring Wells

DATE MEASURED	AREA	MAXIMUM	MINIMUM	AVERAGE
Feb-98	W LARW	1.60E-03	5.21E-04	1.09E-03
Apr-98	W LARW	1.85E-03	4.68E-04	1.14E-03
Aug-98	W LARW	1.85E-03	5.85E-04	1.36E-03
Oct-98	W LARW	8.73E-04	1.42E-04	5.89E-04
Nov-98	W LARW	5.04E-03	2.75E-04	1.62E-03
Dec-98	W LARW	2.16E-03	2.48E-04	8.78E-04
Jan-99	W LARW	2.78E-03	4.89E-04	1.16E-03
Feb-99	W LARW	2.08E-03	3.56E-05	7.76E-04
Mar-99	W LARW	2.42E-03	1.43E-04	8.68E-04
Apr-99	W LARW	3.64E-03	8.76E-05	1.02E-03
May-99	W LARW	2.46E-03	4.59E-06	6.67E-04
Jun-99	W LARW	2.19E-03	3.35E-05	8.61E-04
Jul-99	W LARW	2.66E-03	3.49E-05	9.41E-04
Aug-99	W LARW	2.31E-03	5.09E-05	9.18E-04
Sep-99	W LARW	2.31E-03	5.09E-05	9.18E-04
Oct-99	W LARW	2.39E-03	1.41E-05	9.06E-04
Nov-99	W LARW	2.17E-03	3.95E-05	8.73E-04
Dec-99	W LARW	2.24E-03	3.76E-05	8.56E-04
Jan-00	W LARW	2.61E-03	3.52E-05	8.77E-04
Feb-00	W LARW	2.60E-03	9.35E-06	7.66E-04
Mar-00	W LARW	2.51E-03	4.55E-05	7.98E-04
Apr-00	W LARW	1.95E-03	5.55E-05	8.41E-04

Maximum	5.04E-03	5.85E-04	1.62E-03
Minimum	8.73E-04	4.59E-06	5.89E-04
Average	2.40E-03	1.55E-04	9.42E-04

TABLE 32. SUMMARY OF HORIZONTAL PATHRAE MODEL RESULTS TIME TO EXCEED GWPLs AT THE COMPLIANCE WELL BASED ON 0.265, 0.364, 0.310, 1.72, or 2.10 cm/yr INFILTRATION

Cell Design:	Top Slope	Top Slope, High Precipitation	Frost-Protected Side Slope	Side Slope w/100-fold K Increase	Side Slope, 100-fold K Increase, High Precipitation
Model Run:	T265	T310	S364	S172	S210
Infiltration Rate:	0.265	0.310	0.364	1.72	2.10
Horizontal Distance:	250 ft	250 ft	90 ft	90 ft	90 ft
Al-26	-1	-1	-1	-1	-1
Am-241	-1	-1	-1	-1	-1
Am-242m	-1	-1	-1	-1	-1
Am-243	-1	-1	-1	-1	-1
Bk-247	-1	-1	-1	-1	-1
Ca-41	-1	-1	510	-1	-1
Cd-113m	---	-1	-1	-1	-1
Cf-249	-1	-1	-1	-1	-1
Cf-250	-1	-1	-1	20	20
Cf-251	-1	-1	-1	-1	20
Cf-252	-1	-1	-1	10	10
Cl-36	-1	-1	-1	-1	-1
Eu-152	—	-1	-1	-1	-1
Gd-148	-1	-1	-1	-1	-1
H-3	-1	-1	-1	50	40
I-129	830	710	555	120	100
K-40	990	845	670	140	120
Ks-20	---	-1	-1	-1	-1
Ks-21	---	---	-1	-1	-1
Na-22	-1	-1	-1	20	10
Pd-107	-1	-1	-1	1100	990
Re-187	745	640	500	120	100
Se-79	-1	-1	-1	-1	-1
Si-32	-1	-1	-1	370	300
Sr-90	-1	-1	-1	50	40
Tb-157	-1	-1	-1	40	30
Tb-158	-1	-1	-1	-1	-1
Tc-99	785	670	525	120	100
Tl-204	---	-1	-1	-1	-1

Notes:

— indicates nuclide was not carried into the horizontal modeling, or did not register in horizontal model output files

Year to exceed GWPL is reported to next lowest model output year.

-1 indicates nuclide does not exceed GWPL within the 2000-year time period modeled

TABLE 33. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.265 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE ANALYSIS

	EXCEEDS	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	205	210	215	220	225	230	235	240	245	250
Al-26	-1	0	0	0	0	1.2E-10	3.8E-08	3.3E-06	1.1E-04	1.9E-03	2.0E-02	1.3E-01	6.3E-01	2.3E+00	6.9E+00	1.7E+01	3.5E+01	6.4E+01	1.0E+02	1.3E+02	1.5E+02	1.8E+02	2.0E+02	2.3E+02	2.5E+02	2.8E+02	3.0E+02	3.2E+02	3.3E+02
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	0	0	0	0	4.5E-11	4.6E-09	1.5E-07	2.6E-06	2.6E-05	1.8E-04	8.3E-04	3.0E-03	8.8E-03	2.2E-02	4.4E-02	8.0E-02	1.3E-01	1.6E-01	1.9E-01	2.2E-01	2.5E-01	2.8E-01	3.1E-01	3.3E-01	3.6E-01	3.8E-01	3.9E-01
Ca-41	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-10	4.9E-10	1.5E-09	4.5E-09	1.3E-08	3.4E-08	8.7E-08	2.1E-07	5.2E-07	1.2E-06	2.6E-06
Cf-249	-1	0	0	0	0	0	5.6E-11	5.4E-09	1.8E-07	3.0E-06	2.9E-05	1.9E-04	8.8E-04	3.1E-03	8.8E-03	2.1E-02	4.2E-02	7.4E-02	1.2E-01	1.4E-01	1.7E-01	1.9E-01	2.2E-01	2.4E-01	2.6E-01	2.8E-01	3.0E-01	3.1E-01	3.2E-01
Cf-250	-1	0	0	0	0	2.0E-10	2.6E-08	9.4E-07	1.3E-05	9.1E-05	3.8E-04	1.0E-03	2.1E-03	3.2E-03	4.0E-03	4.1E-03	3.7E-03	2.9E-03	2.1E-03	1.7E-03	1.3E-03	1.1E-03	8.1E-04	6.2E-04	4.6E-04	3.4E-04	2.5E-04	1.8E-04	1.3E-04
Cf-251	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	-1	0	0	0	0	5.0E-10	1.6E-07	1.4E-05	4.8E-04	8.3E-03	8.5E-02	5.6E-01	2.7E+00	9.9E+00	2.9E+01	7.2E+01	1.5E+02	2.7E+02	4.3E+02	5.3E+02	6.4E+02	7.4E+02	8.6E+02	9.6E+02	1.1E+03	1.2E+03	1.3E+03	1.3E+03	1.4E+03
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	-1	0	0	0	0	0	0	0	0	0	0	0	0	3.7E-11	5.1E-10	4.5E-09	2.8E-08	1.4E-07	5.1E-07	9.1E-07	1.5E-06	2.5E-06	3.9E-06	5.9E-06	8.5E-06	1.2E-05	1.6E-05	2.1E-05	2.6E-05
I-129	830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-11	7.7E-11
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-11	2.5E-10	2.4E-09	6.5E-09	1.7E-08	4.3E-08	1.0E-07	2.3E-07	5.0E-07	1.0E-06	2.1E-06	4.0E-06	7.4E-06
Tb-157	-1	0	0	0	0	2.8E-09	7.7E-07	5.7E-05	1.7E-03	2.4E-02	2.1E-01	1.2E+00	4.8E+00	1.5E+01	3.8E+01	7.8E+01	1.4E+02	2.1E+02	2.9E+02	3.3E+02	3.7E+02	4.0E+02	4.2E+02	4.4E+02	4.5E+02	4.6E+02	4.5E+02	4.5E+02	4.3E+02
Tb-158	-1	0	0	0	0	6.4E-10	2.0E-07	1.6E-05	5.0E-04	8.3E-03	7.7E-02	4.8E-01	2.2E+00	7.6E+00	2.1E+01	4.7E+01	9.2E+01	1.6E+02	2.4E+02	2.8E+02	3.3E+02	3.8E+02	4.2E+02	4.6E+02	4.9E+02	5.2E+02	5.4E+02	5.6E+02	5.7E+02
Tc-99	785	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL within the 2,000 years modeled

TABLE 33. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.265 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE ANALYSIS

	255	260	265	270	275	280	285	290	295	300	305	310	315	320
Al-26	3.4E+02	3.5E+02	3.5E+02	3.5E+02	3.5E+02	3.4E+02	3.3E+02	3.2E+02	3.0E+02	2.9E+02	2.8E+02	2.6E+02	2.4E+02	2.3E+02
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	4.0E-01	4.1E-01	4.1E-01	4.1E-01	4.1E-01	4.0E-01	3.8E-01	3.7E-01	3.5E-01	3.3E-01	3.1E-01	3.0E-01	2.8E-01	2.5E-01
Ca-41	5.6E-06	1.1E-05	2.3E-05	4.5E-05	8.6E-05	1.6E-04	2.9E-04	5.1E-04	8.8E-04	1.5E-03	2.5E-03	4.1E-03	6.5E-03	1.0E-02
Cf-249	3.2E-01	3.3E-01	3.2E-01	3.2E-01	3.1E-01	3.0E-01	2.9E-01	2.7E-01	2.6E-01	2.4E-01	2.3E-01	2.1E-01	1.9E-01	1.8E-01
Cf-250	9.4E-05	6.6E-05	4.6E-05	3.2E-05	2.3E-05	1.6E-05	1.1E-05	7.3E-06	5.0E-06	3.4E-06	2.3E-06	1.6E-06	1.1E-06	7.1E-07
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.4E+03	1.5E+03	1.5E+03	1.5E+03	1.5E+03	1.4E+03	1.4E+03	1.3E+03	1.3E+03	1.2E+03	1.2E+03	1.1E+03	1.0E+03	9.5E+02
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.2E-05	3.8E-05	4.5E-05	5.1E-05	5.7E-05	6.3E-05	6.7E-05	7.0E-05	7.3E-05	7.4E-05	7.3E-05	7.1E-05	7.0E-05	6.6E-05
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.5E-10	7.4E-10	2.1E-09	6.0E-09	1.6E-08	4.1E-08	1.0E-07	2.4E-07	5.6E-07	1.3E-06	2.8E-06	6.1E-06	1.3E-05	2.6E-05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.3E-05	2.3E-05	3.9E-05	6.4E-05	1.0E-04	1.6E-04	2.5E-04	3.7E-04	5.4E-04	7.7E-04	1.1E-03	1.5E-03	2.1E-03	2.7E-03
Tb-157	4.1E+02	3.9E+02	3.7E+02	3.4E+02	3.2E+02	2.9E+02	2.6E+02	2.3E+02	2.1E+02	1.9E+02	1.6E+02	1.4E+02	1.3E+02	1.1E+02
Tb-158	5.7E+02	5.6E+02	5.5E+02	5.3E+02	5.1E+02	4.9E+02	4.6E+02	4.3E+02	4.0E+02	3.7E+02	3.4E+02	3.2E+02	2.9E+02	2.6E+02
Tc-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	325	330	335	340	345	350	355	360	365	370	375	380	385	390
Al-26	2.1E+02	1.9E+02	1.7E+02	1.6E+02	1.4E+02	1.3E+02	1.2E+02	1.1E+02	9.6E+01	8.5E+01	7.6E+01	6.8E+01	6.0E+01	5.3E+01
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.4E-01	2.1E-01	2.0E-01	1.8E-01	1.6E-01	1.5E-01	1.3E-01	1.2E-01	1.1E-01	9.4E-02	8.3E-02	7.4E-02	6.5E-02	5.7E-02
Ca-41	1.6E-02	2.5E-02	3.7E-02	5.5E-02	8.1E-02	1.2E-01	1.7E-01	2.4E-01	3.3E-01	4.5E-01	6.3E-01	8.6E-01	1.2E+00	1.5E+00
Cf-249	1.6E-01	1.5E-01	1.3E-01	1.2E-01	1.1E-01	9.5E-02	8.5E-02	7.5E-02	6.7E-02	5.9E-02	5.2E-02	4.6E-02	4.0E-02	3.5E-02
Cf-250	4.7E-07	3.2E-07	2.1E-07	1.4E-07	9.5E-08	6.4E-08	4.2E-08	2.8E-08	1.9E-08	1.2E-08	8.3E-09	5.5E-09	3.6E-09	2.4E-09
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	8.8E+02	8.0E+02	7.4E+02	6.7E+02	6.1E+02	5.5E+02	5.0E+02	4.5E+02	4.0E+02	3.6E+02	3.2E+02	2.8E+02	2.5E+02	2.2E+02
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	6.3E-05	5.9E-05	5.3E-05	4.9E-05	4.3E-05	3.8E-05	3.4E-05	2.9E-05	2.5E-05	2.2E-05	1.8E-05	1.5E-05	1.3E-05	1.0E-05
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	5.2E-05	1.0E-04	2.0E-04	3.7E-04	6.9E-04	1.2E-03	2.2E-03	3.9E-03	6.7E-03	1.1E-02	1.9E-02	3.2E-02	5.1E-02	8.2E-02
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.6E-03	4.6E-03	5.9E-03	7.3E-03	9.2E-03	1.1E-02	1.4E-02	1.6E-02	1.9E-02	2.2E-02	2.6E-02	2.9E-02	3.3E-02	3.7E-02
Tb-157	9.5E+01	8.1E+01	7.0E+01	6.0E+01	5.1E+01	4.3E+01	3.7E+01	3.1E+01	2.6E+01	2.2E+01	1.8E+01	1.5E+01	1.3E+01	1.1E+01
Tb-158	2.3E+02	2.1E+02	1.9E+02	1.6E+02	1.5E+02	1.3E+02	1.1E+02	9.9E+01	8.7E+01	7.6E+01	6.6E+01	5.7E+01	4.9E+01	4.3E+01
Tc-99	0	0	0	0	0	0	0	0	1.5E-11	4.4E-11	1.1E-10	2.6E-10	5.8E-10	1.3E-09

TABLE 33. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.265 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE ANALYSIS

	395	400	405	410	415	420	425	430	435	440	445	450	455	460
Al-26	4.7E+01	4.1E+01	3.6E+01	3.2E+01	2.8E+01	2.4E+01	2.1E+01	1.9E+01	1.6E+01	1.4E+01	1.2E+01	1.1E+01	9.4E+00	8.2E+00
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	5.1E-02	4.5E-02	3.9E-02	3.4E-02	3.0E-02	2.6E-02	2.3E-02	2.0E-02	1.7E-02	1.5E-02	1.3E-02	1.1E-02	9.8E-03	8.5E-03
Ca-41	2.0E+00	2.6E+00	3.4E+00	4.4E+00	5.6E+00	6.9E+00	8.8E+00	1.1E+01	1.3E+01	1.7E+01	2.0E+01	2.5E+01	3.0E+01	3.6E+01
Cf-249	3.0E-02	2.6E-02	2.3E-02	2.0E-02	1.7E-02	1.5E-02	1.3E-02	1.1E-02	9.6E-03	8.3E-03	7.1E-03	6.1E-03	5.3E-03	4.5E-03
Cf-250	1.6E-09	1.0E-09	6.5E-10	4.2E-10	2.4E-10	1.3E-10	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	2.0E+02	1.7E+02	1.5E+02	1.3E+02	1.2E+02	1.0E+02	9.0E+01	7.9E+01	6.8E+01	6.0E+01	5.2E+01	4.5E+01	4.0E+01	3.4E+01
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	8.5E-06	6.9E-06	5.6E-06	4.5E-06	3.6E-06	2.8E-06	2.2E-06	1.7E-06	1.3E-06	1.1E-06	8.0E-07	6.1E-07	4.7E-07	3.6E-07
I-129	0	0	0	0	0	0	0	0	2.5E-11	4.8E-11	1.0E-10	1.9E-10	3.5E-10	6.6E-10
K-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.3E-01	2.0E-01	3.1E-01	4.7E-01	7.2E-01	1.1E+00	1.6E+00	2.3E+00	3.4E+00	4.9E+00	6.9E+00	9.6E+00	1.3E+01	1.9E+01
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.1E-02	4.6E-02	4.9E-02	5.4E-02	5.9E-02	6.2E-02	6.5E-02	6.9E-02	7.2E-02	7.5E-02	7.7E-02	7.9E-02	8.0E-02	8.1E-02
Tb-157	9.0E+00	7.5E+00	6.2E+00	5.1E+00	4.3E+00	3.5E+00	2.9E+00	2.4E+00	2.0E+00	1.7E+00	1.4E+00	1.1E+00	9.3E-01	7.7E-01
Tb-158	3.7E+01	3.2E+01	2.7E+01	2.3E+01	2.0E+01	1.7E+01	1.5E+01	1.3E+01	1.1E+01	9.2E+00	7.8E+00	6.7E+00	5.6E+00	4.8E+00
Tc-99	2.6E-09	5.2E-09	1.1E-08	2.1E-08	4.1E-08	7.9E-08	1.5E-07	2.8E-07	5.1E-07	9.2E-07	1.7E-06	2.9E-06	5.0E-06	8.8E-06

	465	470	475	480	485	490	495	500	505	510	515	520	525	530
Al-26	7.1E+00	6.2E+00	5.3E+00	4.6E+00	4.0E+00	3.5E+00	3.0E+00	2.6E+00	2.2E+00	1.9E+00	1.7E+00	1.4E+00	1.2E+00	1.1E+00
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	7.3E-03	6.4E-03	5.5E-03	4.8E-03	4.1E-03	3.6E-03	3.1E-03	2.6E-03	2.3E-03	2.0E-03	1.7E-03	1.5E-03	1.3E-03	1.1E-03
Ca-41	4.3E+01	5.1E+01	5.9E+01	7.1E+01	8.2E+01	9.5E+01	1.1E+02	1.3E+02	1.5E+02	1.7E+02	2.0E+02	2.2E+02	2.5E+02	2.8E+02
Cf-249	3.9E-03	3.3E-03	2.9E-03	2.5E-03	2.1E-03	1.8E-03	1.6E-03	1.3E-03	1.1E-03	9.7E-04	8.3E-04	7.1E-04	6.1E-04	5.2E-04
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.0E+01	2.6E+01	2.2E+01	1.9E+01	1.7E+01	1.4E+01	1.3E+01	1.1E+01	9.4E+00	8.1E+00	7.0E+00	6.0E+00	5.2E+00	4.5E+00
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.7E-07	2.0E-07	1.5E-07	1.1E-07	8.3E-08	6.1E-08	4.5E-08	3.3E-08	2.4E-06	1.7E-08	1.3E-08	9.2E-09	6.6E-09	4.7E-09
I-129	1.2E-09	2.2E-09	3.7E-09	6.6E-09	1.2E-08	2.0E-08	3.3E-08	5.6E-08	9.2E-08	1.5E-07	2.5E-07	3.9E-07	6.2E-07	9.8E-07
K-40	0	0	0	0	0	0	0	0	0	0	0	0	2.8E-11	5.4E-11
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.6E+01	3.5E+01	4.7E+01	6.4E+01	8.5E+01	1.1E+02	1.5E+02	2.0E+02	2.5E+02	3.3E+02	4.2E+02	5.3E+02	6.9E+02	8.5E+02
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	8.3E-02	8.2E-02	8.2E-02	8.1E-02	8.0E-02	7.7E-02	7.6E-02	7.3E-02	7.1E-02	6.8E-02	6.6E-02	6.3E-02	6.0E-02	5.7E-02
Tb-157	6.3E-01	5.2E-01	4.3E-01	3.5E-01	2.9E-01	2.4E-01	2.0E-01	1.6E-01	1.3E-01	1.1E-01	9.0E-02	7.4E-02	6.0E-02	5.0E-02
Tb-158	4.1E+00	3.5E+00	3.0E+00	2.5E+00	2.1E+00	1.8E+00	1.5E+00	1.3E+00	1.1E+00	9.3E-01	7.9E-01	6.7E-01	5.7E-01	4.8E-01
Tc-99	1.5E-05	2.5E-05	4.1E-05	6.7E-05	1.1E-04	1.8E-04	2.9E-04	4.4E-04	7.0E-04	1.1E-03	1.7E-03	2.6E-03	3.8E-03	5.8E-03

TABLE 33. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.265 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE ANALYSIS

	535	540	545	550	555	560	565	570	575	580	585	590	595	600
Al-26	9.3E-01	8.0E-01	6.9E-01	6.0E-01	5.2E-01	4.5E-01	3.8E-01	3.3E-01	2.9E-01	2.5E-01	2.1E-01	1.8E-01	1.6E-01	1.4E-01
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	9.3E-04	8.0E-04	6.9E-04	6.0E-04	5.1E-04	4.4E-04	3.8E-04	3.3E-04	2.8E-04	2.4E-04	2.1E-04	1.8E-04	1.5E-04	1.3E-04
Ca-41	3.1E+02	3.5E+02	3.9E+02	4.3E+02	4.8E+02	5.3E+02	5.7E+02	6.3E+02	6.8E+02	7.5E+02	8.0E+02	8.6E+02	9.3E+02	1.0E+03
Cf-249	4.4E-04	3.8E-04	3.2E-04	2.8E-04	2.4E-04	2.0E-04	1.7E-04	1.5E-04	1.3E-04	1.1E-04	9.2E-05	7.8E-05	6.7E-05	5.7E-05
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.9E+00	3.4E+00	2.9E+00	2.5E+00	2.2E+00	1.9E+00	1.6E+00	1.4E+00	1.2E+00	1.0E+00	9.0E-01	7.7E-01	6.6E-01	5.8E-01
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.4E-09	2.4E-09	1.7E-09	1.2E-09	8.4E-10	5.9E-10	3.9E-10	2.5E-10	1.5E-10	4.0E-11	0	0	0	0
I-129	1.5E-06	2.3E-06	3.5E-06	5.5E-06	8.4E-06	1.2E-05	1.8E-05	2.7E-05	4.1E-05	5.9E-05	8.5E-05	1.2E-04	1.8E-04	2.5E-04
K-40	9.5E-11	1.9E-10	3.3E-10	6.1E-10	1.1E-09	1.8E-09	3.1E-09	5.5E-09	9.2E-09	1.5E-08	2.6E-08	4.2E-08	6.8E-08	1.1E-07
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.1E+03	1.4E+03	1.7E+03	2.1E+03	2.6E+03	3.1E+03	3.8E+03	4.7E+03	5.6E+03	6.7E+03	8.1E+03	9.6E+03	1.2E+04	1.4E+04
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	5.3E-02	5.0E-02	4.7E-02	4.4E-02	4.1E-02	3.8E-02	3.5E-02	3.3E-02	3.0E-02	2.7E-02	2.5E-02	2.3E-02	2.1E-02	1.9E-02
Tb-157	4.1E-02	3.3E-02	2.8E-02	2.3E-02	1.9E-02	1.5E-02	1.3E-02	1.0E-02	8.5E-03	7.0E-03	5.7E-03	4.7E-03	3.9E-03	3.2E-03
Tb-158	4.1E-01	3.5E-01	2.9E-01	2.5E-01	2.1E-01	1.8E-01	1.5E-01	1.3E-01	1.1E-01	9.0E-02	7.7E-02	6.5E-02	5.5E-02	4.6E-02
Tc-99	8.5E-03	1.3E-02	1.8E-02	2.7E-02	3.9E-02	5.5E-02	7.8E-02	1.1E-01	1.6E-01	2.2E-01	3.0E-01	4.2E-01	5.8E-01	7.8E-01

	605	610	615	620	625	630	635	640	645	650	655	660	665	670
Al-26	1.2E-01	1.0E-01	8.8E-02	7.6E-02	6.5E-02	5.7E-02	4.9E-02	4.2E-02	3.6E-02	3.1E-02	2.7E-02	2.3E-02	2.0E-02	1.7E-02
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.1E-04	9.8E-05	8.4E-05	7.3E-05	6.3E-05	5.4E-05	4.6E-05	4.0E-05	3.4E-05	2.9E-05	2.5E-05	2.2E-05	1.9E-05	1.6E-05
Ca-41	1.1E+03	1.2E+03	1.2E+03	1.3E+03	1.4E+03	1.5E+03	1.6E+03	1.6E+03	1.7E+03	1.8E+03	1.9E+03	2.0E+03	2.1E+03	2.2E+03
Cf-249	4.9E-05	4.2E-05	3.6E-05	3.1E-05	2.6E-05	2.2E-05	1.9E-05	1.6E-05	1.4E-05	1.2E-05	1.0E-05	8.6E-06	7.4E-06	6.3E-06
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	5.0E-01	4.3E-01	3.7E-01	3.2E-01	2.7E-01	2.4E-01	2.0E-01	1.8E-01	1.5E-01	1.3E-01	1.1E-01	9.8E-02	8.4E-02	7.3E-02
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	3.6E-04	5.0E-04	6.9E-04	9.6E-04	1.3E-03	1.8E-03	2.5E-03	3.3E-03	4.4E-03	6.1E-03	8.0E-03	1.1E-02	1.4E-02	1.9E-02
K-40	1.8E-07	2.9E-07	4.5E-07	7.0E-07	1.1E-06	1.7E-06	2.6E-06	4.0E-06	6.0E-06	9.1E-06	1.4E-05	2.0E-05	3.0E-05	4.5E-05
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.6E+04	1.9E+04	2.2E+04	2.6E+04	3.1E+04	3.5E+04	4.1E+04	4.7E+04	5.5E+04	6.4E+04	7.1E+04	8.1E+04	9.2E+04	1.1E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.7E-02	1.5E-02	1.4E-02	1.2E-02	1.1E-02	9.9E-03	8.8E-03	7.8E-03	7.0E-03	6.2E-03	5.5E-03	4.9E-03	4.3E-03	3.8E-03
Tb-157	2.6E-03	2.1E-03	1.8E-03	1.4E-03	1.2E-03	9.8E-04	8.0E-04	6.6E-04	5.4E-04	4.5E-04	3.6E-04	3.0E-04	2.5E-04	2.0E-04
Tb-158	3.9E-02	3.3E-02	2.8E-02	2.4E-02	2.0E-02	1.7E-02	1.4E-02	1.2E-02	1.0E-02	8.7E-03	7.4E-03	6.3E-03	5.3E-03	4.5E-03
Tc-99	1.0E+00	1.4E+00	1.9E+00	2.5E+00	3.3E+00	4.3E+00	5.8E+00	7.4E+00	9.6E+00	1.3E+01	1.6E+01	2.1E+01	2.7E+01	3.4E+01

TABLE 33. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.265 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE ANALYSIS

	675	680	685	690	695	700	705	710	715	720	725	730	735	740
Al-26	1.5E-02	1.3E-02	1.1E-02	9.6E-03	8.3E-03	7.2E-03	6.2E-03	5.4E-03	4.6E-03	4.0E-03	3.4E-03	3.0E-03	2.6E-03	2.2E-03
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.4E-05	1.2E-05	1.0E-05	8.9E-06	7.7E-06	6.6E-06	5.7E-06	4.9E-06	4.2E-06	3.7E-06	3.1E-06	2.7E-06	2.3E-06	2.0E-06
Ca-41	2.3E+03	2.4E+03	2.5E+03	2.5E+03	2.6E+03	2.7E+03	2.7E+03	2.8E+03	2.8E+03	2.9E+03	2.9E+03	3.0E+03	3.0E+03	3.0E+03
Cf-249	5.4E-06	4.6E-06	4.0E-06	3.4E-06	2.9E-06	2.5E-06	2.1E-06	1.8E-06	1.5E-06	1.3E-06	1.1E-06	9.6E-07	8.2E-07	7.0E-07
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	6.3E-02	5.4E-02	4.7E-02	4.0E-02	3.5E-02	3.0E-02	2.6E-02	2.2E-02	1.9E-02	1.7E-02	1.4E-02	1.3E-02	1.1E-02	9.3E-03
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.4E-02	3.2E-02	4.1E-02	5.3E-02	6.9E-02	8.7E-02	1.1E-01	1.5E-01	1.8E-01	2.3E-01	2.9E-01	3.7E-01	4.5E-01	5.8E-01
K-40	6.5E-05	9.3E-05	1.3E-04	2.0E-04	2.8E-04	4.0E-04	5.6E-04	7.8E-04	1.1E-03	1.5E-03	2.1E-03	2.9E-03	4.0E-03	5.5E-03
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.2E+05	1.4E+05	1.5E+05	1.7E+05	1.9E+05	2.2E+05	2.4E+05	2.7E+05	3.0E+05	3.3E+05	3.6E+05	4.0E+05	4.4E+05	4.9E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.3E-03	2.9E-03	2.5E-03	2.2E-03	1.9E-03	1.6E-03	1.4E-03	1.2E-03	1.0E-03	8.9E-04	7.6E-04	6.6E-04	5.6E-04	4.8E-04
Tb-157	1.7E-04	1.4E-04	1.1E-04	9.3E-05	7.6E-05	6.3E-05	5.2E-05	4.2E-05	3.5E-05	2.9E-05	2.4E-05	1.9E-05	1.6E-05	1.3E-05
Tb-158	3.8E-03	3.2E-03	2.7E-03	2.3E-03	2.0E-03	1.7E-03	1.4E-03	1.2E-03	1.0E-03	8.5E-04	7.2E-04	6.1E-04	5.2E-04	4.4E-04
Tc-99	4.3E+01	5.5E+01	6.9E+01	8.7E+01	1.1E+02	1.4E+02	1.7E+02	2.1E+02	2.6E+02	3.1E+02	3.8E+02	4.6E+02	5.6E+02	6.8E+02

	745	750	755	760	765	770	775	780	785	790	795	800	805	810
Al-26	1.9E-03	1.7E-03	1.4E-03	1.2E-03	1.1E-03	9.2E-04	8.0E-04	6.9E-04	5.9E-04	5.1E-04	4.5E-04	3.8E-04	3.3E-04	2.9E-04
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.7E-06	1.5E-06	1.3E-06	1.1E-06	9.5E-07	8.2E-07	7.1E-07	6.1E-07	5.2E-07	4.5E-07	3.9E-07	3.4E-07	2.9E-07	2.5E-07
Ca-41	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.1E+03	3.0E+03
Cf-249	6.0E-07	5.2E-07	4.4E-07	3.8E-07	3.2E-07	2.8E-07	2.4E-07	2.0E-07	1.7E-07	1.5E-07	1.3E-07	1.1E-07	9.3E-08	7.9E-08
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	8.0E-03	6.9E-03	6.0E-03	5.2E-03	4.5E-03	3.9E-03	3.4E-03	2.9E-03	2.5E-03	2.2E-03	1.9E-03	1.6E-03	1.4E-03	1.2E-03
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	7.3E-01	9.0E-01	1.1E+00	1.4E+00	1.7E+00	2.1E+00	2.5E+00	3.0E+00	3.7E+00	4.5E+00	5.4E+00	6.5E+00	7.7E+00	9.4E+00
K-40	7.4E-03	1.0E-02	1.4E-02	1.8E-02	2.5E-02	3.3E-02	4.4E-02	5.8E-02	7.7E-02	1.0E-01	1.3E-01	1.7E-01	2.2E-01	2.9E-01
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	5.3E+05	5.8E+05	6.3E+05	7.0E+05	7.7E+05	8.3E+05	8.9E+05	9.7E+05	1.0E+06	1.1E+06	1.2E+06	1.3E+06	1.5E+06	1.6E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.1E-04	3.5E-04	2.9E-04	2.5E-04	2.1E-04	1.8E-04	1.5E-04	1.3E-04	1.1E-04	8.9E-05	7.5E-05	6.4E-05	5.3E-05	4.5E-05
Tb-157	1.1E-05	8.9E-06	7.3E-06	6.0E-06	5.0E-06	4.1E-06	3.4E-06	2.8E-06	2.3E-06	1.9E-06	1.5E-06	1.3E-06	1.0E-06	8.6E-07
Tb-158	3.7E-04	3.2E-04	2.7E-04	2.3E-04	1.9E-04	1.6E-04	1.4E-04	1.2E-04	9.9E-05	8.4E-05	7.1E-05	6.0E-05	5.1E-05	4.4E-05
Tc-99	8.4E+02	1.0E+03	1.2E+03	1.5E+03	1.7E+03	2.0E+03	2.4E+03	2.9E+03	3.4E+03	4.0E+03	4.7E+03	5.5E+03	6.5E+03	7.5E+03

TABLE 33. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.265 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE ANALYSIS

	815	820	825	830	835	840	845	850	855	860	865	870	875	880
Al-26	2.5E-04	2.1E-04	1.9E-04	1.6E-04	1.4E-04	1.2E-04	1.0E-04	8.9E-05	7.7E-05	6.7E-05	5.8E-05	5.0E-05	4.3E-05	3.7E-05
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.2E-07	1.9E-07	1.6E-07	1.4E-07	1.2E-07	1.0E-07	8.9E-08	7.6E-08	6.6E-08	5.7E-08	4.9E-08	4.2E-08	3.7E-08	3.1E-08
Ca-41	3.0E+03	3.0E+03	2.9E+03	2.9E+03	2.9E+03	2.8E+03	2.8E+03	2.7E+03	2.7E+03	2.6E+03	2.6E+03	2.5E+03	2.5E+03	2.4E+03
Cf-249	6.8E-08	5.8E-08	5.0E-08	4.3E-08	3.7E-08	3.1E-08	2.7E-08	2.3E-08	2.0E-08	1.7E-08	1.4E-08	1.2E-08	1.1E-08	9.0E-09
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.0E-03	9.0E-04	7.8E-04	6.7E-04	5.8E-04	5.0E-04	4.4E-04	3.7E-04	3.2E-04	2.8E-04	2.4E-04	2.1E-04	1.8E-04	1.6E-04
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.1E+01	1.3E+01	1.6E+01	1.9E+01	2.2E+01	2.6E+01	3.1E+01	3.6E+01	4.2E+01	4.9E+01	5.7E+01	6.7E+01	7.7E+01	9.0E+01
K-40	3.8E-01	4.8E-01	6.1E-01	7.9E-01	1.0E+00	1.3E+00	1.6E+00	2.0E+00	2.6E+00	3.2E+00	4.0E+00	5.0E+00	6.3E+00	7.8E+00
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.7E+06	1.9E+06	2.0E+06	2.2E+06	2.3E+06	2.4E+06	2.6E+06	2.7E+06	2.9E+06	3.1E+06	3.2E+06	3.3E+06	3.5E+06	3.7E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.7E-05	3.1E-05	2.6E-05	2.2E-05	1.8E-05	1.5E-05	1.3E-05	1.0E-05	8.7E-06	7.2E-06	6.0E-06	4.9E-06	4.1E-06	3.4E-06
Tb-157	7.1E-07	5.8E-07	4.8E-07	4.0E-07	3.3E-07	2.7E-07	2.2E-07	1.8E-07	1.5E-07	1.2E-07	1.0E-07	8.4E-08	6.9E-08	5.7E-08
Tb-158	3.7E-05	3.1E-05	2.7E-05	2.3E-05	1.9E-05	1.6E-05	1.4E-05	1.2E-05	9.9E-06	8.4E-06	7.1E-06	6.0E-06	5.1E-06	4.3E-06
Tc-99	8.9E+03	1.0E+04	1.2E+04	1.4E+04	1.6E+04	1.8E+04	2.1E+04	2.4E+04	2.8E+04	3.2E+04	3.6E+04	4.1E+04	4.7E+04	5.3E+04

	885	890	895	900	905	910	915	920	925	930	935	940	945	950
Al-26	3.2E-05	2.8E-05	2.4E-05	2.1E-05	1.8E-05	1.6E-05	1.4E-05	1.2E-05	1.0E-05	8.8E-06	7.6E-06	6.6E-06	5.7E-06	4.9E-06
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.7E-08	2.3E-08	2.0E-08	1.7E-08	1.5E-08	1.3E-08	1.1E-08	9.6E-09	8.3E-09	7.2E-09	6.2E-09	5.4E-09	4.6E-09	4.0E-09
Ca-41	2.4E+03	2.3E+03	2.3E+03	2.2E+03	2.1E+03	2.1E+03	2.0E+03	2.0E+03	1.9E+03	1.9E+03	1.8E+03	1.7E+03	1.7E+03	1.6E+03
Cf-249	7.7E-09	6.6E-09	5.6E-09	4.8E-09	4.1E-09	3.5E-09	3.0E-09	2.6E-09	2.2E-09	1.9E-09	1.6E-09	1.4E-09	1.1E-09	9.6E-10
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.4E-04	1.2E-04	1.0E-04	8.8E-05	7.6E-05	6.6E-05	5.7E-05	4.9E-05	4.3E-05	3.7E-05	3.2E-05	2.8E-05	2.4E-05	2.1E-05
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.0E+02	1.2E+02	1.4E+02	1.6E+02	1.8E+02	2.1E+02	2.4E+02	2.7E+02	3.1E+02	3.6E+02	4.0E+02	4.6E+02	5.2E+02	5.8E+02
K-40	9.6E+00	1.2E+01	1.4E+01	1.8E+01	2.2E+01	2.7E+01	3.2E+01	4.0E+01	4.8E+01	5.8E+01	7.0E+01	8.4E+01	1.0E+02	1.2E+02
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.9E+06	4.0E+06	4.2E+06	4.3E+06	4.5E+06	4.7E+06	4.9E+06	5.1E+06	5.3E+06	5.4E+06	5.7E+06	5.9E+06	6.0E+06	6.3E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.8E-06	2.3E-06	1.9E-06	1.6E-06	1.3E-06	1.1E-06	8.8E-07	7.2E-07	5.9E-07	4.8E-07	4.0E-07	3.3E-07	2.7E-07	2.2E-07
Tb-157	4.7E-08	3.9E-08	3.2E-08	2.6E-08	2.2E-08	1.8E-08	1.5E-08	1.2E-08	9.9E-09	8.2E-09	6.7E-09	5.6E-09	4.6E-09	3.8E-09
Tb-158	3.7E-06	3.1E-06	2.7E-06	2.2E-06	1.9E-06	1.6E-06	1.4E-06	1.2E-06	9.9E-07	8.4E-07	7.1E-07	6.1E-07	5.2E-07	4.4E-07
Tc-99	6.0E+04	6.7E+04	7.6E+04	8.5E+04	9.6E+04	1.1E+05	1.2E+05	1.4E+05	1.5E+05	1.7E+05	1.9E+05	2.1E+05	2.3E+05	2.6E+05

TABLE 33. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.265 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE ANALYSIS

	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1030	1040	1050	1060	1070	1080	1100	1300
Al-26	4.3E-06	3.7E-06	3.2E-06	2.8E-06	2.4E-06	2.1E-06	1.8E-06	1.6E-06	1.3E-06	1.2E-06	1.0E-06	8.8E-07	7.5E-07	6.5E-07	4.9E-07	3.7E-07	2.8E-07	2.1E-07	1.6E-07	1.2E-07	6.6E-08	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.4E-09	2.9E-09	2.5E-09	2.2E-09	1.9E-09	1.6E-09	1.4E-09	1.2E-09	1.0E-09	8.5E-10	7.4E-10	6.2E-10	5.2E-10	4.3E-10	2.5E-10	1.1E-10	0	0	0	0	0	0
Ca-41	1.6E+03	1.5E+03	1.5E+03	1.4E+03	1.4E+03	1.3E+03	1.3E+03	1.2E+03	1.2E+03	1.1E+03	1.1E+03	1.0E+03	1.0E+03	9.7E+02	8.8E+02	8.1E+02	7.2E+02	6.6E+02	6.0E+02	5.5E+02	4.5E+02	4.2E+01
Cf-249	8.3E-10	6.9E-10	5.7E-10	4.9E-10	3.8E-10	2.9E-10	2.1E-10	1.3E-10	5.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.8E-05	1.5E-05	1.3E-05	1.2E-05	1.0E-05	8.7E-06	7.6E-06	6.5E-06	5.6E-06	4.9E-06	4.2E-06	3.7E-06	3.2E-06	2.8E-06	2.1E-06	1.5E-06	1.2E-06	8.7E-07	6.5E-07	4.9E-07	2.8E-07	8.4E-10
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	6.7E+02	7.5E+02	8.5E+02	9.4E+02	1.1E+03	1.2E+03	1.3E+03	1.5E+03	1.7E+03	1.8E+03	2.1E+03	2.3E+03	2.5E+03	2.8E+03	3.5E+03	4.2E+03	5.1E+03	6.1E+03	7.4E+03	9.4E+03	1.4E+04	1.9E+05
K-40	1.5E+02	1.7E+02	2.1E+02	2.5E+02	2.9E+02	3.5E+02	4.1E+02	4.8E+02	5.7E+02	6.7E+02	7.9E+02	9.2E+02	1.1E+03	1.3E+03	1.7E+03	2.3E+03	3.1E+03	4.1E+03	5.4E+03	7.1E+03	1.2E+04	1.0E+06
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	6.4E+06	6.8E+06	6.8E+06	7.0E+06	7.3E+06	7.5E+06	7.7E+06	7.9E+06	8.0E+06	8.2E+06	8.5E+06	8.6E+06	8.9E+06	9.0E+06	9.3E+06	9.8E+06	9.9E+06	1.0E+07	1.0E+07	1.1E+07	1.1E+07	9.1E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.8E-07	1.5E-07	1.2E-07	9.7E-08	7.9E-08	6.4E-08	5.3E-08	4.2E-08	3.5E-08	2.8E-08	2.3E-08	1.9E-08	1.5E-08	1.2E-08	8.0E-09	5.2E-09	3.4E-09	2.2E-09	1.4E-09	9.2E-10	3.6E-10	0
Tb-157	3.1E-09	2.5E-09	2.1E-09	1.7E-09	1.4E-09	1.1E-09	9.3E-10	7.5E-10	5.9E-10	4.5E-10	3.5E-10	2.6E-10	1.9E-10	1.0E-10	0	0	0	0	0	0	0	0
Tb-158	3.7E-07	3.1E-07	2.7E-07	2.3E-07	1.9E-07	1.6E-07	1.4E-07	1.2E-07	1.0E-07	8.5E-08	7.2E-08	6.2E-08	5.2E-08	4.4E-08	3.2E-08	2.3E-08	1.7E-08	1.2E-08	8.6E-09	6.2E-09	3.2E-09	0
Tc-99	2.8E+05	3.1E+05	3.5E+05	3.8E+05	4.2E+05	4.7E+05	5.1E+05	5.6E+05	6.1E+05	6.7E+05	7.5E+05	8.3E+05	9.2E+05	1.0E+06	1.3E+06	1.5E+06	1.8E+06	2.1E+06	2.5E+06	2.8E+06	3.7E+06	2.8E+07

TABLE 34. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.364 CM/YR INFILTRATION, 90 FOOT DISTANCE, FROST-PROTECTED SIDE SLOPE ANALYSIS

	EXCEEDS	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	205	210	215	220	225	230	235	240	245
Al-26	-1	0	0	8.9E-08	4.6E-05	4.0E-03	1.1E-01	1.2E+00	7.6E+00	3.0E+01	8.3E+01	1.7E+02	2.7E+02	3.7E+02	4.3E+02	4.3E+02	4.0E+02	3.4E+02	2.6E+02	2.3E+02	1.9E+02	1.6E+02	1.3E+02	1.1E+02	8.7E+01	6.9E+01	5.5E+01	4.3E+01
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	0	1.2E-10	6.5E-08	5.7E-06	1.5E-04	1.7E-03	1.0E-02	3.9E-02	1.1E-01	2.2E-01	3.5E-01	4.7E-01	5.4E-01	5.5E-01	5.0E-01	4.2E-01	3.2E-01	2.8E-01	2.3E-01	1.9E-01	1.6E-01	1.3E-01	1.0E-01	8.3E-02	6.5E-02	5.1E-02
Ca-41	510	0	0	0	0	0	0	0	0	0	0	2.3E-10	6.6E-09	1.2E-07	1.5E-06	1.5E-05	1.1E-04	6.2E-04	3.0E-03	6.5E-03	1.2E-02	2.5E-02	4.3E-02	8.0E-02	1.3E-01	2.3E-01	3.8E-01	6.1E-01
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	-1	0	0	1.7E-10	8.3E-08	6.9E-06	1.8E-04	2.0E-03	1.2E-02	4.5E-02	1.2E-01	2.3E-01	3.7E-01	4.8E-01	5.3E-01	5.3E-01	4.7E-01	3.8E-01	2.9E-01	2.4E-01	2.0E-01	1.7E-01	1.4E-01	1.1E-01	8.6E-02	6.7E-02	5.2E-02	4.0E-02
Cf-250	-1	0	1.5E-10	7.9E-07	1.6E-04	5.4E-03	5.7E-02	2.6E-01	6.4E-01	9.9E-01	1.1E+00	8.7E-01	5.6E-01	3.1E-01	1.4E-01	6.1E-02	2.3E-02	8.0E-03	2.6E-03	1.5E-03	8.2E-04	4.5E-04	2.5E-04	1.3E-04	7.1E-05	3.8E-05	2.0E-05	1.0E-05
Cf-251	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	-1	0	1.2E-10	1.4E-08	8.7E-08	8.7E-08	2.7E-08	4.0E-09	3.3E-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	-1	0	2.6E-11	3.7E-07	1.9E-04	1.7E-02	4.5E-01	5.1E+00	3.2E+01	1.3E+02	3.4E+02	6.9E+02	1.1E+03	1.5E+03	1.8E+03	1.8E+03	1.7E+03	1.4E+03	1.1E+03	9.4E+02	8.0E+02	6.7E+02	5.5E+02	4.5E+02	3.7E+02	2.9E+02	2.3E+02	1.8E+02
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	-1	0	0	0	0	0	0	1.8E-10	2.2E-08	9.6E-07	1.9E-05	2.0E-04	1.5E-03	6.8E-03	2.3E-02	5.9E-02	1.2E-01	2.1E-01	3.3E-01	3.8E-01	4.2E-01	4.5E-01	4.9E-01	5.0E-01	5.0E-01	5.0E-01	4.7E-01	4.4E-01
I-129	555	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	670	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	8.5E-11	9.0E-09	5.0E-08	4.6E-08	1.4E-08	1.8E-09	1.3E-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	500	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8E-11	9.5E-10	2.5E-08	3.6E-07	3.4E-06	1.2E-05	2.9E-05	9.3E-05	2.3E-04	5.5E-04	1.6E-03	3.1E-03	7.6E-03	1.6E-02
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	-1	0	0	0	0	0	0	0	0	1.2E-11	1.0E-09	3.5E-08	7.1E-07	9.4E-06	8.5E-05	5.7E-04	2.9E-03	1.2E-02	4.1E-02	7.2E-02	1.2E-01	1.9E-01	2.9E-01	4.5E-01	6.5E-01	9.4E-01	1.3E+00	1.7E+00
Tb-157	-1	0	2.4E-10	3.0E-06	1.3E-03	9.4E-02	2.1E+00	2.0E+01	1.1E+02	3.5E+02	7.9E+02	1.4E+03	1.8E+03	2.1E+03	2.1E+03	1.8E+03	1.4E+03	9.8E+02	6.5E+02	5.1E+02	4.0E+02	3.1E+02	2.3E+02	1.8E+02	1.3E+02	9.6E+01	7.0E+01	5.0E+01
Tb-158	-1	0	4.0E-11	5.4E-07	2.6E-04	2.2E-02	5.2E-01	5.6E+00	3.3E+01	1.2E+02	3.1E+02	6.0E+02	8.9E+02	1.1E+03	1.2E+03	1.2E+03	1.0E+03	7.9E+02	5.7E+02	4.8E+02	3.9E+02	3.2E+02	2.5E+02	2.0E+02	1.6E+02	1.2E+02	9.2E+01	7.0E+01
Tc-99	525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7E-11	9.4E-11
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL within the 2,000 years modeled

TABLE 34. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.364 CM/YR INFILTRATION, 90 FOOT DISTANCE, FROST-PROTECTED SIDE SLOPE ANALYSIS

	250	255	260	265	270	275	280	285	290	295	300	305	310	315
Al-26	3.3E+01	2.6E+01	2.0E+01	1.5E+01	1.1E+01	8.4E+00	6.3E+00	4.7E+00	3.4E+00	2.5E+00	1.8E+00	1.3E+00	9.6E-01	6.9E-01
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.9E-02	3.0E-02	2.3E-02	1.7E-02	1.3E-02	9.7E-03	7.2E-03	5.3E-03	3.9E-03	2.9E-03	2.1E-03	1.5E-03	1.1E-03	7.8E-04
Ca-41	9.5E-01	1.5E+00	2.2E+00	3.3E+00	4.7E+00	6.9E+00	9.6E+00	1.3E+01	1.8E+01	2.4E+01	3.1E+01	4.2E+01	5.3E+01	6.8E+01
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	3.1E-02	2.3E-02	1.8E-02	1.3E-02	9.7E-03	7.1E-03	5.2E-03	3.8E-03	2.8E-03	2.0E-03	1.4E-03	1.0E-03	7.3E-04	5.2E-04
Cf-250	5.5E-06	2.8E-06	1.5E-06	7.7E-07	4.0E-07	2.0E-07	1.0E-07	5.4E-08	2.8E-08	1.4E-08	7.2E-09	3.7E-09	1.8E-09	9.0E-10
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.4E+02	1.1E+02	8.2E+01	6.2E+01	4.7E+01	3.5E+01	2.6E+01	1.9E+01	1.4E+01	1.1E+01	7.7E+00	5.6E+00	4.0E+00	2.9E+00
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	4.1E-01	3.7E-01	3.3E-01	2.9E-01	2.5E-01	2.1E-01	1.7E-01	1.4E-01	1.1E-01	9.3E-02	7.3E-02	5.8E-02	4.5E-02	3.4E-02
I-129	0	0	0	0	0	0	0	0	5.0E-11	1.4E-10	2.6E-10	7.9E-10	2.2E-09	3.9E-09
K-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.2E-02	7.2E-02	1.3E-01	2.6E-01	5.0E-01	8.6E-01	1.6E+00	2.8E+00	4.7E+00	8.1E+00	1.3E+01	2.2E+01	3.4E+01	5.3E+01
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.3E+00	2.9E+00	3.6E+00	4.6E+00	5.5E+00	6.6E+00	7.9E+00	9.3E+00	1.1E+01	1.2E+01	1.3E+01	1.4E+01	1.6E+01	1.7E+01
Tb-157	3.6E+01	2.6E+01	1.8E+01	1.3E+01	8.8E+00	6.0E+00	4.2E+00	2.9E+00	1.9E+00	1.3E+00	8.8E-01	5.9E-01	4.0E-01	2.7E-01
Tb-158	5.2E+01	3.9E+01	2.9E+01	2.1E+01	1.5E+01	1.1E+01	8.1E+00	5.8E+00	4.2E+00	2.9E+00	2.1E+00	1.5E+00	1.0E+00	7.2E-01
Tc-99	2.1E-10	9.3E-10	3.2E-09	6.5E-09	2.0E-08	6.7E-08	1.4E-07	3.1E-07	9.9E-07	2.2E-06	4.1E-06	1.1E-05	2.4E-05	4.2E-05
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	320	325	330	335	340	345	350	355	360	365	370	375	380	385
Al-26	5.0E-01	3.6E-01	2.6E-01	1.8E-01	1.3E-01	9.1E-02	6.4E-02	4.5E-02	3.1E-02	2.2E-02	1.5E-02	1.0E-02	7.2E-03	5.0E-03
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	5.5E-04	4.0E-04	2.8E-04	2.0E-04	1.4E-04	9.9E-05	6.9E-05	4.8E-05	3.4E-05	2.3E-05	1.6E-05	1.1E-05	7.7E-06	5.3E-06
Ca-41	8.6E+01	1.1E+02	1.3E+02	1.6E+02	2.0E+02	2.4E+02	2.9E+02	3.4E+02	4.0E+02	4.6E+02	5.3E+02	6.1E+02	6.8E+02	7.8E+02
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	3.7E-04	2.6E-04	1.8E-04	1.3E-04	8.9E-05	6.1E-05	4.2E-05	2.9E-05	2.0E-05	1.4E-05	9.4E-06	6.4E-06	4.4E-06	3.0E-06
Cf-250	4.2E-10	1.5E-10	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	2.1E+00	1.5E+00	1.1E+00	7.7E-01	5.4E-01	3.8E-01	2.7E-01	1.9E-01	1.3E-01	9.1E-02	6.3E-02	4.4E-02	3.0E-02	2.1E-02
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.6E-02	2.0E-02	1.5E-02	1.1E-02	8.0E-03	5.8E-03	4.2E-03	3.0E-03	2.1E-03	1.5E-03	1.0E-03	7.4E-04	5.0E-04	3.5E-04
I-129	8.8E-09	2.5E-08	4.9E-08	8.5E-08	2.1E-07	4.5E-07	7.5E-07	1.5E-06	3.2E-06	5.5E-06	9.0E-06	1.8E-05	3.4E-05	5.1E-05
K-40	0	0	0	0	0	1.9E-11	3.0E-11	9.3E-11	3.1E-10	6.8E-10	1.1E-09	2.6E-09	7.8E-09	1.7E-08
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	8.2E+01	1.2E+02	1.9E+02	2.7E+02	3.9E+02	5.7E+02	7.8E+02	1.1E+03	1.5E+03	2.1E+03	2.8E+03	3.8E+03	5.1E+03	6.7E+03
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.8E+01	1.9E+01	1.9E+01	2.0E+01	2.0E+01	2.0E+01	2.0E+01	2.0E+01	2.0E+01	1.9E+01	1.8E+01	1.8E+01	1.7E+01	1.6E+01
Tb-157	1.8E-01	1.2E-01	7.8E-02	5.1E-02	3.4E-02	2.2E-02	1.4E-02	9.4E-03	6.1E-03	3.9E-03	2.5E-03	1.6E-03	1.1E-03	6.9E-04
Tb-158	5.0E-01	3.5E-01	2.4E-01	1.7E-01	1.1E-01	7.8E-02	5.3E-02	3.6E-02	2.5E-02	1.7E-02	1.1E-02	7.6E-03	5.1E-03	3.4E-03
Tc-99	9.8E-05	2.1E-04	3.6E-04	7.2E-04	1.6E-03	2.6E-03	4.6E-03	9.2E-03	1.6E-02	2.4E-02	4.7E-02	8.0E-02	1.2E-01	2.1E-01
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 34. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.364 CM/YR INFILTRATION, 90 FOOT DISTANCE, FROST-PROTECTED SIDE SLOPE ANALYSIS

	390	395	400	405	410	415	420	425	430	435	440	445	450	455
Al-26	3.4E-03	2.4E-03	1.6E-03	1.1E-03	7.7E-04	5.2E-04	3.6E-04	2.5E-04	1.7E-04	1.1E-04	7.8E-05	5.3E-05	3.6E-05	2.5E-05
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.6E-06	2.5E-06	1.7E-06	1.2E-06	8.0E-07	5.4E-07	3.7E-07	2.5E-07	1.7E-07	1.2E-07	8.0E-08	5.4E-08	3.7E-08	2.5E-08
Ca-41	8.7E+02	9.8E+02	1.1E+03	1.2E+03	1.3E+03	1.4E+03	1.6E+03	1.7E+03	1.8E+03	2.0E+03	2.1E+03	2.2E+03	2.3E+03	2.5E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.0E-06	1.4E-06	9.3E-07	6.3E-07	4.3E-07	2.9E-07	1.9E-07	1.3E-07	8.8E-08	5.9E-08	4.0E-08	2.7E-08	1.8E-08	1.2E-08
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.4E-02	9.9E-03	6.8E-03	4.7E-03	3.2E-03	2.2E-03	1.5E-03	1.0E-03	7.0E-04	4.8E-04	3.3E-04	2.2E-04	1.5E-04	1.0E-04
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.4E-04	1.6E-04	1.1E-04	7.4E-05	4.9E-05	3.3E-05	2.2E-05	1.4E-05	9.5E-06	6.2E-06	4.0E-06	2.6E-06	1.7E-06	1.1E-06
I-129	9.2E-05	1.7E-04	2.6E-04	4.1E-04	7.4E-04	1.2E-03	1.7E-03	2.8E-03	4.7E-03	6.8E-03	1.0E-02	1.6E-02	2.4E-02	3.3E-02
K-40	2.5E-08	5.2E-08	1.3E-07	2.7E-07	4.3E-07	8.2E-07	2.0E-06	3.7E-06	5.6E-06	9.9E-06	2.2E-05	3.9E-05	5.8E-05	9.7E-05
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	8.7E+03	1.1E+04	1.4E+04	1.9E+04	2.4E+04	2.9E+04	3.7E+04	4.6E+04	5.7E+04	6.8E+04	8.4E+04	1.0E+05	1.2E+05	1.5E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.5E+01	1.4E+01	1.3E+01	1.2E+01	1.1E+01	1.0E+01	9.5E+00	8.5E+00	7.6E+00	6.9E+00	6.2E+00	5.4E+00	4.8E+00	4.3E+00
Tb-157	4.4E-04	2.8E-04	1.8E-04	1.2E-04	7.5E-05	4.8E-05	3.1E-05	2.0E-05	1.3E-05	8.1E-06	5.1E-06	3.3E-06	2.1E-06	1.3E-06
Tb-158	2.3E-03	1.5E-03	1.0E-03	6.8E-04	4.6E-04	3.0E-04	2.0E-04	1.3E-04	8.9E-05	5.9E-05	3.9E-05	2.6E-05	1.7E-05	1.1E-05
Tc-99	3.5E-01	5.1E-01	8.2E-01	1.4E+00	1.9E+00	2.9E+00	4.7E+00	6.7E+00	9.3E+00	1.5E+01	2.1E+01	2.8E+01	4.2E+01	6.1E+01
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	460	465	470	475	480	485	490	495	500	505	510	515	520	525
Al-26	1.7E-05	1.1E-05	7.7E-06	5.2E-06	3.5E-06	2.4E-06	1.6E-06	1.1E-06	7.4E-07	5.0E-07	3.4E-07	2.3E-07	1.5E-07	1.0E-07
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.7E-08	1.1E-08	7.7E-09	5.2E-09	3.5E-09	2.3E-09	1.5E-09	1.0E-09	6.4E-10	3.5E-10	1.8E-10	0	0	0
Ca-41	2.6E+03	2.7E+03	2.8E+03	2.9E+03	3.0E+03	3.0E+03	3.1E+03	3.1E+03	3.2E+03	3.2E+03	3.3E+03	3.3E+03	3.3E+03	3.3E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	8.1E-09	5.4E-09	3.6E-09	2.4E-09	1.6E-09	1.0E-09	6.5E-10	3.6E-10	1.5E-10	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	7.0E-05	4.8E-05	3.2E-05	2.2E-05	1.5E-05	1.0E-05	6.8E-06	4.6E-06	3.1E-06	2.1E-06	1.4E-06	9.5E-07	6.4E-07	4.3E-07
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	6.9E-07	4.4E-07	2.8E-07	1.8E-07	1.1E-07	7.2E-08	4.5E-08	2.8E-08	1.8E-08	1.1E-08	6.8E-09	4.2E-09	2.6E-09	1.6E-09
I-129	5.2E-02	7.7E-02	1.0E-01	1.5E-01	2.3E-01	3.0E-01	4.0E-01	5.9E-01	8.2E-01	1.0E+00	1.5E+00	2.0E+00	2.7E+00	3.4E+00
K-40	2.0E-04	3.5E-04	4.9E-04	7.7E-04	1.4E-03	2.4E-03	3.4E-03	5.1E-03	9.0E-03	1.4E-02	2.0E-02	2.9E-02	4.9E-02	7.6E-02
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.7E+05	2.0E+05	2.4E+05	2.8E+05	3.3E+05	3.7E+05	4.3E+05	4.9E+05	5.6E+05	6.5E+05	7.3E+05	8.2E+05	9.4E+05	1.0E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.7E+00	3.3E+00	2.8E+00	2.4E+00	2.1E+00	1.8E+00	1.6E+00	1.3E+00	1.1E+00	9.5E-01	8.1E-01	6.8E-01	5.6E-01	4.8E-01
Tb-157	8.6E-07	5.5E-07	3.5E-07	2.2E-07	1.4E-07	9.1E-08	5.8E-08	3.7E-08	2.4E-08	1.5E-08	9.6E-09	6.1E-09	3.9E-09	2.5E-09
Tb-158	7.6E-06	5.0E-06	3.3E-06	2.2E-06	1.5E-06	9.6E-07	6.3E-07	4.2E-07	2.7E-07	1.8E-07	1.2E-07	7.9E-08	5.2E-08	3.4E-08
Tc-99	8.0E+01	1.1E+02	1.6E+02	2.0E+02	2.9E+02	4.0E+02	5.1E+02	6.8E+02	9.3E+02	1.2E+03	1.5E+03	2.0E+03	2.6E+03	3.3E+03
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 34. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.364 CM/YR INFILTRATION, 90 FOOT DISTANCE, FROST-PROTECTED SIDE SLOPE ANALYSIS

	530	535	540	545	550	555	560	565	570	575	580	585	590	595
Al-26	7.0E-08	4.7E-08	3.2E-08	2.1E-08	1.4E-08	9.7E-09	6.5E-09	4.4E-09	2.9E-09	1.9E-09	1.3E-09	8.1E-10	4.7E-10	2.0E-10
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	3.3E+03	3.3E+03	3.3E+03	3.2E+03	3.2E+03	3.1E+03	3.1E+03	3.0E+03	3.0E+03	2.9E+03	2.8E+03	2.7E+03	2.6E+03	2.6E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	2.9E-07	2.0E-07	1.3E-07	9.0E-08	6.0E-08	4.1E-08	2.7E-08	1.8E-08	1.2E-08	8.3E-09	5.6E-09	3.7E-09	2.5E-09	1.7E-09
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	9.7E-10	5.8E-10	3.4E-10	1.9E-10	1.0E-10	2.1E-11	0	0	0	0	0	0	0	0
I-129	4.8E+00	6.2E+00	7.7E+00	1.0E+01	1.4E+01	1.7E+01	2.2E+01	2.8E+01	3.6E+01	4.3E+01	5.6E+01	7.0E+01	8.5E+01	1.1E+02
K-40	1.0E-01	1.4E-01	2.3E-01	3.6E-01	4.7E-01	6.4E-01	1.0E+00	1.5E+00	1.9E+00	2.6E+00	3.8E+00	5.5E+00	7.1E+00	9.3E+00
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.2E+06	1.3E+06	1.4E+06	1.6E+06	1.7E+06	1.9E+06	2.1E+06	2.3E+06	2.5E+06	2.7E+06	2.9E+06	3.2E+06	3.3E+06	3.6E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.0E-01	3.3E-01	2.8E-01	2.3E-01	1.9E-01	1.6E-01	1.3E-01	1.1E-01	8.6E-02	7.0E-02	5.8E-02	4.7E-02	3.8E-02	3.1E-02
Tb-157	1.5E-09	9.4E-10	5.5E-10	2.6E-10	1.0E-11	0	0	0	0	0	0	0	0	0
Tb-158	2.3E-08	1.5E-08	9.8E-09	6.4E-09	4.2E-09	2.7E-09	1.8E-09	1.1E-09	7.0E-10	3.6E-10	9.7E-11	0	0	0
Tc-99	4.2E+03	5.3E+03	6.5E+03	8.2E+03	1.1E+04	1.3E+04	1.6E+04	2.0E+04	2.4E+04	2.9E+04	3.6E+04	4.3E+04	5.2E+04	6.3E+04
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	600	605	610	615	620	625	630	635	640	645	650	655	660	665
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.5E+03	2.4E+03	2.3E+03	2.3E+03	2.4E+03	2.3E+03	2.1E+03	2.0E+03	1.9E+03	1.8E+03	1.6E+03	1.5E+03	1.4E+03	1.4E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.1E-09	6.7E-10	3.2E-10	1.2E-10	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.3E+02	1.6E+02	1.9E+02	2.4E+02	2.9E+02	3.4E+02	4.2E+02	5.1E+02	6.0E+02	7.1E+02	8.7E+02	1.0E+03	1.2E+03	1.4E+03
K-40	1.3E+01	1.9E+01	2.4E+01	3.0E+01	4.3E+01	5.8E+01	7.2E+01	9.1E+01	1.3E+02	1.7E+02	2.1E+02	2.6E+02	3.5E+02	4.6E+02
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.9E+06	4.2E+06	4.4E+06	4.6E+06	4.9E+06	5.2E+06	5.6E+06	5.8E+06	6.1E+06	6.4E+06	6.8E+06	7.1E+06	7.5E+06	7.7E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.5E-02	2.0E-02	1.6E-02	1.3E-02	1.1E-02	9.2E-03	7.1E-03	5.6E-03	4.5E-03	3.5E-03	2.7E-03	2.1E-03	1.7E-03	1.3E-03
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	7.5E+04	8.7E+04	1.0E+05	1.2E+05	1.4E+05	1.7E+05	2.0E+05	2.3E+05	2.6E+05	3.1E+05	3.5E+05	3.9E+05	4.7E+05	5.4E+05
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 34. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.364 CM/YR INFILTRATION, 90 FOOT DISTANCE, FROST-PROTECTED SIDE SLOPE ANALYSIS

	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.2E+03	1.2E+03	1.1E+03	1.0E+03	9.5E+02	8.9E+02	8.6E+02	8.0E+02	7.3E+02	6.8E+02	6.5E+02	6.1E+02	5.6E+02	5.2E+02	4.8E+02	4.7E+02	4.1E+02	3.8E+02	3.6E+02	3.3E+02	3.0E+02	2.7E+02	2.6E+02	2.4E+02	2.1E+02	2.0E+02	1.9E+02	1.7E+02
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.6E+03	1.8E+03	2.2E+03	2.6E+03	2.9E+03	3.5E+03	4.1E+03	4.6E+03	5.2E+03	6.1E+03	6.9E+03	7.8E+03	8.8E+03	1.0E+04	1.1E+04	1.3E+04	1.5E+04	1.6E+04	1.8E+04	2.0E+04	2.3E+04	2.5E+04	2.7E+04	3.1E+04	3.4E+04	3.8E+04	4.3E+04	4.7E+04
K-40	5.6E+02	6.9E+02	9.0E+02	1.2E+03	1.4E+03	1.7E+03	2.2E+03	2.9E+03	3.3E+03	4.0E+03	5.0E+03	6.3E+03	7.4E+03	8.8E+03	1.1E+04	1.3E+04	1.6E+04	1.8E+04	2.3E+04	2.8E+04	3.1E+04	3.7E+04	4.6E+04	5.5E+04	6.3E+04	7.3E+04	8.7E+04	1.0E+05
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	8.0E+06	8.3E+06	8.7E+06	8.8E+06	9.2E+06	9.4E+06	9.7E+06	9.9E+06	1.0E+07	1.0E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.2E+07	1.2E+07	1.2E+07	1.3E+07	1.4E+07	1.4E+07	1.4E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.0E-03	7.9E-04	6.2E-04	5.0E-04	3.8E-04	2.9E-04	2.3E-04	1.8E-04	1.4E-04	1.1E-04	8.6E-05	6.7E-05	5.1E-05	4.0E-05	3.1E-05	2.4E-05	1.9E-05	1.4E-05	1.1E-05	8.7E-06	6.7E-06	5.1E-06	4.0E-06	3.1E-06	2.3E-06	1.8E-06	1.4E-06	1.1E-06
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	6.0E+05	7.0E+05	8.0E+05	8.8E+05	1.0E+06	1.2E+06	1.3E+06	1.4E+06	1.6E+06	1.8E+06	2.0E+06	2.3E+06	2.5E+06	2.8E+06	3.1E+06	3.3E+06	3.7E+06	4.1E+06	4.5E+06	4.9E+06	5.4E+06	5.9E+06	6.4E+06	7.1E+06	7.6E+06	8.3E+06	8.8E+06	9.8E+06
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 34. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.364 CM/YR INFILTRATION, 90 FOOT DISTANCE, FROST-PROTECTED SIDE SLOPE ANALYSIS

	810	815	820	825	830	835	840	845	850	855	860	865	870	875
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.5E+02	1.4E+02	1.3E+02	1.2E+02	1.1E+02	1.0E+02	9.4E+01	8.5E+01	7.5E+01	7.0E+01	6.5E+01	6.0E+01	5.2E+01	4.8E+01
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	5.1E+04	5.5E+04	6.2E+04	6.7E+04	7.3E+04	8.2E+04	8.9E+04	9.5E+04	1.0E+05	1.1E+05	1.2E+05	1.3E+05	1.5E+05	1.6E+05
K-40	1.2E+05	1.4E+05	1.6E+05	1.9E+05	2.2E+05	2.4E+05	2.9E+05	3.4E+05	3.8E+05	4.3E+05	5.0E+05	5.7E+05	6.4E+05	7.2E+05
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.2E+07	1.2E+07	1.2E+07	1.2E+07	1.2E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	9.9E+06	9.7E+06	1.0E+07	1.0E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	8.1E-07	6.3E-07	5.0E-07	3.7E-07	2.8E-07	2.2E-07	1.7E-07	1.3E-07	9.7E-08	7.4E-08	5.8E-08	4.4E-08	3.3E-08	2.5E-08
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.0E+07	1.1E+07	1.2E+07	1.3E+07	1.4E+07	1.5E+07	1.6E+07	1.7E+07	1.8E+07	2.0E+07	2.1E+07	2.2E+07	2.4E+07	2.5E+07
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	880	885	890	895	900	905	910	915	920	925	930	935	940	945
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	4.6E+01	4.0E+01	3.6E+01	3.3E+01	3.1E+01	2.8E+01	2.4E+01	2.3E+01	2.1E+01	1.9E+01	1.7E+01	1.5E+01	1.4E+01	1.3E+01
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.6E+05	1.8E+05	1.9E+05	2.0E+05	2.2E+05	2.4E+05	2.5E+05	2.7E+05	2.9E+05	3.0E+05	3.3E+05	3.5E+05	3.7E+05	3.9E+05
K-40	8.3E+05	9.6E+05	1.1E+06	1.2E+06	1.4E+06	1.5E+06	1.7E+06	1.9E+06	2.1E+06	2.4E+06	2.6E+06	2.9E+06	3.3E+06	3.8E+06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	9.7E+06	9.0E+06	8.8E+06	9.1E+06	9.1E+06	8.7E+06	8.0E+06	8.0E+06	8.1E+06	8.1E+06	7.7E+06	7.0E+06	6.9E+06	7.2E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.0E-08	1.5E-08	1.1E-08	8.3E-09	6.3E-09	4.9E-09	3.6E-09	2.8E-09	2.1E-09	1.6E-09	1.2E-09	8.8E-10	6.8E-10	5.2E-10
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.6E+07	2.9E+07	2.9E+07	3.1E+07	3.4E+07	3.5E+07	3.7E+07	3.9E+07	4.0E+07	4.2E+07	4.5E+07	4.5E+07	4.8E+07	5.1E+07
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 34. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.364 CM/YR INFILTRATION, 90 FOOT DISTANCE, FROST-PROTECTED SIDE SLOPE ANALYSIS

	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1030	1040	1050	1060	1070	1080	1100	1300	1500	2000
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.1E+01	1.0E+01	9.6E+00	8.5E+00	7.4E+00	6.8E+00	6.4E+00	5.7E+00	5.0E+00	4.5E+00	4.2E+00	3.8E+00	3.3E+00	3.0E+00	2.7E+00	2.2E+00	1.8E+00	1.4E+00	1.2E+00	9.1E-01	7.7E-01	5.0E-01	5.1E-03	3.8E-05	1.0E-10
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	4.2E+05	4.4E+05	4.7E+05	4.9E+05	5.2E+05	5.6E+05	5.7E+05	6.1E+05	6.4E+05	6.8E+05	7.0E+05	7.5E+05	7.8E+05	8.1E+05	8.5E+05	9.5E+05	1.2E+06	1.5E+06	1.3E+06	1.3E+06	1.7E+06	1.4E+06	3.2E+06	3.4E+06	5.9E+05
K-40	4.1E+06	4.5E+06	5.0E+06	5.6E+06	6.0E+06	6.7E+06	7.4E+06	8.2E+06	8.8E+06	9.6E+06	1.1E+07	1.2E+07	1.3E+07	1.4E+07	1.5E+07	1.8E+07	2.1E+07	2.5E+07	3.0E+07	3.4E+07	4.0E+07	5.3E+07	5.0E+08	1.7E+09	3.6E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	7.0E+06	6.6E+06	6.1E+06	6.0E+06	6.0E+06	6.1E+06	5.6E+06	5.1E+06	4.9E+06	5.1E+06	5.0E+06	4.6E+06	4.3E+06	4.1E+06	4.1E+06	3.8E+06	3.4E+06	3.3E+06	2.9E+06	2.7E+06	2.5E+06	2.1E+06	2.4E+05	1.9E+04	8.5E+00
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.5E-08	1.8E-04	3.1E+01
Sr-90	3.8E-10	2.9E-10	2.1E-10	1.6E-10	1.1E-10	7.4E-11	6.4E-11	4.4E-11	2.4E-11	1.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	5.3E+07	5.4E+07	5.7E+07	5.9E+07	6.2E+07	6.9E+07	8.1E+07	8.9E+07	9.2E+07	9.0E+07	8.3E+07	8.0E+07	8.8E+07	9.7E+07	1.0E+08	9.2E+07	9.3E+07	1.1E+08	1.1E+08	1.0E+08	1.3E+08	1.1E+08	1.5E+08	1.0E+08	5.6E+06
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 35. HEAVY METAL SOURCE CONCENTRATIONS, K_ds, AND FRACTIONAL RELEASE RATES, BASED ON 0.364 CM/YEAR INFILTRATION

Waste Characteristics:	Infiltration Rate:	0.00364	m/yr
	Waste Thickness:	1	m
	Waste Moisture Content:	0.061	cm^3/cm^3
	Waste Bulk Density:	1.8	g/cm^3
Soil Characteristics:	Soil Thickness:	4.432	m (liner+soil to top of capillary fringe)
	Soil Moisture Content:	0.096	cm^3/cm^3
	Soil Bulk Density:	1.566	g/cm^3
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3
	Hydraulic Conductivity:	7.58E-04	cm/sec
	Gradient:	1.00E-03	m/m
	Aquifer Velocity:	0.8243	m/yr
	Aquifer Flux Rate:	0.2390	$m^3/m^2/yr$

	Element	Symbol	Density (gm/cc)	Maximum Permitted Possible Metal Conc. (kg/m³)	Maximum Possible Waste Concentration (mg-met/kg-wst)	Maximum & Modeled Waste Concentration (mg-met/m³-wst)	Distribution Coefficient (Kd) (ml/gm)	Fractional Release Rate (1/yr)	Waste Retard. Factor	Soil Retard. Factor
101	Silver	Ag-a	10.5	1.05E+04	5.83E+06	1.05E+10	3	6.67E-04	89.525	49.894
102	Silver	Ag-b	10.5			2.63E+09	3	6.67E-04	89.525	49.894
103	Silver	Ag-c	10.5			6.56E+08	3	6.67E-04	89.525	49.894
104	Silver	Ag-d	10.5			1.64E+08	3	6.67E-04	89.525	49.894
105	Arsenic	As-a	5.73	5.73E+03	3.18E+06	5.73E+09	1	1.96E-03	30.508	17.298
106	Arsenic	As-b	5.73			2.87E+07	1	1.96E-03	30.508	17.298
107	Arsenic	As-c	5.73			1.43E+05	1	1.96E-03	30.508	17.298
108	Arsenic	As-d	5.73			7.16E+02	1	1.96E-03	30.508	17.298
109	Barium	Ba-a	3.5	3.50E+03	1.94E+06	3.50E+09	10	2.02E-04	296.082	163.979
110	Barium	Ba-b	3.5			8.75E+08	10	2.02E-04	296.082	163.979
111	Barium	Ba-c	3.5			2.19E+08	10	2.02E-04	296.082	163.979
112	Barium	Ba-d	3.5			5.47E+07	10	2.02E-04	296.082	163.979
113	Beryllium	Be-a	1.848	1.85E+03	1.03E+06	1.85E+09	2.5	7.98E-04	74.770	41.745
114	Beryllium	Be-b	1.848			4.62E+08	2.5	7.98E-04	74.770	41.745
115	Beryllium	Be-c	1.848			1.16E+08	2.5	7.98E-04	74.770	41.745
116	Beryllium	Be-d	1.848			2.89E+07	2.5	7.98E-04	74.770	41.745
117	Cadmium	Cd-a	8.65	8.65E+03	4.81E+06	8.65E+09	1	1.96E-03	30.508	17.298
118	Cadmium	Cd-b	8.65			1.24E+07	1	1.96E-03	30.508	17.298
119	Cadmium	Cd-c	8.65			1.77E+04	1	1.96E-03	30.508	17.298
120	Cadmium	Cd-d	8.65			2.52E+01	1	1.96E-03	30.508	17.298
121	Chromium	Cr-a	8.96	8.96E+03	4.98E+06	8.96E+09	1	1.96E-03	30.508	17.298
122	Chromium	Cr-b	8.96			2.99E+07	1	1.96E-03	30.508	17.298
123	Chromium	Cr-c	8.96			9.96E+04	1	1.96E-03	30.508	17.298
124	Chromium	Cr-d	8.96			3.32E+02	1	1.96E-03	30.508	17.298
125	Copper	Cu-a	8.92	8.92E+03	4.96E+06	8.92E+09	1	1.96E-03	30.508	17.298
126	Copper	Cu-b	8.92			8.92E+07	1	1.96E-03	30.508	17.298
127	Copper	Cu-c	8.92			8.92E+05	1	1.96E-03	30.508	17.298
128	Copper	Cu-d	8.92			8.92E+03	1	1.96E-03	30.508	17.298
129	Mercury	Hg-a	13.54	1.35E+04	7.52E+06	1.35E+10	10	2.02E-04	296.082	163.979
130	Mercury	Hg-b	13.54			3.39E+09	10	2.02E-04	296.082	163.979
131	Mercury	Hg-c	13.54			8.46E+08	10	2.02E-04	296.082	163.979
132	Mercury	Hg-d	13.54			2.12E+08	10	2.02E-04	296.082	163.979
133	Molybden	Mo-a	10.22	1.02E+04	5.68E+06	1.02E+10	1	1.96E-03	30.508	17.298
134	Molybden	Mo-b	10.22			2.04E+07	1	1.96E-03	30.508	17.298
135	Molybden	Mo-c	10.22			4.09E+04	1	1.96E-03	30.508	17.298
136	Molybden	Mo-d	10.22			8.18E+01	1	1.96E-03	30.508	17.298
137	Nickel	Ni-a	8.4	8.40E+03	4.67E+06	8.40E+09	10	2.02E-04	296.082	163.979
138	Nickel	Ni-b	8.4			2.10E+09	10	2.02E-04	296.082	163.979
139	Nickel	Ni-c	8.4			5.25E+08	10	2.02E-04	296.082	163.979
140	Nickel	Ni-d	8.4			1.31E+08	10	2.02E-04	296.082	163.979
141	Lead	Pb-a	11.35	1.14E+04	6.31E+06	1.14E+10	1	1.96E-03	30.508	17.298
142	Lead	Pb-b	11.35			2.27E+07	1	1.96E-03	30.508	17.298
143	Lead	Pb-c	11.35			4.54E+04	1	1.96E-03	30.508	17.298
144	Lead	Pb-d	11.35			9.08E+01	1	1.96E-03	30.508	17.298
145	Selenium	Se-a	4.79	4.79E+03	2.66E+06	4.79E+09	1	1.96E-03	30.508	17.298
146	Selenium	Se-b	4.79			1.60E+07	1	1.96E-03	30.508	17.298
147	Selenium	Se-c	4.79			5.32E+04	1	1.96E-03	30.508	17.298
148	Selenium	Se-d	4.79			1.77E+02	1	1.96E-03	30.508	17.298
149	Zinc	Zn-a	7.13	7.13E+03	3.96E+06	7.13E+09	0.1	1.51E-02	3.951	2.630
150	Zinc	Zn-b	7.13			3.57E+08	0.1	1.51E-02	3.951	2.630
151	Zinc	Zn-c	7.13			1.78E+07	0.1	1.51E-02	3.951	2.630
152	Zinc	Zn-d	7.13			8.91E+05	0.1	1.51E-02	3.951	2.630
153	Zinc	Zn-e	7.13			4.46E+04	0.1	1.51E-02	3.951	2.630
154	Zinc	Zn-f	7.13			2.23E+03	0.1	1.51E-02	3.951	2.630
155	Zinc	Zn-g	7.13			1.11E+02	0.1	1.51E-02	3.951	2.630
156	Zinc	Zn-h	7.13			5.57E+00	0.1	1.51E-02	3.951	2.630
157	Zinc	Zn-I	7.13			2.79E-01	0.1	1.51E-02	3.951	2.630
158	Zinc	Zn-j	7.13			5.57E-02	0.1	1.51E-02	3.951	2.630
159	Zinc	Zn-k	7.13			1.11E-02	0.1	1.51E-02	3.951	2.630
160	Zinc	Zn-l	7.13			2.23E-03	0.1	1.51E-02	3.951	2.630

TABLE 36. METALS CONCENTRATIONS (mg/L) AT THE WATER TABLE
VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	25	50	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Ag-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.5E-23	6.7E-21	5.7E-19	3.0E-17	1.1E-15	2.6E-14	4.9E-13	6.9E-12
As-b	520	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4E-23	2.9E-21	1.5E-19	5.3E-18	1.3E-16	2.4E-15	3.5E-14
As-c	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4E-23	7.5E-22	2.7E-20	6.6E-19	1.2E-17	1.7E-16
As-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-22	3.3E-21	6.1E-20	8.6E-19
Ba-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.8E-23	1.0E-20	8.6E-19	4.6E-17	1.6E-15	4.0E-14	7.3E-13	1.0E-11
Cd-b	460	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-23	1.2E-21	6.5E-20	2.3E-18	5.7E-17	1.1E-15	1.5E-14
Cd-c	600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.3E-23	3.3E-21	8.2E-20	1.5E-18	2.1E-17
Cd-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-22	2.1E-21	3.0E-20
Cr-a	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.0E-23	1.1E-20	8.9E-19	4.7E-17	1.7E-15	4.1E-14	7.6E-13	1.1E-11
Cr-b	510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.5E-23	3.0E-21	1.6E-19	5.6E-18	1.4E-16	2.5E-15	3.6E-14
Cr-c	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.3E-22	1.8E-20	4.6E-19	8.5E-18	1.2E-16
Cr-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.2E-23	1.5E-21	2.8E-20	4.0E-19
Cu-a	440	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.0E-23	1.0E-20	8.9E-19	4.7E-17	1.7E-15	4.1E-14	7.6E-13	1.1E-11
Cu-b	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0E-22	8.9E-21	4.7E-19	1.7E-17	4.1E-16	7.6E-15	1.1E-13
Cu-c	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.9E-23	4.7E-21	1.7E-19	4.1E-18	7.6E-17	1.1E-15
Cu-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.7E-23	1.7E-21	4.1E-20	7.6E-19	1.1E-17
Hg-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.0E-23	1.2E-20	1.0E-18	5.4E-17	1.9E-15	4.7E-14	8.7E-13	1.2E-11
Mo-b	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4E-23	2.0E-21	1.1E-19	3.8E-18	9.4E-17	1.7E-15	2.5E-14
Mo-c	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2E-22	7.6E-21	1.9E-19	3.5E-18	4.9E-17
Mo-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-23	3.8E-22	6.9E-21	9.8E-20
Ni-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.9E-23	1.3E-20	1.1E-18	6.0E-17	2.1E-15	5.3E-14	9.7E-13	1.4E-11
Pb-b	480	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7E-23	2.3E-21	1.2E-19	4.2E-18	1.0E-16	1.9E-15	2.7E-14
Pb-c	600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4E-22	8.4E-21	2.1E-19	3.9E-18	5.5E-17
Pb-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-23	4.2E-22	7.7E-21	1.1E-19
Se-a	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.7E-23	5.6E-21	4.8E-19	2.5E-17	8.9E-16	2.2E-14	4.1E-13	5.8E-12
Se-b	510	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9E-23	1.6E-21	8.4E-20	3.0E-18	7.4E-17	1.4E-15	1.9E-14
Se-c	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8E-22	9.9E-21	2.5E-19	4.5E-18	6.4E-17
Se-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-23	8.2E-22	1.5E-20	2.1E-19
Zn-a	60	0	4.4E-21	4.2E-15	9.8E-08	2.0E-03	1.2E+00	1.0E+02	2.4E+03	2.4E+04	1.4E+05	5.1E+05	1.4E+06	3.0E+06	5.2E+06	7.6E+06	9.7E+06	1.1E+07	1.1E+07	1.1E+07	9.4E+06	7.8E+06	6.1E+06	4.5E+06
Zn-b	60	0	2.2E-22	2.1E-16	4.9E-09	1.0E-04	6.2E-02	5.1E+00	1.2E+02	1.2E+03	6.9E+03	2.6E+04	7.0E+04	1.5E+05	2.6E+05	3.8E+05	4.9E+05	5.5E+05	5.7E+05	5.4E+05	4.7E+05	3.9E+05	3.0E+05	2.3E+05
Zn-c	80	0	1.1E-23	1.0E-17	2.4E-10	5.1E-06	3.1E-03	2.5E-01	5.9E+00	6.0E+01	3.4E+02	1.3E+03	3.5E+03	7.4E+03	1.3E+04	1.9E+04	2.4E+04	2.8E+04	2.8E+04	2.7E+04	2.4E+04	1.9E+04	1.5E+04	1.1E+04
Zn-d	100	0	0	5.2E-19	1.2E-11	2.5E-07	1.6E-04	1.3E-02	3.0E-01	3.0E+00	1.7E+01	6.4E+01	1.7E+02	3.7E+02	6.5E+02	9.5E+02	1.2E+03	1.4E+03	1.4E+03	1.3E+03	1.2E+03	9.7E+02	7.6E+02	5.6E+02
Zn-e	120	0	0	2.6E-20	6.1E-13	1.3E-08	7.8E-06	6.4E-04	1.5E-02	1.5E-01	8.6E-01	3.2E+00	8.7E+00	1.9E+01	3.2E+01	4.8E+01	6.1E+01	6.9E+01	7.1E+01	6.7E+01	5.9E+01	4.9E+01	3.8E+01	2.8E+01
Zn-f	-1	0	0	1.3E-21	3.1E-14	6.3E-10	3.9E-07	3.2E-05	7.4E-04	7.6E-03	4.3E-02	1.6E-01	4.4E-01	9.3E-01	1.6E+00	2.4E+00	3.0E+00	3.5E+00	3.6E+00	3.4E+00	2.9E+00	2.4E+00	1.9E+00	1.4E+00
Zn-g	-1	0	0	6.5E-23	1.5E-15	3.2E-11	1.9E-08	1.6E-06	3.7E-05	3.8E-04	2.1E-03	8.0E-03	2.2E-02	4.6E-02	8.0E-02	1.2E-01	1.5E-01	1.7E-01	1.8E-01	1.7E-01	1.5E-01	1.2E-01	9.4E-02	7.0E-02
Zn-h	-1	0	0	0	7.7E-17	1.6E-12	9.7E-10	8.0E-08	1.9E-06	1.9E-05	1.1E-04	4.0E-04	1.1E-03	2.3E-03	4.0E-03	5.9E-03	7.6E-03	8.6E-03	8.9E-03	8.4E-03	7.4E-03	6.1E-03	4.7E-03	3.5E-03
Zn-i	-1	0	0	0	3.8E-18	7.9E-14	4.9E-11	4.0E-09	9.3E-08	9.5E-07	5.4E-06	2.0E-05	5.5E-05	1.2E-04	2.0E-04	3.0E-04	3.8E-04	4.3E-04	4.5E-04	4.2E-04	3.7E-04	3.0E-04	2.4E-04	1.8E-04
Zn-j	-1	0	0	0	7.7E-19	1.6E-14	9.7E-12	8.0E-10	1.9E-08	1.9E-07	1.1E-06	4.0E-06	1.1E-05	2.3E-05	4.0E-05	5.9E-05	7.6E-05	8.6E-05	8.9E-05	8.4E-05	7.4E-05	6.1E-05	4.7E-05	3.5E-05
Zn-k	-1	0	0	0	1.5E-19	3.2E-15	1.9E-12	1.6E-10	3.7E-09	3.8E-08	2.1E-07	8.0E-07	2.2E-06	4.6E-06	8.0E-06	1.2E-05	1.5E-05	1.7E-05	1.8E-05	1.7E-05	1.5E-05	1.2E-05	9.4E-06	7.0E-06
Zn-l	-1	0	0	0	3.1E-20	6.3E-16	3.9E-13	3.2E-11	7.4E-10	7.6E-09	4.3E-08	1.6E-07	4.4E-07	9.3E-07	1.6E-06	2.4E-06	3.0E-06	3.5E-06	3.6E-06	3.4E-06	2.9E-06	2.4E-06	1.9E-06	1.4E-06

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

TABLE 36. METALS CONCENTRATIONS (mg/L) AT THE WATER TABLE
VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

NUCLIDE:	480	490	495	500	505	510	520	540	560	580	600	650	700	750	800	850	900	950	1000
Ag-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1E-22	2.0E-20
Ag-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.9E-23	4.9E-21
Ag-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0E-23	1.2E-21
Ag-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1E-22
As-a	7.8E-11	2.4E-10	4.2E-10	7.2E-10	1.2E-09	2.0E-09	5.5E-09	3.6E-08	2.1E-07	1.0E-06	4.7E-06	1.3E-04	2.2E-03	2.4E-02	2.0E-01	1.2E+00	5.8E+00	2.3E+01	7.9E+01
As-b	3.9E-13	1.2E-12	2.1E-12	3.6E-12	6.1E-12	1.0E-11	2.8E-11	1.8E-10	1.0E-09	5.2E-09	2.4E-08	6.6E-07	1.1E-05	1.2E-04	9.8E-04	6.0E-03	2.9E-02	1.2E-01	4.0E-01
As-c	1.9E-15	6.0E-15	1.0E-14	1.8E-14	3.0E-14	5.1E-14	1.4E-13	9.1E-13	5.2E-12	2.6E-11	1.2E-10	3.3E-09	5.5E-08	6.1E-07	4.9E-06	3.0E-05	1.4E-04	5.8E-04	2.0E-03
As-d	9.7E-18	3.0E-17	5.2E-17	9.0E-17	1.5E-16	2.5E-16	6.9E-16	4.5E-15	2.6E-14	1.3E-13	5.9E-13	1.6E-11	2.7E-10	3.0E-09	2.4E-08	1.5E-07	7.2E-07	2.9E-06	9.9E-06
Ba-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-22	1.4E-20	1.0E-18	4.7E-17	1.5E-15
Be-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8E-23	3.5E-21	2.6E-19	1.2E-17	3.6E-16
Be-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.9E-22	6.4E-20	2.9E-18	9.1E-17
Be-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2E-22	1.6E-20	7.3E-19	2.3E-17
Cd-a	1.2E-10	3.6E-10	6.3E-10	1.1E-09	1.8E-09	3.1E-09	8.3E-09	5.5E-08	3.1E-07	1.6E-06	7.1E-06	2.0E-04	3.3E-03	3.7E-02	2.9E-01	1.8E+00	8.7E+00	3.5E+01	1.2E+02
Cd-b	1.7E-13	5.2E-13	9.1E-13	1.6E-12	2.6E-12	4.4E-12	1.2E-11	7.9E-11	4.5E-10	2.3E-09	1.0E-08	2.8E-07	4.7E-06	5.3E-05	4.2E-04	2.6E-03	1.2E-02	5.0E-02	1.7E-01
Cd-c	2.4E-16	7.5E-16	1.3E-15	2.2E-15	3.7E-15	6.3E-15	1.7E-14	1.1E-13	6.4E-13	3.2E-12	1.5E-11	4.0E-10	6.8E-09	7.5E-08	6.0E-07	3.7E-06	1.8E-05	7.2E-05	2.4E-04
Cd-d	3.4E-19	1.1E-18	1.8E-18	3.2E-18	5.3E-18	8.9E-18	2.4E-17	1.6E-16	9.1E-16	4.6E-15	2.1E-14	5.8E-13	9.6E-12	1.1E-10	8.6E-10	5.2E-09	2.5E-08	1.0E-07	3.5E-07
Cr-a	1.2E-10	3.8E-10	6.5E-10	1.1E-09	1.9E-09	3.2E-09	8.6E-09	5.7E-08	3.3E-07	1.6E-06	7.4E-06	2.0E-04	3.4E-03	3.8E-02	3.1E-01	1.9E+00	9.0E+00	3.6E+01	1.2E+02
Cr-b	4.1E-13	1.3E-12	2.2E-12	3.7E-12	6.3E-12	1.1E-11	2.9E-11	1.9E-10	1.1E-09	5.5E-09	2.5E-08	6.8E-07	1.1E-05	1.3E-04	1.0E-03	6.2E-03	3.0E-02	1.2E-01	4.1E-01
Cr-c	1.4E-15	4.2E-15	7.3E-15	1.2E-14	2.1E-14	3.5E-14	9.6E-14	6.3E-13	3.6E-12	1.8E-11	8.2E-11	2.3E-09	3.8E-08	4.2E-07	3.4E-06	2.1E-05	1.0E-04	4.0E-04	1.4E-03
Cr-d	4.5E-18	1.4E-17	2.4E-17	4.2E-17	7.0E-17	1.2E-16	3.2E-16	2.1E-15	1.2E-14	6.1E-14	2.7E-13	7.6E-12	1.3E-10	1.4E-09	1.1E-08	6.9E-08	3.3E-07	1.3E-06	4.6E-06
Cu-a	1.2E-10	3.8E-10	6.5E-10	1.1E-09	1.9E-09	3.2E-09	8.6E-09	5.7E-08	3.2E-07	1.6E-06	7.3E-06	2.0E-04	3.4E-03	3.8E-02	3.0E-01	1.9E+00	9.0E+00	3.6E+01	1.2E+02
Cu-b	1.2E-12	3.8E-12	6.5E-12	1.1E-11	1.9E-11	3.2E-11	8.6E-11	5.7E-10	3.2E-09	1.6E-08	7.3E-08	2.0E-06	3.4E-05	3.8E-04	3.0E-03	1.9E-02	9.0E-02	3.6E-01	1.2E+00
Cu-c	1.2E-14	3.8E-14	6.5E-14	1.1E-13	1.9E-13	3.2E-13	8.6E-13	5.7E-12	3.2E-11	1.6E-10	7.3E-10	2.0E-08	3.4E-07	3.8E-06	3.0E-05	1.9E-04	9.0E-04	3.6E-03	1.2E-02
Cu-d	1.2E-16	3.8E-16	6.5E-16	1.1E-15	1.9E-15	3.2E-15	8.6E-15	5.7E-14	3.2E-13	1.6E-12	7.3E-12	2.0E-10	3.4E-09	3.8E-08	3.0E-07	1.9E-06	9.0E-06	3.6E-05	1.2E-04
Hg-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	1.4E-10	4.3E-10	7.4E-10	1.3E-09	2.2E-09	3.6E-09	9.8E-09	6.5E-08	3.7E-07	1.9E-06	8.4E-06	2.3E-04	3.9E-03	4.3E-02	3.5E-01	2.1E+00	1.0E+01	4.1E+01	1.4E+02
Mo-b	2.8E-13	8.6E-13	1.5E-12	2.6E-12	4.3E-12	7.2E-12	2.0E-11	1.3E-10	7.4E-10	3.7E-09	1.7E-08	4.7E-07	7.8E-06	8.7E-05	6.9E-04	4.2E-03	2.1E-02	8.3E-02	2.8E-01
Mo-c	5.5E-16	1.7E-15	3.0E-15	5.1E-15	8.7E-15	1.5E-14	3.9E-14	2.6E-13	1.5E-12	7.5E-12	3.4E-11	9.3E-10	1.6E-08	1.7E-07	1.4E-06	8.5E-06	4.1E-05	1.7E-04	5.6E-04
Mo-d	1.1E-18	3.4E-18	6.0E-18	1.0E-17	1.7E-17	2.9E-17	7.9E-17	5.2E-16	3.0E-15	1.5E-14	6.7E-14	1.9E-12	3.1E-11	3.5E-10	2.8E-09	1.7E-08	8.2E-08	3.3E-07	1.1E-06
Ni-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	1.5E-10	4.8E-10	8.3E-10	1.4E-09	2.4E-09	4.0E-09	1.1E-08	7.2E-08	4.1E-07	2.1E-06	9.4E-06	2.6E-04	4.4E-03	4.9E-02	3.9E-01	2.4E+00	1.1E+01	4.6E+01	1.6E+02
Pb-b	3.1E-13	9.6E-13	1.7E-12	2.8E-12	4.8E-12	8.0E-12	2.2E-11	1.4E-10	8.2E-10	4.1E-09	1.9E-08	5.2E-07	8.7E-06	9.7E-05	7.7E-04	4.7E-03	2.3E-02	9.2E-02	3.1E-01
Pb-c	6.2E-16	1.9E-15	3.3E-15	5.7E-15	9.6E-15	1.6E-14	4.4E-14	2.9E-13	1.6E-12	8.3E-12	3.7E-11	1.0E-09	1.7E-08	1.9E-07	1.5E-06	9.4E-06	4.6E-05	1.8E-04	6.3E-04
Pb-d	1.2E-18	3.8E-18	6.6E-18	1.1E-17	1.9E-17	3.2E-17	8.8E-17	5.8E-16	3.3E-15	1.7E-14	7.5E-14	2.1E-12	3.5E-11	3.9E-10	3.1E-09	1.9E-08	9.2E-08	3.7E-07	1.3E-06
Se-a	6.5E-11	2.0E-10	3.5E-10	6.0E-10	1.0E-09	1.7E-09	4.6E-09	3.0E-08	1.7E-07	8.8E-07	3.9E-06	1.1E-04	1.8E-03	2.0E-02	1.6E-01	9.9E-01	4.8E+00	1.9E+01	6.6E+01
Se-b	2.2E-13	6.7E-13	1.2E-12	2.0E-12	3.4E-12	5.7E-12	1.5E-11	1.0E-10	5.8E-10	2.9E-09	1.3E-08	3.7E-07	6.1E-06	6.8E-05	5.4E-04	3.3E-03	1.6E-02	6.5E-02	2.2E-01
Se-c	7.2E-16	2.2E-15	3.9E-15	6.7E-15	1.1E-14	1.9E-14	5.1E-14	3.4E-13	1.9E-12	9.7E-12	4.4E-11	1.2E-09	2.0E-08	2.3E-07	1.8E-06	1.1E-05	5.4E-05	2.2E-04	7.3E-04
Se-d	2.4E-18	7.5E-18	1.3E-17	2.2E-17	3.7E-17	6.3E-17	1.7E-16	1.1E-15	6.4E-15	3.2E-14	1.5E-13	4.0E-12	6.8E-11	7.5E-10	6.0E-09	3.7E-08	1.8E-07	7.2E-07	2.4E-06
Zn-a	3.2E+06	2.7E+06	2.4E+06	2.2E+06	2.0E+06	1.8E+06	1.5E+06	9.7E+05	6.1E+05	3.8E+05	2.3E+05	6.3E+04	1.5E+04	3.6E+03	7.9E+02	1.7E+02	3.4E+01	6.7E+00	1.3E+00
Zn-b	1.6E+05	1.3E+05	1.2E+05	1.1E+05	1.0E+05	9.1E+04	7.4E+04	4.8E+04	3.1E+04	1.9E+04	1.2E+04	3.1E+03	7.8E+02	1.8E+02	4.0E+01	8.4E+00	1.7E+00	3.4E-01	6.5E-02
Zn-c	8.1E+03	6.7E+03	6.1E+03	5.6E+03	5.0E+03	4.6E+03	3.7E+03	2.4E+03	1.5E+03	9.5E+02	5.8E+02	1.6E+02	3.9E+01	9.0E+00	2.0E+00	4.2E-01	8.5E-02	1.7E-02	3.3E-03
Zn-d	4.0E+02	3.4E+02	3.1E+02	2.8E+02	2.5E+02	2.3E+02	1.9E+02	1.2E+02	7.7E+01	4.8E+01	2.9E+01	7.8E+00	1.9E+00	4.5E-01	9.9E-02	2.1E-02	4.3E-03	8.4E-04	1.6E-04
Zn-e	2.0E+01	1.7E+01	1.5E+01	1.4E+01	1.3E+01	1.1E+01	9.3E+00	6.1E+00	3.8E+00	2.4E+00	1.5E+00	3.9E-01	9.7E-02	2.2E-02	4.9E-03	1.0E-03	2.1E-04	4.2E-05	8.2E-06
Zn-f	1.0E+00	8.4E-01	7.7E-01	7.0E-01	6.3E-01	5.7E-01	4.7E-01	3.0E-01	1.9E-01	1.2E-01	7.3E-02	2.0E-02	4.8E-03	1.1E-03	2.5E-04	5.2E-05	1.1E-05	2.1E-06	4.1E-07
Zn-g	5.0E-02	4.2E-02	3.8E-02	3.5E-02	3.1E-02	2.8E-02	2.3E-02	1.5E-02	9.6E-03	5.9E-03	3.6E-03	9.7E-04	2.4E-04	5.6E-05	1.2E-05	2.6E-06	5.3E-07	1.0E-07	2.0E-08
Zn-h	2.5E-03	2.1E-03	1.9E-03	1.7E-03	1.6E-03	1.4E-03	1.2E-03	7.6E-04	4.8E-04	3.0E-04	1.8E-04	4.9E-05	1.2E-05	2.8E-06	6.2E-07	1.3E-07	2.7E-08	5.3E-09	1.0E-09
Zn-i	1.3E-04	1.1E-04	9.6E-05	8.7E-05	7.9E-05	7.1E-05	5.8E-05	3.8E-05	2.4E-05	1.5E-05	9.1E-06	2.4E-06	6.1E-07	1.4E-07	3.1E-08	6.5E-09	1.3E-09	2.6E-10	5.1E-11
Zn-j	2.5E-05	2.1E-05	1.9E-05	1.7E-05	1.6E-05	1.4E-05	1.2E-05	7.6E-06	4.8E-06	3.0E-06	1.8E-06	4.9E-07	1.2E-07	2.8E-08	6.2E-09	1.3E-09	2.7E-10	5.3E-11	1.0E-11
Zn-k	5.0E-06	4.2E-06	3.8E-06	3.5E-06	3.1E-06	2.8E-06	2.3E-06	1.5E-06	9.6E-07	5.9E-07	3.6E-07	9.7E-08	2.4E-08	5.6E-09	1.2E-09	2.6E-10	5.3E-11	1.0E-11	2.0E-12
Zn-l	1.0E-06	8.4E-07	7.7E-07	7.0E-07	6.3E-07	5.7E-07	4.7E-07	3.0E-07	1.9E-07	1.2E-07	7.3E-08	2.0E-08	4.8E-09	1.1E-09	2.5E-10	5.2E-11	1.1E-11	2.1E-12	4.1E-13

TABLE 37. METALS CONCENTRATIONS (mg/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

	EXCEEDS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140
Ag-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn-a	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	1.7E-06	6.4E-05	3.1E-04	6.7E-04	9.7E-04	1.1E-03	1.2E-03	1.1E-03	1.0E-03	8.7E-04	7.4E-04	6.1E-04
Zn-b	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-13	8.3E-08	3.2E-06	1.5E-05	3.3E-05	4.9E-05	5.7E-05	5.9E-05	5.6E-05	5.1E-05	4.4E-05	3.7E-05	3.0E-05
Zn-c	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-12	4.2E-07	1.6E-05	7.8E-05	1.7E-04	2.4E-04	2.9E-04	3.0E-04	2.8E-04	2.5E-04	2.2E-04	1.8E-04	1.5E-04
Zn-d	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-e	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-f	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-g	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-h	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-i	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-j	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-k	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12
Zn-l	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8E-20	8.3E-15	3.2E-13	1.5E-12	3.3E-12	4.9E-12	5.7E-12	5.9E-12	5.6E-12	5.1E-12	4.4E-12	3.7E-12	3.0E-12

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL within the 1,000 years modeled

TABLE 37. METALS CONCENTRATIONS (mg/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285
Ag-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn-a	4.9E-04	3.9E-04	3.1E-04	2.6E-04	4.8E-04	1.5E-03	2.8E-03	3.9E-03	4.5E-03	4.6E-03	5.8E-03	1.0E-02	1.6E-02	2.1E-02	2.3E-02	2.3E-02	2.2E-02	1.9E-02	1.6E-02	1.4E-02	1.2E-02	9.2E-03	1.1E-02	1.9E-02	3.1E-02	4.1E-02	4.5E-02	4.5E-02	4.2E-02
Zn-b	2.5E-05	2.0E-05	1.6E-05	1.7E-05	1.6E-04	6.5E-04	1.3E-03	1.9E-03	2.2E-03	2.3E-03	2.8E-03	5.0E-03	7.9E-03	1.0E-02	1.1E-02	1.1E-02	1.1E-02	9.5E-03	8.1E-03	6.8E-03	5.6E-03	4.6E-03	5.3E-03	9.5E-03	1.5E-02	2.0E-02	2.2E-02	2.2E-02	2.1E-02
Zn-c	1.2E-04	9.9E-05	7.9E-05	6.4E-05	1.2E-04	3.5E-04	6.6E-04	9.2E-04	1.0E-03	1.2E-03	4.6E-03	1.6E-02	3.2E-02	4.5E-02	5.1E-02	5.1E-02	4.9E-02	4.4E-02	3.8E-02	3.1E-02	2.6E-02	2.1E-02	1.8E-02	1.6E-02	1.8E-02	1.8E-02	1.7E-02	1.6E-02	1.4E-02
Zn-d	2.5E-12	2.0E-12	3.3E-10	1.2E-05	3.6E-04	1.6E-03	3.3E-03	4.7E-03	5.4E-03	5.6E-03	5.5E-03	5.5E-03	5.6E-03	5.6E-03	5.3E-03	4.9E-03	4.2E-03	3.7E-03	3.0E-03	2.5E-03	2.0E-03	1.7E-03	5.5E-03	1.8E-02	3.4E-02	4.7E-02	5.3E-02	5.3E-02	5.0E-02
Zn-e	2.5E-12	2.0E-12	1.6E-10	6.2E-06	1.8E-04	8.0E-04	1.6E-03	2.3E-03	2.7E-03	2.8E-03	2.7E-03	2.8E-03	2.8E-03	2.8E-03	2.7E-03	2.4E-03	2.1E-03	1.8E-03	1.5E-03	1.3E-03	1.0E-03	9.0E-04	2.8E-03	9.2E-03	1.7E-02	2.4E-02	2.7E-02	2.8E-02	2.6E-02
Zn-f	2.5E-12	2.0E-12	9.8E-12	3.1E-07	9.1E-06	4.0E-05	8.2E-05	1.2E-04	1.4E-04	1.4E-04	1.8E-04	3.2E-04	5.0E-04	6.5E-04	7.2E-04	7.3E-04	6.8E-04	6.0E-04	5.2E-04	4.3E-04	3.5E-04	3.3E-04	1.3E-03	4.4E-03	8.4E-03	1.2E-02	1.3E-02	1.3E-02	1.3E-02
Zn-g	2.5E-12	2.0E-12	5.7E-12	1.5E-07	4.5E-06	2.0E-05	4.1E-05	5.8E-05	6.8E-05	7.8E-05	2.9E-04	1.0E-03	2.0E-03	2.7E-03	3.1E-03	3.2E-03	3.0E-03	2.7E-03	2.3E-03	2.0E-03	1.6E-03	1.3E-03	1.6E-03	2.9E-03	4.9E-03	6.4E-03	7.1E-03	7.1E-03	6.6E-03
Zn-h	2.5E-12	2.0E-12	1.6E-12	1.2E-12	1.4E-12	2.5E-12	4.1E-12	5.4E-12	1.8E-10	4.2E-06	1.1E-04	4.9E-04	9.9E-04	1.4E-03	1.6E-03	1.6E-03	1.6E-03	1.4E-03	1.2E-03	1.0E-03	8.3E-04	6.8E-04	8.1E-04	1.5E-03	2.4E-03	3.2E-03	3.6E-03	3.6E-03	3.3E-03
Zn-i	2.5E-12	2.0E-12	1.6E-12	1.2E-12	1.4E-12	2.5E-12	4.1E-12	5.4E-12	9.1E-11	2.1E-06	5.6E-05	2.4E-04	4.9E-04	6.9E-04	7.9E-04	8.1E-04	7.7E-04	6.9E-04	5.9E-04	5.0E-04	4.1E-04	3.4E-04	4.0E-04	7.4E-04	1.2E-03	1.6E-03	1.8E-03	1.8E-03	1.7E-03
Zn-j	2.5E-12	2.0E-12	1.6E-12	1.2E-12	1.4E-12	2.5E-12	4.1E-12	5.4E-12	1.8E-10	4.2E-06	1.1E-04	4.9E-04	9.9E-04	1.4E-03	1.6E-03	1.6E-03	1.6E-03	1.4E-03	1.2E-03	1.0E-03	8.3E-04	6.8E-04	8.1E-04	1.5E-03	2.4E-03	3.2E-03	3.6E-03	3.6E-03	3.3E-03
Zn-k	2.5E-12	2.0E-12	1.6E-12	1.2E-12	1.4E-12	2.5E-12	4.1E-12	5.4E-12	3.5E-10	8.3E-06	2.2E-04	9.5E-04	1.9E-03	2.7E-03	3.1E-03	3.2E-03	3.0E-03	2.7E-03	2.3E-03	2.0E-03	1.6E-03	1.3E-03	1.2E-03	1.0E-03	1.1E-03	1.1E-03	1.1E-03	9.9E-04	8.8E-04
Zn-l	2.5E-12	2.0E-12	1.6E-12	1.2E-12	1.4E-12	2.5E-12	4.1E-12	5.4E-12	7.6E-11	1.7E-06	4.6E-05	2.0E-04	4.0E-04	5.6E-04	6.5E-04	6.7E-04	6.3E-04	5.6E-04	4.9E-04	4.1E-04	3.3E-04	2.7E-04	3.3E-04	5.9E-04	9.7E-04	1.3E-03	1.4E-03	1.4E-03	1.4E-03

TABLE 37. METALS CONCENTRATIONS (mg/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430
Ag-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cr-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cu-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zn-a	3.7E-02	3.2E-02	2.7E-02	2.2E-02	1.8E-02	1.7E-02	2.0E-02	2.5E-02	2.9E-02	3.0E-02	3.0E-02	2.7E-02	2.4E-02	2.0E-02	1.7E-02	1.4E-02	1.1E-02	1.1E-02	1.5E-02	1.9E-02	2.3E-02	2.4E-02	2.5E-02	2.2E-02	2.0E-02	1.6E-02	1.4E-02	1.2E-02	9.4E-03
Zn-b	1.9E-02	1.5E-02	1.3E-02	1.1E-02	8.9E-03	8.3E-03	1.0E-02	1.3E-02	1.5E-02	1.6E-02	1.5E-02	1.4E-02	1.2E-02	1.0E-02	8.7E-03	7.1E-03	5.8E-03	5.6E-03	7.5E-03	1.0E-02	1.2E-02	1.3E-02	1.2E-02	1.1E-02	9.9E-03	8.4E-03	7.1E-03	5.8E-03	4.8E-03
Zn-c	1.2E-02	1.0E-02	8.4E-03	6.8E-03	5.5E-03	4.9E-03	5.6E-03	6.9E-03	7.9E-03	8.2E-03	7.8E-03	7.2E-03	6.3E-03	5.4E-03	4.4E-03	3.6E-03	3.2E-03	7.6E-03	2.1E-02	3.6E-02	4.9E-02	5.5E-02	5.5E-02	5.1E-02	4.5E-02	3.8E-02	3.2E-02	2.6E-02	2.1E-02
Zn-d	4.5E-02	3.9E-02	3.2E-02	2.7E-02	2.2E-02	2.0E-02	2.5E-02	3.3E-02	3.9E-02	4.1E-02	3.9E-02	3.6E-02	3.2E-02	2.7E-02	2.3E-02	1.8E-02	1.5E-02	1.5E-02	1.9E-02	2.5E-02	3.1E-02	3.2E-02	3.1E-02	2.9E-02	2.5E-02	2.2E-02	1.8E-02	1.5E-02	1.2E-02
Zn-e	2.3E-02	2.0E-02	1.7E-02	1.4E-02	1.1E-02	1.1E-02	1.3E-02	1.7E-02	1.9E-02	1.9E-02	2.0E-02	1.8E-02	1.6E-02	1.3E-02	1.1E-02	8.9E-03	7.2E-03	7.1E-03	9.3E-03	1.3E-02	1.5E-02	1.6E-02	1.6E-02	1.4E-02	1.2E-02	1.1E-02	8.8E-03	7.2E-03	6.1E-03
Zn-f	1.1E-02	9.7E-03	8.2E-03	6.7E-03	5.5E-03	5.0E-03	6.2E-03	8.0E-03	9.4E-03	9.9E-03	9.6E-03	8.8E-03	7.8E-03	6.6E-03	5.5E-03	4.5E-03	3.6E-03	3.6E-03	4.7E-03	6.3E-03	7.5E-03	8.0E-03	7.7E-03	7.2E-03	6.2E-03	5.3E-03	4.4E-03	3.6E-03	3.0E-03
Zn-g	5.9E-03	5.0E-03	4.2E-03	3.5E-03	3.1E-03	5.9E-03	1.5E-02	2.7E-02	3.6E-02	4.1E-02	4.2E-02	3.9E-02	3.4E-02	2.9E-02	2.4E-02	2.0E-02	1.6E-02	1.7E-02	2.2E-02	3.0E-02	3.6E-02	3.9E-02	3.8E-02	3.5E-02	3.1E-02	2.7E-02	2.2E-02	1.8E-02	1.5E-02
Zn-h	3.0E-03	2.6E-03	2.2E-03	1.7E-03	1.5E-03	2.9E-03	7.8E-03	1.4E-02	1.9E-02	2.1E-02	2.1E-02	1.9E-02	1.7E-02	1.5E-02	1.2E-02	1.0E-02	8.5E-03	8.4E-03	1.1E-02	1.5E-02	1.8E-02	2.0E-02	1.9E-02	1.8E-02	1.5E-02	1.3E-02	1.1E-02	8.9E-03	7.5E-03
Zn-i	1.4E-03	1.2E-03	1.0E-03	8.6E-04	7.5E-04	1.5E-03	3.9E-03	7.0E-03	9.4E-03	1.0E-02	1.1E-02	9.9E-03	8.9E-03	7.6E-03	6.4E-03	5.2E-03	4.3E-03	4.3E-03	5.7E-03	7.7E-03	9.2E-03	9.9E-03	9.6E-03	8.8E-03	7.7E-03	6.6E-03	5.5E-03	4.5E-03	3.8E-03
Zn-j	3.0E-03	2.6E-03	2.2E-03	1.7E-03	1.4E-03	1.3E-03	1.6E-03	2.0E-03	2.4E-03	2.5E-03	2.4E-03	2.2E-03	1.9E-03	1.7E-03	1.3E-03	1.1E-03	1.0E-03	2.4E-03	6.6E-03	1.1E-02	1.5E-02	1.7E-02	1.7E-02	1.6E-02	1.4E-02	1.2E-02	1.0E-02	8.5E-03	7.2E-03
Zn-k	7.6E-04	6.3E-04	5.2E-04	4.3E-04	3.7E-04	6.3E-04	1.5E-03	2.8E-03	3.6E-03	4.1E-03	4.2E-03	3.9E-03	3.4E-03	2.9E-03	2.4E-03	2.0E-03	1.8E-03	4.7E-03	1.3E-02	2.3E-02	3.1E-02	3.5E-02	3.4E-02	3.2E-02	2.9E-02	2.5E-02	2.1E-02	1.7E-02	1.4E-02
Zn-l	1.1E-03	1.0E-03	8.4E-04	6.9E-04	5.6E-04	5.1E-04	6.3E-04	8.1E-04	9.4E-04	9.9E-04	9.6E-04	8.8E-04	7.8E-04	6.6E-04	5.5E-04	4.5E-04	4.0E-04	9.7E-04	2.6E-03	4.7E-03	6.2E-03	7.0E-03	7.0E-03	6.6E-03	5.8E-03	4.9E-03	4.1E-03	3.4E-03	2.8E-03

TABLE 37. METALS CONCENTRATIONS (mg/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

	435	440	445	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560	565	570	575
Ag-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
As-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
As-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
As-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Ba-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cd-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cd-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cd-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cr-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cr-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cr-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cr-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cu-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cu-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cu-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Cu-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Hg-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Mo-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Mo-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Mo-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Ni-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Pb-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Pb-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Pb-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Se-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Se-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Se-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Se-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-22	1.5E-19	7.6E-18	1.1E-16	7.8E-16	3.3E-15	1.0E-14	2.4E-14
Zn-a	1.3E-02	2.6E-02	4.0E-02	5.1E-02	5.6E-02	5.5E-02	5.2E-02	4.5E-02	3.9E-02	3.2E-02	2.7E-02	2.2E-02	2.4E-02	3.5E-02	4.9E-02	5.9E-02	6.2E-02	6.1E-02	5.6E-02	4.9E-02	4.1E-02	3.5E-02	2.8E-02	2.3E-02	2.2E-02	2.9E-02	3.5E-02	4.1E-02	4.2E-02
Zn-b	6.6E-03	1.3E-02	2.0E-02	2.6E-02	2.8E-02	2.8E-02	2.6E-02	2.3E-02	2.0E-02	1.6E-02	1.3E-02	1.1E-02	1.2E-02	1.8E-02	2.4E-02	2.9E-02	3.1E-02	3.1E-02	2.8E-02	2.5E-02	2.1E-02	1.7E-02	1.4E-02	1.2E-02	1.1E-02	1.4E-02	1.8E-02	2.0E-02	2.0E-02
Zn-c	1.9E-02	1.8E-02	2.0E-02	2.0E-02	2.0E-02	1.8E-02	1.6E-02	1.4E-02	1.2E-02	9.5E-03	7.7E-03	6.3E-03	6.6E-03	9.2E-03	1.3E-02	1.5E-02	1.6E-02	1.5E-02	1.4E-02	1.2E-02	1.0E-02	8.7E-03	7.1E-03	5.8E-03	5.6E-03	7.0E-03	8.8E-03	1.0E-02	1.0E-02
Zn-d	1.0E-02	9.8E-03	1.0E-02	1.1E-02	1.0E-02	9.4E-03	8.3E-03	7.2E-03	6.0E-03	4.9E-03	4.0E-03	3.2E-03	3.4E-03	4.6E-03	6.4E-03	7.5E-03	7.9E-03	7.7E-03	7.1E-03	6.1E-03	5.2E-03	4.4E-03	3.5E-03	3.4E-03	7.9E-03	1.9E-02	3.1E-02	4.0E-02	4.4E-02
Zn-e	8.3E-03	1.6E-02	2.5E-02	3.2E-02	3.5E-02	3.4E-02	3.2E-02	2.8E-02	2.4E-02	2.0E-02	1.6E-02	1.4E-02	1.4E-02	2.2E-02	3.1E-02	3.7E-02	3.9E-02	3.8E-02	3.5E-02	3.1E-02	2.6E-02	2.1E-02	1.8E-02	1.5E-02	1.4E-02	1.8E-02	2.2E-02	2.6E-02	2.6E-02
Zn-f	4.1E-03	7.8E-03	1.2E-02	1.6E-02	1.7E-02	1.7E-02	1.6E-02	1.4E-02	1.2E-02	9.9E-03	8.1E-03	6.7E-03	7.3E-03	1.1E-02	1.5E-02	1.9E-02	2.0E-02	2.0E-02	1.7E-02	1.6E-02	1.3E-02	1.1E-02	8.9E-03	7.3E-03	7.2E-03	8.8E-03	1.1E-02	1.3E-02	1.3E-02
Zn-g	1.3E-02	1.2E-02	1.3E-02	1.3E-02	1.3E-02	1.2E-02	1.0E-02	8.8E-03	7.4E-03	6.2E-03	4.9E-03	4.0E-03	4.2E-03	5.8E-03	8.0E-03	9.6E-03	1.0E-02	9.8E-03	8.9E-03	7.8E-03	6.6E-03	5.5E-03	4.4E-03	4.2E-03	9.8E-03	2.3E-02	3.9E-02	4.9E-02	5.4E-02
Zn-h	1.0E-02	2.0E-02	3.2E-02	4.1E-02	4.4E-02	4.4E-02	4.0E-02	3.6E-02	3.1E-02	2.6E-02	2.0E-02	1.7E-02	1.9E-02	2.7E-02	3.9E-02	4.7E-02	5.0E-02	4.8E-02	4.4E-02	3.8E-02	3.3E-02	2.7E-02	2.2E-02	1.8E-02	1.8E-02	2.2E-02	2.8E-02	3.2E-02	3.3E-02
Zn-i	5.1E-03	9.9E-03	1.6E-02	1.9E-02	2.2E-02	2.2E-02	2.0E-02	1.8E-02	1.5E-02	1.2E-02	1.0E-02	8.5E-03	9.2E-03	1.4E-02	1.9E-02	2.3E-02	2.5E-02	2.4E-02	2.3E-02	1.9E-02	1.7E-02	1.4E-02	1.2E-02	9.2E-03	8.9E-03	1.1E-02	1.4E-02	1.5E-02	1.7E-02
Zn-j	1.0E-02	1.9E-02	3.1E-02	4.1E-02	4.4E-02	4.4E-02	4.0E-02	3.6E-02	3.1E-02	2.6E-02	2.0E-02	1.7E-02	1.9E-02	2.7E-02	3.9E-02	4.7E-02	5.0E-02	4.8E-02	4.4E-02	3.8E-02	3.3E-02	2.7E-02	2.2E-02	1.8E-02	1.8E-02	2.2E-02	2.8E-02	3.2E-02	3.3E-02
Zn-k	1.2E-02	1.2E-02	1.2E-02	1.3E-02	1.2E-02	1.1E-02	1.0E-02	8.7E-03	7.3E-03	6.1E-03	4.9E-03	4.0E-03	4.2E-03	5.8E-03	8.0E-03	9.5E-03	1.0E-02	9.8E-03	8.9E-03	7.8E-03	6.6E-03	5.5E-03	4.4E-03	4.2E-03	9.8E-03	2.3E-02	3.9E-02	4.9E-02	5.4E-02
Zn-l	4.0E-03	7.7E-03	1.2E-02	1.6E-02	1.7E-02	1.7E-02	1.6E-02	1.4E-02	1.2E-02	9.9E-03	8.1E-03	6.7E-03	7.3E-03	1.1E-02	1.5E-02	1.9E-02	2.0E-02	2.0E-02	1.7E-02	1.6E-02	1.3E-02	1.1E-02	8.9E-03	7.3E-03	7.2E-03	8.8E-03	1.1E-02	1.3E-02	1.3E-02

TABLE 37. METALS CONCENTRATIONS (mg/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720
Ag-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
As-b	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
As-c	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
As-d	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Ba-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cd-b	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cd-c	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cd-d	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cr-a	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cr-b	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cr-c	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cr-d	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cu-a	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cu-b	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cu-c	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Cu-d	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Hg-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Mo-b	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Mo-c	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Mo-d	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Ni-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Pb-b	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Pb-c	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Pb-d	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Se-a	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Se-b	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Se-c	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Se-d	5.0E-14	8.8E-14	1.4E-13	2.1E-13	2.9E-13	3.8E-13	4.8E-13	5.9E-13	6.9E-13	8.0E-13	9.0E-13	9.9E-13	1.1E-12	1.2E-12	1.2E-12	1.3E-12	1.3E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.4E-12	1.3E-12	1.3E-12	1.3E-12
Zn-a	4.0E-02	3.6E-02	3.1E-02	2.6E-02	2.2E-02	1.7E-02	1.4E-02	1.4E-02	1.5E-02	1.7E-02	1.9E-02	1.8E-02	1.7E-02	1.6E-02	1.3E-02	1.1E-02	9.1E-03	7.4E-03	6.6E-03	1.1E-02	2.2E-02	3.3E-02	4.0E-02	4.3E-02	4.1E-02	3.8E-02	3.3E-02	2.9E-02	2.3E-02
Zn-b	2.0E-02	1.8E-02	1.6E-02	1.3E-02	1.1E-02	8.8E-03	7.3E-03	6.6E-03	7.4E-03	8.5E-03	9.3E-03	9.2E-03	8.6E-03	7.7E-03	6.6E-03	5.6E-03	4.6E-03	3.8E-03	3.3E-03	5.6E-03	1.1E-02	1.6E-02	2.0E-02	2.2E-02	2.1E-02	2.0E-02	1.6E-02	1.4E-02	1.1E-02
Zn-c	9.9E-03	8.8E-03	7.7E-03	6.5E-03	5.4E-03	4.4E-03	4.0E-03	7.8E-03	1.7E-02	2.7E-02	3.3E-02	3.6E-02	3.6E-02	3.3E-02	2.8E-02	2.4E-02	2.0E-02	1.6E-02	1.3E-02	1.2E-02	1.3E-02	1.4E-02	1.5E-02	1.4E-02	1.3E-02	1.2E-02	1.0E-02	8.3E-03	6.9E-03
Zn-d	4.3E-02	4.0E-02	3.5E-02	2.9E-02	2.5E-02	2.0E-02	1.6E-02	1.6E-02	1.7E-02	2.0E-02	2.2E-02	2.2E-02	2.1E-02	1.9E-02	1.6E-02	1.4E-02	1.1E-02	9.0E-03	8.2E-03	1.4E-02	2.7E-02	4.0E-02	4.9E-02	5.2E-02	5.1E-02	4.6E-02	4.1E-02	3.5E-02	2.9E-02
Zn-e	2.4E-02	2.3E-02	1.9E-02	1.7E-02	1.3E-02	1.1E-02	9.0E-03	8.2E-03	9.2E-03	1.1E-02	1.1E-02	1.1E-02	1.1E-02	9.5E-03	8.3E-03	6.9E-03	5.6E-03	4.6E-03	4.1E-03	6.9E-03	1.3E-02	2.1E-02	2.5E-02	2.6E-02	2.6E-02	2.4E-02	2.1E-02	1.7E-02	1.4E-02
Zn-f	1.3E-02	1.1E-02	9.7E-03	8.2E-03	6.8E-03	5.6E-03	5.1E-03	9.8E-03	2.1E-02	3.3E-02	4.2E-02	4.4E-02	4.4E-02	4.0E-02	3.6E-02	3.0E-02	2.5E-02	2.0E-02	1.6E-02	1.5E-02	1.6E-02	1.7E-02	1.8E-02	1.8E-02	1.7E-02	1.5E-02	1.2E-02	1.0E-02	8.6E-03
Zn-g	5.3E-02	5.0E-02	4.4E-02	3.7E-02	3.0E-02	2.5E-02	2.0E-02	1.9E-02	2.2E-02	2.5E-02	2.8E-02	2.8E-02	2.6E-02	2.4E-02	2.0E-02	1.7E-02	1.4E-02	1.1E-02	9.2E-03	8.2E-03	8.5E-03	9.2E-03	9.4E-03	9.1E-03	8.4E-03	7.5E-03	6.3E-03	5.3E-03	4.4E-03
Zn-h	3.1E-02	2.8E-02	2.5E-02	2.1E-02	1.7E-02	1.4E-02	1.1E-02	1.1E-02	1.2E-02	1.3E-02	1.4E-02	1.4E-02	1.4E-02	1.2E-02	1.0E-02	8.6E-03	7.1E-03	5.8E-03	5.2E-03	8.7E-03	1.7E-02	2.5E-02	3.2E-02	3.3E-02	3.3E-02	3.0E-02	2.6E-02	2.2E-02	1.8E-02
Zn-i	1.5E-02	1.4E-02	1.2E-02	1.0E-02	8.5E-03	7.0E-03	6.3E-03	1.2E-02	2.6E-02	4.2E-02	5.2E-02	5.6E-02	5.5E-02	5.0E-02	4.4E-02	3.8E-02	3.1E-02	2.5E-02	2.1E-02	1.9E-02	2.0E-02	2.2E-02	2.3E-02	2.2E-02	2.1E-02	1.8E-02	1.6E-02	1.3E-02	1.1E-02
Zn-j	3.1E-02	2.8E-02	2.5E-02	2.1E-02	1.7E-02	1.4E-02	1.1E-02	1.1E-02	1.2E-02	1.3E-02	1.4E-02	1.4E-02	1.4E-02	1.2E-02	1.0E-02	8.6E-03	7.1E-03	5.8E-03	5.2E-03	8.7E-03	1.7E-02	2.5E-02	3.2E-02	3.3E-02	3.3E-02	3.0E-02	2.6E-02	2.2E-02	1.8E-02
Zn-k	5.3E-02	5.0E-02	4.4E-02	3.7E-02	3.0E-02	2.5E-02	2.0E-02	1.9E-02	2.2E-02	2.5E-02	2.8E-02	2.8E-02	2.6E-02	2.4E-02	2.0E-02	1.7E-02	1.4E-02	1.1E-02	9.2E-03	8.2E-03	8.5E-03	9.2E-03	9.4E-03	9.1E-03	8.4E-03	7.5E-03	6.3E-03	5.3E-03	4.4E-03
Zn-l	1.3E-02	1.1E-02	9.7E-03	8.2E-03	6.8E-03	5.6E-03	5.1E-03	9.8E-03	2.1E-02	3.3E-02	4.2E-02	4.4E-02	4.4E-02	4.0E-02	3.6E-02	3.0E-02	2.5E-02	2.0E-02	1.6E-02	1.5E-02	1.6E-02	1.7E-02	1.8E-02	1.8E-02	1.7E-02	1.5E-02	1.2E-02	1.0E-02	8.6E-03

TABLE 37. METALS CONCENTRATIONS (mg/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865
Ag-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
As-b	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
As-c	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
As-d	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Ba-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cd-b	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cd-c	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cd-d	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cr-a	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cr-b	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cr-c	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cr-d	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cu-a	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cu-b	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cu-c	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Cu-d	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Hg-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Mo-b	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Mo-c	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Mo-d	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Ni-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Pb-b	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Pb-c	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Pb-d	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Se-a	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Se-b	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Se-c	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Se-d	1.2E-12	1.2E-12	1.2E-12	1.1E-12	1.1E-12	1.1E-12	1.0E-12	9.7E-13	9.3E-13	8.9E-13	8.5E-13	8.1E-13	7.8E-13	7.4E-13	7.0E-13	6.7E-13	6.4E-13	6.1E-13	5.8E-13	5.5E-13	5.2E-13	4.9E-13	4.6E-13	4.4E-13	4.2E-13	3.9E-13	3.7E-13	3.5E-13	3.3E-13
Zn-a	1.9E-02	1.5E-02	1.4E-02	1.4E-02	1.5E-02	1.5E-02	1.4E-02	1.3E-02	1.1E-02	9.5E-03	7.9E-03	6.5E-03	5.2E-03	4.6E-03	6.5E-03	1.1E-02	1.5E-02	1.8E-02	1.9E-02	1.8E-02	1.7E-02	1.5E-02	1.2E-02	9.9E-03	8.1E-03	7.3E-03	1.1E-02	1.7E-02	2.4E-02
Zn-b	9.6E-03	8.7E-03	1.4E-02	2.6E-02	3.9E-02	4.7E-02	4.9E-02	4.8E-02	4.3E-02	3.8E-02	3.2E-02	2.7E-02	2.1E-02	1.8E-02	1.6E-02	1.5E-02	1.5E-02	1.5E-02	1.4E-02	1.3E-02	1.1E-02	9.2E-03	7.7E-03	6.2E-03	5.0E-03	4.4E-03	5.9E-03	9.2E-03	1.3E-02
Zn-c	5.6E-03	4.9E-03	7.5E-03	1.4E-02	1.9E-02	2.4E-02	2.4E-02	2.4E-02	2.2E-02	1.9E-02	1.6E-02	1.3E-02	1.1E-02	9.8E-03	1.5E-02	2.6E-02	3.7E-02	4.4E-02	4.7E-02	4.5E-02	4.1E-02	3.5E-02	3.0E-02	2.5E-02	2.0E-02	1.7E-02	1.4E-02	1.4E-02	1.3E-02
Zn-d	2.3E-02	1.9E-02	1.7E-02	1.8E-02	1.8E-02	1.8E-02	1.8E-02	1.5E-02	1.3E-02	1.2E-02	9.7E-03	7.9E-03	6.4E-03	5.7E-03	8.1E-03	1.3E-02	2.0E-02	2.2E-02	2.4E-02	2.2E-02	2.0E-02	1.8E-02	1.5E-02	1.2E-02	1.0E-02	9.0E-03	1.3E-02	2.2E-02	3.0E-02
Zn-e	1.2E-02	9.7E-03	8.6E-03	8.7E-03	9.1E-03	9.2E-03	8.8E-03	8.0E-03	7.0E-03	6.0E-03	5.0E-03	4.1E-03	3.3E-03	2.9E-03	4.1E-03	6.9E-03	9.6E-03	1.1E-02	1.2E-02	1.2E-02	1.0E-02	8.9E-03	7.5E-03	6.2E-03	5.1E-03	4.5E-03	6.6E-03	1.1E-02	1.5E-02
Zn-f	6.9E-03	6.1E-03	9.4E-03	1.6E-02	2.5E-02	2.9E-02	3.1E-02	3.0E-02	2.7E-02	2.4E-02	2.1E-02	1.6E-02	1.3E-02	1.3E-02	1.9E-02	3.3E-02	4.6E-02	5.5E-02	5.7E-02	5.6E-02	5.0E-02	4.4E-02	3.7E-02	3.1E-02	2.5E-02	2.0E-02	1.7E-02	1.7E-02	1.6E-02
Zn-g	3.5E-03	3.2E-03	4.7E-03	8.4E-03	1.2E-02	1.5E-02	1.6E-02	1.5E-02	1.3E-02	1.1E-02	1.0E-02	8.3E-03	6.8E-03	6.1E-03	9.3E-03	1.6E-02	2.3E-02	2.7E-02	2.9E-02	2.7E-02	2.5E-02	2.2E-02	1.9E-02	1.5E-02	1.2E-02	1.1E-02	1.6E-02	2.7E-02	3.8E-02
Zn-h	1.5E-02	1.2E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	9.9E-03	8.6E-03	7.4E-03	6.2E-03	5.0E-03	4.1E-03	3.6E-03	5.1E-03	8.5E-03	1.2E-02	1.4E-02	1.5E-02	1.4E-02	1.3E-02	1.0E-02	9.2E-03	7.7E-03	6.2E-03	5.6E-03	8.1E-03	1.3E-02	1.8E-02
Zn-i	8.6E-03	7.7E-03	1.2E-02	2.1E-02	3.1E-02	3.8E-02	4.0E-02	3.9E-02	3.5E-02	3.0E-02	2.6E-02	2.2E-02	1.7E-02	1.5E-02	1.3E-02	1.2E-02	1.2E-02	1.2E-02	1.1E-02	1.0E-02	8.7E-03	7.2E-03	6.0E-03	4.8E-03	3.9E-03	3.4E-03	4.5E-03	7.2E-03	9.8E-03
Zn-j	1.5E-02	1.2E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	9.9E-03	8.6E-03	7.4E-03	6.2E-03	5.0E-03	4.1E-03	3.6E-03	5.1E-03	8.5E-03	1.2E-02	1.4E-02	1.5E-02	1.4E-02	1.3E-02	1.0E-02	9.2E-03	7.7E-03	6.2E-03	5.6E-03	8.1E-03	1.3E-02	1.8E-02
Zn-k	3.5E-03	3.2E-03	4.7E-03	8.4E-03	1.2E-02	1.5E-02	1.6E-02	1.5E-02	1.3E-02	1.1E-02	1.0E-02	8.3E-03	6.8E-03	6.1E-03	9.3E-03	1.6E-02	2.3E-02	2.7E-02	2.9E-02	2.7E-02	2.5E-02	2.2E-02	1.9E-02	1.5E-02	1.2E-02	1.1E-02	1.6E-02	2.7E-02	3.8E-02
Zn-l	6.9E-03	6.1E-03	9.4E-03	1.6E-02	2.5E-02	2.9E-02	3.1E-02	3.0E-02	2.7E-02	2.4E-02	2.1E-02	1.6E-02	1.3E-02	1.3E-02	1.9E-02	3.3E-02	4.6E-02	5.5E-02	5.7E-02	5.6E-02	5.0E-02	4.4E-02	3.7E-02	3.1E-02	2.5E-02	2.0E-02	1.7E-02	1.7E-02	1.6E-02

TABLE 37. METALS CONCENTRATIONS (mg/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL FROST-PROTECTED SIDE SLOPE (0.364 CM/YR INFILTRATION)

	870	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000
Ag-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
As-a	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
As-b	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
As-c	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
As-d	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Ba-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-a	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cd-b	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cd-c	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cd-d	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cr-a	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cr-b	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cr-c	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cr-d	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cu-a	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cu-b	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cu-c	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Cu-d	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Hg-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mo-a	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Mo-b	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Mo-c	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Mo-d	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Ni-a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-b	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-c	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-a	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Pb-b	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Pb-c	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Pb-d	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Se-a	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Se-b	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Se-c	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Se-d	3.1E-13	3.0E-13	2.8E-13	2.6E-13	2.5E-13	2.3E-13	2.2E-13	2.1E-13	2.0E-13	1.8E-13	1.7E-13	1.6E-13	1.5E-13	1.5E-13	1.4E-13	1.3E-13	1.2E-13	1.1E-13	1.1E-13	1.0E-13	9.5E-14	8.9E-14	8.4E-14	7.8E-14	7.4E-14	6.9E-14	6.5E-14
Zn-a	2.8E-02	3.0E-02	2.9E-02	2.5E-02	2.2E-02	1.9E-02	1.6E-02	1.2E-02	1.1E-02	1.6E-02	2.5E-02	3.4E-02	3.9E-02	4.0E-02	3.8E-02	3.5E-02	2.9E-02	2.5E-02	2.1E-02	1.7E-02	1.5E-02	2.0E-02	3.1E-02	4.2E-02	4.7E-02	4.8E-02	4.6E-02
Zn-b	1.4E-02	1.5E-02	1.4E-02	1.3E-02	1.2E-02	9.4E-03	7.7E-03	6.3E-03	5.7E-03	8.0E-03	1.3E-02	1.7E-02	2.0E-02	2.1E-02	1.9E-02	1.7E-02	1.5E-02	1.3E-02	1.0E-02	8.4E-03	7.7E-03	1.0E-02	1.6E-02	2.1E-02	2.4E-02	2.4E-02	2.3E-02
Zn-c	1.3E-02	1.2E-02	1.0E-02	8.9E-03	7.6E-03	6.2E-03	5.0E-03	4.0E-03	3.5E-03	4.5E-03	6.7E-03	8.8E-03	1.0E-02	1.0E-02	9.6E-03	8.7E-03	7.5E-03	6.3E-03	5.2E-03	4.2E-03	3.8E-03	5.2E-03	8.0E-03	1.1E-02	1.2E-02	1.2E-02	1.2E-02
Zn-d	3.5E-02	3.6E-02	3.5E-02	3.1E-02	2.7E-02	2.3E-02	2.0E-02	1.6E-02	1.4E-02	2.0E-02	3.1E-02	4.2E-02	4.9E-02	5.0E-02	4.8E-02	4.2E-02	3.7E-02	3.1E-02	2.6E-02	2.1E-02	1.9E-02	2.6E-02	3.9E-02	5.2E-02	5.9E-02	6.1E-02	5.8E-02
Zn-e	1.8E-02	1.8E-02	1.8E-02	1.6E-02	1.4E-02	1.1E-02	9.6E-03	7.8E-03	7.1E-03	1.0E-02	1.6E-02	2.1E-02	2.4E-02	2.5E-02	2.4E-02	2.2E-02	1.9E-02	1.6E-02	1.3E-02	1.0E-02	9.6E-03	1.3E-02	2.0E-02	2.6E-02	3.0E-02	3.0E-02	2.9E-02
Zn-f	1.6E-02	1.5E-02	1.3E-02	1.1E-02	9.4E-03	7.8E-03	6.2E-03	5.0E-03	4.4E-03	5.7E-03	8.4E-03	1.1E-02	1.3E-02	1.3E-02	1.2E-02	1.1E-02	9.4E-03	7.9E-03	6.5E-03	5.3E-03	4.8E-03	6.5E-03	1.0E-02	1.3E-02	1.5E-02	1.5E-02	1.4E-02
Zn-g	4.5E-02	4.6E-02	4.4E-02	4.0E-02	3.4E-02	2.9E-02	2.4E-02	2.0E-02	1.7E-02	2.4E-02	3.9E-02	5.3E-02	6.1E-02	6.3E-02	6.0E-02	5.4E-02	4.6E-02	3.9E-02	3.2E-02	2.6E-02	2.1E-02	1.8E-02	1.7E-02	1.6E-02	1.5E-02	1.3E-02	1.1E-02
Zn-h	2.2E-02	2.3E-02	2.2E-02	2.0E-02	1.7E-02	1.5E-02	1.1E-02	9.6E-03	8.7E-03	1.2E-02	2.0E-02	2.7E-02	3.1E-02	3.1E-02	3.0E-02	2.6E-02	2.3E-02	2.0E-02	1.6E-02	1.4E-02	1.2E-02	1.6E-02	2.5E-02	3.3E-02	3.7E-02	3.8E-02	3.5E-02
Zn-i	1.1E-02	1.2E-02	1.1E-02	1.0E-02	8.7E-03	7.3E-03	6.0E-03	4.9E-03	4.5E-03	6.2E-03	9.9E-03	1.3E-02	1.6E-02	1.6E-02	1.5E-02	1.4E-02	1.2E-02	9.8E-03	8.1E-03	6.6E-03	6.0E-03	8.2E-03	1.3E-02	1.7E-02	1.9E-02	1.9E-02	1.8E-02
Zn-j	2.2E-02	2.3E-02	2.2E-02	2.0E-02	1.7E-02	1.5E-02	1.1E-02	9.6E-03	8.7E-03	1.2E-02	2.0E-02	2.7E-02	3.1E-02	3.1E-02	3.0E-02	2.6E-02	2.3E-02	2.0E-02	1.6E-02	1.4E-02	1.2E-02	1.6E-02	2.5E-02	3.3E-02	3.7E-02	3.8E-02	3.5E-02
Zn-k	4.5E-02	4.6E-02	4.4E-02	4.0E-02	3.4E-02	2.9E-02	2.4E-02	2.0E-02	1.7E-02	2.4E-02	3.9E-02	5.3E-02	6.1E-02	6.3E-02	6.0E-02	5.4E-02	4.6E-02	3.9E-02	3.2E-02	2.6E-02	2.1E-02	1.8E-02	1.7E-02	1.6E-02	1.5E-02	1.3E-02	1.1E-02
Zn-l	1.6E-02	1.5E-02	1.3E-02	1.1E-02	9.4E-03	7.8E-03	6.2E-03	5.0E-03	4.4E-03	5.7E-03	8.4E-03	1.1E-02	1.3E-02	1.3E-02	1.2E-02	1.1E-02	9.4E-03	7.9E-03	6.5E-03	5.3E-03	4.8E-03	6.5E-03	1.0E-02	1.3E-02	1.5E-02	1.5E-02	1.4E-02

DIVIDER PAGE

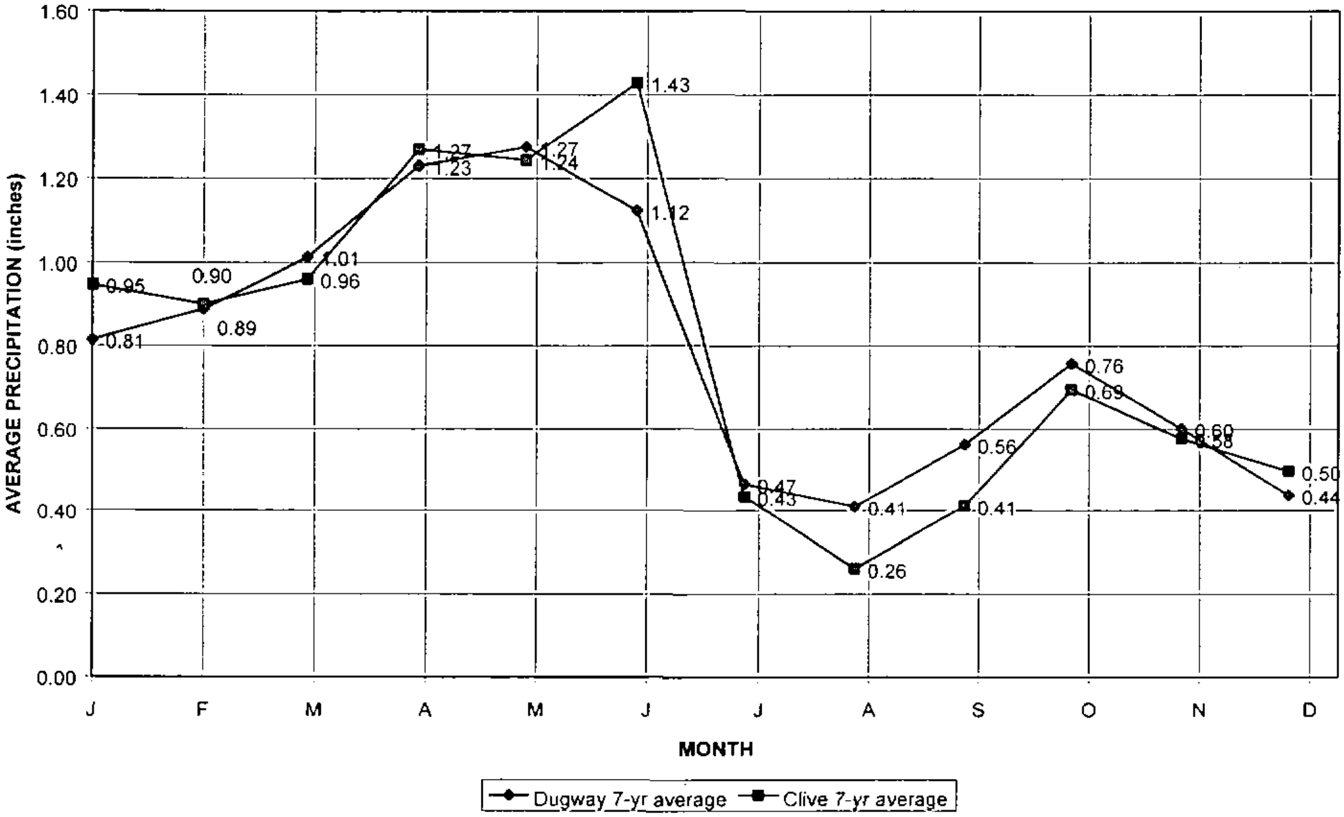


Figure 1. 1993 – 1999 Average Monthly Precipitation at Dugway and Clive

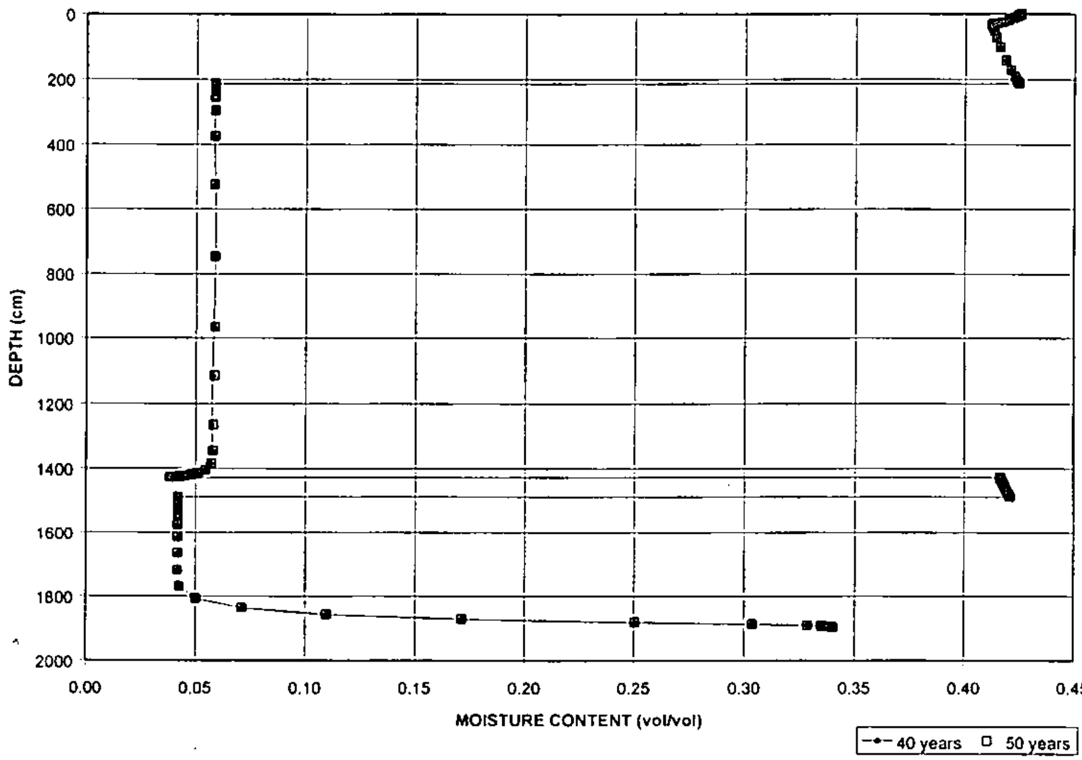


Figure 2. Moisture Content vs. Depth—UNSAT-H Output For Western LARW Cell Top Slope

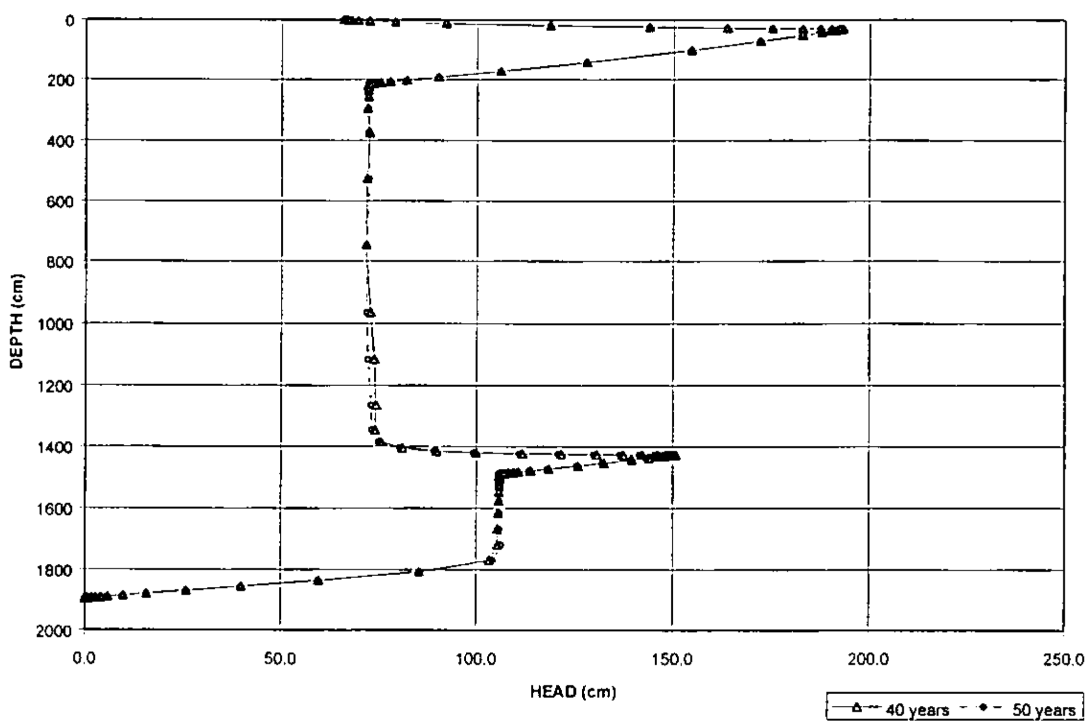


Figure 3. Soil Suction Head (Ψ) vs. Depth—UNSAT-H Output For Western LARW Cell Top Slope

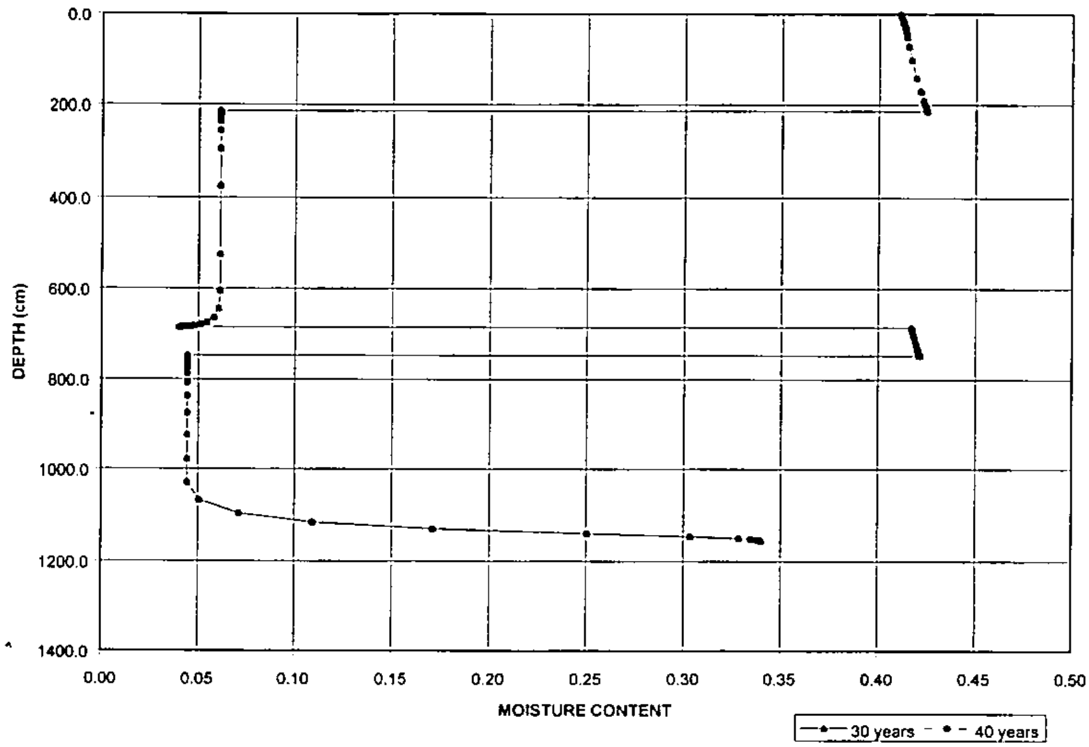


Figure 4. Moisture Content vs. Depth—UNSAT-H Output For Western LARW Cell Frost-Protected Side Slope

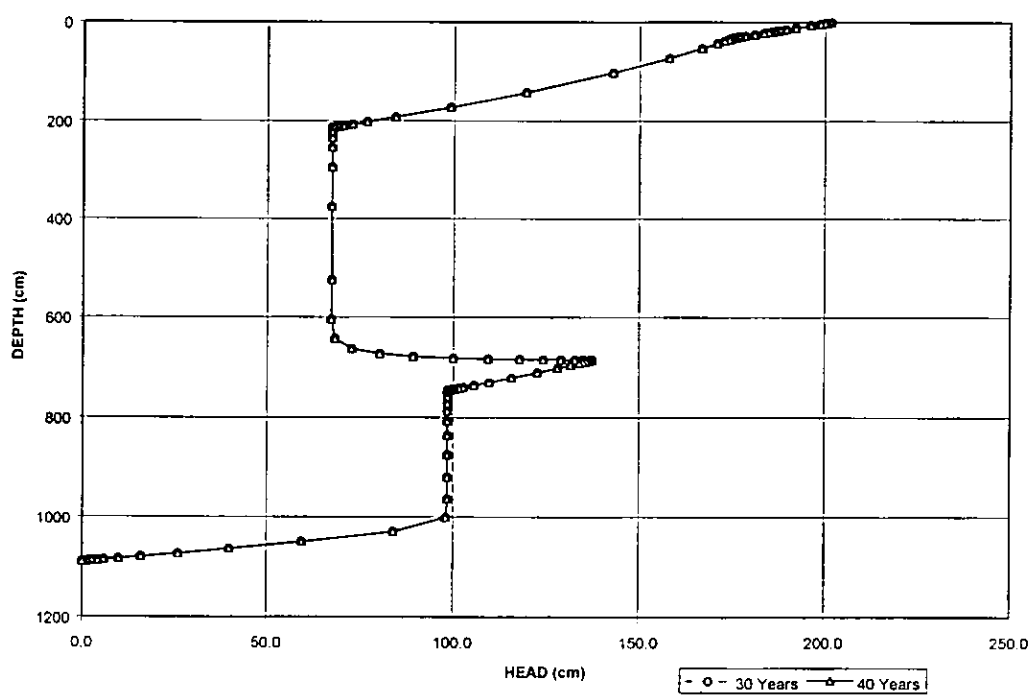


Figure 5. Soil Suction Head (Ψ) vs. Depth—UNSAT-H Output For Western LARW Cell Frost-Protected Side Slope

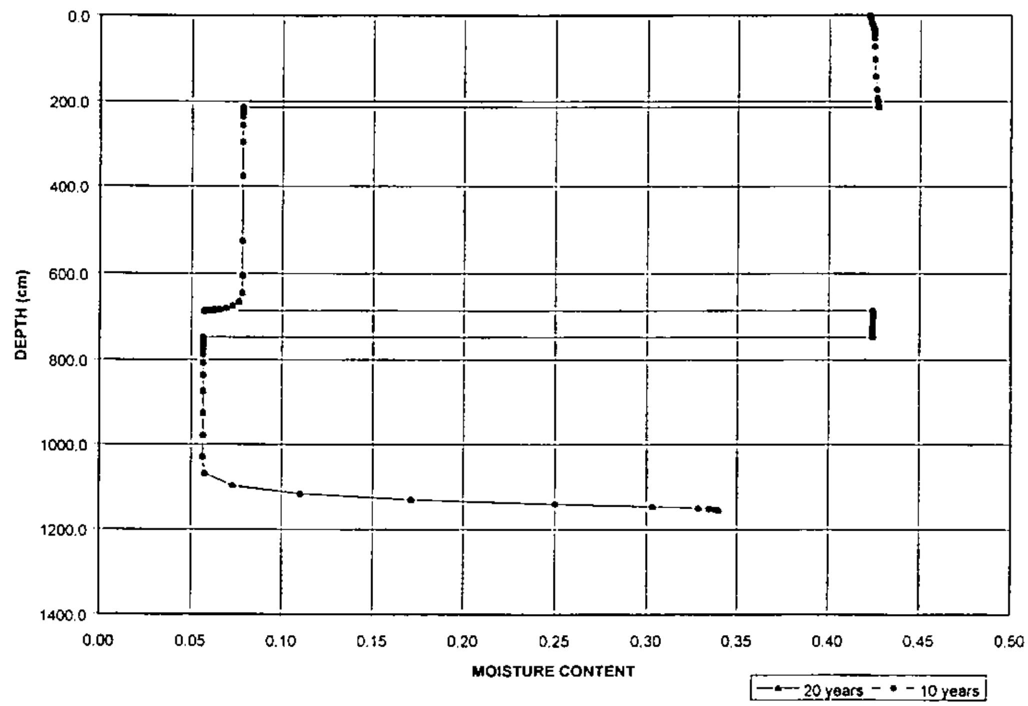


Figure 6. Moisture Content vs. Depth—UNSAT-H Output For Western LARW Cell Degraded Side Slope with a 100-fold Permeability Increase

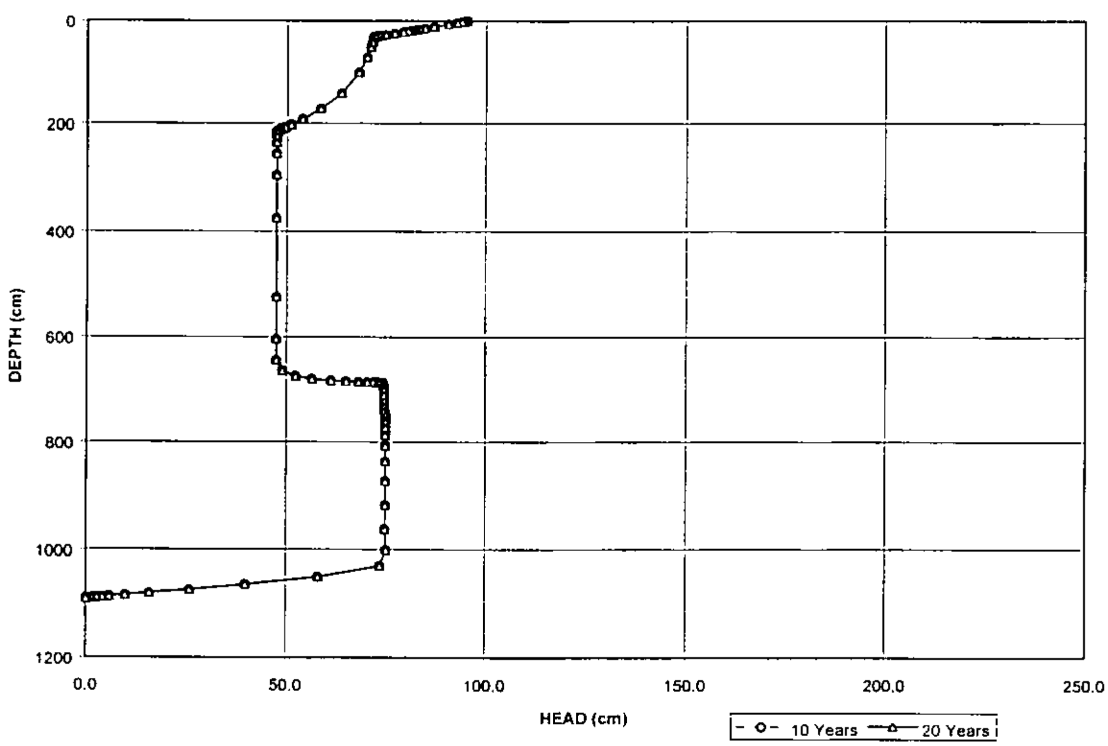


Figure 7. Soil Suction Head (Ψ) vs. Depth—UNSAT-H Output For Western LARW Cell Degraded Side Slope with a 100-fold Permeability Increase

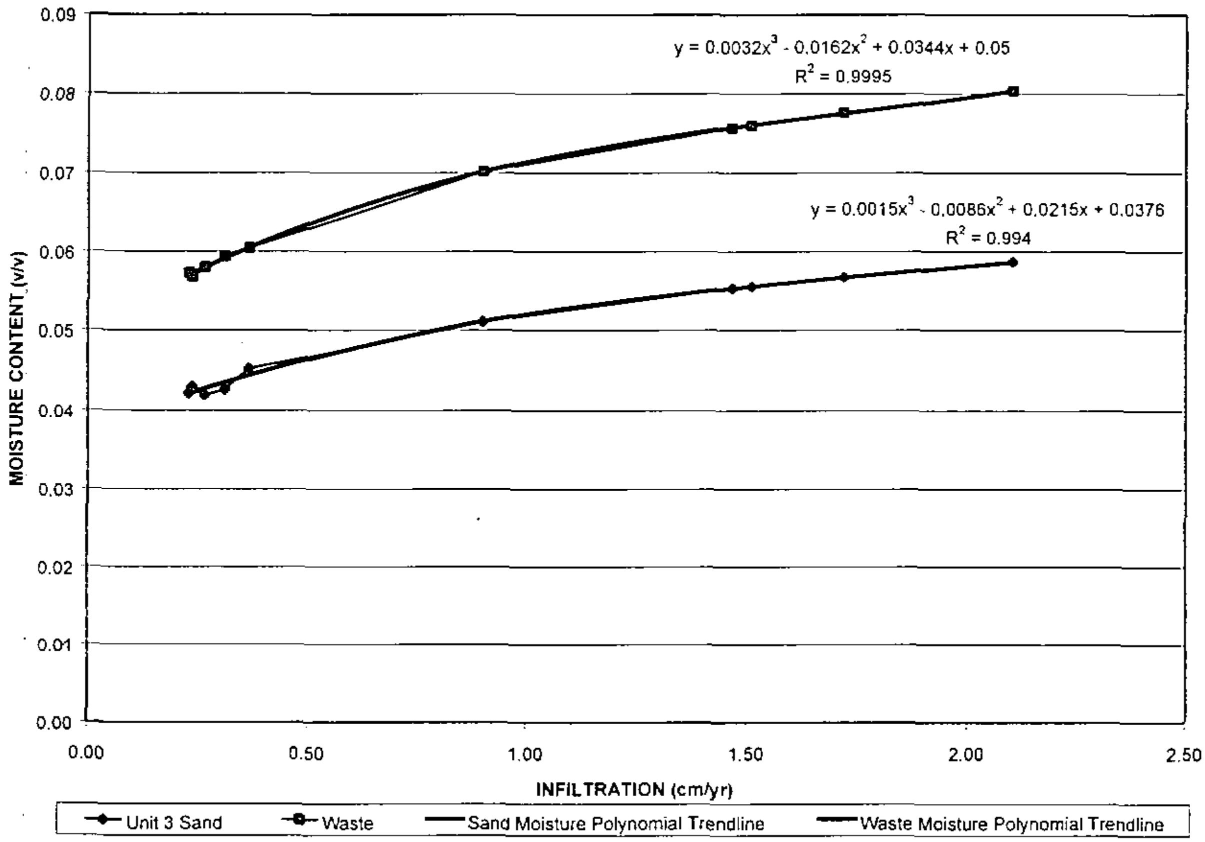


Figure 8. Moisture Content vs. Infiltration Rate

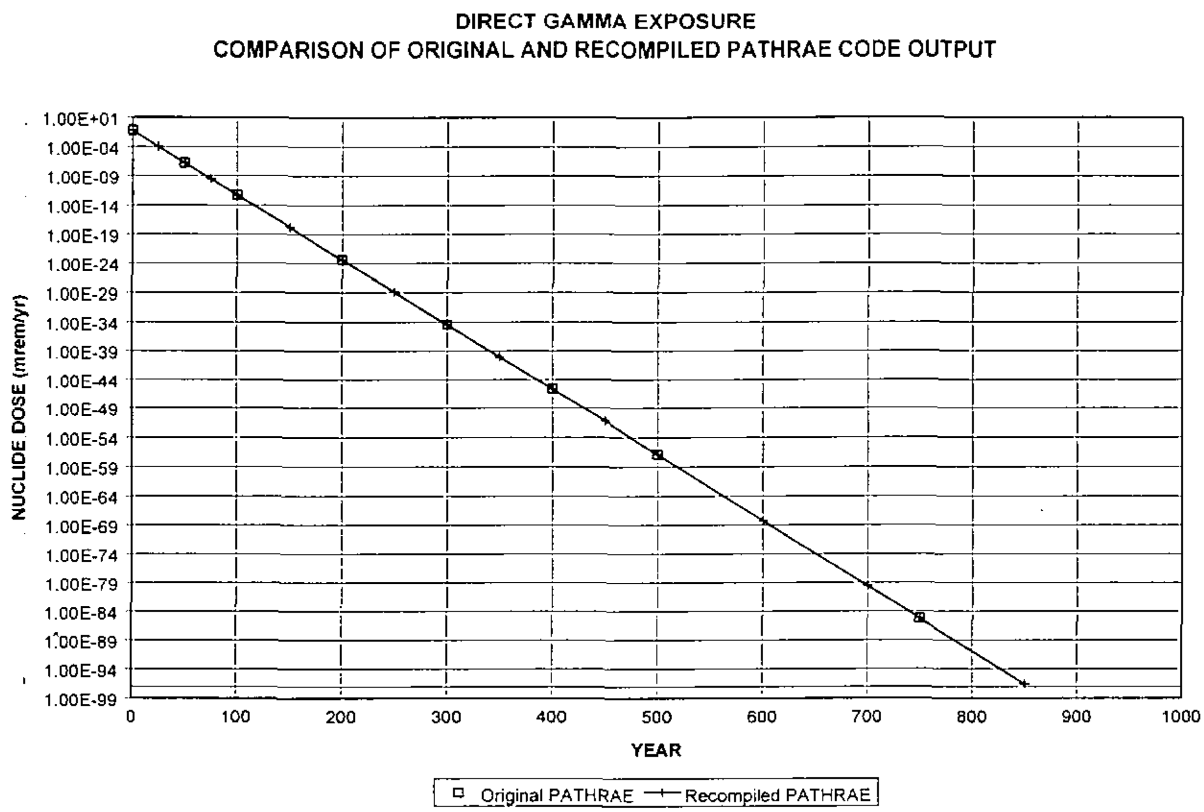


Figure 9. Direct Gamma Exposure — Comparison of Original and Recompiled PATHRAE Code

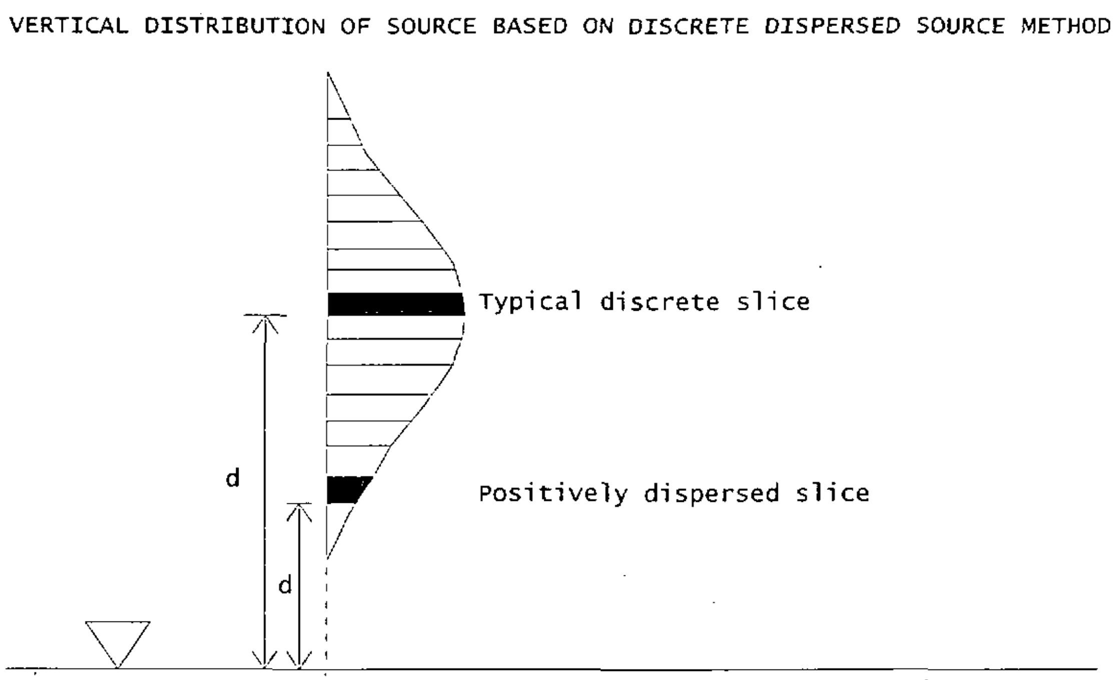


Figure 10. Vertical distribution of source term based on the discrete dispersed source method.

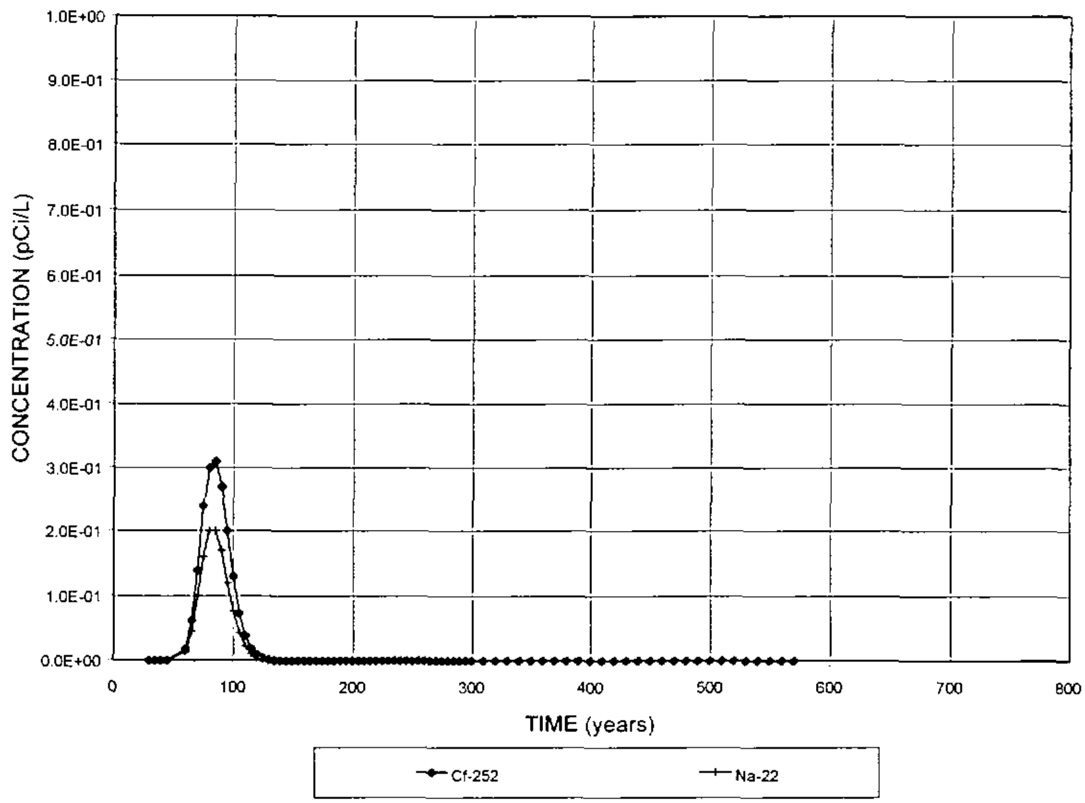


Figure 11. Selected Constituents whose Concentrations (pCi/L) Peak Within 500 Years but Do Not Exceed GWPLs at the Water Table, Vertical PATHRAE Model Output Based on 0.265 cm/year infiltration

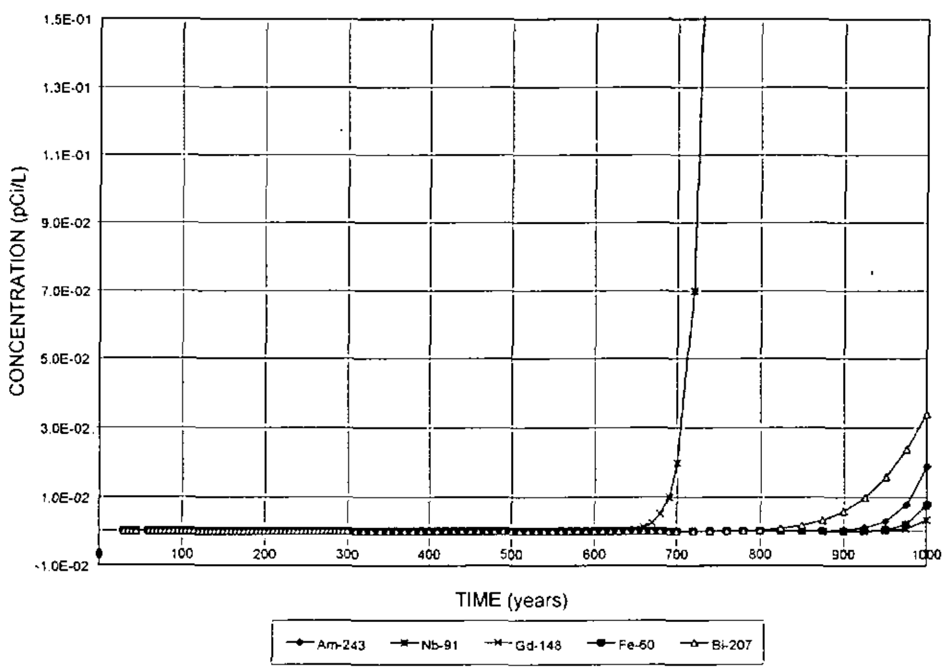


Figure 12. Selected Constituents whose Concentrations (pCi/L) Peak After 500 Years and Do Not Exceed GWPLs at the Water Table, Vertical PATHRAE Model Output Based on 0.265 cm/year infiltration

Whetstone Associates

ATTACHMENT 1
WESTERN REGIONAL CLIMATIC DATA CENTER (WRCC) REPORTS FOR DUGWAY AND WENDOVER

Prepared for

Envirocare of Utah, Inc.
46 West Broadway, Suite 116
Salt Lake City, Utah 84101

Prepared by

Whetstone Associates, Inc..
13685 West Wesley Avenue
Lakewood, Colorado 80228-4744
303-716-9303
Document 4101M.000719

July 19, 2000

DUGWAY, UTAH

Station Metadata

From NCDC Station Historical Listing for NWS Cooperative Network
ObsTyp: t-Temperature-1, p-Daily precip-2, w-(blank), s-(blank), e-Evap-5
h-Hourly precip - 6 0.01" Universal, or - 7 0.10" Fisher-Porter
U - Observed, but beginning date is uncertain

Count	Number (Coop)	Station Name (From NCDC listing)	Lat ddmm	Long dddmm	Elev ftx10	Start yy mm	ObsTyp t	p	w	s	e	h	End yy mm
311	422257-1	DUGWAY	4012	11257	0434	50 09	U	U				U	52 02
312	422257-1	DUGWAY	4012	11256	0434	52 02	U	U				U	65 06
313	422257-1	DUGWAY	4011	11256	0436	65 06	U	U				U	87 01
314	422257-1	DUGWAY	4011	11256	0436	87 01						6	87 06
315	422257-1	DUGWAY	4011	11255	0434	87 06	1	2				6	99 99

Statistics by element

(From WRCC data archives)
Last Compiled on December 31, 1998
Dates are format of YYYYMMDD. Numbers are total Number of observations

STATION	START	END	PRECP	SNWFL	SNWDP	TMAX	TMIN	TOBS	EVAP	WNDM
422257	19500921	19980930	17101	16969	15648	17149	17148	7028	0	0

STATION - NCDC COOP Station number
START - First Date in record
END - Last Date in record (when last compiled)
PRECP - Precipitation
SNWFL - Snowfall
SNWDP - Snow depth
TMAX - Daily Max. Temperature
TMIN - Daily Min. Temperature
TOBS - Temperature at Observation time
EVAP - Evaporation
WNDMV - Wind Movement

Statistics by observation

(From WRCC data archives)
Last compiled on December 31, 1998

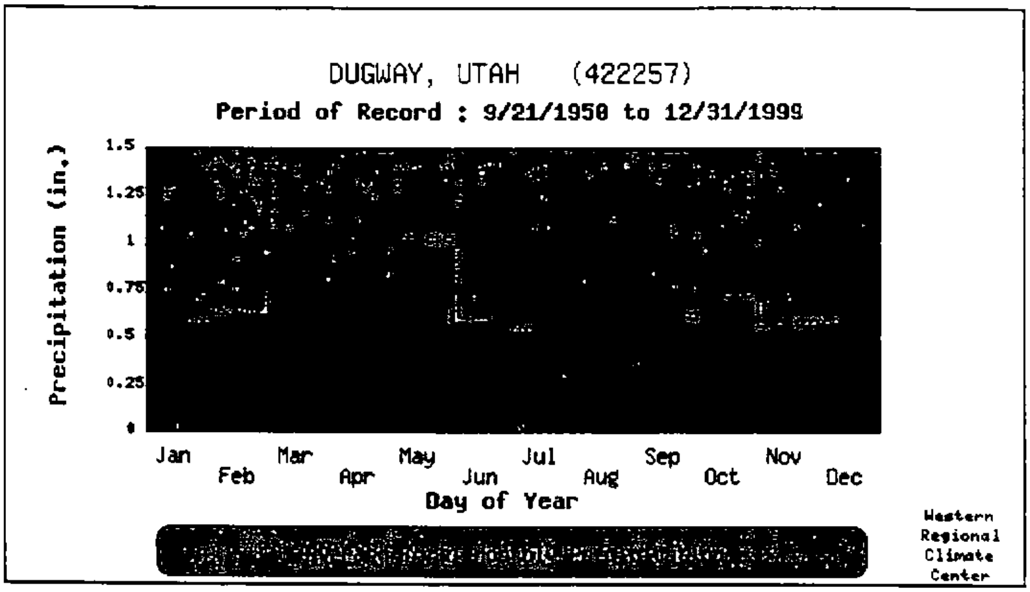
Dates are format of YYYYMMDD. Numbers represent one day and one day is considered present if any element is reported.

STATION	NAME	START	END	POSBL	PRSNT	LNGPR	MISS
422257	DUGWAY	19500921	19980930	17542	17286	6857	256

STATION - NCDC COOP Station number
NAME - Most recent name in NCDC history file
START - First Date in record
END - Last Date in record (when last compiled)
POSBL - Possible number of observations between START and END date
PRSNT - Number of days present in record
LNGPR - Largest number of consecutive observations
MISSG - Total number of missing days (no observation)
LNGMS - Largest number of consecutive missing observations

DUGWAY, UTAH

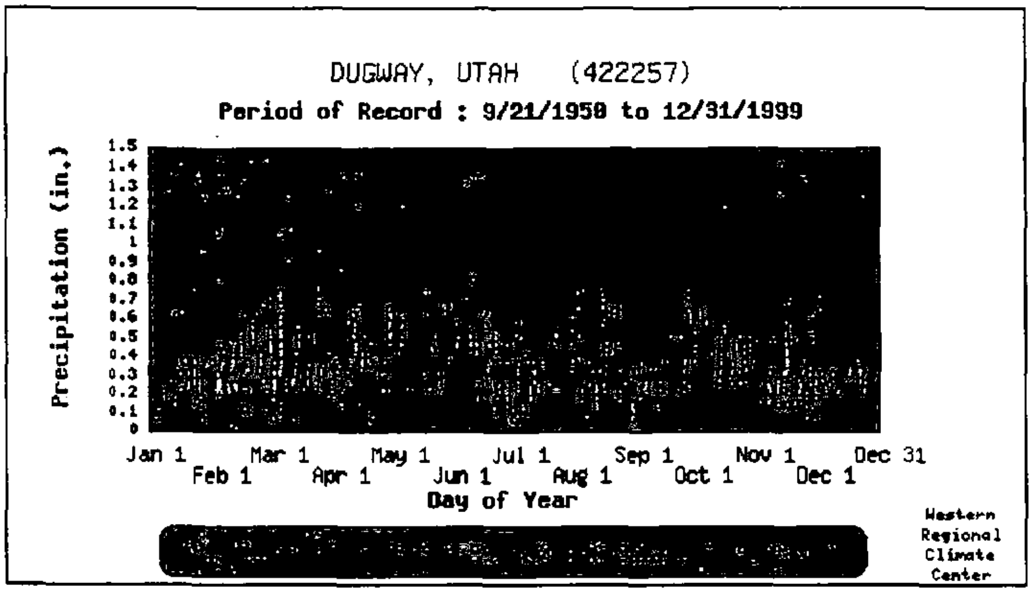
POR - Monthly Average Total Precipitation



■ - Average precipitation recorded for the month.

DUGWAY, UTAH

POR - Daily Precipitation Average and Extreme



- Extreme is the greatest daily precipitation recorded for the day of the year.
- Average is the average of all daily precipitation recorded for the day of the year.

DUGWAY, UTAH

Monthly Total Precipitation (inches)

(422257)

File last updated on Mar 15, 2000
*** Note *** Provisional Data *** After Year/Month 199912
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1950	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.42t	0.56	0.89	0.57	2.02
1951	0.62	0.28	0.36	0.85	0.33	0.25	0.75	0.34	0.10	0.50	0.67	1.49	6.54
1952	1.39	0.06	1.60	1.33	0.66	0.51	0.02	0.04	0.00	0.00	0.57	0.20	6.38
1953	0.52	0.01	0.14	0.97	0.25	0.30	1.17	0.52	0.00	0.22	0.05	0.33	4.48
1954	0.22	0.34	1.19	0.18	0.21	0.42	0.12	0.04	0.23	0.58	0.58	0.24	4.35
1955	0.55	1.39	0.02	0.25	0.53	0.79	0.32	1.36	0.68	0.70	0.38	0.41	7.38
1956	1.07	0.75	0.00	0.33	0.97	0.04	0.21	0.00	0.11	0.68	0.03	0.39	4.58
1957	0.86	0.01	0.30	0.81	2.37	0.66	0.43	0.54	0.10	0.11	0.50	0.18	6.87
1958	0.10	1.14	0.83	0.15	0.25	0.00	0.06	0.80	0.08	0.00	0.60	0.12	4.13
1959	0.52	0.65	0.22	0.80	1.10	0.46	0.47	1.27	0.76	0.00	0.00	1.58	7.83
1960	0.60	0.95	0.65	0.35	0.25	0.04	0.26	0.30	0.16	0.27	0.60	0.47	4.90
1961	0.00	0.20	0.48	0.24	0.39	0.00	0.91	1.31	1.99	1.34	0.48	0.48	7.82
1962	0.53	0.89	0.81	0.62	0.99	0.62	0.33	0.00	0.08	0.84	0.15	0.02	5.88
1963	0.26	0.62	0.80	1.95	0.10	1.79	0.00	0.49	0.93	0.33	1.48	0.32	9.07
1964	0.22	0.21	0.56	1.64	1.24	1.82	0.11	0.12	0.00	0.16	0.61	1.60	8.29
1965	0.44	0.46	0.34	0.77	1.39	0.86	0.55	1.43	1.67	0.42	0.42	0.61	9.36
1966	0.55	0.33	0.12	0.17	0.44	0.00	0.02	0.00	0.14	0.33	0.25	1.00	3.35
1967	0.62	0.00	0.14	0.88	1.38	2.35	0.17	0.04	0.75	0.44	0.56	0.63	7.96
1968	0.08	1.28	1.20	1.20	0.73	1.24	1.00	1.70	0.13	0.93	0.28	1.46	11.23
1969	0.55	1.33	0.15	1.06	0.00	0.00z	0.00z	0.30	0.09	1.07	0.25	0.00z	4.80
1970	0.00	0.60	0.14	0.73	0.11	0.64	1.68	0.09	0.00z	0.40	0.75	0.90	6.04
1971	0.15	0.89	0.10	1.49	0.84	1.00	0.00	0.50	1.29	1.36	0.55	0.31	8.48

	1	2	3	4	5	6	7	8	9	10	11	12	
1972	0.10	0.09	0.11	0.64	0.02	0.10	0.01	0.31	1.35	1.59	1.00	0.00z	5.32
1973	0.63	0.39	1.30	0.93	0.00z	0.21	0.41	0.26	0.74	0.17	1.86	0.17	7.07
1974	0.77	0.07	0.23	1.01	0.30	0.00	0.33	0.06	0.00	0.76	0.19	0.09	3.81
1975	0.20	0.03	1.76	0.47	1.04	0.32	0.86	0.45	0.16	0.46	0.26	0.46	6.47
1976	0.06	0.96	0.16	0.81	0.95	0.00	0.70	0.25	0.51	1.04	0.25	0.00	5.69
1977	0.25	0.10	0.34	0.13	2.93	0.02	1.32	0.47	0.26	0.09	0.03	0.45	6.39
1978	1.34	1.15	2.12	0.89	0.56	0.04	0.09	0.51	1.30	0.00z	0.00z	0.00z	8.00
1979	0.63	0.81	1.34	0.20	0.88	0.02	0.10	0.15	0.00	1.35	0.35	0.10	5.93
1980	1.54	1.58	1.33	0.94	2.92	0.25	0.13	0.44	0.40	0.26	0.44	0.43	10.66
1981	0.35	0.19	1.52	0.61	1.54	0.06	0.19	0.23	0.65	2.00	0.51	0.91	8.76
1982	0.46	0.17	0.85	0.17	2.96	0.87	1.52	1.20	3.16	1.89	0.74	1.08	15.07
1983	0.98z	1.17	1.98	1.07	0.47	0.00d	1.89	1.89	0.46	0.60	1.09	2.33	12.95
1984	0.52	0.41c	0.85	1.86	0.00z	1.08	1.76	1.87	0.49	1.18	0.46	0.48	10.96
1985	0.00z	0.00z	0.94	0.20	1.10a	0.57	0.51	0.15	0.00z	1.17	1.03	1.19	6.86
1986	0.37	0.72a	2.44	2.14	1.74	0.50	0.89	0.93	0.87	0.53	0.18	0.00	11.31
1987	0.85	0.65	1.00	0.13	1.39	0.41	0.96	1.44	0.23	1.17	1.22	0.15	9.60
1988	0.88	0.12	0.55	0.46	1.34	0.22	0.03	1.54	1.05	0.26	0.83	0.61	7.89
1989	0.18	0.71	0.86	0.05	1.22	0.16	0.09	0.21	1.27	0.77	0.40	0.02	5.94
1990	0.26	0.30	0.60	0.71	0.78	0.30	0.05	0.03	0.31	0.48	0.33	0.20	4.35
1991	0.41	0.32a	0.33	0.81	1.20	0.46	0.31	0.78	1.00	1.42	0.63	0.41	8.08
1992	0.22	0.83	0.65	0.04	0.69	0.52	1.29	0.15	0.22	1.32	0.30	1.05	7.28
1993	1.32	0.72	0.98	0.15	1.26	0.55	0.60	0.09	0.20	1.45	0.04	0.38	7.74
1994	0.03	1.12	1.37	1.82	1.35	0.00	0.22	0.51	0.64	0.93	1.42	0.25	9.66
1995	0.92	0.26	1.66	1.53	2.08	1.25	0.34	0.80	0.27	0.02	0.33	0.52a	9.98
1996	0.61a	0.88a	0.92	0.78	1.52	0.00	0.68	0.00	0.59	0.57	1.02a	1.28	8.85
1997	1.27a	1.42	0.24	1.47	0.97	2.64	0.31	0.67	1.09	0.58	1.03	0.40	12.09
1998	0.57	1.63	1.75	0.81	0.63	2.37	0.98	0.50	0.69	1.76	0.32	0.22	12.23
1999	0.98	0.20	0.18	2.05	1.10	1.06	0.13	0.30	0.46	0.00	0.05	0.02	6.53
Period of Record Statistics													
MEAN	0.54	0.61	0.79	0.81	1.01	0.58	0.53	0.56	0.59	0.72	0.55	0.56	7.64
S.D.	0.40	0.47	0.62	0.57	0.74	0.67	0.51	0.54	0.62	0.54	0.41	0.52	2.59
SKEW	0.76	0.47	0.73	0.64	1.05	1.57	1.08	1.04	1.90	0.59	1.06	1.36	0.58
MAX	1.54	1.63	2.44	2.14	2.96	2.64	1.89	1.89	3.16	2.00	1.86	2.33	15.07
MIN	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.35
NO YRS	47	48	49	49	47	48	48	49	47	49	49	47	41

DUGWAY, UTAH (422257)

Period of Record Monthly Climate Summary

Period of Record : 9/21/1950 to 12/31/1999

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	38.0	45.2	53.8	62.9	73.5	84.8	94.5	91.9	81.0	67.1	50.8	39.3	65.2
Average Min. Temperature (F)	16.0	22.7	28.6	35.4	44.2	53.2	61.3	59.5	48.2	35.9	25.9	17.7	37.4
Average Total Precipitation (in.)	0.54	0.61	0.79	0.81	1.01	0.58	0.53	0.56	0.59	0.72	0.55	0.56	7.84
Average Total SnowFall (in.)	4.0	2.9	2.5	0.9	0.2	0.0	0.0	0.0	0.0	0.1	1.8	3.6	16.1
Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 97.8% Min. Temp.: 97.8% Precipitation: 97.5% Snowfall: 96.7% Snow Depth: 89.2%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

WENDOVER WSO AIRPORT, UTAH (429382)

Period of Record Monthly Climate Summary

Period of Record : 8/ 6/1924 to 12/31/1999

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	35.6	42.7	52.3	61.9	72.2	81.9	91.8	89.4	78.3	63.2	46.9	36.9	62.8
Average Min. Temperature (F)	19.0	24.7	32.2	40.4	50.2	58.6	67.4	64.9	54.1	41.7	29.2	21.1	41.9
Average Total Precipitation (in.)	0.27	0.30	0.40	0.51	0.74	0.55	0.28	0.35	0.37	0.49	0.32	0.25	4.84
Average Total SnowFall (in.)	1.6	1.5	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.2	5.5
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 86.8% Min. Temp.: 86.9% Precipitation: 86.9% Snowfall: 83.5% Snow Depth: 79.4%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

WENDOVER WSO AIRPORT, UTAH

Station Metadata

From NCDC Station Historical Listing for NWS Cooperative Network
ObsTyp: t-Temperature-1, p-Daily precip-2, w-(blank), s-(blank), e-Evap-5
h-Hourly precip - 6 0.01" Universal, or - 7 0.10" Fisher-Porter
U - Observed, but beginning date is uncertain

Count	Number (Coop)	Station Name (From NCDC listing)	Lat ddmm	Long dddmm	Elev ftx10	Start yy mm	ObsTyp t	p	w	s	e	h	End yy mm
1139	429382-1	WENDOVER WSO AIRPORT	4044	11402	0424	48 07	U	U					58 12
1140	429382-1	WENDOVER WSO AIRPORT	4044	11402	0424	59 01	U	U					99 99

Statistics by element

(From WRCC data archives)
Last Compiled on December 31, 1998
Dates are format of YYYYMMDD. Numbers are total Number of observations

STATION	START	END	PRECP	SNWFL	SNWDP	TMAX	TMIN	TOBS	EVAP	WNDM
429382	19240806	19980930	23539	22606	21518	23521	23531	9412	0	0

STATION - NCDC COOP Station number
START - First Date in record
END - Last Date in record (when last compiled)
PRECP - Precipitation
SNWFL - Snowfall
SNWDP - Snow depth
TMAX - Daily Max. Temperature
TMIN - Daily Min. Temperature
TOBS - Temperature at Observation time
EVAP - Evaporation
WNDMV - Wind Movement

Statistics by observation

(From WRCC data archives)
Last compiled on December 31, 1998
Dates are format of YYYYMMDD. Numbers represent one day and one day is considered present if any element is reported.

STATION	NAME	START	END	POSBL	PRSNT	LNGPR	MISS
429382	WENDOVER AUTOB	19240806	19980930	27084	23791	6272	3293

STATION - NCDC COOP Station number
NAME - Most recent name in NCDC history file
START - First Date in record
END - Last Date in record (when last compiled)
POSBL - Possible number of observations between START and END date
PRSNT - Number of days present in record
LNGPR - Largest number of consecutive observations
MISSG - Total number of missing days (no observation)
LNGMS - Largest number of consecutive missing observations

WENDOVER WSO AIRPORT, UTAH

Monthly Total Precipitation (inches)

(429382)

File last updated on Mar 15, 2000
*** Note *** Provisional Data *** After Year/Month 199912
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1924	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1925	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1926	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1927	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1928	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1929	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1930	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1931	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1932	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1933	0.00z	0.00z	0.00z	1.05a	0.99	0.00	0.00	0.38	0.14	0.15	0.03	0.21	2.95
1934	0.13	0.34	0.06	0.01	0.01	0.68	0.60	0.07	1.93	0.07	0.22	0.28	4.40
1935	0.40	0.38	0.10	0.77	1.20	0.04	0.00	0.03	0.03	0.28	0.08	0.06	3.37
1936	0.15	0.81	0.46	0.39	0.50	1.25	0.68	0.30	0.00	1.15	0.00	0.50	6.19
1937	0.17	0.54	0.28	0.31	1.21	0.11	1.18	0.78	0.19	0.17	0.12	0.43	5.49
1938	0.15	0.45	0.57	0.78	0.63	0.67	1.35	0.68	0.06	0.87	0.40	0.33	6.94
1939	0.23	0.01	0.69	0.59	0.73	0.51	0.56	0.08	0.59a	1.09a	0.05	0.10	5.23
1940	0.57	0.45	0.27	2.01	0.10	0.19	0.00	0.04	0.87	0.41	0.25	0.27	5.43
1941	0.14	0.41	0.85	0.93	0.26	1.23	0.63	2.56	0.65	1.47	0.52	0.45	10.10
1942	0.28	0.31	0.95	0.35	0.77	0.06	0.10	0.10	0.27	0.24	0.23	0.38	4.04
1943	0.06	0.37	0.19	1.04	0.27	1.61a	0.00	0.20	0.05	0.40	0.00	0.42	4.61
1944	0.29	0.27	0.13	1.22	0.23	1.34	0.05	0.00	0.17	0.02	0.93	0.00	4.65
1945	0.05	1.02	0.47a	0.31	1.00	1.79	0.04	0.60	0.29	1.40	0.78	0.02	7.77

1946	0.24	0.06c	0.00z	0.38	0.36	0.00	0.33	0.09	0.00	1.34	0.68	0.33	3.81
1947	0.17	0.04	0.10	0.57	0.71	0.35	0.00	0.54	1.67	0.27	0.29	0.22	4.93
1948	0.00	0.31	0.29	0.21	0.00	0.02	0.00	0.02	0.09	0.41	0.06	0.88	2.29
1949	1.42	0.21	0.16	0.06	0.80	0.33	0.08	0.17	0.07	0.51	0.02	0.00	3.83
1950	0.02	0.03	0.89	0.89	0.57g	0.18	0.45	0.00	0.04g	0.65	0.63	0.08	3.82
1951	1.00	0.29	0.32	1.01	0.90	0.06	0.41	0.28	0.00	0.31	0.44	0.28	5.30
1952	0.34	0.49	1.00	0.10	0.36	0.25	0.19	0.20	0.00	0.00	0.25	0.34	3.52
1953	0.26	0.10	0.29	0.38	0.22	0.18	0.22	0.05	0.00	0.53	0.04	0.09	2.36
1954	0.62a	0.12	0.38	0.25	0.17	0.43	0.23	0.18b	0.53	0.28	0.18a	0.42	3.79
1955	0.19	0.11	0.04	0.01	0.97	0.17	0.10	0.81	0.53	0.39	0.29	0.62	4.23
1956	0.92	0.26	0.06	0.23	1.67	0.00	0.26	0.00	0.00	0.36	0.00	0.31	4.07
1957	0.36	0.00	0.39	0.06	2.42	0.40	0.05	0.20	0.00	0.33	1.83	0.13	6.17
1958	0.01	0.53	0.85	0.08	0.33	0.01	0.28	0.38	0.12	0.00	0.06	0.27	2.92
1959	0.42	0.23	0.33	0.00n	0.74	1.03	0.02	0.28	0.14n	0.00	0.00	0.29	3.34
1960	0.11	0.38	0.30	0.22	0.08	0.27	0.09	0.13	0.33	0.27	0.25	0.04	2.47
1961	0.00	0.25	0.42	0.08	0.51	0.04	0.03	0.70	0.46	0.67	0.76	0.25	4.17
1962	0.29	1.29	0.35	0.49	0.76	0.72	0.27	0.04	0.06	0.94	0.00	0.00	5.21
1963	0.20	0.27	0.15	0.92	0.93	1.96	0.00	0.26	0.58	0.56	0.73	0.25	6.81
1964	0.18	0.03	0.80	0.46	1.48	3.01	0.03	0.03	0.00	0.13	0.16	0.86	7.17
1965	0.11	0.22	0.05	0.42	0.41	1.13	0.41	1.01	0.55	0.02	0.41	0.59	5.33
1966	0.07	0.28	0.18	0.27	0.26	0.23	0.44	0.02	0.37	0.00	0.22	0.79	3.13
1967	0.40	0.01	0.86	0.66	1.24	2.00	0.63	0.01	0.42	0.28	0.03	0.15	6.69
1968	0.17	0.81	0.40	0.40	1.06	0.97	0.39	0.49	0.06	0.35	0.16	0.20	5.46
1969	0.38	0.56	0.07	1.02	0.04	1.31	0.26	0.03	0.20	0.85	0.34	0.47	5.53
1970	0.08	0.06	0.12	0.30	0.42	1.12	0.34	0.18	0.04	0.36	1.58	0.41	5.01
1971	0.23	0.38	0.07	1.98	1.70	0.20	0.20	0.70	0.36	0.16	0.35	0.38	6.71
1972	0.21	0.56	0.03	0.05	0.06	0.31	0.24	0.84	0.24	2.41	0.07	0.30	5.32
1973	0.17	0.67	1.19	0.62	0.39	0.49	0.57	0.44	0.40	0.44	0.45	0.29	6.12
1974	0.12	0.20	0.26	0.14	0.15	0.00	0.14	0.00	0.00	1.31	0.33	0.14	2.79
1975	0.30	0.43	0.68	0.38	0.82	0.43	0.06	0.12	0.07	1.49	0.41	0.09	5.28
1976	0.07	0.71	0.23	0.67	0.72	0.05	0.34	1.15	0.41	0.21	0.00o	0.00z	4.56
1977	0.15	0.10	0.10b	0.03	2.56	0.77	0.41a	1.22	0.17	0.17	0.53	0.36	6.57
1978	0.58	0.47	1.34	0.89	0.48	0.02	0.04	0.00	0.50	0.00	0.70	0.05	5.07
1979	0.55	0.39	0.08	0.09	1.05	0.65	0.00d	0.29	0.00	0.46	0.20	0.00	3.76
1980	0.35f	0.47	0.05x	0.51	2.14	0.60	0.16	1.42	0.06	0.05a	0.54	0.20a	6.15
1981	0.05	0.02	0.30	0.40	0.71	0.41	0.24	0.01	0.16	0.26e	0.10b	0.45	3.11
1982	0.37	0.00	0.51a	0.09	0.98	0.04	0.53	0.36	3.37	0.23c	0.71	0.14a	7.33
1983	0.52	0.09	0.15e	0.99	0.28	0.47	0.35	1.51	0.49	0.79	0.33	0.67c	6.64
1984	0.05	0.09	0.18	0.47	0.50	0.34b	0.66	0.92a	0.25	0.31	0.07	0.01	3.85
1985	0.07	0.18	0.30	0.19	0.33	0.49f	0.22	0.00	0.27	0.09	0.29	0.59	2.53
1986	0.14a	0.20b	0.30	1.19	0.13	0.01	0.00p	0.31r	0.93	1.04	0.03	0.00	3.97
1987	0.07	0.65	1.15	0.05	4.19	0.06	1.11	0.20	0.00	1.69	1.06	0.17	10.40
1988	0.60	0.00	0.05	0.59	0.64	0.88	0.05	0.01	0.45	0.00	0.64	0.15	4.06

1989	0.03	0.14	0.73	0.70	1.56	0.44e	0.17	0.94	0.25	0.64	0.14	0.00	5.74
1990	0.07	0.04	1.14	1.64	0.47	0.24	0.05	0.07	0.31	0.14	0.04	0.22	4.43
1991	0.34	0.24	0.82	0.68	1.05	0.32	0.02	0.25	0.62	0.00z	0.05a	0.03	4.42
1992	0.01	0.14	0.15a	0.00	0.01	0.26	0.20	0.33	0.00	0.26	0.14a	0.12b	1.62
1993	1.00	0.13b	0.19a	0.04	0.13c	0.37	0.60	0.01	0.24	0.51	0.01	0.00	3.23
1994	0.02	0.01	0.47	0.29a	0.33	0.00	0.15	0.35	0.88	0.06b	0.13a	0.00z	2.69
1995	0.22	0.04	0.30	0.90	0.85	1.16	0.03	0.00	0.37	0.11	0.14	0.05a	4.17
1996	0.76x	0.23a	0.18	0.09	0.55a	0.01b	0.25	0.00	0.09	0.00	0.09	0.31a	1.80
1997	0.12z	0.05	0.00	0.09e	0.06a	0.86	0.61	0.16a	0.25	0.10a	0.26	0.00	2.44
1998	0.06	0.71	0.79	0.19	1.21	1.03	0.20	0.06	1.37	1.81	0.01	0.00	7.44
1999	0.36	0.11	0.07	0.43	0.21	0.45	0.28	0.14	0.27	0.00	0.00	0.00	2.32
2000	0.60	0.28	0.21q	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.88
					Period of Record Statistics								
MEAN	0.27	0.30	0.40	0.51	0.74	0.55	0.28	0.35	0.37	0.49	0.32	0.25	4.99
S.D.	0.27	0.26	0.34	0.45	0.71	0.60	0.29	0.47	0.54	0.52	0.36	0.22	1.81
SKEW	1.92	1.29	1.00	1.33	2.26	1.67	1.61	2.26	3.41	1.54	2.05	0.92	0.69
MAX	1.42	1.29	1.34	2.01	4.19	3.01	1.35	2.56	3.37	2.41	1.83	0.88	10.40
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.62
NO YRS	64	67	64	66	66	66	66	66	65	66	66	65	55

Whetstone Associates

ATTACHMENT 2
WESTERN LARW CELL
HELP INFILTRATION MODEL
OUTPUT FILES

Prepared for

Envirocare of Utah, Inc.
46 West Broadway, Suite 116
Salt Lake City, Utah 84101

Prepared by

Whetstone Associates, Inc..
13685 West Wesley Avenue
Lakewood, Colorado 80228-4744
303-716-9303
Document 4101M.000719

July 19, 2000

INDEX OF HELP MODEL OUTPUT FILES
WESTERN LARW CELL

RUN:	CASE:	INCLUDED IN APPENDIX	INCLUDED ON CD
TOP SLOPE:			
T-1	Top Slope, 540 ft length, 3% grade	✓	✓
T2	Top Slope, increase drainage layer thickness to 12"		✓
HT1	High Precipitation sensitivity analysis	✓	✓
LT1	*Low Precipitation sensitivity analysis*		✓
TTR_3	Top Slope, Decrease lower radon barrier thickness to 3 ft		✓
TTR_2	Top Slope, Decrease lower radon barrier thickness to 2 ft		✓
TTR_1	Top Slope, Decrease lower radon barrier thickness to 1 ft	✓	✓
SIDE SLOPE:			
SP1	Side-slope, frost prot. *layer, length 160 ft, no run-on*	✓	✓
SP1-R1	Side-slope, frost prot. layer, length 731 ft, with run-on		✓
SP1-R2	Side-slope, frost prot. layer, length 746 ft, with run-on		✓
SP1-R3	Side-slope, frost prot. layer, length 747 ft, with run-on	✓	✓
S1	Side-slope, degraded 100x, length 160 ft, no run-on	✓	✓
S1-R1	Side-slope, degraded 100x, length 818 ft, with run-on		✓
S1-R2	Side-slope, degraded 100x, length 882 ft, with run-on		✓
S1-R3	Side-slope, degraded 100x, length 887 ft, with run-on		✓
S1-R4	Side-slope, degraded 100x, length 887 ft, with run-on	✓	✓
SH1	Side-slope, High Precip., degraded 100x, 160', no run-on		✓
SH1-R1	Side-slope, High Precip., degraded 100x, 757', with run-on		✓
SH1-R2	Side-slope, High Precip., degraded 100x, 787', *with run-on*		✓
SH1-R3	Side-slope, High Precip., degraded 100x, 787', with run-on	✓	✓
SL1	Side-slope, Low Precip., degraded 100x, 160', no run-on		✓
SL1-R1	Side-slope, Low Precip., degraded 100x, 757', with run-on		✓
SL1-R2	Side-slope, Low Precip., degraded 100x, 757', with run-on		✓
SL1-R3	Side-slope, Low Precip., degraded 100x, 757', with run-on		✓
SL1-R4	Side-slope, Low Precip., degraded 100x, 757', with run-on		✓
ST1	Side-slope, frost prot. layer, thicker filter, no run-on		✓

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.06   (17 AUGUST 1996)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:    C:\WLARW\HELP\T-1\R100.D4
TEMPERATURE DATA FILE:      C:\WLARW\HELP\T-1\R100.D7
SOLAR RADIATION DATA FILE:  C:\WLARW\HELP\T-1\R100.D13
EVAPOTRANSPIRATION DATA:    C:\WLARW\HELP\T-1\R100.D11
SOIL AND DESIGN DATA FILE:  C:\WLARW\HELP\T-1\T1.D10
OUTPUT DATA FILE:           C:\WLARW\HELP\T-1\T1.OUT
TIME:  10: 7      DATE:   5/19/2000

******************************************************************************
     TITLE:  Western LARW Top Slope, 3% Slope
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                   LAYER  1
                                   --------
                      TYPE 1 - VERTICAL PERCOLATION LAYER
                          MATERIAL TEXTURE NUMBER   0
           THICKNESS                    =     18.00   INCHES
           POROSITY                     =      0.1900 VOL/VOL
           FIELD CAPACITY               =      0.0240 VOL/VOL
           WILTING POINT                =      0.0070 VOL/VOL
           INITIAL SOIL WATER CONTENT   =      0.0140 VOL/VOL
           EFFECTIVE SAT. HYD. COND.    =   42.0000000000     CM/SEC

                                   LAYER  2
                                   --------
                      TYPE 1 - VERTICAL PERCOLATION LAYER
                          MATERIAL TEXTURE NUMBER   0
           THICKNESS                    =      6.00   INCHES
           POROSITY                     =      0.1900 VOL/VOL
           FIELD CAPACITY               =      0.0240 VOL/VOL
           WILTING POINT                =      0.0070 VOL/VOL
           INITIAL SOIL WATER CONTENT   =      0.0240 VOL/VOL
           EFFECTIVE SAT. HYD. COND.    =   42.0000000000     CM/SEC

                                   LAYER  3
                                   --------
                      TYPE 1 - VERTICAL PERCOLATION LAYER
                          MATERIAL TEXTURE NUMBER   0
           THICKNESS                    =     12.00   INCHES
           POROSITY                     =      0.3100 VOL/VOL
           FIELD CAPACITY               =      0.2000 VOL/VOL
           WILTING POINT                =      0.0250 VOL/VOL
           INITIAL SOIL WATER CONTENT   =      0.1322 VOL/VOL
           EFFECTIVE SAT. HYD. COND.    =  0.400000019000E-02 CM/SEC

                                   LAYER  4
                                   --------
                        TYPE 2 - LATERAL DRAINAGE LAYER
                          MATERIAL TEXTURE NUMBER   0
           THICKNESS                    =      6.00   INCHES
           POROSITY                     =      0.2800 VOL/VOL
           FIELD CAPACITY               =      0.0320 VOL/VOL
           WILTING POINT                =      0.0130 VOL/VOL
           INITIAL SOIL WATER CONTENT   =      0.0320 VOL/VOL
           EFFECTIVE SAT. HYD. COND.    =    3.50000000000    CM/SEC
           SLOPE                        =      3.00   PERCENT
```

```
DRAINAGE LENGTH              =    540.0    FEET

                        LAYER  5
                        --------
              TYPE 3 - BARRIER SOIL LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     12.00   INCHES
POROSITY                     =      0.4300 VOL/VOL
FIELD CAPACITY               =      0.3900 VOL/VOL
WILTING POINT                =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000006000E-07 CM/SEC

                        LAYER  6
                        --------
          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     72.00   INCHES
POROSITY                     =      0.4300 VOL/VOL
FIELD CAPACITY               =      0.3900 VOL/VOL
WILTING POINT                =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.3900 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

                        LAYER  7
                        --------
          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =    100.00   INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.0620 VOL/VOL
WILTING POINT                =      0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1099 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000024000E-03 CM/SEC

                        LAYER  8
                        --------
              TYPE 3 - BARRIER SOIL LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4300 VOL/VOL
FIELD CAPACITY               =      0.3900 VOL/VOL
WILTING POINT                =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

           GENERAL DESIGN AND EVAPORATIVE ZONE DATA
           ----------------------------------------
 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
        SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
        GROUND CONDITIONS, A SURFACE SLOPE OF  3.% AND
        A SLOPE LENGTH OF  540. FEET.
SCS RUNOFF CURVE NUMBER            =     69.10
FRACTION OF AREA ALLOWING RUNOFF   =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE =      1.240  ACRES
EVAPORATIVE ZONE DEPTH             =     18.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE  =      0.252  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE =      3.420  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE =      0.126  INCHES
INITIAL SNOW WATER                 =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS   =     56.724  INCHES
TOTAL INITIAL WATER                =     56.724  INCHES
TOTAL SUBSURFACE INFLOW            =      0.00   INCHES/YEAR
           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------
 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
        SALT LAKE CITY         UTAH
   STATION LATITUDE                        =  40.69 DEGREES
   MAXIMUM LEAF AREA INDEX                 =   0.00
   START OF GROWING SEASON (JULIAN DATE)   =    117
   END OF GROWING SEASON (JULIAN DATE)     =    289
```

```
EVAPORATIVE ZONE DEPTH                    =  18.0  INCHES
AVERAGE ANNUAL WIND SPEED                 =   5.75 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY  =  50.50 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY  =  28.60 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY  =  22.70 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  47.90 %
```

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.54	0.61	0.79	0.81	1.01	0.58
0.53	0.56	0.59	0.72	0.55	0.56

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
27.00	34.00	40.00	50.00	60.00	69.00
78.00	76.00	65.00	53.00	39.00	29.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH AND STATION LATITUDE = 40.69 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.50	0.64	0.82	0.76	0.98	0.67
	0.47	0.56	0.58	0.80	0.55	0.59
STD. DEVIATIONS	0.25	0.29	0.38	0.32	0.57	0.47
	0.39	0.45	0.47	0.57	0.31	0.24
RUNOFF						
TOTALS	0.001	0.005	0.002	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.002	0.015	0.012	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.001
EVAPOTRANSPIRATION						
TOTALS	0.394	0.415	0.563	0.471	0.505	0.408
	0.261	0.289	0.286	0.345	0.333	0.442
STD. DEVIATIONS	0.172	0.182	0.229	0.206	0.283	0.252
	0.162	0.220	0.206	0.234	0.145	0.147
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0117	0.1976	0.4231	0.2842	0.4478	0.2771
	0.2146	0.2469	0.2735	0.4571	0.2008	0.0653
STD. DEVIATIONS	0.0519	0.2811	0.2850	0.1753	0.3345	0.2398
	0.2338	0.2541	0.2798	0.3905	0.2082	0.1055
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0005	0.0042	0.0115	0.0120	0.0138	0.0110
	0.0082	0.0091	0.0089	0.0115	0.0088	0.0050
STD. DEVIATIONS	0.0017	0.0050	0.0051	0.0054	0.0069	0.0062
	0.0057	0.0062	0.0063	0.0071	0.0061	0.0059
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0.0119	0.0073	0.0098	0.0096	0.0097	0.0086
	0.0078	0.0082	0.0080	0.0086	0.0079	0.0071
STD. DEVIATIONS	0.0570	0.0020	0.0021	0.0021	0.0023	0.0021
	0.0022	0.0021	0.0021	0.0026	0.0023	0.0022

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0003	0.0064	0.0124	0.0086	0.0131	0.0084
	0.0063	0.0072	0.0083	0.0134	0.0061	0.0019
STD. DEVIATIONS	0.0015	0.0090	0.0083	0.0053	0.0098	0.0073
	0.0068	0.0074	0.0085	0.0114	0.0063	0.0031

DAILY AVERAGE HEAD ON TOP OF LAYER 8

AVERAGES	0.0041	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
STD. DEVIATIONS	0.0407	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

****

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.92 (1.425)	35661.2	100.00
RUNOFF	0.007 (0.0220)	32.36	0.091
EVAPOTRANSPIRATION	4.711 (0.7554)	21205.03	59.462
LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.09996 (0.83631)	13953.547	39.12808
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.10448 (0.01668)	470.291	1.31877
AVERAGE HEAD ON TOP OF LAYER 5	0.008 (0.002)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.10444 (0.05359)	470.086	1.31820
AVERAGE HEAD ON TOP OF LAYER 8	0.000 (0.003)		
CHANGE IN WATER STORAGE	0.000 (0.1814)	0.19	0.001

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.04	4681.248
RUNOFF	0.094	423.1866
DRAINAGE COLLECTED FROM LAYER 4	0.64594	2907.51099
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001784	8.02962
AVERAGE HEAD ON TOP OF LAYER 5	0.586	
MAXIMUM HEAD ON TOP OF LAYER 5	1.144	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	12.9 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.036136	162.65710
AVERAGE HEAD ON TOP OF LAYER 8	1.497	
SNOW WATER	0.76	3440.8979
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0894	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0070	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.2514	0.0140
2	0.1440	0.0240
3	1.5868	0.1322
4	0.1920	0.0320
5	5.1600	0.4300
6	28.0800	0.3900
7	10.9945	0.1099
8	10.3200	0.4300
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.06   (17 AUGUST 1996)                **
**                DEVELOPED BY ENVIRONMENTAL LABORATORY                     **
**                  USAE WATERWAYS EXPERIMENT STATION                       **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************

PRECIPITATION DATA FILE:     C:\WLARW\HELP\T-1\H100.D4
TEMPERATURE DATA FILE:       C:\WLARW\HELP\T-1\H100.D7
SOLAR RADIATION DATA FILE:   C:\WLARW\HELP\T-1\H100.D13
EVAPOTRANSPIRATION DATA:     C:\WLARW\HELP\T-1\H100.D11
SOIL AND DESIGN DATA FILE:   C:\WLARW\HELP\T-1\HT1.D10
OUTPUT DATA FILE:            C:\WLARW\HELP\T-1\HT1.OUT
TIME:  16:39      DATE:   5/19/2000

******************************************************************************
     TITLE:  Western LARW Top Slope, 3% Slope, High Precipitation
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                              LAYER  1
                              --------
               TYPE 1 - VERTICAL PERCOLATION LAYER
                   MATERIAL TEXTURE NUMBER   0
          THICKNESS                   =     18.00    INCHES
          POROSITY                    =      0.1900 VOL/VOL
          FIELD CAPACITY              =      0.0240 VOL/VOL
          WILTING POINT               =      0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0140 VOL/VOL
          EFFECTIVE SAT. HYD. COND.   =   42.0000000000     CM/SEC

                              LAYER  2
                              --------
               TYPE 1 - VERTICAL PERCOLATION LAYER
                   MATERIAL TEXTURE NUMBER   0
          THICKNESS                   =      6.00    INCHES
          POROSITY                    =      0.1900 VOL/VOL
          FIELD CAPACITY              =      0.0240 VOL/VOL
          WILTING POINT               =      0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.   =   42.0000000000     CM/SEC

                              LAYER  3
                              --------
               TYPE 1 - VERTICAL PERCOLATION LAYER
                   MATERIAL TEXTURE NUMBER   0
          THICKNESS                   =     12.00    INCHES
          POROSITY                    =      0.3100 VOL/VOL
          FIELD CAPACITY              =      0.2000 VOL/VOL
          WILTING POINT               =      0.0250 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.1322 VOL/VOL
          EFFECTIVE SAT. HYD. COND.   =  0.400000019000E-02 CM/SEC

                              LAYER  4
                              --------
                 TYPE 2 - LATERAL DRAINAGE LAYER
                   MATERIAL TEXTURE NUMBER   0
          THICKNESS                   =      6.00    INCHES
          POROSITY                    =      0.2800 VOL/VOL
          FIELD CAPACITY              =      0.0320 VOL/VOL
          WILTING POINT               =      0.0130 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0320 VOL/VOL
          EFFECTIVE SAT. HYD. COND.   =   3.50000000000     CM/SEC
          SLOPE                       =      3.00    PERCENT
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DRAINAGE LENGTH              =    540.0    FEET

                          LAYER  5
                          --------
                 TYPE 3 - BARRIER SOIL LINER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =    12.00   INCHES
POROSITY                     =     0.4300 VOL/VOL
FIELD CAPACITY               =     0.3900 VOL/VOL
WILTING POINT                =     0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =     0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000006000E-07 CM/SEC

                          LAYER  6
                          --------
             TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =    72.00   INCHES
POROSITY                     =     0.4300 VOL/VOL
FIELD CAPACITY               =     0.3900 VOL/VOL
WILTING POINT                =     0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =     0.3900 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

                          LAYER  7
                          --------
             TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =   100.00   INCHES
POROSITY                     =     0.4370 VOL/VOL
FIELD CAPACITY               =     0.0620 VOL/VOL
WILTING POINT                =     0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT   =     0.1121 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000024000E-03 CM/SEC

                          LAYER  8
                          --------
                 TYPE 3 - BARRIER SOIL LINER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =    24.00   INCHES
POROSITY                     =     0.4300 VOL/VOL
FIELD CAPACITY               =     0.3900 VOL/VOL
WILTING POINT                =     0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =     0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------
 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
        SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
        GROUND CONDITIONS, A SURFACE SLOPE OF  3.% AND
        A SLOPE LENGTH OF  540. FEET.
SCS RUNOFF CURVE NUMBER              =     69.10
FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE   =      1.240  ACRES
EVAPORATIVE ZONE DEPTH               =     18.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE    =      0.252  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE   =      3.420  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE   =      0.126  INCHES
INITIAL SNOW WATER                   =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS     =     56.944  INCHES
TOTAL INITIAL WATER                  =     56.944  INCHES
TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR
           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------
 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
        SALT LAKE CITY        UTAH
     STATION LATITUDE                        =  40.69 DEGREES
     MAXIMUM LEAF AREA INDEX                 =   0.00
     START OF GROWING SEASON (JULIAN DATE)   =    117
     END OF GROWING SEASON (JULIAN DATE)     =    289
```

EVAPORATIVE ZONE DEPTH = 18.0 INCHES
AVERAGE ANNUAL WIND SPEED = 5.75 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 50.50 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 28.60 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 22.70 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 47.90 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
1.13	1.54	0.92	1.53	1.01	2.64
0.81	0.30	0.71	1.21	0.41	0.57

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
27.00	34.00	40.00	50.00	60.00	69.00
78.00	76.00	65.00	53.00	39.00	29.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH AND STATION LATITUDE = 40.59 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.04	1.62	1.00	1.43	1.00	2.98
	0.78	0.32	0.69	1.32	0.42	0.60
STD. DEVIATIONS	0.53	0.75	0.47	0.61	0.58	2.13
	0.66	0.29	0.56	0.94	0.25	0.25
RUNOFF						
TOTALS	0.013	0.220	0.034	0.000	0.000	0.005
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.035	0.335	0.089	0.000	0.000	0.023
	0.000	0.000	0.000	0.000	0.000	0.001
EVAPOTRANSPIRATION						
TOTALS	0.545	0.591	0.652	0.747	0.534	1.066
	0.357	0.206	0.270	0.450	0.302	0.431
STD. DEVIATIONS	0.185	0.155	0.258	0.307	0.305	0.647
	0.264	0.131	0.218	0.304	0.139	0.146
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0241	0.7072	0.9195	0.6731	0.4507	1.8191
	0.5101	0.1241	0.3667	0.8669	0.1416	0.0652
STD. DEVIATIONS	0.0959	0.8403	0.6413	0.3701	0.3284	1.4977
	0.4286	0.1756	0.3522	0.6846	0.1994	0.1069
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0007	0.0063	0.0128	0.0173	0.0131	0.0198
	0.0107	0.0057	0.0103	0.0144	0.0060	0.0047
STD. DEVIATIONS	0.0023	0.0073	0.0054	0.0051	0.0067	0.0088
	0.0060	0.0056	0.0071	0.0080	0.0052	0.0058
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0.0135	0.0091	0.0117	0.0124	0.0110	0.0119
	0.0089	0.0078	0.0093	0.0104	0.0079	0.0082
STD. DEVIATIONS	0.0596	0.0024	0.0024	0.0023	0.0026	0.0030
	0.0026	0.0027	0.0025	0.0031	0.0025	0.0024

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0007	0.0228	0.0269	0.0204	0.0132	0.0551
	0.0150	0.0036	0.0111	0.0254	0.0043	0.0019
STD. DEVIATIONS	0.0028	0.0271	0.0188	0.0112	0.0096	0.0453
	0.0126	0.0051	0.0107	0.0201	0.0060	0.0031

DAILY AVERAGE HEAD ON TOP OF LAYER 8

AVERAGES	0.0045	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
STD. DEVIATIONS	0.0444	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

****

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT
PRECIPITATION	13.21 (2.765)	59464.5	100.00
RUNOFF	0.272 (0.3701)	1222.69	2.056
EVAPOTRANSPIRATION	6.149 (1.0642)	27677.55	46.545
LATERAL DRAINAGE COLLECTED FROM LAYER 4	6.66823 (1.85156)	30015.018	50.47556
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.12201 (0.01876)	549.201	0.92358
AVERAGE HEAD ON TOP OF LAYER 5	0.017 (0.005)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.12205 (0.05537)	549.392	0.92390
AVERAGE HEAD ON TOP OF LAYER 8	0.000 (0.004)		
CHANGE IN WATER STORAGE	0.000 (0.1743)	-0.19	0.000

****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	3.42	15394.104
RUNOFF	1.083	4875.3628
DRAINAGE COLLECTED FROM LAYER 4	2.11999	9542.50586
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001974	8.88346
AVERAGE HEAD ON TOP OF LAYER 5	1.925	
MAXIMUM HEAD ON TOP OF LAYER 5	3.621	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	31.7 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.036236	163.10559
AVERAGE HEAD ON TOP OF LAYER 8	1.567	
SNOW WATER	2.09	9389.8994
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.1369
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0070

*** Maximum heads are computed using McEnroe's equations. ***

Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.2516	0.0140
2	0.1440	0.0240
3	1.5868	0.1322
4	0.1920	0.0320
5	5.1600	0.4300
6	28.0800	0.3900
7	11.2058	0.1121
8	10.3200	0.4300
SNOW WATER	0.000	

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**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.06   (17 AUGUST 1996)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:     C:\WLARW\HELP\T-1\R100.D4
TEMPERATURE DATA FILE:       C:\WLARW\HELP\T-1\R100.D7
SOLAR RADIATION DATA FILE:   C:\WLARW\HELP\T-1\R100.D13
EVAPOTRANSPIRATION DATA:     C:\WLARW\HELP\T-1\R100.D11
SOIL AND DESIGN DATA FILE:   C:\WLARW\HELP\T-1\TTR_1.D10
OUTPUT DATA FILE:            C:\WLARW\HELP\T-1\TTR_1.OUT
TIME:  14: 4      DATE:   5/30/2000

******************************************************************************
     TITLE:  Western LARW Top Slope, 3% Slope, 1 foot Radon Barrier
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                   LAYER  1
                                   --------
                  TYPE 1 - VERTICAL PERCOLATION LAYER
                      MATERIAL TEXTURE NUMBER   0
           THICKNESS                   =     18.00   INCHES
           POROSITY                    =      0.1900 VOL/VOL
           FIELD CAPACITY              =      0.0240 VOL/VOL
           WILTING POINT               =      0.0070 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.0140 VOL/VOL
           EFFECTIVE SAT. HYD. COND.   =   42.0000000000     CM/SEC

                                   LAYER  2
                                   --------
                  TYPE 1 - VERTICAL PERCOLATION LAYER
                      MATERIAL TEXTURE NUMBER   0
           THICKNESS                   =      6.00   INCHES
           POROSITY                    =      0.1900 VOL/VOL
           FIELD CAPACITY              =      0.0240 VOL/VOL
           WILTING POINT               =      0.0070 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.0240 VOL/VOL
           EFFECTIVE SAT. HYD. COND.   =   42.0000000000     CM/SEC

                                   LAYER  3
                                   --------
                  TYPE 1 - VERTICAL PERCOLATION LAYER
                      MATERIAL TEXTURE NUMBER   0
           THICKNESS                   =     12.00   INCHES
           POROSITY                    =      0.3100 VOL/VOL
           FIELD CAPACITY              =      0.2000 VOL/VOL
           WILTING POINT               =      0.0250 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.1322 VOL/VOL
           EFFECTIVE SAT. HYD. COND.   =  0.400000019000E-02 CM/SEC

                                   LAYER  4
                                   --------
                    TYPE 2 - LATERAL DRAINAGE LAYER
                      MATERIAL TEXTURE NUMBER   0
           THICKNESS                   =      6.00   INCHES
           POROSITY                    =      0.2800 VOL/VOL
           FIELD CAPACITY              =      0.0320 VOL/VOL
           WILTING POINT               =      0.0130 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.0320 VOL/VOL
           EFFECTIVE SAT. HYD. COND.   =    3.50000000000    CM/SEC
           SLOPE                       =      3.00   PERCENT
```

```
DRAINAGE LENGTH              =     540.0    FEET

                          LAYER  5
                          --------
             TYPE 3 - BARRIER SOIL LINER
             MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     12.00    INCHES
POROSITY                     =      0.4300 VOL/VOL
FIELD CAPACITY               =      0.3900 VOL/VOL
WILTING POINT                =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000006000E-07 CM/SEC

                          LAYER  6
                          --------
         TYPE 1 - VERTICAL PERCOLATION LAYER
             MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     12.00    INCHES
POROSITY                     =      0.4300 VOL/VOL
FIELD CAPACITY               =      0.3900 VOL/VOL
WILTING POINT                =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.3900 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

                          LAYER  7
                          --------
         TYPE 1 - VERTICAL PERCOLATION LAYER
             MATERIAL TEXTURE NUMBER   0
THICKNESS                    =    100.00    INCHES
POROSITY                     =      0.4370 VOL/VOL
FIELD CAPACITY               =      0.0620 VOL/VOL
WILTING POINT                =      0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.1099 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000024000E-03 CM/SEC

                          LAYER  8
                          --------
             TYPE 3 - BARRIER SOIL LINER
             MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     24.00    INCHES
POROSITY                     =      0.4300 VOL/VOL
FIELD CAPACITY               =      0.3900 VOL/VOL
WILTING POINT                =      0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------
 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
          GROUND CONDITIONS, A SURFACE SLOPE OF  3.% AND
          A SLOPE LENGTH OF  540. FEET.
SCS RUNOFF CURVE NUMBER            =     69.10
FRACTION OF AREA ALLOWING RUNOFF   =    100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE =      1.240  ACRES
EVAPORATIVE ZONE DEPTH             =     18.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE  =      0.252  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE =      3.420  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE =      0.126  INCHES
INITIAL SNOW WATER                 =      0.000  INCHES
INITIAL WATER IN LAYER MATERIALS   =     33.324  INCHES
TOTAL INITIAL WATER                =     33.324  INCHES
TOTAL SUBSURFACE INFLOW            =      0.00   INCHES/YEAR
           EVAPOTRANSPIRATION AND WEATHER DATA
           -----------------------------------
 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          SALT LAKE CITY        UTAH
    STATION LATITUDE                         =  40.69 DEGREES
    MAXIMUM LEAF AREA INDEX                  =   0.00
    START OF GROWING SEASON (JULIAN DATE)    =    117
    END OF GROWING SEASON (JULIAN DATE)      =    289
```

EVAPORATIVE ZONE DEPTH = 18.0 INCHES
AVERAGE ANNUAL WIND SPEED = 5.75 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 50.50 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 28.60 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 22.70 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 47.90 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.54	0.61	0.79	0.81	1.01	0.58
0.53	0.56	0.59	0.72	0.55	0.56

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
27.00	34.00	40.00	50.00	60.00	69.00
78.00	76.00	65.00	53.00	39.00	29.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH
AND STATION LATITUDE = 40.69 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.50	0.64	0.82	0.76	0.98	0.67
	0.47	0.56	0.58	0.80	0.55	0.59
STD. DEVIATIONS	0.25	0.29	0.38	0.32	0.57	0.47
	0.39	0.45	0.47	0.57	0.31	0.24
RUNOFF						
TOTALS	0.001	0.005	0.002	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.002	0.015	0.012	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.001
EVAPOTRANSPIRATION						
TOTALS	0.394	0.415	0.563	0.471	0.505	0.408
	0.261	0.289	0.286	0.345	0.333	0.442
STD. DEVIATIONS	0.172	0.182	0.229	0.206	0.283	0.252
	0.162	0.220	0.206	0.234	0.145	0.147
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0117	0.1976	0.4231	0.2842	0.4478	0.2771
	0.2146	0.2469	0.2735	0.4571	0.2008	0.0653
STD. DEVIATIONS	0.0519	0.2811	0.2850	0.1753	0.3345	0.2398
	0.2338	0.2541	0.2798	0.3905	0.2082	0.1055
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0005	0.0042	0.0115	0.0120	0.0138	0.0110
	0.0082	0.0091	0.0089	0.0115	0.0088	0.0050
STD. DEVIATIONS	0.0017	0.0050	0.0051	0.0054	0.0069	0.0062
	0.0057	0.0062	0.0063	0.0071	0.0061	0.0059
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0.0119	0.0073	0.0098	0.0096	0.0097	0.0086
	0.0078	0.0082	0.0080	0.0086	0.0079	0.0071
STD. DEVIATIONS	0.0570	0.0020	0.0021	0.0021	0.0023	0.0021
	0.0022	0.0021	0.0021	0.0026	0.0023	0.0022

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0003	0.0064	0.0124	0.0086	0.0131	0.0084
	0.0063	0.0072	0.0083	0.0134	0.0061	0.0019
STD. DEVIATIONS	0.0015	0.0090	0.0083	0.0053	0.0098	0.0073
	0.0068	0.0074	0.0085	0.0114	0.0063	0.0031

DAILY AVERAGE HEAD ON TOP OF LAYER 8

AVERAGES	0.0041	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
STD. DEVIATIONS	0.0407	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

****

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES		CU. FEET	PERCENT
PRECIPITATION	7.92	(1.425)	35661.2	100.00
RUNOFF	0.007	(0.0220)	32.36	0.091
EVAPOTRANSPIRATION	4.711	(0.7554)	21205.03	59.462
LATERAL DRAINAGE COLLECTED FROM LAYER 4	3.09996	(0.83631)	13953.547	39.12808
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.10448	(0.01668)	470.291	1.31877
AVERAGE HEAD ON TOP OF LAYER 5	0.008	(0.002)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.10444	(0.05359)	470.086	1.31820
AVERAGE HEAD ON TOP OF LAYER 8	0.000	(0.003)		
CHANGE IN WATER STORAGE	0.000	(0.1814)	0.19	0.001

****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.04	4681.248
RUNOFF	0.094	423.1866
DRAINAGE COLLECTED FROM LAYER 4	0.64594	2907.51099
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001784	8.02962
AVERAGE HEAD ON TOP OF LAYER 5	0.586	
MAXIMUM HEAD ON TOP OF LAYER 5	1.144	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	12.9 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.036136	162.65710
AVERAGE HEAD ON TOP OF LAYER 8	1.497	
SNOW WATER	0.76	3440.8979
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0894	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0070	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

****

FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.2514	0.0140
2	0.1440	0.0240
3	1.5868	0.1322
4	0.1920	0.0320
5	5.1600	0.4300
6	4.6800	0.3900
7	10.9945	0.1099
8	10.3200	0.4300
SNOW WATER	0.000	

****

```
******************************************************************************
******************************************************************************
**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**             HELP MODEL VERSION 3.06   (17 AUGUST 1996)                   **
**              DEVELOPED BY ENVIRONMENTAL LABORATORY                       **
**                USAE WATERWAYS EXPERIMENT STATION                         **
**         FOR USEPA RISK REDUCTION ENGINEERING LABORATORY                  **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:     C:\WLARW\HELP\S-1\R100.D4
TEMPERATURE DATA FILE:       C:\WLARW\HELP\S-1\R100.D7
SOLAR RADIATION DATA FILE:   C:\WLARW\HELP\S-1\R100.D13
EVAPOTRANSPIRATION DATA:     C:\WLARW\HELP\S-1\R100.D11
SOIL AND DESIGN DATA FILE:   C:\WLARW\HELP\S-1\SP1.D10
OUTPUT DATA FILE:            C:\WLARW\HELP\S-1\SP1.OUT
TIME:  12:39     DATE:   5/19/2000

******************************************************************************
     TITLE:  WLARW - Side Slope, no-run on, with frost protection
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                              LAYER  1
                              --------
                TYPE 1 - VERTICAL PERCOLATION LAYER
                    MATERIAL TEXTURE NUMBER   0
          THICKNESS                    =     18.00    INCHES
          POROSITY                     =      0.1700 VOL/VOL
          FIELD CAPACITY               =      0.0070 VOL/VOL
          WILTING POINT                =      0.0030 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0099 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =   80.0000000000     CM/SEC

                              LAYER  2
                              --------
                TYPE 1 - VERTICAL PERCOLATION LAYER
                    MATERIAL TEXTURE NUMBER   0
          THICKNESS                    =      6.00    INCHES
          POROSITY                     =      0.1900 VOL/VOL
          FIELD CAPACITY               =      0.0240 VOL/VOL
          WILTING POINT                =      0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =   42.0000000000     CM/SEC

                              LAYER  3
                              --------
                TYPE 1 - VERTICAL PERCOLATION LAYER
                    MATERIAL TEXTURE NUMBER   0
          THICKNESS                    =     12.00    INCHES
          POROSITY                     =      0.3100 VOL/VOL
          FIELD CAPACITY               =      0.2000 VOL/VOL
          WILTING POINT                =      0.0250 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.1322 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.400000019000E-02 CM/SEC

                              LAYER  4
                              --------
                  TYPE 2 - LATERAL DRAINAGE LAYER
                    MATERIAL TEXTURE NUMBER   0
          THICKNESS                    =      6.00    INCHES
          POROSITY                     =      0.2800 VOL/VOL
          FIELD CAPACITY               =      0.0320 VOL/VOL
          WILTING POINT                =      0.0130 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.0320 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =   3.50000000000     CM/SEC
          SLOPE                        =     20.00    PERCENT
```

```
DRAINAGE LENGTH              =     160.0    FEET

                         LAYER  5
                         --------
               TYPE 3 - BARRIER SOIL LINER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      12.00   INCHES
POROSITY                     =       0.4300 VOL/VOL
FIELD CAPACITY               =       0.3900 VOL/VOL
WILTING POINT                =       0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =       0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000006000E-07 CM/SEC

                         LAYER  6
                         --------
             TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      72.00   INCHES
POROSITY                     =       0.4300 VOL/VOL
FIELD CAPACITY               =       0.3900 VOL/VOL
WILTING POINT                =       0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =       0.3900 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

                         LAYER  7
                         --------
             TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     100.00   INCHES
POROSITY                     =       0.4370 VOL/VOL
FIELD CAPACITY               =       0.0620 VOL/VOL
WILTING POINT                =       0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT   =       0.1063 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.500000024000E-03 CM/SEC

                         LAYER  8
                         --------
               TYPE 3 - BARRIER SOIL LINER
                 MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      24.00   INCHES
POROSITY                     =       0.4300 VOL/VOL
FIELD CAPACITY               =       0.3900 VOL/VOL
WILTING POINT                =       0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =       0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------
 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
          SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
          GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
          A SLOPE LENGTH OF  160. FEET.
SCS RUNOFF CURVE NUMBER             =      73.00
FRACTION OF AREA ALLOWING RUNOFF    =     100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =       0.367  ACRES
EVAPORATIVE ZONE DEPTH              =      18.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =       0.178  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =       3.060  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =       0.054  INCHES
INITIAL SNOW WATER                  =       0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =      56.291  INCHES
TOTAL INITIAL WATER                 =      56.291  INCHES
TOTAL SUBSURFACE INFLOW             =       0.00   INCHES/YEAR
            EVAPOTRANSPIRATION AND WEATHER DATA
            -----------------------------------
 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
          SALT LAKE CITY        UTAH
    STATION LATITUDE                         =  40.69 DEGREES
    MAXIMUM LEAF AREA INDEX                  =   0.00
    START OF GROWING SEASON (JULIAN DATE)    =    117
    END OF GROWING SEASON (JULIAN DATE)      =    289
```

```
          EVAPORATIVE ZONE DEPTH                      =  18.0  INCHES
          AVERAGE ANNUAL WIND SPEED                   =   5.75 MPH
          AVERAGE 1ST QUARTER RELATIVE HUMIDITY       =  50.50 %
          AVERAGE 2ND QUARTER RELATIVE HUMIDITY       =  28.60 %
          AVERAGE 3RD QUARTER RELATIVE HUMIDITY       =  22.70 %
          AVERAGE 4TH QUARTER RELATIVE HUMIDITY       =  47.90 %
      NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
               COEFFICIENTS FOR    SALT LAKE CITY      UTAH
               NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
  JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
  -------     -------     -------     -------     -------     -------
   0.54        0.61        0.79        0.81        1.01        0.58
   0.53        0.56        0.59        0.72        0.55        0.56
      NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
               COEFFICIENTS FOR    SALT LAKE CITY      UTAH
          NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
  JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
  -------     -------     -------     -------     -------     -------
  27.00       34.00       40.00       50.00       60.00       69.00
  78.00       76.00       65.00       53.00       39.00       29.00
      NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
               COEFFICIENTS FOR    SALT LAKE CITY      UTAH
                 AND STATION LATITUDE  =  40.69 DEGREES

*******************************************************************************
      AVERAGE MONTHLY VALUES IN INCHES FOR YEARS     1 THROUGH  100
-------------------------------------------------------------------------------
                       JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                       -------  -------  -------  -------  -------  -------
 PRECIPITATION
 -------------
   TOTALS                0.50     0.64     0.82     0.76     0.98     0.67
                         0.47     0.56     0.58     0.80     0.55     0.59
   STD. DEVIATIONS       0.25     0.29     0.38     0.32     0.57     0.47
                         0.39     0.45     0.47     0.57     0.31     0.24
 RUNOFF
 ------
   TOTALS                0.001    0.005    0.002    0.000    0.000    0.000
                         0.000    0.000    0.000    0.000    0.000    0.000
   STD. DEVIATIONS       0.003    0.017    0.015    0.000    0.000    0.000
                         0.000    0.000    0.000    0.000    0.000    0.001
 EVAPOTRANSPIRATION
 ------------------
   TOTALS                0.395    0.401    0.553    0.505    0.561    0.434
                         0.277    0.314    0.300    0.377    0.343    0.444
   STD. DEVIATIONS       0.172    0.172    0.237    0.227    0.323    0.269
                         0.188    0.244    0.230    0.262    0.156    0.152
 LATERAL DRAINAGE COLLECTED FROM LAYER  4
 ----------------------------------------
   TOTALS                0.0129   0.2353   0.4163   0.2503   0.4137   0.2403
                         0.2008   0.2360   0.2596   0.4209   0.1855   0.0621
   STD. DEVIATIONS       0.0687   0.3214   0.3067   0.1587   0.3201   0.2406
                         0.2279   0.2496   0.2749   0.3779   0.1936   0.0950
 PERCOLATION/LEAKAGE THROUGH LAYER  5
 ------------------------------------
   TOTALS                0.0003   0.0015   0.0062   0.0089   0.0080   0.0074
                         0.0071   0.0075   0.0076   0.0080   0.0081   0.0053
   STD. DEVIATIONS       0.0008   0.0022   0.0039   0.0033   0.0036   0.0034
                         0.0037   0.0038   0.0040   0.0039   0.0043   0.0040
 PERCOLATION/LEAKAGE THROUGH LAYER  8
 ------------------------------------
   TOTALS                0.0073   0.0032   0.0066   0.0077   0.0070   0.0065
                         0.0063   0.0066   0.0064   0.0066   0.0066   0.0048
   STD. DEVIATIONS       0.0531   0.0016   0.0022   0.0020   0.0021   0.0021
                         0.0022   0.0023   0.0025   0.0024   0.0026   0.0027

-------------------------------------------------------------------------------
            AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------
 DAILY AVERAGE HEAD ON TOP OF LAYER  5
 -------------------------------------
```

AVERAGES	0.0001	0.0014	0.0022	0.0014	0.0023	0.0014
	0.0011	0.0013	0.0015	0.0023	0.0011	0.0003
STD. DEVIATIONS	0.0004	0.0019	0.0016	0.0009	0.0017	0.0013
	0.0012	0.0014	0.0015	0.0020	0.0011	0.0005

DAILY AVERAGE HEAD ON TOP OF LAYER 8

AVERAGES	0.0035	0.0000	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
STD. DEVIATIONS	0.0349	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

****

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.92 (1.425)	10554.6	100.00
RUNOFF	0.009 (0.0263)	11.54	0.109
EVAPOTRANSPIRATION	4.905 (0.8066)	6533.87	61.906
LATERAL DRAINAGE COLLECTED FROM LAYER 4	2.93356 (0.82468)	3908.114	37.02769
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.07584 (0.01046)	101.032	0.95724
AVERAGE HEAD ON TOP OF LAYER 5	0.001 (0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.07584 (0.05243)	101.035	0.95726
AVERAGE HEAD ON TOP OF LAYER 8	0.000 (0.003)		
CHANGE IN WATER STORAGE	0.000 (0.1828)	0.01	0.000

****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.04	1385.498
RUNOFF	0.106	141.4071
DRAINAGE COLLECTED FROM LAYER 4	1.37956	1837.86462
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001097	1.46116
AVERAGE HEAD ON TOP OF LAYER 5	0.184	
MAXIMUM HEAD ON TOP OF LAYER 5	0.108	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	5.0 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.035973	47.92405
AVERAGE HEAD ON TOP OF LAYER 8	1.382	
SNOW WATER	0.76	1018.3948
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0826	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0030	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

****

FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.1790	0.0099
2	0.1440	0.0240
3	1.5868	0.1322
4	0.1920	0.0320
5	5.1600	0.4300
6	28.0800	0.3900
7	10.6298	0.1063
8	10.3200	0.4300
SNOW WATER	0.000	

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**                                                                        **
**                                                                        **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE             **
**                HELP MODEL VERSION 3.06   (17 AUGUST 1996)              **
**                 DEVELOPED BY ENVIRONMENTAL LABORATORY                  **
**                   USAE WATERWAYS EXPERIMENT STATION                    **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY            **
**                                                                        **
**                                                                        **
****************************************************************************
****************************************************************************

PRECIPITATION DATA FILE:     C:\WLARW\HELP\S-1\R100.D4
TEMPERATURE DATA FILE:       C:\WLARW\HELP\S-1\R100.D7
SOLAR RADIATION DATA FILE:   C:\WLARW\HELP\S-1\R100.D13
EVAPOTRANSPIRATION DATA:     C:\WLARW\HELP\S-1\R100.D11
SOIL AND DESIGN DATA FILE:   C:\WLARW\HELP\S-1\SP1-R3.D10
OUTPUT DATA FILE:            C:\WLARW\HELP\S-1\SP1-R3.OUT
TIME:  15:18     DATE:   5/19/2000

****************************************************************************
     TITLE:  WLARW-Side Slope, With run on, with frost protection, 746 ft
****************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                  LAYER  1
                                  --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =      18.00   INCHES
          POROSITY                   =       0.1700 VOL/VOL
          FIELD CAPACITY             =       0.0070 VOL/VOL
          WILTING POINT              =       0.0030 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0099 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =    80.0000000000     CM/SEC

                                  LAYER  2
                                  --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       6.00   INCHES
          POROSITY                   =       0.1900 VOL/VOL
          FIELD CAPACITY             =       0.0240 VOL/VOL
          WILTING POINT              =       0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =    42.0000000000     CM/SEC

                                  LAYER  3
                                  --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =      12.00   INCHES
          POROSITY                   =       0.3100 VOL/VOL
          FIELD CAPACITY             =       0.2000 VOL/VOL
          WILTING POINT              =       0.0250 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.1322 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   0.400000019000E-02 CM/SEC

                                  LAYER  4
                                  --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       6.00   INCHES
          POROSITY                   =       0.2800 VOL/VOL
          FIELD CAPACITY             =       0.0320 VOL/VOL
          WILTING POINT              =       0.0130 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0320 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =    3.50000000000     CM/SEC
          SLOPE                      =      20.00   PERCENT
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  DRAINAGE LENGTH             =    746.0    FEET

                        LAYER  5
                        --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =     12.00   INCHES
  POROSITY                    =      0.4300 VOL/VOL
  FIELD CAPACITY              =      0.3900 VOL/VOL
  WILTING POINT               =      0.2800 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.4300 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.500000006000E-07 CM/SEC

                        LAYER  6
                        --------

        TYPE 1 - VERTICAL PERCOLATION LAYER
            MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =     72.00   INCHES
  POROSITY                    =      0.4300 VOL/VOL
  FIELD CAPACITY              =      0.3900 VOL/VOL
  WILTING POINT               =      0.2800 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.3900 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.999999997000E-06 CM/SEC

                        LAYER  7
                        --------

        TYPE 1 - VERTICAL PERCOLATION LAYER
            MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =    100.00   INCHES
  POROSITY                    =      0.4370 VOL/VOL
  FIELD CAPACITY              =      0.0620 VOL/VOL
  WILTING POINT               =      0.0240 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.1135 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.500000024000E-03 CM/SEC

                        LAYER  8
                        --------

            TYPE 3 - BARRIER SOIL LINER
            MATERIAL TEXTURE NUMBER   0
  THICKNESS                   =     24.00   INCHES
  POROSITY                    =      0.4300 VOL/VOL
  FIELD CAPACITY              =      0.3900 VOL/VOL
  WILTING POINT               =      0.2800 VOL/VOL
  INITIAL SOIL WATER CONTENT  =      0.4300 VOL/VOL
  EFFECTIVE SAT. HYD. COND.   =  0.999999997000E-06 CM/SEC

          GENERAL DESIGN AND EVAPORATIVE ZONE DATA
          ----------------------------------------

 NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
        SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
        GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
        A SLOPE LENGTH OF  160. FEET.

 SCS RUNOFF CURVE NUMBER            =    73.00
 FRACTION OF AREA ALLOWING RUNOFF   =   100.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE =     0.367  ACRES
 EVAPORATIVE ZONE DEPTH             =    18.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE  =     0.178  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE =     3.060  INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE =     0.054  INCHES
 INITIAL SNOW WATER                 =     0.000  INCHES
 INITIAL WATER IN LAYER MATERIALS   =    57.011  INCHES
 TOTAL INITIAL WATER                =    57.011  INCHES
 TOTAL SUBSURFACE INFLOW            =     0.00   INCHES/YEAR

            EVAPOTRANSPIRATION AND WEATHER DATA
            -----------------------------------

 NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
        SALT LAKE CITY        UTAH

     STATION LATITUDE                     =  40.69 DEGREES
     MAXIMUM LEAF AREA INDEX              =   0.00
     START OF GROWING SEASON (JULIAN DATE) =   117
     END OF GROWING SEASON (JULIAN DATE)   =   289
```

EVAPORATIVE ZONE DEPTH = 18.0 INCHES
AVERAGE ANNUAL WIND SPEED = 5.75 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 50.50 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 28.60 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 22.70 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 47.90 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
0.54	0.61	0.79	0.81	1.01	0.58
0.53	0.56	0.59	0.72	0.55	0.56

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
27.00	34.00	40.00	50.00	60.00	69.00
78.00	76.00	65.00	53.00	39.00	29.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR SALT LAKE CITY UTAH AND STATION LATITUDE = 40.69 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.50	0.64	0.82	0.76	0.98	0.67
	0.47	0.56	0.58	0.80	0.55	0.59
STD. DEVIATIONS	0.25	0.29	0.38	0.32	0.57	0.47
	0.39	0.45	0.47	0.57	0.31	0.24
RUNOFF						
TOTALS	0.001	0.005	0.002	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.003	0.017	0.015	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.001
EVAPOTRANSPIRATION						
TOTALS	0.394	0.403	0.552	0.509	0.564	0.437
	0.276	0.313	0.301	0.380	0.343	0.443
STD. DEVIATIONS	0.172	0.171	0.239	0.230	0.321	0.267
	0.175	0.244	0.234	0.261	0.158	0.151
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0127	0.2363	0.4081	0.2395	0.4042	0.2296
	0.1991	0.2266	0.2520	0.4151	0.1765	0.0570
STD. DEVIATIONS	0.0684	0.3200	0.3085	0.1548	0.3223	0.2416
	0.2366	0.2433	0.2724	0.3767	0.1901	0.0920
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0005	0.0034	0.0126	0.0166	0.0159	0.0137
	0.0131	0.0143	0.0141	0.0153	0.0148	0.0093
STD. DEVIATIONS	0.0015	0.0047	0.0069	0.0062	0.0066	0.0062
	0.0063	0.0071	0.0075	0.0070	0.0073	0.0074
PERCOLATION/LEAKAGE THROUGH LAYER 8						
TOTALS	0.0105	0.0074	0.0138	0.0151	0.0140	0.0125
	0.0121	0.0129	0.0121	0.0123	0.0120	0.0088
STD. DEVIATIONS	0.0616	0.0032	0.0038	0.0037	0.0040	0.0036
	0.0044	0.0042	0.0048	0.0045	0.0047	0.0049

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0001	0.0016	0.0026	0.0016	0.0026	0.0015
	0.0013	0.0015	0.0017	0.0026	0.0012	0.0004
STD. DEVIATIONS	0.0004	0.0022	0.0019	0.0010	0.0020	0.0016
	0.0015	0.0015	0.0018	0.0024	0.0012	0.0006

DAILY AVERAGE HEAD ON TOP OF LAYER 8

AVERAGES	0.0047	0.0001	0.0001	0.0002	0.0002	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
STD. DEVIATIONS	0.0468	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.92 (1.425)	10554.6	100.00
RUNOFF	0.009 (0.0264)	11.59	0.110
EVAPOTRANSPIRATION	4.914 (0.7972)	6546.24	62.023
LATERAL DRAINAGE COLLECTED FROM LAYER 4	2.85655 (0.82102)	3805.530	36.05576
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.14352 (0.01911)	191.200	1.81154
AVERAGE HEAD ON TOP OF LAYER 5	0.002 (0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.14348 (0.06035)	191.141	1.81098
AVERAGE HEAD ON TOP OF LAYER 8	0.001 (0.004)		
CHANGE IN WATER STORAGE	0.000 (0.1843)	0.07	0.001

PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.04	1385.498
RUNOFF	0.106	141.4224
DRAINAGE COLLECTED FROM LAYER 4	1.38188	1840.95886
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.001722	2.29364
AVERAGE HEAD ON TOP OF LAYER 5	0.270	
MAXIMUM HEAD ON TOP OF LAYER 5	0.501	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	27.3 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.036299	48.35846
AVERAGE HEAD ON TOP OF LAYER 8	1.612	
SNOW WATER	0.76	1018.3948
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.0828
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0030

*** Maximum heads are computed using McEnroe's equations. ***

Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.1788	0.0099
2	0.1440	0.0240
3	1.5868	0.1322
4	0.1920	0.0320
5	5.1600	0.4300
6	28.0800	0.3900
7	11.3544	0.1135
8	10.3200	0.4300
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE              **
**               HELP MODEL VERSION 3.06   (17 AUGUST 1996)                **
**                DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                  USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY             **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:     C:\WLARW\HELP\S-1\R100.D4
TEMPERATURE DATA FILE:       C:\WLARW\HELP\S-1\R100.D7
SOLAR RADIATION DATA FILE:   C:\WLARW\HELP\S-1\R100.D13
EVAPOTRANSPIRATION DATA:     C:\WLARW\HELP\S-1\R100.D11
SOIL AND DESIGN DATA FILE:   C:\WLARW\HELP\S-1\S1.D10
OUTPUT DATA FILE:            C:\WLARW\HELP\S-1\S1.OUT
TIME:  10:59     DATE:   5/19/2000

******************************************************************************
     TITLE:  WLARW - Side Slope, no-run on, w/o frost protection
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                  LAYER  1
                                  --------
                   TYPE 1 - VERTICAL PERCOLATION LAYER
                       MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =      18.00   INCHES
          POROSITY                   =       0.1700 VOL/VOL
          FIELD CAPACITY             =       0.0070 VOL/VOL
          WILTING POINT              =       0.0030 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0099 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   80.0000000000      CM/SEC

                                  LAYER  2
                                  --------
                     TYPE 2 - LATERAL DRAINAGE LAYER
                       MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =      12.00   INCHES
          POROSITY                   =       0.1900 VOL/VOL
          FIELD CAPACITY             =       0.0240 VOL/VOL
          WILTING POINT              =       0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   42.0000000000      CM/SEC
          SLOPE                      =      20.00   PERCENT
          DRAINAGE LENGTH            =     160.0    FEET

                                  LAYER  3
                                  --------
                       TYPE 3 - BARRIER SOIL LINER
                       MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       7.00   INCHES
          POROSITY                   =       0.4300 VOL/VOL
          FIELD CAPACITY             =       0.3900 VOL/VOL
          WILTING POINT              =       0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.4300 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.499999987000E-05 CM/SEC

                                  LAYER  4
                                  --------
                   TYPE 1 - VERTICAL PERCOLATION LAYER
                       MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       5.00   INCHES
          POROSITY                   =       0.4300 VOL/VOL
          FIELD CAPACITY             =       0.3900 VOL/VOL
          WILTING POINT              =       0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.4071 VOL/VOL
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    EFFECTIVE SAT. HYD. COND.    =  0.500000006000E-07 CM/SEC

                             LAYER  5
                             --------

              TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
    THICKNESS                    =      72.00   INCHES
    POROSITY                     =       0.4300 VOL/VOL
    FIELD CAPACITY               =       0.3900 VOL/VOL
    WILTING POINT                =       0.2800 VOL/VOL
    INITIAL SOIL WATER CONTENT   =       0.3900 VOL/VOL
    EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

                             LAYER  6
                             --------

              TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
    THICKNESS                    =     100.00   INCHES
    POROSITY                     =       0.4370 VOL/VOL
    FIELD CAPACITY               =       0.0620 VOL/VOL
    WILTING POINT                =       0.0240 VOL/VOL
    INITIAL SOIL WATER CONTENT   =       0.1280 VOL/VOL
    EFFECTIVE SAT. HYD. COND.    =  0.500000024000E-03 CM/SEC

                             LAYER  7
                             --------

                 TYPE 3 - BARRIER SOIL LINER
                 MATERIAL TEXTURE NUMBER   0
    THICKNESS                    =      24.00   INCHES
    POROSITY                     =       0.4300 VOL/VOL
    FIELD CAPACITY               =       0.3900 VOL/VOL
    WILTING POINT                =       0.2800 VOL/VOL
    INITIAL SOIL WATER CONTENT   =       0.4300 VOL/VOL
    EFFECTIVE SAT. HYD. COND.    =  0.999999997000E-06 CM/SEC

             GENERAL DESIGN AND EVAPORATIVE ZONE DATA
             ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
           GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
           A SLOPE LENGTH OF  160. FEET.
 SCS RUNOFF CURVE NUMBER             =     73.00
 FRACTION OF AREA ALLOWING RUNOFF    =    100.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE  =      0.367  ACRES
 EVAPORATIVE ZONE DEPTH              =     18.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE   =      0.178  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE  =      3.060  INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE  =      0.054  INCHES
 INITIAL SNOW WATER                  =      0.000  INCHES
 INITIAL WATER IN LAYER MATERIALS    =     56.712  INCHES
 TOTAL INITIAL WATER                 =     56.712  INCHES
 TOTAL SUBSURFACE INFLOW             =      0.00   INCHES/YEAR
              EVAPOTRANSPIRATION AND WEATHER DATA
              -----------------------------------

  NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
           SALT LAKE CITY        UTAH
      STATION LATITUDE                         =  40.69 DEGREES
      MAXIMUM LEAF AREA INDEX                  =   0.00
      START OF GROWING SEASON (JULIAN DATE)    =   117
      END OF GROWING SEASON (JULIAN DATE)      =   289
      EVAPORATIVE ZONE DEPTH                   =  18.0  INCHES
      AVERAGE ANNUAL WIND SPEED                =   5.75 MPH
      AVERAGE 1ST QUARTER RELATIVE HUMIDITY    =  50.50 %
      AVERAGE 2ND QUARTER RELATIVE HUMIDITY    =  28.60 %
      AVERAGE 3RD QUARTER RELATIVE HUMIDITY    =  22.70 %
      AVERAGE 4TH QUARTER RELATIVE HUMIDITY    =  47.90 %
  NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
           COEFFICIENTS FOR    SALT LAKE CITY       UTAH
           NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
```

0.54	0.61	0.79	0.81	1.01	0.58
0.53	0.56	0.59	0.72	0.55	0.56

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
27.00	34.00	40.00	50.00	60.00	69.00
78.00	76.00	65.00	53.00	39.00	29.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH
AND STATION LATITUDE = 40.69 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.50	0.64	0.82	0.76	0.98	0.67
	0.47	0.56	0.58	0.80	0.55	0.59
STD. DEVIATIONS	0.25	0.29	0.38	0.32	0.57	0.47
	0.39	0.45	0.47	0.57	0.31	0.24
RUNOFF						
TOTALS	0.001	0.005	0.002	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.003	0.017	0.015	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.001
EVAPOTRANSPIRATION						
TOTALS	0.395	0.402	0.559	0.506	0.567	0.439
	0.282	0.315	0.300	0.378	0.346	0.445
STD. DEVIATIONS	0.172	0.171	0.236	0.223	0.321	0.271
	0.191	0.234	0.225	0.260	0.159	0.151
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0116	0.2303	0.3806	0.2072	0.3580	0.1977
	0.1682	0.2060	0.2230	0.3692	0.1493	0.0466
STD. DEVIATIONS	0.0669	0.3165	0.3031	0.1416	0.3020	0.2120
	0.2048	0.2322	0.2496	0.3481	0.1681	0.0821
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0012	0.0094	0.0379	0.0485	0.0589	0.0436
	0.0346	0.0381	0.0436	0.0594	0.0390	0.0173
STD. DEVIATIONS	0.0040	0.0132	0.0258	0.0267	0.0360	0.0335
	0.0263	0.0286	0.0351	0.0418	0.0285	0.0207
PERCOLATION/LEAKAGE THROUGH LAYER 7						
TOTALS	0.0326	0.0191	0.0276	0.0377	0.0478	0.0476
	0.0444	0.0369	0.0332	0.0355	0.0361	0.0330
STD. DEVIATIONS	0.0801	0.0102	0.0098	0.0107	0.0101	0.0116
	0.0118	0.0143	0.0120	0.0140	0.0132	0.0163

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3						
AVERAGES	0.0001	0.0015	0.0024	0.0013	0.0020	0.0012
	0.0010	0.0012	0.0014	0.0021	0.0009	0.0003
STD. DEVIATIONS	0.0005	0.0025	0.0023	0.0008	0.0016	0.0012

0.0012	0.0013	0.0015	0.0020	0.0010	0.0005

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.0080	0.0002	0.0003	0.0004	0.0005	0.0005
	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004
STD. DEVIATIONS	0.0774	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0002	0.0001	0.0002	0.0001	0.0002

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.92 (1.425)	10554.6	100.00
RUNOFF	0.009 (0.0265)	11.62	0.110
EVAPOTRANSPIRATION	4.935 (0.8214)	6574.09	62.287
LATERAL DRAINAGE COLLECTED FROM LAYER 2	2.54766 (0.75968)	3394.015	32.15684
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.43149 (0.07858)	574.837	5.44634
AVERAGE HEAD ON TOP OF LAYER 3	0.001 (0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.43148 (0.09704)	574.825	5.44622
AVERAGE HEAD ON TOP OF LAYER 7	0.001 (0.006)		
CHANGE IN WATER STORAGE	0.000 (0.2175)	0.02	0.000

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.04	1385.498
RUNOFF	0.106	141.3905
DRAINAGE COLLECTED FROM LAYER 2	1.37790	1835.65259
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.068512	91.27209
AVERAGE HEAD ON TOP OF LAYER 3	0.421	
MAXIMUM HEAD ON TOP OF LAYER 3	0.009	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.036957	49.23493
AVERAGE HEAD ON TOP OF LAYER 7	2.076	
SNOW WATER	0.76	1018.3948
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0830	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0030	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.1787	0.0099
2	0.2880	0.0240
3	3.0100	0.4300
4	2.0357	0.4071
5	28.0800	0.3900
6	12.8007	0.1280
7	10.3200	0.4300
SNOW WATER	0.000	

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.06   (17 AUGUST 1996)                 **
**                DEVELOPED BY ENVIRONMENTAL LABORATORY                     **
**                  USAE WATERWAYS EXPERIMENT STATION                       **
**              FOR USEPA RISK REDUCTION ENGINEERING LABORATORY             **
**                                                                          **
**                                                                          **
******************************************************************************
******************************************************************************
PRECIPITATION DATA FILE:     C:\WLARW\HELP\S-1\R100.D4
TEMPERATURE DATA FILE:       C:\WLARW\HELP\S-1\R100.D7
SOLAR RADIATION DATA FILE:   C:\WLARW\HELP\S-1\R100.D13
EVAPOTRANSPIRATION DATA:     C:\WLARW\HELP\S-1\R100.D11
SOIL AND DESIGN DATA FILE:   C:\WLARW\HELP\S-1\S1-R4.D10
OUTPUT DATA FILE:            C:\WLARW\HELP\S-1\S1-R4.OUT
TIME:  11:58      DATE:  5/19/2000

******************************************************************************
     TITLE:  WLARW-Side Slope, With run-on, w/o frost protection, 887 ft
******************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                   LAYER  1
                                   --------
                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =      18.00   INCHES
          POROSITY                   =       0.1700 VOL/VOL
          FIELD CAPACITY             =       0.0070 VOL/VOL
          WILTING POINT              =       0.0030 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0099 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =    80.0000000000      CM/SEC

                                   LAYER  2
                                   --------
                       TYPE 2 - LATERAL DRAINAGE LAYER
                         MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =      12.00   INCHES
          POROSITY                   =       0.1900 VOL/VOL
          FIELD CAPACITY             =       0.0240 VOL/VOL
          WILTING POINT              =       0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =    42.0000000000      CM/SEC
          SLOPE                      =      20.00   PERCENT
          DRAINAGE LENGTH            =     887.0    FEET

                                   LAYER  3
                                   --------
                         TYPE 3 - BARRIER SOIL LINER
                         MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       7.00   INCHES
          POROSITY                   =       0.4300 VOL/VOL
          FIELD CAPACITY             =       0.3900 VOL/VOL
          WILTING POINT              =       0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.4300 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   0.499999987000E-05 CM/SEC

                                   LAYER  4
                                   --------
                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       5.00   INCHES
          POROSITY                   =       0.4300 VOL/VOL
          FIELD CAPACITY             =       0.3900 VOL/VOL
          WILTING POINT              =       0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.4114 VOL/VOL
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EFFECTIVE SAT. HYD. COND.   = 0.500000006000E-07 CM/SEC

                         LAYER 5
                         --------

              TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER  0
THICKNESS                    =      72.00   INCHES
POROSITY                     =       0.4300 VOL/VOL
FIELD CAPACITY               =       0.3900 VOL/VOL
WILTING POINT                =       0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =       0.3900 VOL/VOL
EFFECTIVE SAT. HYD. COND.    = 0.999999997000E-06 CM/SEC

                         LAYER 6
                         --------

              TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER  0
THICKNESS                    =     100.00   INCHES
POROSITY                     =       0.4370 VOL/VOL
FIELD CAPACITY               =       0.0620 VOL/VOL
WILTING POINT                =       0.0240 VOL/VOL
INITIAL SOIL WATER CONTENT   =       0.1337 VOL/VOL
EFFECTIVE SAT. HYD. COND.    = 0.500000024000E-03 CM/SEC

                         LAYER 7
                         --------

                 TYPE 3 - BARRIER SOIL LINER
                 MATERIAL TEXTURE NUMBER  0
THICKNESS                    =      24.00   INCHES
POROSITY                     =       0.4300 VOL/VOL
FIELD CAPACITY               =       0.3900 VOL/VOL
WILTING POINT                =       0.2800 VOL/VOL
INITIAL SOIL WATER CONTENT   =       0.4300 VOL/VOL
EFFECTIVE SAT. HYD. COND.    = 0.999999997000E-06 CM/SEC

            GENERAL DESIGN AND EVAPORATIVE ZONE DATA
            ----------------------------------------

  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
         SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
         GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
         A SLOPE LENGTH OF  160. FEET.
SCS RUNOFF CURVE NUMBER             =      73.00
FRACTION OF AREA ALLOWING RUNOFF    =     100.0    PERCENT
AREA PROJECTED ON HORIZONTAL PLANE  =       0.367  ACRES
EVAPORATIVE ZONE DEPTH              =      18.0    INCHES
INITIAL WATER IN EVAPORATIVE ZONE   =       0.178  INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE  =       3.060  INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE  =       0.054  INCHES
INITIAL SNOW WATER                  =       0.000  INCHES
INITIAL WATER IN LAYER MATERIALS    =      57.303  INCHES
TOTAL INITIAL WATER                 =      57.303  INCHES
TOTAL SUBSURFACE INFLOW             =       0.00   INCHES/YEAR
             EVAPOTRANSPIRATION AND WEATHER DATA
             -----------------------------------

  NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
         SALT LAKE CITY        UTAH
     STATION LATITUDE                         = 40.69 DEGREES
     MAXIMUM LEAF AREA INDEX                  =  0.00
     START OF GROWING SEASON (JULIAN DATE)    =   117
     END OF GROWING SEASON (JULIAN DATE)      =   289
     EVAPORATIVE ZONE DEPTH                   = 18.0  INCHES
     AVERAGE ANNUAL WIND SPEED                =  5.75 MPH
     AVERAGE 1ST QUARTER RELATIVE HUMIDITY    = 50.50 %
     AVERAGE 2ND QUARTER RELATIVE HUMIDITY    = 28.60 %
     AVERAGE 3RD QUARTER RELATIVE HUMIDITY    = 22.70 %
     AVERAGE 4TH QUARTER RELATIVE HUMIDITY    = 47.90 %
  NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
         COEFFICIENTS FOR    SALT LAKE CITY      UTAH
         NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
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0.54	0.61	0.79	0.81	1.01	0.58
0.53	0.56	0.59	0.72	0.55	0.56

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
27.00	34.00	40.00	50.00	60.00	69.00
78.00	76.00	65.00	53.00	39.00	29.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SALT LAKE CITY UTAH
AND STATION LATITUDE = 40.69 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 100

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.50	0.64	0.82	0.76	0.98	0.67
	0.47	0.56	0.58	0.80	0.55	0.59
STD. DEVIATIONS	0.25	0.29	0.38	0.32	0.57	0.47
	0.39	0.45	0.47	0.57	0.31	0.24
RUNOFF						
TOTALS	0.001	0.005	0.002	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.003	0.017	0.015	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.001
EVAPOTRANSPIRATION						
TOTALS	0.395	0.402	0.559	0.506	0.567	0.439
	0.282	0.315	0.300	0.378	0.346	0.445
STD. DEVIATIONS	0.172	0.171	0.236	0.223	0.321	0.271
	0.191	0.234	0.225	0.260	0.159	0.151
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0108	0.2237	0.3567	0.1764	0.3258	0.1746
	0.1503	0.1840	0.2017	0.3390	0.1255	0.0346
STD. DEVIATIONS	0.0661	0.3119	0.3028	0.1324	0.2932	0.2022
	0.2002	0.2207	0.2428	0.3361	0.1574	0.0699
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0020	0.0161	0.0620	0.0793	0.0909	0.0668
	0.0524	0.0601	0.0651	0.0894	0.0628	0.0293
STD. DEVIATIONS	0.0067	0.0226	0.0404	0.0384	0.0491	0.0464
	0.0344	0.0449	0.0464	0.0569	0.0421	0.0345
PERCOLATION/LEAKAGE THROUGH LAYER 7						
TOTALS	0.0534	0.0328	0.0482	0.0674	0.0782	0.0717
	0.0644	0.0561	0.0456	0.0479	0.0522	0.0581
STD. DEVIATIONS	0.0870	0.0212	0.0232	0.0170	0.0189	0.0180
	0.0200	0.0218	0.0203	0.0218	0.0208	0.0222

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3						
AVERAGES	0.0001	0.0016	0.0023	0.0013	0.0020	0.0012
	0.0010	0.0012	0.0014	0.0021	0.0009	0.0003
STD. DEVIATIONS	0.0005	0.0024	0.0022	0.0008	0.0016	0.0012

	0.0012	0.0013	0.0015	0.0020	0.0009	0.0005

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.0096	0.0004	0.0005	0.0007	0.0008	0.0008
	0.0007	0.0006	0.0005	0.0005	0.0006	0.0006
STD. DEVIATIONS	0.0914	0.0003	0.0003	0.0002	0.0002	0.0002
	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.92 (1.425)	10554.6	100.00
RUNOFF	0.009 (0.0265)	11.62	0.110
EVAPOTRANSPIRATION	4.935 (0.8214)	6574.09	62.287
LATERAL DRAINAGE COLLECTED FROM LAYER 2	2.30304 (0.73536)	3068.133	29.06924
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.67611 (0.11050)	900.719	8.53393
AVERAGE HEAD ON TOP OF LAYER 3	0.001 (0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.67607 (0.11524)	900.661	8.53338
AVERAGE HEAD ON TOP OF LAYER 7	0.001 (0.008)		
CHANGE IN WATER STORAGE	0.000 (0.2382)	0.07	0.001

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	1.04	1385.498
RUNOFF	0.106	141.3905
DRAINAGE COLLECTED FROM LAYER 2	1.37688	1834.29102
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.072845	97.04459
AVERAGE HEAD ON TOP OF LAYER 3	0.421	
MAXIMUM HEAD ON TOP OF LAYER 3	0.161	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.037216	49.57933
AVERAGE HEAD ON TOP OF LAYER 7	2.258	
SNOW WATER	0.76	1018.3948
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.0830	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0030	

*** Maximum heads are computed using McEnroe's equations. ***
Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.1787	0.0099
2	0.2880	0.0240
3	3.0100	0.4300
4	2.0569	0.4114
5	28.0800	0.3900
6	13.3745	0.1337
7	10.3200	0.4300
SNOW WATER	0.000	

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**                                                                    **
**                                                                    **
**          HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE             **
**             HELP MODEL VERSION 3.06   (17 AUGUST 1996)             **
**              DEVELOPED BY ENVIRONMENTAL LABORATORY                 **
**                USAE WATERWAYS EXPERIMENT STATION                   **
**          FOR USEPA RISK REDUCTION ENGINEERING LABORATORY           **
**                                                                    **
**                                                                    **
************************************************************************
************************************************************************
PRECIPITATION DATA FILE:     C:\WLARW\HELP\S-1\HP\H100.D4
TEMPERATURE DATA FILE:       C:\WLARW\HELP\S-1\HP\H100.D7
SOLAR RADIATION DATA FILE:   C:\WLARW\HELP\S-1\HP\H100.D13
EVAPOTRANSPIRATION DATA:     C:\WLARW\HELP\S-1\HP\H100.D11
SOIL AND DESIGN DATA FILE:   C:\WLARW\HELP\S-1\HP\SH1-R3.D10
OUTPUT DATA FILE:            C:\WLARW\HELP\S-1\HP\SH1-R3.OUT
TIME:  16: 0     DATE:   5/22/2000

************************************************************************
     TITLE:  WLARW - Side Slope, no-run on, w/o fp, Hi Prec, 783 feet
************************************************************************
     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER
              WERE SPECIFIED BY THE USER.

                                  LAYER  1
                                  --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       18.00   INCHES
          POROSITY                   =       0.1700 VOL/VOL
          FIELD CAPACITY             =       0.0070 VOL/VOL
          WILTING POINT              =       0.0030 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0100 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   80.0000000000     CM/SEC

                                  LAYER  2
                                  --------
                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =       12.00   INCHES
          POROSITY                   =       0.1900 VOL/VOL
          FIELD CAPACITY             =       0.0240 VOL/VOL
          WILTING POINT              =       0.0070 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.0240 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =   42.0000000000     CM/SEC
          SLOPE                      =       20.00   PERCENT
          DRAINAGE LENGTH            =      783.0    FEET

                                  LAYER  3
                                  --------
                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =        7.00   INCHES
          POROSITY                   =       0.4300 VOL/VOL
          FIELD CAPACITY             =       0.3900 VOL/VOL
          WILTING POINT              =       0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.4300 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.499999987000E-05 CM/SEC

                                  LAYER  4
                                  --------
                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER   0
          THICKNESS                  =        5.00   INCHES
          POROSITY                   =       0.4300 VOL/VOL
          FIELD CAPACITY             =       0.3900 VOL/VOL
          WILTING POINT              =       0.2800 VOL/VOL
          INITIAL SOIL WATER CONTENT =       0.4119 VOL/VOL
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   EFFECTIVE SAT. HYD. COND.   =  0.500000006000E-07 CM/SEC

                         LAYER  5
                         --------
             TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                  =      72.00   INCHES
   POROSITY                   =       0.4300 VOL/VOL
   FIELD CAPACITY             =       0.3900 VOL/VOL
   WILTING POINT              =       0.2800 VOL/VOL
   INITIAL SOIL WATER CONTENT =       0.3900 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.999999997000E-06 CM/SEC

                         LAYER  6
                         --------
             TYPE 1 - VERTICAL PERCOLATION LAYER
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                  =     100.00   INCHES
   POROSITY                   =       0.4370 VOL/VOL
   FIELD CAPACITY             =       0.0620 VOL/VOL
   WILTING POINT              =       0.0240 VOL/VOL
   INITIAL SOIL WATER CONTENT =       0.1388 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.500000024000E-03 CM/SEC

                         LAYER  7
                         --------
                 TYPE 3 - BARRIER SOIL LINER
                 MATERIAL TEXTURE NUMBER   0
   THICKNESS                  =      24.00   INCHES
   POROSITY                   =       0.4300 VOL/VOL
   FIELD CAPACITY             =       0.3900 VOL/VOL
   WILTING POINT              =       0.2800 VOL/VOL
   INITIAL SOIL WATER CONTENT =       0.4300 VOL/VOL
   EFFECTIVE SAT. HYD. COND.   =  0.999999997000E-06 CM/SEC

           GENERAL DESIGN AND EVAPORATIVE ZONE DATA
           ----------------------------------------
  NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
           SOIL DATA BASE USING SOIL TEXTURE #21 WITH BARE
           GROUND CONDITIONS, A SURFACE SLOPE OF 20.% AND
           A SLOPE LENGTH OF  160. FEET.
 SCS RUNOFF CURVE NUMBER            =     73.00
 FRACTION OF AREA ALLOWING RUNOFF   =    100.0    PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE =      0.367  ACRES
 EVAPORATIVE ZONE DEPTH             =     18.0    INCHES
 INITIAL WATER IN EVAPORATIVE ZONE  =      0.180  INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE =      3.060  INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE =      0.054  INCHES
 INITIAL SNOW WATER                 =      0.000  INCHES
 INITIAL WATER IN LAYER MATERIALS   =     57.818  INCHES
 TOTAL INITIAL WATER                =     57.818  INCHES
 TOTAL SUBSURFACE INFLOW            =      0.00   INCHES/YEAR
            EVAPOTRANSPIRATION AND WEATHER DATA
            -----------------------------------
  NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
           SALT LAKE CITY        UTAH
      STATION LATITUDE                         =  40.69 DEGREES
      MAXIMUM LEAF AREA INDEX                  =   0.00
      START OF GROWING SEASON (JULIAN DATE)    =    117
      END OF GROWING SEASON (JULIAN DATE)      =    289
      EVAPORATIVE ZONE DEPTH                   =  18.0  INCHES
      AVERAGE ANNUAL WIND SPEED                =   5.75 MPH
      AVERAGE 1ST QUARTER RELATIVE HUMIDITY    =  50.50 %
      AVERAGE 2ND QUARTER RELATIVE HUMIDITY    =  28.60 %
      AVERAGE 3RD QUARTER RELATIVE HUMIDITY    =  22.70 %
      AVERAGE 4TH QUARTER RELATIVE HUMIDITY    =  47.90 %
  NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
           COEFFICIENTS FOR    SALT LAKE CITY      UTAH
           NORMAL MEAN MONTHLY PRECIPITATION (INCHES)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
```

```
 1.13       1.54       0.92       1.53       1.01       2.64
 0.81       0.30       0.71       1.21       0.41       0.57
    NOTE:  TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
              COEFFICIENTS FOR    SALT LAKE CITY      UTAH
        NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)
JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
 27.00      34.00       40.00       50.00       60.00       69.00
 78.00      76.00       65.00       53.00       39.00       29.00
    NOTE:  SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
              COEFFICIENTS FOR    SALT LAKE CITY      UTAH
                AND STATION LATITUDE  =  40.59 DEGREES

*******************************************************************************

         AVERAGE MONTHLY VALUES IN INCHES FOR YEARS    1 THROUGH  100
-------------------------------------------------------------------------------

                        JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                        -------  -------  -------  -------  -------  -------
PRECIPITATION
-------------
  TOTALS                  1.04     1.62     1.00     1.43     1.00     2.98
                          0.78     0.32     0.69     1.32     0.42     0.60
  STD. DEVIATIONS         0.53     0.75     0.47     0.61     0.58     2.13
                          0.66     0.29     0.56     0.94     0.25     0.25

RUNOFF
------
  TOTALS                 0.016    0.244    0.038    0.000    0.000    0.009
                         0.000    0.000    0.000    0.000    0.000    0.000
  STD. DEVIATIONS        0.041    0.359    0.096    0.000    0.000    0.037
                         0.000    0.000    0.000    0.000    0.000    0.001

EVAPOTRANSPIRATION
------------------
  TOTALS                 0.544    0.581    0.650    0.803    0.580    1.059
                         0.360    0.206    0.290    0.485    0.304    0.429
  STD. DEVIATIONS        0.186    0.159    0.281    0.333    0.334    0.626
                         0.274    0.138    0.242    0.320    0.144    0.148

LATERAL DRAINAGE COLLECTED FROM LAYER  2
----------------------------------------
  TOTALS                 0.0222   0.7598   0.7864   0.5246   0.3281   1.7616
                         0.3742   0.0825   0.2944   0.7357   0.0792   0.0348
  STD. DEVIATIONS        0.0972   0.8406   0.6964   0.3375   0.2846   1.5560
                         0.4185   0.1596   0.3230   0.6529   0.1427   0.0703

PERCOLATION/LEAKAGE THROUGH LAYER  3
------------------------------------
  TOTALS                 0.0027   0.0329   0.0647   0.1182   0.0833   0.1513
                         0.0669   0.0410   0.0778   0.1188   0.0412   0.0286
  STD. DEVIATIONS        0.0080   0.0527   0.0458   0.0481   0.0457   0.0779
                         0.0437   0.0341   0.0553   0.0722   0.0314   0.0345

PERCOLATION/LEAKAGE THROUGH LAYER  7
------------------------------------
  TOTALS                 0.0640   0.0419   0.0705   0.0893   0.1006   0.0830
                         0.0782   0.0788   0.0651   0.0374   0.0490   0.0695
  STD. DEVIATIONS        0.0938   0.0293   0.0286   0.0229   0.0221   0.0220
                         0.0219   0.0263   0.0276   0.0257   0.0297   0.0309

-------------------------------------------------------------------------------
           AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)
-------------------------------------------------------------------------------

DAILY AVERAGE HEAD ON TOP OF LAYER  3
-------------------------------------
  AVERAGES               0.0001   0.0048   0.0047   0.0032   0.0020   0.0109
                         0.0025   0.0006   0.0019   0.0043   0.0006   0.0003
  STD. DEVIATIONS        0.0006   0.0059   0.0044   0.0019   0.0016   0.0099
```

	0.0033	0.0007	0.0021	0.0040	0.0011	0.0005

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.0111	0.0005	0.0008	0.0010	0.0011	0.0009
	0.0008	0.0008	0.0007	0.0004	0.0005	0.0007
STD. DEVIATIONS	0.1046	0.0003	0.0003	0.0003	0.0002	0.0002
	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003

****
****

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 100

	INCHES	CU. FEET	PERCENT
PRECIPITATION	13.21 (2.765)	17599.6	100.00
RUNOFF	0.308 (0.3989)	410.27	2.331
EVAPOTRANSPIRATION	6.292 (1.0820)	8382.13	47.627
LATERAL DRAINAGE COLLECTED FROM LAYER 2	5.78356 (1.80762)	7704.921	43.77905
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.82739 (0.14922)	1102.252	6.26295
AVERAGE HEAD ON TOP OF LAYER 3	0.003 (0.001)		
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.82737 (0.15898)	1102.228	6.26282
AVERAGE HEAD ON TOP OF LAYER 7	0.002 (0.009)		
CHANGE IN WATER STORAGE	0.000 (0.2720)	0.02	0.000

****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 100

	(INCHES)	(CU. FT.)
PRECIPITATION	3.42	4556.159
RUNOFF	1.119	1491.0641
DRAINAGE COLLECTED FROM LAYER 2	2.17558	2898.33057
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.099619	132.71327
AVERAGE HEAD ON TOP OF LAYER 3	0.476	
MAXIMUM HEAD ON TOP OF LAYER 3	0.219	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	0.0 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.037447	49.88711
AVERAGE HEAD ON TOP OF LAYER 7	2.421	
SNOW WATER	2.09	2779.1074
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1250	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0030	

*** Maximum heads are computed using McEnroe's equations. ***

Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

****
****

FINAL WATER STORAGE AT END OF YEAR 100

LAYER	(INCHES)	(VOL/VOL)
1	0.1794	0.0100
2	0.2880	0.0240
3	3.0100	0.4300
4	2.0593	0.4119
5	28.0800	0.3900
6	13.8819	0.1388
7	10.3200	0.4300
SNOW WATER	0.000	

****

Whetstone Associates

ATTACHMENT 3
WESTERN LARW CELL
UNSAT-H MODEL INPUT FILES

Prepared for

Envirocare of Utah, Inc.
46 West Broadway, Suite 116
Salt Lake City, Utah 84101

Prepared by

Whetstone Associates, Inc..
13685 West Wesley Avenue
Lakewood, Colorado 80228-4744
303-716-9303
Document 4101M.000719

July 19, 2000

```
--------------------------------------------------------------------------------
                              Program DATAINH
                               Version2.05
--------------------------------------------------------------------------------
 Input Filename: E:\4101M\UNSATH\TOP_04.inp
 Date Processed: 22 May 2000
 Time Processed: 12:27:53.13
--------------------------------------------------------------------------------
 Title:
 TOP_04.INP: W.LARW Cell Unsat flow, 0.265 cm/yr infiltration
--------------------------------------------------------------------------------
 Options chosen include:

 IPLANT =   0        LOWER  =   2        NGRAV   =   1        ISWDIF =   1
 IHEAT  =   0        UPPERH =   0        LOWERH  =   0
 NPRINT =   0        DAYEND = 365        NDAYS   = 365        NYEARS =  10
 IRAIN  =   0        ICONVH =   0
 NSURPE =   0        NFHOUR =   2        ITOPBC  =   0        ET_OPT =   0
 ICLOUD =   0
 KOPT   =   4        KEST   =   3        IVAPOR  =   0        SH_OPT =   0
 INMAX  =   3        INHMAX =   2
 HIRRI  =   0.00     HDRY   =  1.000E+04 HTOP    =   0.00     DHMAX  =   0.00
 DMAXBA =  5.000E-04 DELMAX =  0.150     DELMIN  =  1.500E-08 STOPHR =   24.0
 OUTTIM =  0.150
 TORT   =  0.660     TSOIL  =   288.     VAPDIF  =  0.240     QHTOP  =   0.00
 TGRAD  =   0.00     TSMEAN =   288.     TSAMP   =   10.0     QHLEAK =   0.00
 WTF    =  0.500     RFACT  =   1.05     RAINIF  =  1.000E-05 DHFACT =   0.00
 MATN   =   5        NPT    = 128

--------------------------------------------------------------------------------
 KOPT = 4:  van Genuchten functions for soil hydraulic properties

 THETA vs H, MAT   1,   Radon Barrier Moisture Characteristics
      AIRINT =   0.0000                               THET =  0.43200
        THTR =  0.10000                              ALPHA =  3.00000E-03
           N =   1.1720                                  M =  0.14676
    K vs H, MAT   1,   Radon Barrier Hydraulic Conductivity
      AIRINK =   0.0000                                 SK =  1.80000E-04
           A =  3.00000E-03                              N =   1.1720
           M =  0.14676                             KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   2,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                               THET =  0.43200
        THTR =  0.10000                              ALPHA =  3.00000E-03
           N =   1.1720                                  M =  0.14676
    K vs H, MAT   2,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                                 SK =  3.60000E-03
           A =  3.00000E-03                              N =   1.1720
           M =  0.14676                             KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   3,   Waste Moisture Characteristics
      AIRINT =   0.0000                               THET =  0.35000
        THTR =  2.00000E-02                          ALPHA =  0.11500
           N =   2.0130                                  M =  0.50323
    K vs H, MAT   3,   Waste Hydraulic Conductivity
      AIRINK =   0.0000                                 SK =   1.8000
           A =  0.11500                                  N =   2.0130
           M =  0.50323                             KMODEL =   2.0000
        EPIT =  0.50000

 THETA vs H, MAT   4,   Clay Liner Moisture Characteristics
```

```
     AIRINT =   0.0000                                   THET =  0.43200
       THTR =  0.10000                                  ALPHA =  3.00000E-03
          N =   1.1720                                      M =  0.14676
    K vs H, MAT   4,   Clay Liner Hydraulic Conductivity
     AIRINK =   0.0000                                     SK =  3.60000E-03
          A =  3.00000E-03                                  N =   1.1720
          M =  0.14676                                 KMODEL =   2.0000
       EPIT =   4.5000

THETA vs H, MAT   5,   Unit 3 Silty Sand Moisture Characteristics
     AIRINT =   0.0000                                   THET =  0.34000
       THTR =  2.00000E-02                              ALPHA =  5.50000E-02
          N =   2.5180                                      M =  0.60286
    K vs H, MAT   5,   Unit 3 Silty Sand Hydraulic Conductivity
     AIRINK =   0.0000                                     SK =   2.0810
          A =  5.50000E-02                                  N =   2.5180
          M =  0.60286                                 KMODEL =   2.0000
       EPIT =  0.50000

Surface node hydraulic properties

HIRRI =      0.0     , THETA = 0.4320, K =   1.8000E-04, C =  -1.9786E-08
HDRY  =    1.00E+04, THETA = 0.2845, K =   9.2973E-11, C =  -3.1149E-06
NDAY =   0
```

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.00	1	6.5700E+01	1.1014E-05	-1.1048E-04	0.4253	288.1
2	0.10	1	6.5900E+01	1.0982E-05	-1.1048E-04	0.4253	288.1
3	0.30	1	6.6300E+01	1.0919E-05	-1.1047E-04	0.4252	288.1
4	0.60	1	6.6800E+01	1.0840E-05	-1.1047E-04	0.4252	288.1
5	1.10	1	6.7700E+01	1.0700E-05	-1.1046E-04	0.4251	288.1
6	2.00	1	6.9400E+01	1.0444E-05	-1.1043E-04	0.4249	288.1
7	3.50	1	7.2400E+01	1.0014E-05	-1.1036E-04	0.4246	288.1
8	6.50	1	7.8900E+01	9.1695E-06	-1.1008E-04	0.4238	288.1
9	11.50	1	9.1900E+01	7.7688E-06	-1.0918E-04	0.4224	288.1
10	19.00	1	1.1900E+02	5.6942E-06	-1.0630E-04	0.4195	288.1
11	24.00	1	1.4400E+02	4.4110E-06	-1.0301E-04	0.4169	288.1
12	27.00	1	1.6400E+02	3.6559E-06	-1.0018E-04	0.4148	288.1
13	28.50	1	1.7500E+02	3.3146E-06	-9.8585E-05	0.4138	288.1
14	29.40	1	1.8300E+02	3.0931E-06	-9.7422E-05	0.4130	288.1
15	29.90	1	1.8700E+02	2.9898E-06	-9.6840E-05	0.4126	288.1
16	30.20	1	1.9000E+02	2.9154E-06	-9.6405E-05	0.4123	288.1
17	30.40	1	1.9200E+02	2.8671E-06	-9.6114E-05	0.4121	288.1
18	30.50	1	1.9300E+02	2.8434E-06	-9.5969E-05	0.4120	288.1
19	30.60	2	1.9300E+02	5.6869E-05	-9.5969E-05	0.4120	288.1
20	30.80	2	1.9300E+02	5.6869E-05	-9.5969E-05	0.4120	288.1
21	31.10	2	1.9300E+02	5.6869E-05	-9.5969E-05	0.4120	288.1
22	31.60	2	1.9300E+02	5.6869E-05	-9.5969E-05	0.4120	288.1
23	32.50	2	1.9200E+02	5.7343E-05	-9.6114E-05	0.4121	288.1
24	34.00	2	1.9200E+02	5.7343E-05	-9.6114E-05	0.4121	288.1
25	37.00	2	1.9000E+02	5.8307E-05	-9.6405E-05	0.4123	288.1
26	42.00	2	1.8800E+02	5.9294E-05	-9.6695E-05	0.4125	288.1
27	52.00	2	1.8300E+02	6.1861E-05	-9.7422E-05	0.4130	288.1
28	72.00	2	1.7200E+02	6.8065E-05	-9.9020E-05	0.4140	288.1
29	102.00	2	1.5500E+02	7.9436E-05	-1.0146E-04	0.4158	288.1
30	141.80	2	1.2800E+02	1.0357E-04	-1.0517E-04	0.4185	288.1
31	171.80	2	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
32	191.80	2	9.0100E+01	1.5886E-04	-1.0933E-04	0.4226	288.1
33	201.80	2	8.1900E+01	1.7630E-04	-1.0991E-04	0.4235	288.1
34	206.80	2	7.7800E+01	1.8610E-04	-1.1014E-04	0.4240	288.1
35	209.80	2	7.5300E+01	1.9247E-04	-1.1025E-04	0.4242	288.1
36	211.30	2	7.4000E+01	1.9592E-04	-1.1030E-04	0.4244	288.1

37	212.20	2	7.3200E+01	1.9808E-04	-1.1033E-04	0.4245	288.1
38	212.70	2	7.2800E+01	1.9918E-04	-1.1034E-04	0.4245	288.1
39	213.00	2	7.2500E+01	2.0001E-04	-1.1035E-04	0.4245	288.1
40	213.20	2	7.2400E+01	2.0029E-04	-1.1036E-04	0.4246	288.1
41	213.30	2	7.2300E+01	2.0056E-04	-1.1036E-04	0.4246	288.1
42	213.40	2	7.2200E+01	2.0084E-04	-1.1036E-04	0.4246	288.1
43	213.50	3	7.2100E+01	3.0506E-05	-5.3265E-04	0.0584	288.1
44	213.70	3	7.2100E+01	3.0506E-05	-5.3265E-04	0.0584	288.1
45	214.00	3	7.2100E+01	3.0506E-05	-5.3265E-04	0.0584	288.1
46	214.50	3	7.2100E+01	3.0506E-05	-5.3265E-04	0.0584	288.1
47	215.40	3	7.2100E+01	3.0506E-05	-5.3265E-04	0.0584	288.1
48	216.90	3	7.2100E+01	3.0506E-05	-5.3265E-04	0.0584	288.1
49	219.90	3	7.2100E+01	3.0506E-05	-5.3265E-04	0.0584	288.1
50	224.90	3	7.2200E+01	3.0317E-05	-5.3119E-04	0.0584	288.1
51	234.90	3	7.2200E+01	3.0317E-05	-5.3119E-04	0.0584	288.1
52	254.90	3	7.2200E+01	3.0317E-05	-5.3119E-04	0.0584	288.1
53	294.90	3	7.2000E+01	3.0696E-05	-5.3411E-04	0.0585	288.1
54	374.90	3	7.2600E+01	2.9575E-05	-5.2544E-04	0.0582	288.1
55	524.90	3	7.1800E+01	3.1082E-05	-5.3704E-04	0.0586	288.1
56	744.90	3	7.1700E+01	3.1276E-05	-5.3852E-04	0.0587	288.1
57	964.90	3	7.2800E+01	2.9213E-05	-5.2260E-04	0.0581	288.1
58	1114.90	3	7.3800E+01	2.7479E-05	-5.0872E-04	0.0576	288.1
59	1264.90	3	7.4300E+01	2.6659E-05	-5.0199E-04	0.0573	288.1
60	1344.90	3	7.4100E+01	2.6983E-05	-5.0467E-04	0.0574	288.1
61	1384.90	3	7.5600E+01	2.4663E-05	-4.8510E-04	0.0567	288.1
62	1404.90	3	8.1100E+01	1.7992E-05	-4.2221E-04	0.0542	288.1
63	1414.90	3	8.9900E+01	1.1321E-05	-3.4421E-04	0.0508	288.1
64	1419.90	3	9.9900E+01	7.0402E-06	-2.7909E-04	0.0477	288.1
65	1422.90	3	1.1200E+02	4.2042E-06	-2.2221E-04	0.0447	288.1
66	1424.40	3	1.2200E+02	2.8578E-06	-1.8733E-04	0.0427	288.1
67	1425.30	3	1.3100E+02	2.0722E-06	-1.6248E-04	0.0411	288.1
68	1425.80	3	1.3700E+02	1.6926E-06	-1.4855E-04	0.0402	288.1
69	1426.10	3	1.4200E+02	1.4394E-06	-1.3827E-04	0.0395	288.1
70	1426.30	3	1.4600E+02	1.2696E-06	-1.3079E-04	0.0389	288.1
71	1426.40	3	1.4800E+02	1.1938E-06	-1.2727E-04	0.0387	288.1
72	1426.50	3	1.5100E+02	1.0903E-06	-1.2226E-04	0.0383	288.1
73	1426.60	4	1.5100E+02	8.2485E-05	-1.0203E-04	0.4162	288.1
74	1426.80	4	1.5100E+02	8.2485E-05	-1.0203E-04	0.4162	288.1
75	1427.10	4	1.5000E+02	8.3272E-05	-1.0217E-04	0.4163	288.1
76	1427.60	4	1.5000E+02	8.3272E-05	-1.0217E-04	0.4163	288.1
77	1428.30	4	1.5000E+02	8.3272E-05	-1.0217E-04	0.4163	288.1
78	1429.30	4	1.4900E+02	8.4070E-05	-1.0231E-04	0.4164	288.1
79	1430.80	4	1.4800E+02	8.4878E-05	-1.0245E-04	0.4165	288.1
80	1432.50	4	1.4700E+02	8.5697E-05	-1.0259E-04	0.4166	288.1
81	1436.50	4	1.4400E+02	8.8220E-05	-1.0301E-04	0.4169	288.1
82	1442.50	4	1.4000E+02	9.1746E-05	-1.0356E-04	0.4173	288.1
83	1452.50	4	1.3300E+02	9.8402E-05	-1.0451E-04	0.4180	288.1
84	1461.50	4	1.2600E+02	1.0575E-04	-1.0542E-04	0.4188	288.1
85	1471.50	4	1.1800E+02	1.1512E-04	-1.0643E-04	0.4196	288.1
86	1477.50	4	1.1400E+02	1.2024E-04	-1.0691E-04	0.4200	288.1
87	1481.50	4	1.1100E+02	1.2430E-04	-1.0725E-04	0.4203	288.1
88	1483.20	4	1.0900E+02	1.2712E-04	-1.0748E-04	0.4206	288.1
89	1484.70	4	1.0800E+02	1.2856E-04	-1.0759E-04	0.4207	288.1
90	1485.70	4	1.0700E+02	1.3002E-04	-1.0770E-04	0.4208	288.1
91	1486.40	4	1.0700E+02	1.3002E-04	-1.0770E-04	0.4208	288.1
92	1486.90	4	1.0700E+02	1.3002E-04	-1.0770E-04	0.4208	288.1
93	1487.20	4	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
94	1487.40	4	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
95	1487.50	4	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
96	1487.60	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
97	1487.80	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
98	1488.10	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
99	1488.60	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1

100	1489.30	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
101	1490.30	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
102	1491.80	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
103	1493.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
104	1497.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
105	1503.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
106	1513.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
107	1527.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
108	1547.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
109	1576.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
110	1614.50	5	1.0600E+02	2.7036E-05	-3.0950E-04	0.0419	288.1
111	1665.50	5	1.0500E+02	2.8548E-05	-3.1683E-04	0.0422	288.1
112	1717.50	5	1.0500E+02	2.8548E-05	-3.1683E-04	0.0422	288.1
113	1768.50	5	1.0300E+02	3.1877E-05	-3.3224E-04	0.0428	288.1
114	1806.50	5	8.5400E+01	9.3077E-05	-5.2617E-04	0.0502	288.1
115	1835.50	5	5.9700E+01	7.0153E-04	-1.2377E-03	0.0711	288.1
116	1855.50	5	4.0000E+01	6.1313E-03	-2.9853E-03	0.1095	288.1
117	1869.50	5	2.6000E+01	4.9416E-02	-6.2848E-03	0.1714	288.1
118	1879.50	5	1.6000E+01	2.9258E-01	-9.1845E-03	0.2504	288.1
119	1885.50	5	1.0000E+01	8.0844E-01	-7.8186E-03	0.3036	288.1
120	1889.50	5	6.0000E+00	1.3768E+00	-4.5129E-03	0.3287	288.1
121	1891.20	5	4.3000E+00	1.6343E+00	-2.8711E-03	0.3350	288.1
122	1892.70	5	2.8000E+00	1.8412E+00	-1.5389E-03	0.3383	288.1
123	1893.70	5	1.8000E+00	1.9570E+00	-7.9452E-04	0.3394	288.1
124	1894.40	5	1.1000E+00	2.0220E+00	-3.7748E-04	0.3398	288.1
125	1894.90	5	6.0000E-01	2.0575E+00	-1.5058E-04	0.3400	288.1
126	1895.20	5	3.0000E-01	2.0728E+00	-5.2590E-05	0.3400	288.1
127	1895.40	5	1.0000E-01	2.0795E+00	-9.9232E-06	0.3400	288.1
128	1895.50	5	0.0000E+00	2.0810E+00	-1.5572E-08	0.3400	288.1

Total Initial Storage = 211.1580 cm

NSURPE = 0: There will be no surface evaporation

IRAIN = 0
NWATER (number of days of rain/irrigation) =365

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
1	0.000	0.0007	1	1.000	2
	24.000	0.0000			
2	0.000	0.0007	1	1.000	2
	24.000	0.0000			
3	0.000	0.0007	1	1.000	2
	24.000	0.0000			
...					
363	0.000	0.0007	1	1.000	2
	24.000	0.0000			
364	0.000	0.0007	1	1.000	2
	24.000	0.0000			
365	0.000	0.0007	1	1.000	2
	24.000	0.0000			

Total Water Applied = 0.2665 cm

```
--------------------------------------------------------------------------------
                               Program DATAINH
                                Version2.05
--------------------------------------------------------------------------------
 Input Filename: C:\WLARW\UnsatH\fpss_04.inp
 Date Processed: 22 May 2000
 Time Processed: 13:32:03.14
--------------------------------------------------------------------------------
 Title:
 FPSS_04.INP: Unsat flow, side slope with frost protection, 0.3644 cm/yr infiltra
--------------------------------------------------------------------------------
 Options chosen include:

 IPLANT =   0        LOWER  =   2        NGRAV  =   1        ISWDIF =   1
 IHEAT  =   0        UPPERH =   0        LOWERH =   0
 NPRINT =   0        DAYEND = 365        NDAYS  = 365        NYEARS =  10
 IRAIN  =   0        ICONVH =   0
 NSURPE =   0        NFHOUR =   2        ITOPBC =   0        ET_OPT =   0
 ICLOUD =   0
 KOPT   =   4        KEST   =   3        IVAPOR =   0        SH_OPT =   0
 INMAX  =   3        INHMAX =   2
 HIRRI  =   0.00     HDRY   =  1.000E+04 HTOP   =   0.00     DHMAX  =   0.00
 DMAXBA = 5.000E-04  DELMAX =  0.150     DELMIN =  1.500E-08 STOPHR =   24.0
 OUTTIM = 0.150
 TORT   = 0.660      TSOIL  =   288.     VAPDIF =  0.240     QHTOP  =   0.00
 TGRAD  =   0.00     TSMEAN =   288.     TSAMP  =   10.0     QHLEAK =   0.00
 WTF    = 0.500      RFACT  =   1.05     RAINIF =  1.000E-05 DHFACT =   0.00
 MATN   =   5        NPT    = 136

--------------------------------------------------------------------------------
 KOPT = 4:  van Genuchten functions for soil hydraulic properties

 THETA vs H, MAT   1,   Degraded Radon Barrier Moisture Characteristics
      AIRINT =   0.0000                            THET =  0.43200
        THTR =  0.10000                           ALPHA =  3.00000E-03
           N =   1.1720                               M =  0.14676
     K vs H, MAT   1,   Degraded Radon Barrier Hydraulic Conductivity
      AIRINK =   0.0000                              SK =  1.80000E-02
           A =  3.00000E-03                           N =   1.1720
           M =  0.14676                          KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   2,   Radon Barrier2 Moisture Characteristics
      AIRINT =   0.0000                            THET =  0.43200
        THTR =  0.10000                           ALPHA =  3.00000E-03
           N =   1.1720                               M =  0.14676
     K vs H, MAT   2,   Radon Barrier2 Hydraulic Conductivity
      AIRINK =   0.0000                              SK =  3.60000E-03
           A =  3.00000E-03                           N =   1.1720
           M =  0.14676                          KMODEL =   2.0000
        EPIT =   4.5000

 THETA vs H, MAT   3,   Waste Moisture Characteristics
      AIRINT =   0.0000                            THET =  0.35000
        THTR =  2.00000E-02                       ALPHA =  0.11500
           N =   2.0130                               M =  0.50323
     K vs H, MAT   3,   Waste Hydraulic Conductivity
      AIRINK =   0.0000                              SK =   1.8000
           A =  0.11500                               N =   2.0130
           M =  0.50323                          KMODEL =   2.0000
        EPIT =  0.50000

 THETA vs H, MAT   4,   Clay Liner Moisture Characteristics
```

```
    AIRINT =   0.0000                               THET =  0.43200
      THTR =  0.10000                              ALPHA =  3.00000E-03
         N =   1.1720                                  M =  0.14676
   K vs H, MAT    4,   Clay Liner Hydraulic Conductivity
    AIRINK =   0.0000                                 SK =  3.60000E-03
         A =  3.00000E-03                              N =   1.1720
         M =  0.14676                             KMODEL =   2.0000
      EPIT =   4.5000

THETA vs H, MAT    5,   Unit 3 Silty Sand Moisture Characteristics
    AIRINT =   0.0000                               THET =  0.34000
      THTR =  2.00000E-02                          ALPHA =  5.50000E-02
         N =   2.5180                                  M =  0.60286
   K vs H, MAT    5,   Unit 3 Silty Sand Hydraulic Conductivity
    AIRINK =   0.0000                                 SK =   2.0810
         A =  5.50000E-02                              N =   2.5180
         M =  0.60286                             KMODEL =   2.0000
      EPIT =  0.50000

Surface node hydraulic properties

HIRRI =        0.0     , THETA = 0.4320, K =   1.8000E-02, C =  -1.9786E-08
HDRY  =     1.00E+04, THETA = 0.2845, K =   9.2973E-09, C =  -3.1149E-06
NDAY =    0
```

NODE	Z	MAT	HEAD	CONDUCTIVITY	CAPACITY	THETA	TEMP
1	0.00	1	2.0200E+02	2.6415E-04	-9.4665E-05	0.4111	288.1
2	0.10	1	2.0200E+02	2.6415E-04	-9.4665E-05	0.4111	288.1
3	0.30	1	2.0100E+02	2.6629E-04	-9.4810E-05	0.4112	288.1
4	0.60	1	2.0100E+02	2.6629E-04	-9.4810E-05	0.4112	288.1
5	1.10	1	2.0100E+02	2.6629E-04	-9.4810E-05	0.4112	288.1
6	2.00	1	2.0000E+02	2.6846E-04	-9.4955E-05	0.4113	288.1
7	3.50	1	1.9900E+02	2.7066E-04	-9.5099E-05	0.4114	288.1
8	6.50	1	1.9600E+02	2.7739E-04	-9.5534E-05	0.4117	288.1
9	11.30	1	1.9200E+02	2.8671E-04	-9.6114E-05	0.4121	288.1
10	14.30	1	1.8900E+02	2.9399E-04	-9.6550E-05	0.4124	288.1
11	15.80	1	1.8800E+02	2.9647E-04	-9.6695E-05	0.4125	288.1
12	16.70	1	1.8700E+02	2.9898E-04	-9.6840E-05	0.4126	288.1
13	17.20	1	1.8700E+02	2.9898E-04	-9.6840E-05	0.4126	288.1
14	17.50	1	1.8700E+02	2.9898E-04	-9.6840E-05	0.4126	288.1
15	17.70	1	1.8700E+02	2.9898E-04	-9.6840E-05	0.4126	288.1
16	17.80	1	1.8600E+02	3.0152E-04	-9.6986E-05	0.4127	288.1
17	17.90	1	1.8600E+02	3.0152E-04	-9.6986E-05	0.4127	288.1
18	18.10	1	1.8600E+02	3.0152E-04	-9.6986E-05	0.4127	288.1
19	18.40	1	1.8600E+02	3.0152E-04	-9.6986E-05	0.4127	288.1
20	18.90	1	1.8600E+02	3.0152E-04	-9.6986E-05	0.4127	288.1
21	19.80	1	1.8500E+02	3.0408E-04	-9.7131E-05	0.4128	288.1
22	21.30	1	1.8300E+02	3.0931E-04	-9.7422E-05	0.4130	288.1
23	24.10	1	1.8100E+02	3.1465E-04	-9.7713E-05	0.4132	288.1
24	27.00	1	1.7800E+02	3.2291E-04	-9.8149E-05	0.4135	288.1
25	28.50	1	1.7700E+02	3.2573E-04	-9.8294E-05	0.4136	288.1
26	29.40	1	1.7600E+02	3.2858E-04	-9.8439E-05	0.4137	288.1
27	29.90	1	1.7600E+02	3.2858E-04	-9.8439E-05	0.4137	288.1
28	30.20	1	1.7600E+02	3.2858E-04	-9.8439E-05	0.4137	288.1
29	30.40	1	1.7600E+02	3.2858E-04	-9.8439E-05	0.4137	288.1
30	30.50	1	1.7500E+02	3.3146E-04	-9.8585E-05	0.4138	288.1
31	30.60	2	1.7500E+02	6.6292E-05	-9.8585E-05	0.4138	288.1
32	30.80	2	1.7500E+02	6.6292E-05	-9.8585E-05	0.4138	288.1
33	31.10	2	1.7500E+02	6.6292E-05	-9.8585E-05	0.4138	288.1
34	31.60	2	1.7500E+02	6.6292E-05	-9.8585E-05	0.4138	288.1
35	32.50	2	1.7500E+02	6.6292E-05	-9.8585E-05	0.4138	288.1
36	34.00	2	1.7400E+02	6.6876E-05	-9.8730E-05	0.4139	288.1

37	37.00	2	1.7300E+02	6.7467E-05	-9.8875E-05	0.4139	288.1
38	42.00	2	1.7100E+02	6.8670E-05	-9.9165E-05	0.4141	288.1
39	52.00	2	1.6700E+02	7.1165E-05	-9.9743E-05	0.4145	288.1
40	72.00	2	1.5800E+02	7.7250E-05	-1.0104E-04	0.4154	288.1
41	102.00	2	1.4300E+02	8.9084E-05	-1.0315E-04	0.4170	288.1
42	141.80	2	1.1900E+02	1.1388E-04	-1.0630E-04	0.4195	288.1
43	171.80	2	9.9100E+01	1.4248E-04	-1.0852E-04	0.4216	288.1
44	191.80	2	8.4400E+01	1.7070E-04	-1.0975E-04	0.4232	288.1
45	201.80	2	7.6700E+01	1.8886E-04	-1.1019E-04	0.4241	288.1
46	206.80	2	7.2700E+01	1.9945E-04	-1.1035E-04	0.4245	288.1
47	209.80	2	7.0400E+01	2.0596E-04	-1.1041E-04	0.4248	288.1
48	211.30	2	6.9200E+01	2.0948E-04	-1.1044E-04	0.4249	288.1
49	212.20	2	6.8400E+01	2.1187E-04	-1.1045E-04	0.4250	288.1
50	212.70	2	6.8000E+01	2.1309E-04	-1.1046E-04	0.4250	288.1
51	213.00	2	6.7800E+01	2.1370E-04	-1.1046E-04	0.4251	288.1
52	213.20	2	6.7600E+01	2.1431E-04	-1.1046E-04	0.4251	288.1
53	213.30	2	6.7500E+01	2.1462E-04	-1.1046E-04	0.4251	288.1
54	213.40	2	6.7500E+01	2.1462E-04	-1.1046E-04	0.4251	288.1
55	213.50	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
56	213.70	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
57	214.00	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
58	214.50	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
59	215.40	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
60	216.90	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
61	219.90	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
62	224.90	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
63	234.90	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
64	254.90	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
65	294.90	3	6.7400E+01	4.1260E-05	-6.0820E-04	0.0611	288.1
66	374.90	3	6.7300E+01	4.1535E-05	-6.0998E-04	0.0612	288.1
67	524.20	3	6.7500E+01	4.0987E-05	-6.0643E-04	0.0611	288.1
68	604.20	3	6.7300E+01	4.1535E-05	-6.0998E-04	0.0612	288.1
69	644.20	3	6.8300E+01	3.8881E-05	-5.9255E-04	0.0606	288.1
70	664.20	3	7.2800E+01	2.9213E-05	-5.2260E-04	0.0581	288.1
71	674.20	3	8.0400E+01	1.8707E-05	-4.2952E-04	0.0545	288.1
72	679.20	3	8.9400E+01	1.1609E-05	-3.4804E-04	0.0510	288.1
73	682.20	3	1.0000E+02	7.0085E-06	-2.7853E-04	0.0477	288.1
74	683.70	3	1.0900E+02	4.7520E-06	-2.3458E-04	0.0454	288.1
75	684.60	3	1.1800E+02	3.3220E-06	-2.0023E-04	0.0434	288.1
76	685.10	3	1.2400E+02	2.6555E-06	-1.8134E-04	0.0423	288.1
77	685.40	3	1.2900E+02	2.2213E-06	-1.6756E-04	0.0414	288.1
78	685.60	3	1.3300E+02	1.9351E-06	-1.5763E-04	0.0408	288.1
79	685.70	3	1.3500E+02	1.8089E-06	-1.5299E-04	0.0405	288.1
80	685.80	3	1.3700E+02	1.6926E-06	-1.4855E-04	0.0402	288.1
81	685.90	4	1.3700E+02	9.4520E-05	-1.0397E-04	0.4176	288.1
82	686.10	4	1.3700E+02	9.4520E-05	-1.0397E-04	0.4176	288.1
83	686.40	4	1.3700E+02	9.4520E-05	-1.0397E-04	0.4176	288.1
84	686.90	4	1.3700E+02	9.4520E-05	-1.0397E-04	0.4176	288.1
85	687.60	4	1.3600E+02	9.5470E-05	-1.0410E-04	0.4177	288.1
86	688.60	4	1.3600E+02	9.5470E-05	-1.0410E-04	0.4177	288.1
87	690.10	4	1.3500E+02	9.6434E-05	-1.0424E-04	0.4178	288.1
88	691.80	4	1.3400E+02	9.7411E-05	-1.0437E-04	0.4179	288.1
89	695.80	4	1.3200E+02	9.9407E-05	-1.0464E-04	0.4181	288.1
90	701.80	4	1.2800E+02	1.0357E-04	-1.0517E-04	0.4185	288.1
91	710.80	4	1.2300E+02	1.0913E-04	-1.0581E-04	0.4191	288.1
92	721.80	4	1.1600E+02	1.1764E-04	-1.0667E-04	0.4198	288.1
93	730.80	4	1.1000E+02	1.2570E-04	-1.0737E-04	0.4205	288.1
94	736.80	4	1.0600E+02	1.3151E-04	-1.0781E-04	0.4209	288.1
95	740.80	4	1.0300E+02	1.3612E-04	-1.0813E-04	0.4212	288.1
96	742.50	4	1.0200E+02	1.3771E-04	-1.0823E-04	0.4213	288.1
97	744.00	4	1.0100E+02	1.3933E-04	-1.0833E-04	0.4214	288.1
98	745.00	4	9.9900E+01	1.4114E-04	-1.0844E-04	0.4215	288.1
99	745.70	4	9.9400E+01	1.4197E-04	-1.0849E-04	0.4216	288.1

100	746.20	4	9.9000E+01	1.4264E-04	-1.0853E-04	0.4216	288.1
101	746.50	4	9.8800E+01	1.4298E-04	-1.0855E-04	0.4217	288.1
102	746.70	4	9.8600E+01	1.4332E-04	-1.0857E-04	0.4217	288.1
103	746.80	4	9.8600E+01	1.4332E-04	-1.0857E-04	0.4217	288.1
104	746.90	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
105	747.10	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
106	747.40	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
107	747.90	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
108	748.60	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
109	749.60	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
110	751.10	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
111	752.80	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
112	756.80	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
113	762.80	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
114	772.80	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
115	786.80	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
116	806.80	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
117	835.80	5	9.8600E+01	4.0940E-05	-3.6998E-04	0.0444	288.1
118	873.80	5	9.8600E+01	4.0940E-05	-3.6998E-04	0.0444	288.1
119	923.80	5	9.8500E+01	4.1179E-05	-3.7091E-04	0.0444	288.1
120	978.00	5	9.8600E+01	4.0940E-05	-3.6998E-04	0.0444	288.1
121	1028.00	5	9.8100E+01	4.2150E-05	-3.7464E-04	0.0446	288.1
122	1066.00	5	8.4100E+01	1.0158E-04	-5.4620E-04	0.0509	288.1
123	1095.00	5	5.9600E+01	7.0810E-04	-1.2425E-03	0.0712	288.1
124	1115.00	5	4.0000E+01	6.1313E-03	-2.9853E-03	0.1095	288.1
125	1129.00	5	2.6000E+01	4.9416E-02	-6.2848E-03	0.1714	288.1
126	1139.00	5	1.6000E+01	2.9258E-01	-9.1845E-03	0.2504	288.1
127	1145.00	5	1.0000E+01	8.0844E-01	-7.8186E-03	0.3036	288.1
128	1149.00	5	6.0000E+00	1.3768E+00	-4.5129E-03	0.3287	288.1
129	1150.70	5	4.3000E+00	1.6343E+00	-2.8711E-03	0.3350	288.1
130	1152.20	5	2.8000E+00	1.8412E+00	-1.5389E-03	0.3383	288.1
131	1153.20	5	1.8000E+00	1.9570E+00	-7.9452E-04	0.3394	288.1
132	1153.90	5	1.1000E+00	2.0220E+00	-3.7748E-04	0.3398	288.1
133	1154.40	5	6.0000E-01	2.0575E+00	-1.5058E-04	0.3400	288.1
134	1154.70	5	3.0000E-01	2.0728E+00	-5.2590E-05	0.3400	288.1
135	1154.90	5	1.0000E-01	2.0795E+00	-9.9232E-06	0.3400	288.1
136	1155.00	5	0.0000E+00	2.0810E+00	-1.5572E-08	0.3400	288.1

Total Initial Storage = 170.2956 cm

NSURPE = 0: There will be no surface evaporation
IRAIN = 0
NWATER (number of days of rain/irrigation) =365

Rainfall/Irrigation Details

Day	Time (hr)	Amount (cm)	Application Type	Efficiency	Changes In Rate/Head
1	0.000	0.0010	1	1.000	2
	24.000	0.0000			
2	0.000	0.0010	1	1.000	2
	24.000	0.0000			
...					
363	0.000	0.0010	1	1.000	2
	24.000	0.0000			
364	0.000	0.0010	1	1.000	2
	24.000	0.0000			
365	0.000	0.0010	1	1.000	2
	24.000	0.0000			

Total Water Applied = 0.3613 cm

Whetstone Associates

ATTACHMENT 4
WESTERN LARW CELL
UNSAT-H MODEL OUTPUT FILES

Prepared for

Envirocare of Utah, Inc.
46 West Broadway, Suite 116
Salt Lake City, Utah 84101

Prepared by

Whetstone Associates, Inc..
13685 West Wesley Avenue
Lakewood, Colorado 80228-4744
303-716-9303
Document 4101M.000719

July 19, 2000

UNSAT-H Version 2.05
INITIAL CONDITIONS

Input Filename: E:\4101M\UNSATH\TOP_04.inp
Results Filename: E:\4101M\UNSATH\TOP_04.res
Date of Run: 22 May 2000
Time of Run: 14:49:04.84
Title:
TOP_04.INP: W.LARW Cell Unsat flow, 0.265 cm/yr infiltration

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	0.000E+00	6.575E+01	0.4253	0.00	2	1.000E-01	6.592E+01	0.4253	0.00
3	3.000E-01	6.628E+01	0.4252	0.00	4	6.000E-01	6.682E+01	0.4252	0.00
5	1.100E+00	6.773E+01	0.4251	0.00	6	2.000E+00	6.942E+01	0.4249	0.00
7	3.500E+00	7.238E+01	0.4246	0.00	8	6.500E+00	7.891E+01	0.4238	0.00
9	1.150E+01	9.193E+01	0.4224	0.00	10	1.900E+01	1.187E+02	0.4195	0.00
11	2.400E+01	1.440E+02	0.4169	0.00	12	2.700E+01	1.636E+02	0.4149	0.00
13	2.850E+01	1.752E+02	0.4137	0.00	14	2.940E+01	1.829E+02	0.4130	0.00
15	2.990E+01	1.874E+02	0.4125	0.00	16	3.020E+01	1.902E+02	0.4123	0.00
17	3.040E+01	1.921E+02	0.4121	0.00	18	3.050E+01	1.931E+02	0.4120	0.00
19	3.060E+01	1.932E+02	0.4120	0.00	20	3.080E+01	1.931E+02	0.4120	0.00
21	3.110E+01	1.930E+02	0.4120	0.00	22	3.160E+01	1.927E+02	0.4120	0.00
23	3.250E+01	1.923E+02	0.4121	0.00	24	3.400E+01	1.916E+02	0.4121	0.00
25	3.700E+01	1.902E+02	0.4123	0.00	26	4.200E+01	1.878E+02	0.4125	0.00
27	5.200E+01	1.828E+02	0.4130	0.00	28	7.200E+01	1.722E+02	0.4140	0.00
29	1.020E+02	1.546E+02	0.4158	0.00	30	1.418E+02	1.281E+02	0.4185	0.00
31	1.718E+02	1.059E+02	0.4209	0.00	32	1.918E+02	9.011E+01	0.4226	0.00
33	2.018E+02	8.193E+01	0.4235	0.00	34	2.068E+02	7.777E+01	0.4240	0.00
35	2.098E+02	7.525E+01	0.4242	0.00	36	2.113E+02	7.399E+01	0.4244	0.00
37	2.122E+02	7.323E+01	0.4245	0.00	38	2.127E+02	7.280E+01	0.4245	0.00
39	2.130E+02	7.255E+01	0.4245	0.00	40	2.132E+02	7.238E+01	0.4246	0.00
41	2.133E+02	7.230E+01	0.4246	0.00	42	2.134E+02	7.221E+01	0.4246	0.00
43	2.135E+02	7.215E+01	0.0584	0.00	44	2.137E+02	7.215E+01	0.0584	0.00
45	2.140E+02	7.215E+01	0.0584	0.00	46	2.145E+02	7.215E+01	0.0584	0.00
47	2.154E+02	7.215E+01	0.0584	0.00	48	2.169E+02	7.215E+01	0.0584	0.00
49	2.199E+02	7.215E+01	0.0584	0.00	50	2.249E+02	7.215E+01	0.0584	0.00
51	2.349E+02	7.215E+01	0.0584	0.00	52	2.549E+02	7.216E+01	0.0584	0.00
53	2.949E+02	7.208E+01	0.0585	0.00	54	3.749E+02	7.221E+01	0.0584	0.00
55	5.249E+02	7.238E+01	0.0583	0.00	56	7.449E+02	7.175E+01	0.0586	0.00
57	9.649E+02	7.182E+01	0.0586	0.00	58	1.115E+03	7.234E+01	0.0583	0.00
59	1.265E+03	7.320E+01	0.0579	0.00	60	1.345E+03	7.338E+01	0.0578	0.00
61	1.385E+03	7.507E+01	0.0569	0.00	62	1.405E+03	8.058E+01	0.0544	0.00
63	1.415E+03	8.938E+01	0.0510	0.00	64	1.420E+03	9.943E+01	0.0479	0.00
65	1.423E+03	1.112E+02	0.0449	0.00	66	1.424E+03	1.213E+02	0.0428	0.00
67	1.425E+03	1.303E+02	0.0412	0.00	68	1.426E+03	1.370E+02	0.0402	0.00
69	1.426E+03	1.420E+02	0.0395	0.00	70	1.426E+03	1.458E+02	0.0389	0.00
71	1.426E+03	1.480E+02	0.0387	0.00	72	1.427E+03	1.502E+02	0.0384	0.00
73	1.427E+03	1.504E+02	0.4162	0.00	74	1.427E+03	1.503E+02	0.4162	0.00
75	1.427E+03	1.501E+02	0.4163	0.00	76	1.428E+03	1.498E+02	0.4163	0.00
77	1.428E+03	1.493E+02	0.4163	0.00	78	1.429E+03	1.486E+02	0.4164	0.00
79	1.431E+03	1.476E+02	0.4165	0.00	80	1.433E+03	1.464E+02	0.4166	0.00
81	1.437E+03	1.437E+02	0.4169	0.00	82	1.443E+03	1.395E+02	0.4173	0.00
83	1.453E+03	1.324E+02	0.4181	0.00	84	1.462E+03	1.258E+02	0.4188	0.00
85	1.472E+03	1.183E+02	0.4196	0.00	86	1.478E+03	1.137E+02	0.4201	0.00
87	1.482E+03	1.106E+02	0.4204	0.00	88	1.483E+03	1.093E+02	0.4205	0.00
89	1.485E+03	1.081E+02	0.4207	0.00	90	1.486E+03	1.073E+02	0.4207	0.00
91	1.486E+03	1.067E+02	0.4208	0.00	92	1.487E+03	1.063E+02	0.4208	0.00
93	1.487E+03	1.061E+02	0.4209	0.00	94	1.487E+03	1.060E+02	0.4209	0.00

```
   95 1.488E+03 1.059E+02 0.4209    0.00      96 1.488E+03 1.058E+02 0.0419    0.00
   97 1.488E+03 1.058E+02 0.0419    0.00      98 1.488E+03 1.058E+02 0.0419    0.00
   99 1.489E+03 1.058E+02 0.0419    0.00     100 1.489E+03 1.058E+02 0.0419    0.00
  101 1.490E+03 1.058E+02 0.0419    0.00     102 1.492E+03 1.058E+02 0.0419    0.00
  103 1.494E+03 1.058E+02 0.0419    0.00     104 1.498E+03 1.058E+02 0.0419    0.00
  105 1.504E+03 1.059E+02 0.0419    0.00     106 1.514E+03 1.059E+02 0.0419    0.00
  107 1.528E+03 1.059E+02 0.0419    0.00     108 1.548E+03 1.060E+02 0.0419    0.00
  109 1.577E+03 1.060E+02 0.0419    0.00     110 1.615E+03 1.061E+02 0.0418    0.00
  111 1.666E+03 1.060E+02 0.0419    0.00     112 1.718E+03 1.064E+02 0.0417    0.00
  113 1.769E+03 1.041E+02 0.0425    0.00     114 1.807E+03 8.564E+01 0.0501    0.00
  115 1.836E+03 5.972E+01 0.0711    0.00     116 1.856E+03 3.998E+01 0.1095    0.00
  117 1.870E+03 2.600E+01 0.1714    0.00     118 1.880E+03 1.600E+01 0.2504    0.00
  119 1.886E+03 1.000E+01 0.3036    0.00     120 1.890E+03 6.000E+00 0.3287    0.00
  121 1.891E+03 4.300E+00 0.3350    0.00     122 1.893E+03 2.800E+00 0.3383    0.00
  123 1.894E+03 1.800E+00 0.3394    0.00     124 1.894E+03 1.100E+00 0.3398    0.00
  125 1.895E+03 6.000E-01 0.3400    0.00     126 1.895E+03 3.000E-01 0.3400    0.00
  127 1.895E+03 1.000E-01 0.3400    0.00     128 1.896E+03 0.000E+00 0.3400    0.00

Initial Water Storage = 211.3727 cm

-------------------------------------------------------------------------------


DAILY SUMMARY:  Day =    1, Simulated Time = 24.0000 hr
-------------
Node Number        =      23          45          75          100         125
Depth (cm)         =    32.50000   214.00000  1427.10000  1489.30000  1894.90000
Water (cm3/cm3)    =     0.41207     0.05842     0.41625     0.04192     0.33996
Head (cm)          = 1.92325E+02 7.21492E+01 1.50096E+02 1.05821E+02 5.99992E-01
Water Flow (cm)    = 7.29996E-04 7.29953E-04 6.59628E-04 6.56788E-04 6.45759E-04

 PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
211.3727+ 0.0007+ 0.0000 - 0.0000- 0.0000-  0.0006 =211.3728  Versus 211.3728

Mass Balance =  1.1369E-13 cm;  Time step attempts =  388 and successes =  388

-------------------------------------------------------------------------------
DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
-------------
Node Number        =      23          45          75          100         125
Depth (cm)         =    32.50000   214.00000  1427.10000  1489.30000  1894.90000
Water (cm3/cm3)    =     0.41207     0.05842     0.41627     0.04196     0.33996
Head (cm)          = 1.92325E+02 7.21487E+01 1.49887E+02 1.05701E+02 5.99992E-01
Water Flow (cm)    = 7.29997E-04 7.29968E-04 6.64504E-04 6.61304E-04 6.45496E-04

 PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
211.4034+ 0.0007+ 0.0000 - 0.0000- 0.0000-  0.0006 =211.4035  Versus 211.4035

Mass Balance = -1.1369E-13 cm;  Time step attempts =  160 and successes =  160
1

-------------------------------------------------------------------------------
                            UNSAT-H Version 2.05
                             SIMULATION SUMMARY

Title:
TOP_04.INP: W.LARW Cell Unsat flow, 0.265 cm/yr infiltration
-------------------------------------------------------------------------------

Transpiration Scheme is:             =    0
Potential Evapotranspiration         =  0.0000E+00     [cm]
Potential Transpiration              =  0.0000E+00     [cm]
Actual Transpiration                 =  0.0000E+00     [cm]
```

```
Potential Evaporation                  =  0.0000E+00     [cm]
Actual Evaporation                     =  0.0000E+00     [cm]
Evaporation during Growth              =  0.0000E+00     [cm]
Total Runoff                           =  0.0000E+00     [cm]
Total Infiltration                     =  2.6645E-01     [cm]
Total Drainage at Base of Profile      =  2.3563E-01     [cm]
Total Applied Water                    =  2.6645E-01     [cm]
Actual Rainfall                        =  2.6645E-01     [cm]
Actual Irrigation                      =  0.0000E+00     [cm]
Total Final Moisture Storage           =  2.1140E+02     [cm]
Mass Balance Error                     =  1.3245E-11     [cm]
Total Successful Time Steps            =     58628
Total Attempted Time Steps             =     58628
Total Time Step Reductions (DHMAX)     =         0
Total Changes in Surface Boundary      =         0
Total Time Actually Simulated          =  3.6500E+02     [days]
```

Total water flow (cm) across different depths at the end of 3.6500E+02 days:

DEPTH	FLOW	DEPTH	FLOW	DEPTH	FLOW
0.000	2.6645E-01	0.050	2.6645E-01	0.200	2.6645E-01
0.450	2.6645E-01	0.850	2.6645E-01	1.550	2.6645E-01
2.750	2.6645E-01	5.000	2.6645E-01	9.000	2.6645E-01
15.250	2.6645E-01	21.500	2.6645E-01	25.500	2.6645E-01
27.750	2.6645E-01	28.950	2.6645E-01	29.650	2.6645E-01
30.050	2.6645E-01	30.300	2.6645E-01	30.450	2.6645E-01
30.550	2.6645E-01	30.700	2.6645E-01	30.950	2.6645E-01
31.350	2.6645E-01	32.050	2.6645E-01	33.250	2.6645E-01
35.500	2.6645E-01	39.500	2.6645E-01	47.000	2.6645E-01
62.000	2.6645E-01	87.000	2.6644E-01	121.900	2.6644E-01
156.800	2.6644E-01	181.800	2.6644E-01	196.800	2.6644E-01
204.300	2.6644E-01	208.300	2.6644E-01	210.550	2.6644E-01
211.750	2.6644E-01	212.450	2.6644E-01	212.850	2.6644E-01
213.100	2.6644E-01	213.250	2.6644E-01	213.350	2.6644E-01
213.450	2.6644E-01	213.600	2.6644E-01	213.850	2.6644E-01
214.250	2.6644E-01	214.950	2.6644E-01	216.150	2.6644E-01
218.400	2.6643E-01	222.400	2.6643E-01	229.900	2.6643E-01
244.900	2.6642E-01	274.900	2.6638E-01	334.900	2.6686E-01
449.900	2.6443E-01	634.900	2.6680E-01	854.900	2.7252E-01
1039.900	2.6914E-01	1189.900	2.5897E-01	1304.900	2.4998E-01
1364.900	2.4562E-01	1394.900	2.4353E-01	1409.900	2.4254E-01
1417.400	2.4208E-01	1421.400	2.4187E-01	1423.650	2.4176E-01
1424.850	2.4171E-01	1425.550	2.4169E-01	1425.950	2.4167E-01
1426.200	2.4167E-01	1426.350	2.4166E-01	1426.450	2.4166E-01
1426.550	2.4166E-01	1426.700	2.4165E-01	1426.950	2.4165E-01
1427.350	2.4164E-01	1427.950	2.4163E-01	1428.800	2.4161E-01
1430.050	2.4158E-01	1431.650	2.4155E-01	1434.500	2.4149E-01
1439.500	2.4139E-01	1447.500	2.4124E-01	1457.000	2.4107E-01
1466.500	2.4092E-01	1474.500	2.4080E-01	1479.500	2.4073E-01
1482.350	2.4069E-01	1483.950	2.4067E-01	1485.200	2.4065E-01
1486.050	2.4064E-01	1486.650	2.4063E-01	1487.050	2.4063E-01
1487.300	2.4062E-01	1487.450	2.4062E-01	1487.550	2.4062E-01
1487.700	2.4061E-01	1487.950	2.4060E-01	1488.350	2.4059E-01
1488.950	2.4057E-01	1489.800	2.4054E-01	1491.050	2.4049E-01
1492.650	2.4043E-01	1495.500	2.4032E-01	1500.500	2.4014E-01
1508.500	2.3986E-01	1520.500	2.3944E-01	1537.500	2.3889E-01
1562.000	2.3816E-01	1595.500	2.3730E-01	1640.000	2.3642E-01
1691.500	2.3580E-01	1743.000	2.3558E-01	1787.500	2.3561E-01
1821.000	2.3563E-01	1845.500	2.3563E-01	1862.500	2.3563E-01
1874.500	2.3563E-01	1882.500	2.3563E-01	1887.500	2.3563E-01
1890.350	2.3563E-01	1891.950	2.3563E-01	1893.200	2.3563E-01
1894.050	2.3563E-01	1894.650	2.3563E-01	1895.050	2.3563E-01
1895.300	2.3563E-01	1895.450	2.3563E-01	1895.500	2.3563E-01

UNSAT-H Version 2.05
INITIAL CONDITIONS

Input Filename: C:\WLARW\UnsatH\fpss_04.inp
Results Filename: E:\4101M\UNSATH\FPSS_04.res
Date of Run: 22 May 2000
Time of Run: 13:32:19.17
Title:
FPSS_04.INP: Unsat flow, side slope with frost protection, 0.3644 cm/yr infiltr

		Initial Conditions					Initial Conditions		
NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)	NODE	DEPTH (cm)	HEAD (cm)	THETA (vol.)	TEMP (K)
1	0.000E+00	2.017E+02	0.4112	0.00	2	1.000E-01	2.016E+02	0.4112	0.00
3	3.000E-01	2.014E+02	0.4112	0.00	4	6.000E-01	2.011E+02	0.4112	0.00
5	1.100E+00	2.007E+02	0.4113	0.00	6	2.000E+00	2.000E+02	0.4113	0.00
7	3.500E+00	1.987E+02	0.4115	0.00	8	6.500E+00	1.961E+02	0.4117	0.00
9	1.130E+01	1.920E+02	0.4121	0.00	10	1.430E+01	1.895E+02	0.4123	0.00
11	1.580E+01	1.882E+02	0.4125	0.00	12	1.670E+01	1.874E+02	0.4125	0.00
13	1.720E+01	1.870E+02	0.4126	0.00	14	1.750E+01	1.867E+02	0.4126	0.00
15	1.770E+01	1.865E+02	0.4126	0.00	16	1.780E+01	1.865E+02	0.4126	0.00
17	1.790E+01	1.864E+02	0.4126	0.00	18	1.810E+01	1.862E+02	0.4127	0.00
19	1.840E+01	1.859E+02	0.4127	0.00	20	1.890E+01	1.855E+02	0.4127	0.00
21	1.980E+01	1.847E+02	0.4128	0.00	22	2.130E+01	1.834E+02	0.4129	0.00
23	2.410E+01	1.810E+02	0.4132	0.00	24	2.700E+01	1.785E+02	0.4134	0.00
25	2.850E+01	1.772E+02	0.4135	0.00	26	2.940E+01	1.764E+02	0.4136	0.00
27	2.990E+01	1.759E+02	0.4137	0.00	28	3.020E+01	1.757E+02	0.4137	0.00
29	3.040E+01	1.755E+02	0.4137	0.00	30	3.050E+01	1.754E+02	0.4137	0.00
31	3.060E+01	1.754E+02	0.4137	0.00	32	3.080E+01	1.753E+02	0.4137	0.00
33	3.110E+01	1.752E+02	0.4137	0.00	34	3.160E+01	1.750E+02	0.4138	0.00
35	3.250E+01	1.746E+02	0.4138	0.00	36	3.400E+01	1.741E+02	0.4138	0.00
37	3.700E+01	1.729E+02	0.4140	0.00	38	4.200E+01	1.709E+02	0.4142	0.00
39	5.200E+01	1.668E+02	0.4146	0.00	40	7.200E+01	1.579E+02	0.4155	0.00
41	1.020E+02	1.428E+02	0.4170	0.00	42	1.418E+02	1.194E+02	0.4195	0.00
43	1.718E+02	9.909E+01	0.4216	0.00	44	1.918E+02	8.438E+01	0.4232	0.00
45	2.018E+02	7.668E+01	0.4241	0.00	46	2.068E+02	7.274E+01	0.4245	0.00
47	2.098E+02	7.035E+01	0.4248	0.00	48	2.113E+02	6.915E+01	0.4249	0.00
49	2.122E+02	6.843E+01	0.4250	0.00	50	2.127E+02	6.802E+01	0.4250	0.00
51	2.130E+02	6.778E+01	0.4251	0.00	52	2.132E+02	6.762E+01	0.4251	0.00
53	2.133E+02	6.754E+01	0.4251	0.00	54	2.134E+02	6.746E+01	0.4251	0.00
55	2.135E+02	6.740E+01	0.0611	0.00	56	2.137E+02	6.740E+01	0.0611	0.00
57	2.140E+02	6.740E+01	0.0611	0.00	58	2.145E+02	6.740E+01	0.0611	0.00
59	2.154E+02	6.740E+01	0.0611	0.00	60	2.169E+02	6.740E+01	0.0611	0.00
61	2.199E+02	6.740E+01	0.0611	0.00	62	2.249E+02	6.740E+01	0.0611	0.00
63	2.349E+02	6.740E+01	0.0611	0.00	64	2.549E+02	6.740E+01	0.0611	0.00
65	2.949E+02	6.743E+01	0.0611	0.00	66	3.749E+02	6.736E+01	0.0611	0.00
67	5.242E+02	6.744E+01	0.0611	0.00	68	6.042E+02	6.725E+01	0.0612	0.00
69	6.442E+02	6.828E+01	0.0606	0.00	70	6.642E+02	7.273E+01	0.0581	0.00
71	6.742E+02	8.034E+01	0.0545	0.00	72	6.792E+02	8.928E+01	0.0510	0.00
73	6.822E+02	9.997E+01	0.0477	0.00	74	6.837E+02	1.093E+02	0.0453	0.00
75	6.846E+02	1.177E+02	0.0435	0.00	76	6.851E+02	1.242E+02	0.0423	0.00
77	6.854E+02	1.290E+02	0.0414	0.00	78	6.856E+02	1.327E+02	0.0408	0.00
79	6.857E+02	1.348E+02	0.0405	0.00	80	6.858E+02	1.371E+02	0.0402	0.00
81	6.859E+02	1.373E+02	0.4176	0.00	82	6.861E+02	1.372E+02	0.4176	0.00
83	6.864E+02	1.370E+02	0.4176	0.00	84	6.869E+02	1.367E+02	0.4176	0.00
85	6.876E+02	1.363E+02	0.4177	0.00	86	6.886E+02	1.358E+02	0.4177	0.00
87	6.901E+02	1.349E+02	0.4178	0.00	88	6.918E+02	1.339E+02	0.4179	0.00
89	6.958E+02	1.316E+02	0.4182	0.00	90	7.018E+02	1.281E+02	0.4185	0.00
91	7.108E+02	1.225E+02	0.4191	0.00	92	7.218E+02	1.155E+02	0.4199	0.00
93	7.308E+02	1.096E+02	0.4205	0.00	94	7.368E+02	1.055E+02	0.4209	0.00

```
    95 7.408E+02 1.027E+02 0.4212   0.00     96 7.425E+02 1.015E+02 0.4214   0.00
    97 7.440E+02 1.005E+02 0.4215   0.00     98 7.450E+02 9.978E+01 0.4216   0.00
    99 7.457E+02 9.928E+01 0.4216   0.00    100 7.462E+02 9.892E+01 0.4217   0.00
   101 7.465E+02 9.871E+01 0.4217   0.00    102 7.467E+02 9.857E+01 0.4217   0.00
   103 7.468E+02 9.850E+01 0.4217   0.00    104 7.469E+02 9.845E+01 0.0444   0.00
   105 7.471E+02 9.845E+01 0.0444   0.00    106 7.474E+02 9.845E+01 0.0444   0.00
   107 7.479E+02 9.845E+01 0.0444   0.00    108 7.486E+02 9.845E+01 0.0444   0.00
   109 7.496E+02 9.845E+01 0.0444   0.00    110 7.511E+02 9.845E+01 0.0444   0.00
   111 7.528E+02 9.845E+01 0.0444   0.00    112 7.568E+02 9.845E+01 0.0444   0.00
   113 7.628E+02 9.845E+01 0.0444   0.00    114 7.728E+02 9.845E+01 0.0444   0.00
   115 7.868E+02 9.846E+01 0.0444   0.00    116 8.068E+02 9.846E+01 0.0444   0.00
   117 8.358E+02 9.846E+01 0.0444   0.00    118 8.738E+02 9.847E+01 0.0444   0.00
   119 9.238E+02 9.846E+01 0.0444   0.00    120 9.780E+02 9.855E+01 0.0444   0.00
   121 1.028E+03 9.814E+01 0.0445   0.00    122 1.066E+03 8.412E+01 0.0509   0.00
   123 1.095E+03 5.957E+01 0.0713   0.00    124 1.115E+03 3.996E+01 0.1096   0.00
   125 1.129E+03 2.600E+01 0.1714   0.00    126 1.139E+03 1.600E+01 0.2504   0.00
   127 1.145E+03 1.000E+01 0.3036   0.00    128 1.149E+03 6.000E+00 0.3287   0.00
   129 1.151E+03 4.300E+00 0.3350   0.00    130 1.152E+03 2.800E+00 0.3383   0.00
   131 1.153E+03 1.800E+00 0.3394   0.00    132 1.154E+03 1.100E+00 0.3398   0.00
   133 1.154E+03 6.000E-01 0.3400   0.00    134 1.155E+03 3.000E-01 0.3400   0.00
   135 1.155E+03 1.000E-01 0.3400   0.00    136 1.155E+03 0.000E+00 0.3400   0.00
 Initial Water Storage = 170.3078 cm

--------------------------------------------------------------------------------
 DAILY SUMMARY:  Day =    1, Simulated Time = 24.0000 hr
 -------------
 Node Number         =        23         45          75         100         126
 Depth (cm)          =     24.10000  201.80000   684.60000   746.20000  1139.00000
 Water (cm3/cm3)     =      0.41316    0.42409     0.04350     0.42165     0.25038
 Head (cm)           = 1.81003E+02 7.66802E+01 1.17717E+02 9.89245E+01 1.59992E+01
 Water Flow (cm)     = 9.90000E-04 9.90002E-04 9.91306E-04 9.91192E-04 9.88794E-04

  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
 170.3078+ 0.0010+ 0.0000 - 0.0000- 0.0000-  0.0010 =170.3078  Versus 170.3078

 Mass Balance = -1.7053E-13 cm;  Time step attempts =  388 and successes =  388
--------------------------------------------------------------------------------
 DAILY SUMMARY:  Day = 365, Simulated Time = 24.0000 hr
 -------------
 Node Number         =        23         45          75         100         126
 Depth (cm)          =     24.10000  201.80000   684.60000   746.20000  1139.00000
 Water (cm3/cm3)     =      0.41316    0.42409     0.04350     0.42165     0.25038
 Head (cm)           = 1.81003E+02 7.66802E+01 1.17712E+02 9.89209E+01 1.59992E+01
 Water Flow (cm)     = 9.90000E-04 9.90001E-04 9.91406E-04 9.91354E-04 9.89247E-04

  PRESTOR   INFIL  RUNOFF    EVAPO   TRANS    DRAIN   NEWSTOR          STORAGE
 170.3081+ 0.0010+ 0.0000 - 0.0000- 0.0000-  0.0010 =170.3081  Versus 170.3081

 Mass Balance = -3.6948E-13 cm;  Time step attempts =  160 and successes =  160
1
--------------------------------------------------------------------------------
                            UNSAT-H Version 2.05
                             SIMULATION SUMMARY
 Title:
 FPSS_04.INP: Unsat flow, side slope with frost protection, 0.3644 cm/yr infiltr
--------------------------------------------------------------------------------
 Transpiration Scheme is:              =    0
 Potential Evapotranspiration          =  0.0000E+00     [cm]
 Potential Transpiration               =  0.0000E+00     [cm]
 Actual Transpiration                  =  0.0000E+00     [cm]
 Potential Evaporation                 =  0.0000E+00     [cm]
 Actual Evaporation                    =  0.0000E+00     [cm]
 Evaporation during Growth             =  0.0000E+00     [cm]
```

```
Total Runoff                          =  0.0000E+00      [cm]
Total Infiltration                    =  3.6135E-01      [cm]
Total Drainage at Base of Profile     =  3.6099E-01      [cm]
Total Applied Water                   =  3.6135E-01      [cm]
Actual Rainfall                       =  3.6135E-01      [cm]
Actual Irrigation                     =  0.0000E+00      [cm]
Total Final Moisture Storage          =  1.7031E+02      [cm]
Mass Balance Error                    = -3.8170E-11      [cm]
Total Successful Time Steps           =     58628
Total Attempted Time Steps            =     58628
Total Time Step Reductions (DHMAX)    =         0
Total Changes in Surface Boundary     =         0
Total Time Actually Simulated         =  3.6500E+02      [days]
```

Total water flow (cm) across different depths at the end of 3.6500E+02 days:

DEPTH	FLOW	DEPTH	FLOW	DEPTH	FLOW
0.000	3.6135E-01	0.050	3.6135E-01	0.200	3.6135E-01
0.450	3.6135E-01	0.850	3.6135E-01	1.550	3.6135E-01
2.750	3.6135E-01	5.000	3.6135E-01	8.900	3.6135E-01
12.800	3.6135E-01	15.050	3.6135E-01	16.250	3.6135E-01
16.950	3.6135E-01	17.350	3.6135E-01	17.600	3.6135E-01
17.750	3.6135E-01	17.850	3.6135E-01	18.000	3.6135E-01
18.250	3.6135E-01	18.650	3.6135E-01	19.350	3.6135E-01
20.550	3.6135E-01	22.700	3.6135E-01	25.550	3.6135E-01
27.750	3.6135E-01	28.950	3.6135E-01	29.650	3.6135E-01
30.050	3.6135E-01	30.300	3.6135E-01	30.450	3.6135E-01
30.550	3.6135E-01	30.700	3.6135E-01	30.950	3.6135E-01
31.350	3.6135E-01	32.050	3.6135E-01	33.250	3.6135E-01
35.500	3.6135E-01	39.500	3.6135E-01	47.000	3.6135E-01
62.000	3.6135E-01	87.000	3.6135E-01	121.900	3.6135E-01
156.800	3.6135E-01	181.800	3.6135E-01	196.800	3.6135E-01
204.300	3.6135E-01	208.300	3.6135E-01	210.550	3.6135E-01
211.750	3.6135E-01	212.450	3.6135E-01	212.850	3.6135E-01
213.100	3.6135E-01	213.250	3.6135E-01	213.350	3.6135E-01
213.450	3.6135E-01	213.600	3.6135E-01	213.850	3.6135E-01
214.250	3.6135E-01	214.950	3.6135E-01	216.150	3.6135E-01
218.400	3.6135E-01	222.400	3.6135E-01	229.900	3.6135E-01
244.900	3.6135E-01	274.900	3.6136E-01	334.900	3.6127E-01
449.550	3.6154E-01	564.200	3.6182E-01	624.200	3.6188E-01
654.200	3.6187E-01	669.200	3.6186E-01	676.700	3.6186E-01
680.700	3.6185E-01	682.950	3.6185E-01	684.150	3.6185E-01
684.850	3.6185E-01	685.250	3.6185E-01	685.500	3.6185E-01
685.650	3.6185E-01	685.750	3.6185E-01	685.850	3.6185E-01
686.000	3.6185E-01	686.250	3.6185E-01	686.650	3.6185E-01
687.250	3.6185E-01	688.100	3.6185E-01	689.350	3.6185E-01
690.950	3.6185E-01	693.800	3.6184E-01	698.800	3.6184E-01
706.300	3.6184E-01	716.300	3.6183E-01	726.300	3.6183E-01
733.800	3.6182E-01	738.800	3.6182E-01	741.650	3.6182E-01
743.250	3.6182E-01	744.500	3.6182E-01	745.350	3.6182E-01
745.950	3.6182E-01	746.350	3.6182E-01	746.600	3.6182E-01
746.750	3.6182E-01	746.850	3.6182E-01	747.000	3.6182E-01
747.250	3.6182E-01	747.650	3.6182E-01	748.250	3.6182E-01
749.100	3.6182E-01	750.350	3.6181E-01	751.950	3.6181E-01
754.800	3.6181E-01	759.800	3.6180E-01	767.800	3.6179E-01
779.800	3.6177E-01	796.800	3.6173E-01	821.300	3.6168E-01
854.800	3.6159E-01	898.800	3.6146E-01	950.900	3.6130E-01
1003.000	3.6114E-01	1047.000	3.6103E-01	1080.500	3.6100E-01
1105.000	3.6099E-01	1122.000	3.6099E-01	1134.000	3.6099E-01
1142.000	3.6099E-01	1147.000	3.6099E-01	1149.850	3.6099E-01
1151.450	3.6099E-01	1152.700	3.6099E-01	1153.550	3.6099E-01
1154.150	3.6099E-01	1154.550	3.6099E-01	1154.800	3.6099E-01
1154.950	3.6099E-01	1155.000	3.6099E-01		

Whetstone Associates

ATTACHMENT 5
RESULTS FOR SAMPLE INPUT FILE USING RECOMPILED PATHRAE MODEL CODE

Prepared for

Envirocare of Utah, Inc.
46 West Broadway, Suite 116
Salt Lake City, Utah 84101

Prepared by

Whetstone Associates, Inc..
13685 West Wesley Avenue
Lakewood, Colorado 80228-4744
303-716-9303
Document 4101M.000719

July 19, 2000

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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date:  5-16-2000
  Time: 11:21:45
RISK ASSESSMENT
*****  Mirror Image of Input Files  *****
-- Input File:  ABCDEF.DAT
RISK ASSESSMENT
20,0.,25.,50.,75.,100.,150.,200.,250.,300.,350.,400.,450.,500.,600.,700.,750.,850.,1000.,1500.,2000.
34,0,5
2,2, 5,0, 6,0, 7,0, 8,0,
0.,600.,120.,1.0E+10,1.,100.,0.
1600.,1.,0.,0.,.65,0.,10.,.25
20,0,0,1,1,1
0.15,4.85,3.49E+05,0.,0.,1500.,.40,.705,0.90,1.
1.0E-7,8000.,.81,0.,5.24E+11
240.,5.56E-4,.22,.02,3.0E-4,20.,.01
4,6.3,.23,0.,1.1E-06,.01,0.,0.,0.,0.,0.
0,0,0,0,0,0,0
1,0,0,0
.50,70.,.25,25.,0.,10.,2.5E-4,1.,9.4E-03,.2
-- Input File:  BRCDCF.DAT
 41,U-238     2.3E-04,  1.2E-01,  6.5E-08,
371,Th-234    1.3E-05,  3.3E-05,  1.0E-06,
248,Pa-234m   2.1E-06,  7.4E-07,  1.1E-06,
 38,U-234     2.6E-04,  1.3E-01,  8.1E-08,
 36,Th-230    5.3E-04,  3.2E-01,  9.1E-08,
 55,Ra-226    1.1E-03,  7.9E-03,  7.6E-07,
310,Rn-222      0.,       0.,     4.0E-08,
276,Po-218      0.,       0.,       0.,
258,Pb-214    5.8E-07,  6.7E-06,  2.7E-05,
120,Bi-214    2.4E-07,  6.3E-06,  1.4E-04,
270,Po-214      0.,       0.,     8.4E-09,
250,Pb-210    5.1E-03,  1.3E-02,  3.0E-07,
116,Bi-210    5.9E-06,  1.9E-04,    0.,
266,Po-210    1.6E-03,  8.1E-03,  8.6E-10,
 37,Th-232    2.8E-03,  1.6E+00,  6.7E-08,
296,Ra-228    1.2E-03,  4.2E-03,  6.7E-14,
102,Ac-228    2.1E-06,  2.9E-04,  9.1E-05,
368,Th-228    3.8E-04,  3.1E-01,  2.8E-07,
292,Ra-224    3.3E-04,  2.9E-03,  1.1E-06,
308,Rn-220      0.,       0.,     5.4E-08,
272,Po-216      0.,       0.,     1.5E-09,
254,Pb-212    4.1E-05,  1.6E-04,  1.6E-05,
118,Bi-212    9.9E-07,  2.1E-05,  1.8E-05,
268,Po-212      0.,       0.,       0.,
372,Tl-208      0.,       0.,     3.0E-04,
 39,U-235     2.5E-04,  1.2E-01,  1.7E-05,
 52,Th-231    1.3E-06,  8.1E-07,  1.9E-06,
 53,Pa-231    1.1E-02,  1.3E+00,  3.6E-06,
101,Ac-227    1.4E-02,  6.7E+00,  2.1E-08,
367,Th-227    3.6E-05,  1.6E-02,  1.2E-05,
291,Ra-223    5.5E-04,  7.5E-03,  1.5E-05,
307,Rn-219      0.,       0.,     6.2E-06,
252,Pb-211    4.4E-07,  9.0E-06,  5.2E-06,
117,Bi-211      0.,       0.,     5.1E-06,
-- Input File:  INVNTRY.DAT
 41, 4.47E+09, 1.0E-12, 37.5,  .066,      0., 0.,    1.,  U-238
371, 4.47E+09, 1.0E-12, 30.8,  .081,      0., 0.,    1.,  Th-234
248, 4.47E+09, 1.0E-12, 12.0,  .718,      0., 0.,    1.,  Pa-234m
 38, 2.44E+05, 1.0E-12, 35.5,  .070,      0., 0.,    1.,  U-234
 36, 7.77E+04, 1.0E-12, 30.3,  .084,      0., 0.,    1.,  Th-230
 55, 1.60E+03, 1.0E-12, 21.5,  .170,      0., 0.,    1.,  Ra-226
310, 1.60E+03, 1.0E-12, 13.9,  .512,      0., 0.,    1.,  Rn-222
276, 1.60E+03, 1.0E-12,  0.0,  .000,      0., 0.,    1.,  Po-218
258, 1.60E+03, 1.0E-12, 18.1,  .273,      0., 0.,    1.,  Pb-214
120, 1.60E+03, 1.0E-12,  9.8, 1.112,      0., 0.,    1.,  Bi-214
270, 1.60E+03, 1.0E-12, 11.3,  .797,      0., 0.,    1.,  Po-214
250, 1.60E+03, 1.0E-12, 59.0,  .047,      0., 0.,    1.,  Pb-210
116, 1.60E+03, 1.0E-12,  0.0,  .000,      0., 0.,    1.,  Bi-210
266, 1.60E+03, 1.0E-12,  0.0,  .000,      0., 0.,    1.,  Po-210
 37, 1.40E+10, 1.0E-12, 35.5,  .070,      0., 0.,    1.,  Th-232
296, 1.40E+10, 1.0E-12,  0.0,  .000,      0., 0.,    1.,  Ra-228
102, 1.40E+10, 1.0E-12, 11.9,  .731,      0., 0.,    1.,  Ac-228
368, 1.40E+10, 1.0E-12, 25.9,  .112,      0., 0.,    1.,  Th-228
292, 1.40E+10, 1.0E-12, 19.3,  .230,      0., 0.,    1.,  Ra-224
308, 1.40E+10, 1.0E-12, 13.5,  .550,      0., 0.,    1.,  Rn-220
272, 1.40E+10, 1.0E-12,  0.0,  .000,      0., 0.,    1.,  Po-216
254, 1.40E+10, 1.0E-12, 21.4,  .171,      0., 0.,    1.,  Pb-212
118, 1.40E+10, 1.0E-12, 11.0,  .861,      0., 0.,    1.,  Bi-212
268, 1.40E+10, 6.4E-13,  0.0,  .000,      0., 0.,    1.,  Po-212
372, 1.40E+10, 3.6E-13, 12.0,  .721,      0., 0.,    1.,  Tl-208
 39, 7.04E+08, 4.6E-14, 21.6,  .169,      0., 0.,    1.,  U-235
 52, 7.04E+08, 4.6E-14, 35.3,  .071,      0., 0.,    1.,  Th-231
 53, 3.28E+04, 4.6E-14, 22.8,  .146,      0., 0.,    1.,  Pa-231
101, 3.28E+04, 4.6E-14, 29.6,  .087,      0., 0.,    1.,  Ac-227
367, 3.28E+04, 4.6E-14, 20.3,  .197,      0., 0.,    1.,  Th-227
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291, 3.28E+04, 4.6E-14,  22.2,  .154,       0., 0.,     1.,  Ra-223
307, 3.28E+04, 4.6E-14,  17.3,  .298,       0., 0.,     1.,  Rn-219
252, 3.28E+04, 4.6E-14,  13.2,  .577,       0., 0.,     1.,  Pb-211
117, 3.28E+04, 4.6E-14,  17.2,  .305,       0., 0.,     1.,  Bi-211
-- Input File:  RQSITE.DAT
 41, 2.61E-1,   0.13,      0.13,  U-238
371, 2.61E-1,   0.13,      0.13,  Th-234
248, 2.61E-1,   0.13,      0.13,  Pa-234m
 38, 2.61E-1,   0.13,      0.13,  U-234
 36, 4.58E-6, 15000.,   15000.,  Th-230
 55, 6.48E-4,   106.,      106.,  Ra-226
310, 6.48E-4,   106.,      106.,  Rn-222
276, 6.48E-4,   106.,      106.,  Po-218
258, 6.48E-4,   106.,      106.,  Pb-214
120, 6.48E-4,   106.,      106.,  Bi-214
270, 6.48E-4,   106.,      106.,  Po-214
250, 6.48E-4,   106.,      106.,  Pb-210
116, 6.48E-4,   106.,      106.,  Bi-210
266, 6.48E-4,   106.,      106.,  Po-210
 37, 4.58E-6, 15000.,   15000.,  Th-232
296, 4.58E-6, 15000.,   15000.,  Ra-228
102, 4.58E-6, 15000.,   15000.,  Ac-228
368, 4.58E-6, 15000.,   15000.,  Th-228
292, 4.58E-6, 15000.,   15000.,  Ra-224
308, 4.58E-6, 15000.,   15000.,  Rn-220
272, 4.58E-6, 15000.,   15000.,  Po-216
254, 4.58E-6, 15000.,   15000.,  Pb-212
118, 4.58E-6, 15000.,   15000.,  Bi-212
268, 4.58E-6, 15000.,   15000.,  Po-212
372, 4.58E-6, 15000.,   15000.,  Tl-208
 39, 2.61E-1,   0.13,      0.13,  U-235
 52, 2.61E-1,   0.13,      0.13,  Th-231
 53, 2.61E-1,   0.13,      0.13,  Pa-231
101, 2.61E-1,   0.13,      0.13,  Ac-227
367, 2.61E-1,   0.13,      0.13,  Th-227.
291, 2.61E-1,   0.13,      0.13,  Ra-223
307, 2.61E-1,   0.13,      0.13,  Rn-219
252, 2.61E-1,   0.13,      0.13,  Pb-211
117, 2.61E-1,   0.13,      0.13,  Bi-211
-- Input File:  UPTAKE.DAT
0.5,    0.2,     1.50
0.67,   0.65,    2.1E-3,  8766.,   8766.
0.0,    2160.,   24.,       1440.,     1.,  0.83
50.,    6.,      48.,        480.,     48.
1.0,    0.023,   60.,          8.,     50.
0.,     62.,     0.,           0.,     0.,    510.,  0.
U-238              .25, 2.5E-3, 2.5E-4, 5.0E-4,    0., 3.4E-4, 2.0E+0
Th-234             .25, 4.2E-3, 4.2E-4, 5.0E-6,    0., 2.0E-4, 3.0E+1
Pa-234m            .25, 2.5E-3, 2.5E-4, 5.0E-6,    0., 8.0E-2, 1.1E+1
U-234              .25, 2.5E-3, 2.5E-4, 5.0E-4,    0., 3.4E-4, 2.0E+0
Th-230             .25, 4.2E-3, 4.2E-4, 5.0E-6,    0., 2.0E-4, 3.0E+1
Ra-226             .25, 3.1E-4, 3.1E-5, 8.0E-3,    0., 3.4E-2, 5.0E+1
Rn-222             .25, 3.5E+0, 3.5E-1, 2.0E-2,    0., 2.0E-2, 1.0E+0
Po-218             .25, 1.5E-1, 1.5E-2, 3.0E-4,    0., 1.2E-2, 5.0E+2
Pb-214             .25, 6.8E-2, 6.8E-3, 6.2E-4,    0., 2.9E-4, 1.0E+2
Bi-214             .25, 1.5E-1, 1.5E-2, 5.0E-4,    0., 1.3E-2, 1.5E+1
Po-214             .25, 1.5E-1, 1.5E-2, 3.0E-4,    0., 1.2E-2, 5.0E+2
Pb-210             .25, 6.8E-2, 6.8E-3, 6.2E-4,    0., 2.9E-4, 1.0E+2
Bi-210             .25, 1.5E-1, 1.5E-2, 5.0E-4,    0., 1.3E-2, 1.5E+1
Po-210             .25, 1.5E-1, 1.5E-2, 3.0E-4,    0., 1.2E-2, 5.0E+2
Th-232             .25, 4.2E-3, 4.2E-4, 5.0E-6,    0., 2.0E-4, 3.0E+1
Ra-228             .25, 3.1E-4, 3.1E-5, 8.0E-3,    0., 3.4E-2, 5.0E+1
Ac-228             .25, 2.5E-3, 2.5E-4, 5.0E-6,    0., 6.0E-2, 2.5E+1
Th-228             .25, 4.2E-3, 4.2E-4, 5.0E-6,    0., 2.0E-4, 3.0E+1
Ra-224             .25, 3.1E-4, 3.1E-5, 8.0E-3,    0., 3.4E-2, 5.0E+1
Rn-220             .25, 3.5E+0, 3.5E-1, 2.0E-2,    0., 2.0E-2, 1.0E+0
Po-216             .25, 1.5E-1, 1.5E-2, 3.0E-4,    0., 1.2E-2, 5.0E+2
Pb-212             .25, 6.8E-2, 6.8E-3, 6.2E-4,    0., 2.9E-4, 1.0E+2
Bi-212             .25, 1.5E-1, 1.5E-2, 5.0E-4,    0., 1.3E-2, 1.5E+1
Po-212             .25, 1.5E-1, 1.5E-2, 3.0E-4,    0., 1.2E-2, 5.0E+2
Tl-208             .25, 2.5E-1, 2.5E-2, 2.2E-2,    0., 4.0E-2, 1.0E+4
U-235              .25, 2.5E-3, 2.5E-4, 5.0E-4,    0., 3.4E-4, 2.0E+0
Th-231             .25, 4.2E-3, 4.2E-4, 5.0E-6,    0., 2.0E-4, 3.0E+1
Pa-231             .25, 2.5E-3, 2.5E-4, 5.0E-6,    0., 8.0E+2, 1.1E+1
Ac-227             .25, 2.5E-3, 2.5E-4, 5.0E-6,    0., 6.0E-2, 2.5E+1
Th-227             .25, 4.2E-3, 4.2E-4, 5.0E-6,    0., 2.0E-4, 3.0E+1
Ra-223             .25, 3.1E-4, 3.1E-5, 8.0E-3,    0., 3.4E-2, 5.0E+1
Rn-219             .25, 3.5E+0, 3.5E-1, 2.0E-2,    0., 2.0E-2, 1.0E-0
Pb-211             .25, 6.8E-2, 6.8E-3, 6.2E-4,    0., 2.9E-4, 1.0E+2
Bi-211             .25, 1.5E-1, 1.5E-2, 5.0E-4,    0., 1.3E-2, 1.5E+1
1

                         TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
                  UT(J,1)    UT(J,2)    UT(J,3)    UT(J,4)    UT(J,5)    UT(J,6)
                   RIVER      WELL      EROSION    BATHTUB   SPILLAGE     FOOD
NUCLIDE            L/YR       L/YR       L/YR       L/YR       L/YR       KG/YR
  Th-234        5.361E-02  5.361E-02  5.361E-02  5.361E-02  5.361E+02  4.869E-03
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Pa-234m	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	2.899E-03
Rn-222	5.379E+02	5.379E+02	1.053E+03	1.023E+03	1.007E+03	4.058E+00
Po-218	5.362E+02	5.362E+02	5.583E+02	5.570E+02	5.563E+02	1.739E-01
Pb-214	5.361E+02	5.361E+02	5.462E+02	5.456E+02	5.453E+02	7.883E-02
Bi-214	5.362E+02	5.362E+02	5.583E+02	5.570E+02	5.563E+02	1.739E-01
Po-214	5.362E+02	5.362E+02	5.583E+02	5.570E+02	5.563E+02	1.739E-01
Pb-210	5.361E+02	5.361E+02	5.462E+02	5.456E+02	5.453E+02	7.883E-02
Bi-210	5.362E+02	5.362E+02	5.583E+02	5.570E+02	5.563E+02	1.739E-01
Po-210	5.362E+02	5.362E+02	5.583E+02	5.570E+02	5.563E+02	1.739E-01
Ra-228	5.361E+02	5.361E+02	5.363E+02	5.364E+02	5.362E+02	3.594E-04
Ac-228	5.361E+02	5.361E+02	5.379E+02	5.387E+02	5.369E+02	2.899E-03
Th-228	5.361E+02	5.361E+02	5.391E+02	5.404E+02	5.374E+02	4.869E-03
Ra-224	5.361E+02	5.361E+02	5.363E+02	5.364E+02	5.362E+02	3.594E-04
Rn-220	5.379E+02	5.379E+02	3.045E+03	4.095E+03	1.620E+03	4.058E+00
Po-216	5.362E+02	5.362E+02	6.436E+02	6.886E+02	5.826E+02	1.739E-01
Pb-212	5.362E+02	5.362E+02	5.849E+02	6.053E+02	5.572E+02	7.884E-02
Bi-212	5.362E+02	5.362E+02	6.436E+02	6.886E+02	5.826E+02	1.739E-01
Po-212	5.362E+02	5.362E+02	6.436E+02	6.886E+02	5.826E+02	1.739E-01
Tl-208	5.362E+02	5.362E+02	7.153E+02	7.903E+02	6.135E+02	2.898E-01
Ac-227	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	2.898E-03
Th-227	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	4.869E-03
Ra-223	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	3.594E-04
Rn-219	5.372E+02	5.372E+02	5.382E+02	5.382E+02	5.383E+02	4.058E+00
Pb-211	5.361E+02	5.361E+02	5.362E+02	5.362E+02	5.362E+02	7.884E-02
Bi-211	5.362E+02	5.362E+02	5.362E+02	5.362E+02	5.362E+02	1.739E-01
Th-230	5.361E+02	5.361E+02	5.391E+02	5.403E+02	5.374E+02	4.869E-03
Th-232	5.361E+02	5.361E+02	5.391E+02	5.404E+02	5.374E+02	4.869E-03
U-234	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	2.898E-03
U-235	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	2.899E-03
U-238	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	2.899E-03
Th-231	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	4.869E-03
Pa-231	5.361E+02	5.361E+02	5.361E+02	5.361E+02	5.361E+02	2.898E-03
Ra-226	5.361E+02	5.361E+02	5.362E+02	5.362E+02	5.362E+02	3.594E-04

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********** PATHRAE INPUT SUMMARY **********
THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
NUMBER OF TIMES FOR CALCULATION IS 20
YEARS TO BE CALCULATED ARE ...
     .00     25.00     50.00     75.00    100.00
   150.00   200.00    250.00    300.00    350.00
   400.00   450.00    500.00    600.00    700.00
   750.00   850.00   1000.00   1500.00   2000.00
THERE ARE  34 ISOTOPES IN THE INVENTORY FILE
THE VALUE OF IFLAG IS 0
NUMBER OF PATHWAYS IS  5
           PATHWAY       .      TYPE OF USAGE
                               FOR UPTAKE FACTORS
   2  GROUNDWATER TO WELL            2
   5  FOOD GROWN ON SITE             0
   6  NATURAL BIOINTRUSION           0
   7  DIRECT GAMMA                   0
   8  DUST INHALATION                0
TIME OF OPERATION OF WASTE FACILITY IN YEARS                 0.
LENGTH OF REPOSITORY (M)                                   600.
WIDTH OF REPOSITORY (M)                                    120.
RIVER FLOW RATE (M**3/YR)                                    1.00E+10
STREAM FLOW RATE (M**3/YR)                                   1.00E+00
DISTANCE TO RIVER (M)                                      100.
OPERATIONAL SPILLAGE FRACTION                                0.00E+00
DENSITY OF AQUIFER (KG/M**3)                              1600.
LONGITUDINAL DISPERSIVITY (M)                                1.00E+00
LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)           0.00E+00
NUMBER OF MESH POINTS FOR DISPERSION CALCULATION            20
FLAG FOR GAMMA PATHWAY OPTIONS                               0
FLAG FOR GAMMA BUILDUP CALCULATION                           1
FLAG FOR ATMOSPHERIC PATHWAY                                 0
COVER THICKNESS OVER WASTE (M)                                .15
THICKNESS OF WASTE IN PITS (M)                               4.85
TOTAL WASTE VOLUME (M**3)                                    3.490E+05
DISTANCE TO WELL -- X COORDINATE (M)                         0.
DISTANCE TO WELL -- Y COORDINATE (M)                         0.
DENSITY OF WASTE (KG/M**3)                                1500.
FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE               .400
FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD              .705
DEPTH OF PLANT ROOT ZONE (M)                                  .900
AREAL DENSITY OF PLANTS (KG/M**2)                            1.000
AVERAGE DUST LOADING IN AIR (KG/M**3)                        1.00E-07
ANNUAL ADULT BREATHING RATE (M**3/YR)                     8000.
FRACTION OF YEAR EXPOSED TO DUST                              .810
CANISTER LIFETIME (YEARS)                                    0.
INVENTORY SCALING FACTOR                                     5.24E+11
HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                    240.
AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)             5.56E-04
RADON EMANATING POWER OF THE WASTE                           2.20E-01
DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)               2.00E-02
DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)               3.00E-04
THICKNESS OF CONCRETE SLAB FLOOR (CM)                       20.0
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DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)	1.00E-02
ATMOSPHERIC STABILITY CLASS	4
AVERAGE WIND SPEED (M/S)	6.30
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR	.2300
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)	.0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)	1.10E-06
DEPOSITION VELOCITY (M/S)	.0100
STACK HEIGHT (M)	.0
STACK INSIDE DIAMETER (M)	.00
STACK GAS VELOCITY (M/S)	.0
HEAT EMISSION RATE FROM BURNING (CAL/S)	0.00E+00
DECAY CHAIN FLAGS 0 0 0 0 0 0	0
FLAG FOR INPUT SUMMARY PRINTOUT	1
FLAG FOR DIRECTION OF TRENCH FILLING	0
FLAG FOR GROUNDWATER PATHWAY OPTIONS	0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)	5.00E-01
DEGREE OF SOIL SATURATION	.650
RESIDUAL SOIL SATURATION	.000
PERMEABILITY OF VERTICAL ZONE (M/YR)	10.00
SOIL NUMBER	.250
POROSITY OF AQUIFER	.25
POROSITY OF UNSATURATED ZONE	.20
DISTANCE FROM AQUIFER TO WASTE (M)	25.0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)	3.85E+00
HORIZONTAL VELOCITY OF AQUIFER (M/YR)	70.0
LENGTH OF PERFORATED WELL CASING (M)	10.000
SURFACE EROSION RATE (M/YR)	2.500E-04
LEACH RATE SCALING FACTOR	1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)	9.40E-03

NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Th-234	1.300E-05	3.300E-05	1.000E-06	4.470E-09
Pa-234m	2.100E-06	7.400E-07	1.100E-06	4.470E+09
Rn-222	0.000E+00	0.000E+00	4.000E-08	1.600E+03
Po-218	0.000E+00	0.000E+00	0.000E+00	1.600E+03
Pb-214	5.800E-07	6.700E-06	2.700E-05	1.600E+03
Bi-214	2.400E-07	6.300E-06	1.400E-04	1.600E+03
Po-214	0.000E+00	0.000E+00	8.400E-09	1.600E+03
Pb-210	5.100E-03	1.300E-02	3.000E-07	1.600E+03
Bi-210	5.900E-06	1.900E-04	0.000E+00	1.600E+03
Po-210	1.600E-03	9.100E-03	8.600E-10	1.600E+03
Ra-228	1.200E-03	4.200E-03	6.700E-14	1.400E+10
Ac-228	2.100E-06	2.900E-04	9.100E-05	1.400E+10
Th-228	3.800E-04	3.100E-01	2.800E-07	1.400E+10
Ra-224	3.300E-04	2.900E-03	1.100E-06	1.400E+10
Rn-220	0.000E+00	0.000E+00	5.400E-08	1.400E+10
Po-216	0.000E+00	0.000E+00	1.500E-09	1.400E+10
Pb-212	4.100E-05	1.600E-04	1.600E-05	1.400E+10
Bi-212	9.900E-07	2.100E-05	1.800E-05	1.400E+10
Po-212	0.000E+00	0.000E+00	0.000E+00	1.400E+10
Tl-208	0.000E+00	0.000E+00	3.000E-04	1.400E+10
Ac-227	1.400E-02	6.700E+00	2.100E-08	3.280E+04
Th-227	3.600E-05	1.600E-02	1.200E-05	3.280E+04
Ra-223	5.500E-04	7.500E-03	1.500E-05	3.280E+04
Rn-219	0.000E+00	0.000E+00	6.200E-06	3.280E+04
Pb-211	4.400E-07	9.000E-06	5.200E-06	3.280E+04
Bi-211	0.000E+00	0.000E+00	5.100E-06	3.280E+04
Th-230	5.300E-04	3.200E-01	9.100E-08	7.770E+04
Th-232	2.800E-03	1.600E+00	6.700E-08	1.400E+10
U-234	2.600E-04	1.300E-01	8.100E-08	2.440E+05
U-235	2.500E-04	1.200E-01	1.700E-05	7.040E+08
U-238	2.300E-04	1.200E-01	6.500E-08	4.470E+09
Th-231	1.300E-06	8.100E-07	1.900E-06	7.040E+08
Pa-231	1.100E-02	1.300E+00	3.600E-06	3.280E+04
Ra-226	1.100E-03	7.900E-03	7.600E-07	1.600E+03

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Th-234	0.000E+00	9.100E-02	3.080E+01
Pa-234m	0.000E+00	7.180E-01	1.200E+01
Rn-222	0.000E+00	5.120E-01	1.390E+01
Po-218	0.000E+00	0.000E+00	0.000E+00
Pb-214	0.000E+00	2.730E-01	1.810E+01
Bi-214	0.000E+00	1.112E+00	9.800E+00
Po-214	0.000E+00	7.970E-01	1.130E+01
Pb-210	0.000E+00	4.700E-02	5.900E+01
Bi-210	0.000E+00	0.000E+00	0.000E+00
Po-210	0.000E+00	0.000E+00	0.000E+00
Ra-228	0.000E+00	0.000E+00	0.000E+00
Ac-228	0.000E+00	7.310E-01	1.190E+01
Th-228	0.000E+00	1.120E-01	2.590E+01
Ra-224	0.000E+00	2.300E-01	1.930E+01
Rn-220	0.000E+00	5.500E-01	1.350E+01
Po-216	0.000E+00	0.000E+00	0.000E+00

Pb-212	0.000E+00	1.710E-01	2.140E+01
Bi-212	0.000E+00	8.610E-01	1.100E+01
Po-212	0.000E+00	0.000E+00	0.000E+00
Tl-208	0.000E+00	7.210E-01	1.200E+01
Ac-227	0.000E+00	5.700E-02	2.960E+01
Th-227	0.000E+00	1.970E-01	2.030E+01
Ra-223	0.000E+00	1.540E-01	2.220E+01
Rn-219	0.000E+00	2.980E-01	1.730E+01
Pb-211	0.000E+00	5.770E-01	1.320E+01
Bi-211	0.000E+00	3.050E-01	1.720E+01
Th-230	0.000E+00	8.400E-02	3.030E+01
Th-232	0.000E+00	7.000E-02	3.550E+01
U-234	0.000E+00	7.000E-02	3.550E+01
U-235	0.000E+00	1.690E-01	2.160E+01
U-238	0.000E+00	6.600E-02	3.750E+01
Th-231	0.000E+00	7.100E-02	3.530E+01
Pa-231	0.000E+00	1.460E-01	2.280E+01
Ra-226	0.000E+00	1.700E-01	2.150E+01

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Th-234	2.610E-01	2.610E-01	0.000E+00	1.000E-12
Pa-234m	2.610E-01	2.610E-01	0.000E+00	1.000E-12
Rn-222	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Po-218	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Pb-214	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Bi-214	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Po-214	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Pb-210	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Bi-210	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Po-210	6.480E-04	6.480E-04	0.000E+00	1.000E-12
Ra-228	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Ac-228	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Th-228	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Ra-224	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Rn-220	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Po-216	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Pb-212	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Bi-212	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Po-212	4.580E-06	4.580E-06	0.000E+00	6.400E-13
Tl-208	4.580E-06	4.580E-06	0.000E+00	3.600E-13
Ac-227	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Th-227	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Ra-223	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Rn-219	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Pb-211	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Bi-211	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Th-230	4.580E-06	4.580E-06	0.000E+00	1.000E-12
Th-232	4.580E-06	4.580E-06	0.000E+00	1.000E-12
U-234	2.610E-01	2.610E-01	0.000E+00	1.000E-12
U-235	2.610E-01	2.610E-01	0.000E+00	4.600E-14
U-238	2.610E-01	2.610E-01	0.000E+00	1.000E-12
Th-231	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Pa-231	2.610E-01	2.610E-01	0.000E+00	4.600E-14
Ra-226	6.480E-04	6.480E-04	0.000E+00	1.000E-12

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Th-234	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Pa-234m	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Rn-222	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Po-218	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Pb-214	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Bi-214	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Po-214	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Pb-210	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Bi-210	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Po-210	1.060E+02	6.794E+02	1.060E+02	1.306E+03
Ra-228	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Ac-228	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Th-228	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Ra-224	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Rn-220	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Po-216	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Pb-212	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Bi-212	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Po-212	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Tl-208	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Ac-227	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Th-227	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Ra-223	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Rn-219	1.300E-01	1.832E+00	1.300E-01	2.600E-00
Pb-211	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Bi-211	1.300E-01	1.832E-00	1.300E-01	2.600E+00
Th-230	1.500E+04	9.600E+04	1.500E+04	1.846E+05
Th-232	1.500E+04	9.600E+04	1.500E+04	1.846E-05
U-234	1.300E-01	1.832E+00	1.300E-01	2.600E-00

U-235	1.300E-01	1.832E+00	1.300E-01	2.600E+00
U-238	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Th-231	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Pa-231	1.300E-01	1.832E+00	1.300E-01	2.600E+00
Ra-226	1.060E+02	6.794E+02	1.060E+02	1.306E+03

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Th-234	4.200E-03	4.200E-04	5.000E-06	2.000E-04
Pa-234m	2.500E-03	2.500E-04	5.000E-06	8.000E+02
Rn-222	3.500E+00	3.500E-01	2.000E-02	2.000E-02
Po-218	1.500E-01	1.500E-02	3.000E-04	1.200E-02
Pb-214	6.800E-02	6.800E-03	6.200E-04	2.900E-04
Bi-214	1.500E-01	1.500E-02	5.000E-04	1.300E-02
Po-214	1.500E-01	1.500E-02	3.000E-04	1.200E-02
Pb-210	6.800E-02	6.800E-03	6.200E-04	2.900E-04
Bi-210	1.500E-01	1.500E-02	5.000E-04	1.300E-02
Po-210	1.500E-01	1.500E-02	3.000E-04	1.200E-02
Ra-228	3.100E-04	3.100E-05	8.000E-03	3.400E-02
Ac-228	2.500E-03	2.500E-04	5.000E-06	6.000E-02
Th-228	4.200E-03	4.200E-04	5.000E-06	2.000E-04
Ra-224	3.100E-04	3.100E-05	8.000E-03	3.400E-02
Rn-220	3.500E+00	3.500E-01	2.000E-02	2.000E-02
Po-216	1.500E-01	1.500E-02	3.000E-04	1.200E-02
Pb-212	6.800E-02	6.800E-03	6.200E-04	2.900E-04
Bi-212	1.500E-01	1.500E-02	5.000E-04	1.300E-02
Po-212	1.500E-01	1.500E-02	3.000E-04	1.200E-02
Tl-208	2.500E-01	2.500E-02	2.200E-02	4.000E-02
Ac-227	2.500E-03	2.500E-04	5.000E-06	6.000E-02
Th-227	4.200E-03	4.200E-04	5.000E-06	2.000E-04
Ra-223	3.100E-04	3.100E-05	8.000E-03	3.400E-02
Rn-219	3.500E+00	3.500E-01	2.000E-02	2.000E-02
Pb-211	6.800E-02	6.800E-03	6.200E-04	2.900E-04
Bi-211	1.500E-01	1.500E-02	5.000E-04	1.300E-02
Th-230	4.200E-03	4.200E-04	5.000E-06	2.000E-04
Th-232	4.200E-03	4.200E-04	5.000E-06	2.000E-04
U-234	2.500E-03	2.500E-04	5.000E-04	3.400E-04
U-235	2.500E-03	2.500E-04	5.000E-04	3.400E-04
U-238	2.500E-03	2.500E-04	5.000E-04	3.400E-04
Th-231	4.200E-03	4.200E-04	5.000E-06	2.000E-04
Pa-231	2.500E-03	2.500E-04	5.000E-06	8.000E+02
Ra-226	3.100E-04	3.100E-05	8.000E-03	3.400E-02

PATHWAY 2
GROUNDWATER TO WELL
WELL AT .0 M

********* NUCLIDE DOSES (mrem/yr) ********

NUCLIDE/TIME	0.	25.	50.	75.	100.	150.	200.	250.	300.	350.
Th-234	0.0E+00	1.1E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pa-234m	0.0E+00	1.8E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Rn-222	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-218	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-214	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Bi-214	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-214	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Bi-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ra-228	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ac-228	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Th-228	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ra-224	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Rn-220	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-216	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-212	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Bi-212	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

NUCLIDE/TIME	400.	450.	500.	600.	700.	750.	850.	1000.	1500.	2000.
Th-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pa-234m	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Rn-222	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-218	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-214	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Bi-214	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-214	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Bi-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ra-228	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ac-228	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Th-228	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ra-224	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Rn-220	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-216	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-212	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Bi-212	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

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      Po-212            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Tl-208            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ac-227            0.0E+00   5.5E+02   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Th-227            0.0E+00   1.4E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ra-223            0.0E+00   2.1E+01   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Rn-219            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-211            0.0E+00   1.7E-02   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Bi-211            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Th-230            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Th-232            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      U-234             0.0E+00   2.2E+02   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      U-235             0.0E+00   9.8E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      U-238             0.0E+00   2.0E+02   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Th-231            0.0E+00   5.1E-02   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pa-231            0.0E+00   4.3E+02   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ra-226            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
******* SUM OF NUCLIDE DOSES FOR GIVEN TIMES ******
                        0.0E+00   1.4E+03   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
******* SUM OF NUCLIDE RISKS FOR GIVEN TIMES ******
                        0.0E+00   4.0E-04   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00

 NUCLIDE CONCENTRATIONS IN WELL WATER (Ci/m**3)
  NUCLIDE/TIME          0.        25.       50.       75.       100.      150.      200.      250.      300.      350.
400.      450.      500.      600.      700.      750.      850.      1000.     1500.     2000.
      Th-234            0.0E+00   1.6E-06   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pa-234m           0.0E+00   1.6E-06   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Rn-222            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-218            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-214            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Bi-214            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-214            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-210            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Bi-210            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-210            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ra-228            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ac-228            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Th-228            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ra-224            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Rn-220            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-216            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-212            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Bi-212            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-212            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Tl-208            0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ac-227            0.0E+00   7.3E-08   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Th-227            0.0E+00   7.3E-08   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
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Ra-223	0.0E+00	7.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Rn-219	0.0E+00	7.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-211	0.0E+00	7.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Bi-211	0.0E+00	7.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Th-232	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-234	0.0E+00	1.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-235	0.0E+00	7.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-238	0.0E+00	1.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Th-231	0.0E+00	7.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pa-231	0.0E+00	7.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

PATHWAY 5
FOOD GROWN ON SITE

********* NUCLIDE DOSES (mrem/yr) ********

NUCLIDE/TIME	0.	25.	50.	75.	100.	150.	200.	250.	300.	350.	400.	450.	500.	600.	700.	750.	850.	1000.	1500.	2000.
Th-234	2.2E-05	3.2E-08	4.7E-11	6.9E-14	1.0E-16	2.2E-22	4.7E-28	1.0E-33	2.2E-39	4.6E-45	1.0E-50	2.1E-56	4.6E-62	2.1E-73	9.9E-85	2.1E-90	9.8-102	9.8-119	2.1-175	4.3-232
Pa-234m	2.1E-06	3.1E-09	4.5E-12	6.6E-15	9.7E-18	2.1E-23	4.5E-29	9.7E-35	2.1E-40	4.5E-46	9.6E-52	2.1E-57	4.4E-63	2.1E-74	9.5E-86	2.0E-91	9.4-103	9.4-120	2.0-176	4.2-233
Rn-222	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-218	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-214	1.6E-05	1.5E-05	1.5E-05	1.5E-05	1.4E-05	1.3E-05	1.3E-05	1.2E-05	1.1E-05	1.1E-05	1.0E-05	9.7E-06	9.2E-06	8.3E-06	7.4E-06	7.0E-06	6.3E-06	5.4E-06	3.1E-06	1.8E-06
Bi-214	1.4E-05	1.4E-05	1.4E-05	1.3E-05	1.3E-05	1.2E-05	1.2E-05	1.1E-05	1.0E-05	9.9E-06	9.4E-06	8.9E-06	8.4E-06	7.5E-06	6.8E-06	6.4E-06	5.8E-06	4.9E-06	2.8E-06	1.7E-06
Po-214	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-210	1.4E-01	1.4E-01	1.3E-01	1.3E-01	1.2E-01	1.2E-01	1.1E-01	1.1E-01	1.0E-01	9.5E-02	9.0E-02	8.5E-02	8.1E-02	7.3E-02	6.5E-02	6.2E-02	5.5E-02	4.7E-02	2.7E-02	1.6E-02
Bi-210	3.5E-04	3.5E-04	3.4E-04	3.3E-04	3.2E-04	3.0E-04	2.9E-04	2.7E-04	2.6E-04	2.4E-04	2.3E-04	2.2E-04	2.1E-04	1.9E-04	1.7E-04	1.6E-04	1.4E-04	1.2E-04	7.0E-05	4.1E-05
Po-210	9.6E-02	9.4E-02	9.1E-02	8.9E-02	8.6E-02	8.2E-02	7.7E-02	7.3E-02	7.0E-02	6.6E-02	6.2E-02	5.9E-02	5.6E-02	5.0E-02	4.5E-02	4.3E-02	3.8E-02	3.3E-02	1.9E-02	1.1E-02
Ra-228	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04
Ac-228	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06	2.1E-06
Th-228	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.4E-04	6.3E-04
Ra-224	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05	4.1E-05
Rn-220	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-216	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-212	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03
Bi-212	6.0E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05	5.9E-05
Po-212	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tl-208	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ac-227	6.5E-04	9.5E-07	1.4E-09	2.0E-12	3.0E-15	6.4E-21	1.4E-26	2.9E-32	6.3E-38	1.4E-43	2.9E-49	6.3E-55	1.3E-60	6.2E-72	2.9E-83	6.2E-89	2.8-100	2.8-117	5.9-174	1.2-230
Th-227	2.8E-06	4.1E-09	6.0E-12	8.8E-15	1.3E-17	2.8E-23	5.9E-29	1.3E-34	2.7E-40	5.9E-46	1.3E-51	2.7E-57	5.8E-63	2.7E-74	1.2E-85	2.7E-91	1.2-102	1.2-119	2.5-176	5.3-233
Ra-223	3.1E-06	4.6E-09	6.7E-12	9.9E-15	1.4E-17	3.1E-23	6.7E-29	1.4E-34	3.1E-40	6.6E-46	1.4E-51	3.1E-57	6.6E-63	3.0E-74	1.4E-85	3.0E-91	1.4-102	1.4-119	2.9-176	6.0-233
Rn-219	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pb-211	5.5E-07	8.1E-10	1.2E-12	1.7E-15	2.5E-18	5.5E-24	1.2E-29	2.5E-35	5.4E-41	1.2E-46	2.5E-52	5.4E-58	1.2E-63	5.3E-75	2.5E-86	5.3E-92	2.4-103	2.4-120	5.0-177	1.1-233
Bi-211	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Th-230	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.9E-04	8.8E-04
Th-232	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03	4.7E-03

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      U-234          2.6E-04   3.8E-07   5.6E-10   9.2E-13   1.2E-15   2.6E-21   5.6E-27   1.2E-32   2.6E-38   5.5E-44
1.2E-49  2.6E-55   5.5E-61   2.5E-72   1.2E-83   2.5E-89   1.2-100   1.2-117   2.5-174   5.2-231
      U-235          1.2E-05   1.7E-08   2.5E-11   3.6E-14   5.3E-17   1.1E-22   2.5E-28   5.3E-34   1.1E-39   2.4E-45
5.3E-51  1.1E-56   2.4E-62   1.1E-73   5.2E-85   1.1E-90   5.2-102   5.1-119   1.1-175   2.3-232
      U-238          2.3E-04   3.4E-07   5.0E-10   7.3E-13   1.1E-15   2.3E-21   4.9E-27   1.1E-32   2.3E-38   4.9E-44
1.1E-49  2.3E-55   4.9E-61   2.2E-72   1.0E-83   2.2E-89   1.0-100   1.0-117   2.2-174   4.6-231
      Th-231         1.0E-07   1.5E-10   2.2E-13   3.2E-16   4.7E-19   1.0E-24   2.2E-30   4.6E-36   9.9E-42   2.1E-47
4.6E-53  9.9E-59   2.1E-64   9.8E-76   4.5E-87   9.8E-93   4.5-104   4.5-121   9.5-178   2.0-234
      Pa-231         5.1E-04   7.4E-07   1.1E-09   1.6E-12   2.3E-15   5.0E-21   1.1E-26   2.3E-32   5.0E-38   1.1E-43
2.3E-49  5.0E-55   1.1E-60   4.9E-72   2.3E-83   4.9E-89   2.3-100   2.3-117   4.8-174   1.0-230
      Ra-226         1.4E-04   1.3E-04   1.3E-04   1.3E-04   1.3E-04   1.2E-04   1.2E-04   1.2E-04   1.1E-04   1.1E-04
1.1E-04  1.0E-04   9.9E-05   9.3E-05   8.7E-05   8.4E-05   7.9E-05   7.1E-05   5.2E-05   3.7E-05
******* SUM OF NUCLIDE DOSES FOR GIVEN TIMES ******
                     2.4E-01   2.4E-01   2.3E-01   2.2E-01   2.2E-01   2.1E-01   2.0E-01   1.9E-01   1.8E-01   1.7E-01
1.6E-01  1.5E-01   1.4E-01   1.3E-01   1.2E-01   1.1E-01   1.0E-01   8.8E-02   5.4E-02   3.5E-02
******* SUM OF NUCLIDE RISKS FOR GIVEN TIMES ******
                     6.9E-08   6.6E-08   6.5E-08   6.3E-08   6.1E-08   5.8E-08   5.5E-08   5.2E-08   5.0E-08   4.7E-08
4.5E-08  4.3E-08   4.1E-08   3.7E-08   3.3E-08   3.1E-08   2.8E-08   2.5E-08   1.5E-08   9.7E-09
 FRACTIONAL MIXING OF WASTE IN SOIL IN TRENCH IS  .999
 FRACTION OF FOOD CONSUMED WHICH IS GROWN AT THE WASTE SITE (FG) IS   .400
 FRACTIONAL MIXING OF TRENCH MATERIAL IN SURFACE SOIL IS  8.64E-01

                                             PATHWAY  6
                                         NATURAL BIOINTRUSION

********* NUCLIDE DOSES (mrem/yr) ********
 NUCLIDE/TIME            0.        25.       50.       75.       100.      150.      200.      250.      300.      350.
400.     450.      500.      600.      700.      750.      850.      1000.     1500.     2000.
      Th-234         2.1E-05   3.1E-08   4.5E-11   6.7E-14   9.8E-17   2.1E-22   4.5E-28   9.7E-34   2.1E-39   4.5E-45
9.6E-51  2.1E-56   4.5E-62   2.1E-73   9.5E-85   2.0E-90   9.5-102   9.4-119   2.0-175   4.2-232
      Pa-234m        2.0E-06   3.0E-09   4.4E-12   6.4E-15   9.4E-18   2.0E-23   4.3E-29   9.3E-35   2.0E-40   4.3E-46
9.3E-52  2.0E-57   4.3E-63   2.0E-74   9.2E-86   2.0E-91   9.1-103   9.0-120   1.9-176   4.0-233
      Rn-222         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-218         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-214         1.5E-05   1.5E-05   1.4E-05   1.4E-05   1.4E-05   1.3E-05   1.2E-05   1.2E-05   1.1E-05   1.0E-05
9.9E-06  9.4E-06   8.9E-06   8.0E-06   7.2E-06   6.8E-06   6.1E-06   5.2E-06   3.0E-06   1.8E-06
      Bi-214         1.4E-05   1.4E-05   1.3E-05   1.3E-05   1.2E-05   1.2E-05   1.1E-05   1.1E-05   1.0E-05   9.5E-06
9.0E-06  8.6E-06   8.1E-06   7.3E-06   6.5E-06   6.2E-06   5.6E-06   4.7E-06   2.7E-06   1.6E-06
      Po-214         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-210         1.3E-01   1.3E-01   1.3E-01   1.2E-01   1.2E-01   1.1E-01   1.1E-01   1.0E-01   9.7E-02   9.2E-02
8.7E-02  8.2E-02   7.8E-02   7.0E-02   6.3E-02   6.0E-02   5.3E-02   4.5E-02   2.6E-02   1.5E-02
      Bi-210         3.4E-04   3.3E-04   3.2E-04   3.2E-04   3.1E-04   2.9E-04   2.8E-04   2.6E-04   2.5E-04   2.3E-04
2.2E-04  2.1E-04   2.0E-04   1.8E-04   1.6E-04   1.5E-04   1.4E-04   1.2E-04   6.8E-05   3.9E-05
      Po-210         9.3E-02   9.0E-02   8.8E-02   8.6E-02   8.3E-02   7.9E-02   7.5E-02   7.1E-02   6.7E-02   6.4E-02
6.0E-02  5.7E-02   5.4E-02   4.8E-02   4.4E-02   4.1E-02   3.7E-02   3.1E-02   1.8E-02   1.1E-02
      Ra-228         1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04
1.4E-04  1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04   1.4E-04
      Ac-228         2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06
2.0E-06  2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06   2.0E-06
      Th-228         6.2E-04   6.2E-04   6.2E-04   6.2E-04   6.2E-04   6.2E-04   6.2E-04   6.2E-04   6.2E-04   6.2E-04
6.2E-04  6.2E-04   6.2E-04   6.2E-04   6.2E-04   6.1E-04   6.1E-04   6.1E-04   6.1E-04   6.1E-04
      Ra-224         4.0E-05   4.0E-05   4.0E-05   4.0E-05   4.0E-05   4.0E-05   4.0E-05   4.0E-05   3.9E-05   3.9E-05
3.9E-05  3.9E-05   3.9E-05   3.9E-05   3.9E-05   3.9E-05   3.9E-05   3.9E-05   3.9E-05   3.9E-05
      Rn-220         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-216         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-212         1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03
1.1E-03  1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03   1.1E-03
      Bi-212         5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05
5.7E-05  5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05   5.7E-05
      Po-212         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Tl-208         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ac-227         6.2E-04   9.1E-07   1.3E-09   2.0E-12   2.9E-15   6.2E-21   1.3E-26   2.8E-32   6.1E-38   1.3E-43
2.8E-49  6.1E-55   1.3E-60   6.0E-72   2.8E-83   5.9E-89   2.7-100   2.7-117   5.7-174   1.2-230
      Th-227         2.7E-06   3.9E-09   5.8E-12   8.5E-15   1.2E-17   2.7E-23   5.7E-29   1.2E-34   2.6E-40   5.7E-46
1.2E-51  2.6E-57   5.6E-63   2.6E-74   1.2E-85   2.6E-91   1.2-102   1.2-119   2.5-176   5.1-233
      Ra-223         3.0E-06   4.4E-09   6.5E-12   9.5E-15   1.4E-17   3.0E-23   6.5E-29   1.4E-34   3.0E-40   6.4E-46
1.4E-51  2.9E-57   6.3E-63   2.9E-74   1.3E-85   2.9E-91   1.3-102   1.3-119   2.8-176   5.8-233
      Rn-219         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pb-211         5.3E-07   7.8E-10   1.1E-12   1.7E-15   2.5E-18   5.3E-24   1.1E-29   2.4E-35   5.2E-41   1.1E-46
2.4E-52  5.2E-58   1.1E-63   5.1E-75   2.4E-86   5.1E-92   2.3-103   2.3-120   4.9-177   1.0-233
      Bi-211         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00  0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Th-230         8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04
8.6E-04  8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.6E-04   8.5E-04   8.5E-04
      Th-232         4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03
4.5E-03  4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03   4.5E-03
      U-234          2.5E-04   3.7E-07   5.4E-10   7.9E-13   1.2E-15   2.5E-21   5.4E-27   1.2E-32   2.5E-38   5.3E-44
1.1E-49  2.5E-55   5.3E-61   2.5E-72   1.1E-83   2.4E-89   1.1-100   1.1-117   2.4-174   5.0-231
      U-235          1.1E-05   1.6E-08   2.4E-11   3.5E-14   5.1E-17   1.1E-22   2.4E-28   5.1E-34   1.1E-39   2.4E-45
5.1E-51  1.1E-56   2.3E-62   1.1E-73   5.0E-85   1.1E-90   5.0-102   5.0-119   1.0-175   2.2-232
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     U-238            2.2E-04    3.3E-07    4.8E-10    7.0E-13    1.0E-15    2.2E-21    4.8E-27    1.0E-32    2.2E-38    4.7E-44
1.0E-49   2.2E-55    4.7E-61    2.2E-72    1.0E-83    2.2E-89    1.0-100    9.9-118    2.1-174    4.4-231
     Th-231           9.7E-08    1.4E-10    2.1E-13    3.1E-16    4.5E-19    9.7E-25    2.1E-30    4.5E-36    9.6E-42    2.1E-47
4.4E-53   9.5E-59    2.1E-64    9.5E-76    4.4E-87    9.4E-93    4.4-104    4.3-121    9.1-178    1.9-234
     Pa-231           4.9E-04    7.2E-07    1.1E-09    1.5E-12    2.3E-15    4.9E-21    1.0E-26    2.2E-32    4.8E-38    1.0E-43
2.2E-49   4.8E-55    1.0E-60    4.8E-72    2.2E-83    4.7E-89    2.2-100    2.2-117    4.6-174    9.7-231
     Ra-226           1.3E-04    1.3E-04    1.3E-04    1.3E-04    1.2E-04    1.2E-04    1.2E-04    1.1E-04    1.1E-04    1.1E-04
1.0E-04   9.8E-05    9.5E-05    8.9E-05    8.4E-05    8.1E-05    7.6E-05    6.9E-05    5.0E-05    3.6E-05
******* SUM OF NUCLIDE DOSES FOR GIVEN TIMES ******
                      2.4E-01    2.3E-01    2.2E-01    2.2E-01    2.1E-01    2.0E-01    1.9E-01    1.8E-01    1.7E-01    1.6E-01
1.5E-01   1.5E-01    1.4E-01    1.3E-01    1.1E-01    1.1E-01    9.8E-02    8.4E-02    5.2E-02    3.3E-02
******* SUM OF NUCLIDE RISKS FOR GIVEN TIMES ******
                      6.6E-08    6.4E-08    6.2E-08    6.1E-08    5.9E-08    5.6E-08    5.3E-08    5.1E-08    4.8E-08    4.6E-08
4.3E-08   4.1E-08    3.9E-08    3.5E-08    3.2E-08    3.0E-08    2.7E-08    2.4E-08    1.5E-08    9.4E-09
 FRACTIONAL MIXING OF WASTE IN SOIL IN TRENCH IS  .999
 FRACTION OF FOOD CONSUMED WHICH IS GROWN AT THE WASTE SITE (FG) IS   .400

                                                        PATHWAY  7
                                                       DIRECT GAMMA
********* NUCLIDE DOSES (mrem/yr) ********   WITH BUILDUP
 NUCLIDE/TIME            0.         25.        50.        75.       100.       150.       200.       250.       300.       350.
400.      450.       500.       600.       700.       750.       850.      1000.      1500.      2000.
     Th-234           6.0E-02    1.0E-04    1.8E-07    3.0E-10    5.1E-13    1.5E-18    4.2E-24    1.2E-29    3.3E-35    9.0E-41
2.4E-46   5.9E-52    1.3E-57    5.8E-69    2.7E-80    5.8E-86    2.7E-97    2.7-114    5.6-171    1.2-227
     Pa-234m          2.0E-01    3.0E-04    4.5E-07    6.8E-10    1.0E-12    2.3E-18    5.0E-24    1.1E-29    2.4E-35    5.3E-41
1.1E-46   2.5E-52    5.3E-58    2.7E-69    1.2E-80    2.7E-86    1.2E-97    1.2-114    2.6-171    5.5-229
     Rn-222           9.4E-03    9.4E-03    9.5E-03    9.5E-03    9.5E-03    9.3E-03    8.8E-03    9.4E-03    7.9E-03    7.5E-03
7.1E-03   6.7E-03    6.3E-03    5.7E-03    5.1E-03    4.9E-03    4.4E-03    3.7E-03    2.2E-03    1.3E-03
     Po-218           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
     Pb-214           9.3E+00    9.0E+00    8.8E+00    8.5E+00    8.3E+00    7.9E+00    7.5E+00    7.1E+00    6.7E+00    6.3E+00
6.0E+00   5.7E+00    5.4E+00    4.8E+00    4.3E+00    4.1E+00    3.7E+00    3.1E+00    1.8E+00    1.1E+00
     Bi-214           2.0E+01    2.0E+01    2.0E+01    2.0E+01    1.9E+01    1.9E+01    1.9E+01    1.8E+01    1.8E+01    1.8E+01
1.7E+01 , 1.7E+01    1.7E+01    1.7E+01    1.6E+01    1.5E+01    1.3E+01    1.1E+01    6.6E+00    3.8E+00
     Po-214           1.5E-03    1.4E-03    1.4E-03    1.4E-03    1.4E-03    1.4E-03    1.4E-03    1.3E-03    1.3E-03    1.2E-03
1.2E-03   1.1E-03    1.1E-03    1.1E-03    9.8E-04    9.3E-04    8.4E-04    7.1E-04    4.1E-04    2.4E-04
     Pb-210           4.2E-04    5.7E-04    7.7E-04    1.0E-03    1.4E-03    2.5E-03    4.4E-03    7.8E-03    1.3E-02    2.3E-02
3.7E-02   5.7E-02    8.3E-02    8.2E-02    7.4E-02    7.0E-02    6.3E-02    5.3E-02    3.1E-02    1.8E-02
     Bi-210           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
     Po-210           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
     Ra-228           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
     Ac-228           1.6E+01    1.7E+01    1.7E+01    1.8E+01    1.8E+01    1.9E+01    1.9E+01    2.0E+01    2.0E+01    2.0E+01
2.0E+01   2.1E+01    2.1E+01    2.3E+01    2.3E+01    2.3E+01    2.3E+01    2.3E+01    2.3E+01    2.3E+01
     Th-228           2.7E-02    3.0E-02    3.4E-02    3.8E-02    4.3E-02    5.4E-02    6.8E-02    8.4E-02    1.0E-01    1.2E-01
1.4E-01   1.5E-01    1.5E-01    1.5E-01    1.5E-01    1.5E-01    1.5E-01    1.5E-01    1.5E-01    1.5E-01
     Ra-224           1.5E-01    1.7E-01    1.8E-01    2.0E-01    2.1E-01    2.5E-01    2.9E-01    3.3E-01    3.7E-01    4.1E-01
4.1E-01   4.1E-01    4.1E-01    4.1E-01    4.1E-01    4.1E-01    4.1E-01    4.1E-01    4.1E-01    4.1E-01
     Rn-220           1.2E-02    1.2E-02    1.3E-02    1.3E-02    1.3E-02    1.4E-02    1.4E-02    1.4E-02    1.4E-02    1.4E-02
1.4E-02   1.4E-02    1.4E-02    1.4E-02    1.4E-02    1.4E-02    1.4E-02    1.4E-02    1.4E-02    1.4E-02
     Po-216           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
     Pb-212           2.1E+00    2.3E+00    2.5E+00    2.8E+00    3.0E+00    3.6E+00    4.3E+00    5.1E+00    5.9E+00    6.7E+00
6.9E+00   6.9E+00    6.9E+00    6.9E+00    6.9E+00    6.9E+00    6.9E+00    6.9E+00    6.9E+00    6.9E+00
     Bi-212           2.9E+00    3.0E+00    3.1E+00    3.1E+00    3.2E+00    3.3E+00    3.4E+00    3.5E+00    3.6E+00    3.7E+00
3.7E+00   3.8E+00    3.9E+00    4.4E+00    4.4E+00    4.4E+00    4.4E+00    4.4E+00    4.4E+00    4.4E+00
     Po-212           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
     Tl-208           1.9E+01    2.0E+01    2.0E+01    2.1E+01    2.1E+01    2.2E+01    2.3E+01    2.4E+01    2.4E+01    2.4E+01
2.4E+01   2.4E+01    2.5E+01    2.7E+01    2.7E+01    2.7E+01    2.7E+01    2.7E+01    2.7E+01    2.7E+01
     Ac-227           6.6E-05    1.1E-07    1.9E-10    3.2E-13    5.4E-16    1.5E-21    4.3E-27    1.2E-32    3.3E-38.   8.8E-44
2.3E-49   5.5E-55    1.2E-60    5.4E-72    2.5E-83    5.4E-89    2.5-100    2.5-117    5.1-174    1.1-230
     Th-227           7.5E-02    1.2E-04    1.9E-07    3.1E-10    4.9E-13    1.3E-18    3.2E-24    7.9E-30    1.9E-35    4.7E-41
1.0E-46   2.2E-52    4.7E-58    2.1E-69    9.9E-81    2.1E-86    9.8E-98    9.7-115    2.0-171    4.2-228
     Ra-223           8.7E-02    1.4E-04    2.3E-07    3.7E-10    6.0E-13    1.5E-18    4.0E-24    1.0E-29    2.5E-35    6.3E-41
1.4E-46   3.1E-52    6.6E-58    3.1E-69    1.4E-80    3.0E-86    1.4E-97    1.4-114    2.9-171    6.0-228
     Rn-219           9.5E-02    1.4E-04    2.0E-07    3.0E-10    4.4E-13    9.4E-19    2.0E-24    4.4E-30    9.3E-36    2.0E-41
4.3E-47   9.3E-53    2.0E-58    9.2E-70    4.2E-81    9.1E-87    4.2E-98    4.2-115    8.7-172    1.8-228
     Pb-211           5.1E-02    7.7E-05    1.2E-07    1.7E-10    2.6E-13    5.9E-19    1.3E-24    2.9E-30    6.2E-36    1.3E-41
2.9E-47   6.0E-53    1.3E-58    6.1E-70    2.8E-81    6.0E-87    2.8E-98    2.8-115    5.8-172    1.2-228
     Bi-211           7.7E-02    1.1E-04    1.7E-07    2.4E-10    3.6E-13    7.7E-19    1.6E-24    3.5E-30    7.6E-36    1.6E-41
3.5E-47   7.5E-53    1.6E-58    7.5E-70    3.4E-81    7.4E-87    3.4E-98    3.4-115    7.1-172    1.5-228
     Th-230           5.7E-03    6.7E-03    7.7E-03    9.0E-03    1.0E-02    1.4E-02    1.8E-02    2.4E-02    3.1E-02    3.8E-02
4.7E-02   5.3E-02    5.3E-02    5.3E-02    5.3E-02    5.3E-02    5.3E-02    5.3E-02    5.3E-02    5.3E-02
     Th-232           2.3E-03    2.7E-03    3.3E-03    3.9E-03    4.7E-03    6.6E-03    9.3E-03    1.3E-02    1.8E-02    2.4E-02
3.1E-02   3.9E-02    4.0E-02    4.0E-02    4.0E-02    4.0E-02    4.0E-02    4.0E-02    4.0E-02    4.0E-02
     U-234            2.7E-03    4.8E-06    8.5E-09    1.5E-11    2.6E-14    7.9E-20    2.4E-25    7.2E-31    2.1E-36    6.1E-42
1.7E-47   4.6E-53    1.0E-58    4.7E-70    2.2E-81    4.7E-87    2.2E-98    2.2-115    4.5-172    9.6-229
     U-235            9.9E-02    1.6E-04    2.6E-07    4.2E-10    6.8E-13    1.7E-18    4.5E-24    1.1E-29    2.8E-35    6.9E-41
1.6E-46   3.3E-52    7.2E-58    3.3E-69    1.5E-80    3.3E-86    1.5E-97    1.5-114    3.2-171    6.7-228
     U-238            1.7E-03    3.1E-06    5.4E-09    9.7E-12    1.7E-14    5.4E-20    1.7E-25    5.1E-31    1.5E-36    4.5E-42
1.3E-47   3.6E-53    8.2E-59    3.8E-70    1.7E-81    3.8E-87    1.7E-98    1.7-115    3.6-172    7.7-229
     Th-231           3.0E-03    5.3E-06    9.3E-09    1.6E-11    2.8E-14,   8.7E-20    2.6E-25    7.8E-31    2.3E-36    6.5E-42
1.8E-47   4.9E-53    1.1E-58    5.0E-70    2.3E-81    5.0E-87    2.3E-98    2.3-115    4.9-172    1.0-228
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      Pa-231           2.0E-02    3.2E-05    5.3E-08    8.6E-11    1.4E-13    3.6E-19    9.4E-25    2.4E-30    6.1E-36    1.5E-41
3.5E-47   7.6E-53    1.6E-58    7.6E-70    3.5E-81    7.5E-87    3.5E-98    3.5-115    7.3-172    1.5-228
      Ra-226           9.8E-02    1.1E-01    1.1E-01    1.2E-01    1.3E-01    1.6E-01    1.8E-01    2.0E-01    2.3E-01    2.5E-01
2.5E-01   2.5E-01    2.4E-01    2.2E-01    2.1E-01    2.0E-01    1.9E-01    1.7E-01    1.2E-01    9.0E-02
******* SUM OF NUCLIDE DOSES FOR GIVEN TIMES ******
                       7.1E+01    7.1E+01    7.2E+01    7.3E+01    7.4E+01    7.5E+01    7.7E+01    7.8E+01    7.9E+01    8.0E+01
8.0E+01   7.9E+01    7.9E+01    8.4E+01    8.2E+01    8.1E+01    7.9E+01    7.6E+01    7.0E+01    6.6E+01
******* SUM OF NUCLIDE RISKS FOR GIVEN TIMES ******
                       2.0E-05    2.0E-05    2.0E-05    2.0E-05    2.1E-05    2.1E-05    2.2E-05    2.2E-05    2.2E-05    2.2E-05
2.2E-05   2.2E-05    2.2E-05    2.4E-05    2.3E-05    2.3E-05    2.2E-05    2.1E-05    2.0E-05    1.9E-05
 EROSION STOPS AFTER COVER IS ALL ERODED IN       600.0 YEARS

                                                      PATHWAY  8
                                                    DUST INHALATION
********* NUCLIDE DOSES (mrem/yr) ********
 NUCLIDE/TIME             0.         25.         50.         75.        100.        150.        200.        250.        300.        350.
400.      450.       500.       600.       700.       750.       850.      1000.      1500.      2000.
      Th-234           1.8E-05    2.7E-08    4.0E-11    5.8E-14    8.5E-17    1.8E-22    3.9E-28    8.5E-34    1.8E-39    3.9E-45
8.4E-51   1.8E-56    3.9E-62    1.8E-73    8.3E-85    1.8E-90    8.3-102    8.2-119    1.7-175    3.7-232
      Pa-234m          4.1E-07    6.1E-10    8.9E-13    1.3E-15    1.9E-18    4.1E-24    8.9E-30    1.9E-35    4.1E-41    8.8E-47
1.9E-52   4.1E-58    8.7E-64    4.0E-75    1.9E-86    4.0E-92    1.9-103    1.8-120    3.9-177    8.2-234
      Rn-222           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Po-218           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Pb-214           3.8E-06    3.7E-06    3.6E-06    3.5E-06    3.4E-06    3.2E-06    3.0E-06    2.9E-06    2.7E-06    2.6E-06
2.4E-06   2.3E-06    2.2E-06    2.0E-06    1.8E-06    1.7E-06    1.5E-06    1.3E-06    7.4E-07    4.3E-07
      Bi-214           3.5E-06    3.4E-06    3.3E-06    3.3E-06    3.2E-06    3.0E-06    2.8E-06    2.7E-06    2.6E-06    2.4E-06
2.3E-06   2.2E-06    2.1E-06    1.8E-06    1.7E-06    1.6E-06    1.4E-06    1.2E-06    7.0E-07    4.1E-07
      Po-214           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Pb-210           7.3E-03    7.1E-03    6.9E-03    6.7E-03    6.5E-03    6.2E-03    5.9E-03    5.6E-03    5.3E-03    5.0E-03
4.7E-03   4.5E-03    4.2E-03    3.8E-03    3.4E-03    3.2E-03    2.9E-03    2.5E-03    1.4E-03    8.4E-04
      Bi-210           1.1E-04    1.0E-04    1.0E-04    9.8E-05    9.5E-05    9.0E-05    8.6E-05    8.1E-05    7.7E-05    7.3E-05
6.9E-05   6.5E-05    6.2E-05    5.6E-05    5.0E-05    4.7E-05    4.2E-05    3.6E-05    2.1E-05    1.2E-05
      Po-210           4.5E-03    4.4E-03    4.3E-03    4.2E-03    4.1E-03    3.9E-03    3.7E-03    3.5E-03    3.3E-03    3.1E-03
2.9E-03   2.8E-03    2.6E-03    2.4E-03    2.1E-03    2.0E-03    1.8E-03    1.5E-03    9.0E-04    5.2E-04
      Ra-228           2.4E-03    2.4E-03    2.4E-03    2.4E-03    2.4E-03    2.3E-03    2.3E-03    2.3E-03    2.3E-03    2.3E-03
2.3E-03   2.3E-03    2.3E-03    2.3E-03    2.3E-03    2.3E-03    2.3E-03    2.3E-03    2.3E-03    2.3E-03
      Ac-228           1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04
1.6E-04   1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04    1.6E-04
      Th-228           1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01
1.7E-01   1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01    1.7E-01
      Ra-224           1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03
1.6E-03   1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03    1.6E-03
      Rn-220           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Po-216           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Pb-212           9.0E-05    9.0E-05    9.0E-05    9.0E-05    9.0E-05    9.0E-05    8.9E-05    8.9E-05    8.9E-05    8.9E-05
8.9E-05   8.9E-05    8.9E-05    8.9E-05    8.9E-05    8.9E-05    8.9E-05    8.9E-05    8.9E-05    8.9E-05
      Bi-212           1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05
1.2E-05   1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05    1.2E-05
      Po-212           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Tl-208           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Ac-227           1.7E-01    2.5E-04    3.7E-07    5.4E-10    8.0E-13    1.7E-18    3.7E-24    7.9E-30    1.7E-35    3.6E-41
7.8E-47   1.7E-52    3.6E-58    1.7E-69    7.7E-81    1.6E-86    7.6E-98    7.5-115    1.6-171    3.3-228
      Th-227           4.1E-04    6.0E-07    8.9E-10    1.3E-12    1.9E-15    4.1E-21    8.8E-27    1.9E-32    4.0E-38    8.7E-44
1.9E-49   4.0E-55    8.6E-61    4.0E-72    1.8E-83    3.9E-89    1.8-100    1.8-117    3.8-174    7.9-231
      Ra-223           1.9E-04    2.8E-07    4.1E-10    6.1E-13    8.9E-16    1.9E-21    4.1E-27    8.8E-33    1.9E-38    4.1E-44
8.7E-50   1.9E-55    4.0E-61    1.9E-72    8.6E-84    1.8E-89    8.5-101    8.4-118    1.8-174    3.7-231
      Rn-219           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Pb-211           2.1E-07    3.0E-10    4.4E-13    6.5E-16    9.5E-19    2.0E-24    4.4E-30    9.4E-36    2.0E-41    4.3E-47
9.3E-53   2.0E-58    4.3E-64    2.0E-75    9.2E-87    2.0E-92    9.1-104    9.0-121    1.9-177    3.9-234
      Bi-211           0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
0.0E+00   0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00    0.0E+00
      Th-230           1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01
1.8E-01   1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01    1.8E-01
      Th-232           9.0E-01    9.0E-01    9.0E-01    9.0E-01    9.0E-01    9.0E-01    8.9E-01    8.9E-01    8.9E-01    8.9E-01
8.9E-01   8.9E-01    8.9E-01    8.9E-01    8.9E-01    8.9E-01    8.9E-01    8.9E-01    8.9E-01    8.9E-01
      U-234            7.3E-02    1.1E-04    1.6E-07    2.3E-10    3.4E-13    7.2E-19    1.6E-24    3.3E-30    7.2E-36    1.5E-41
3.3E-47   7.1E-53    1.5E-58    7.1E-70    3.3E-81    7.1E-87    3.3E-98    3.2-115    6.9-172    1.4-228
      U-235            3.1E-03    4.5E-06    6.6E-09    9.7E-12    1.4E-14    3.1E-20    6.6E-26    1.4E-31    3.1E-37    6.6E-43
1.4E-48   3.0E-54    6.5E-60    3.0E-71    1.4E-82    3.0E-88    1.4E-99    1.4-116    2.9-173    6.1-230
      U-238            6.7E-02    9.9E-05    1.4E-07    2.1E-10    3.1E-13    6.7E-19    1.4E-24    3.1E-30    6.6E-36    1.4E-41
3.1E-47   6.6E-53    1.4E-58    6.6E-70    3.0E-81    6.5E-87    3.0E-98    3.0-115    6.3-172    1.3-228
      Th-231           2.1E-08    3.1E-11    4.5E-14    6.6E-17    9.6E-20    2.1E-25    4.5E-31    9.6E-37    2.1E-42    4.4E-48
9.5E-54   2.0E-59    4.4E-65    2.0E-76    9.4E-88    2.0E-93    9.4-105    9.3-122    2.0-178    4.1-235
      Pa-231           3.3E-02    4.9E-05    7.2E-08    1.1E-10    1.5E-13    3.3E-19    7.2E-25    1.5E-30    3.3E-36    7.1E-42
1.5E-47   3.3E-53    7.1E-59    3.3E-70    1.5E-81    3.2E-87    1.5E-98    1.5-115    3.2-172    6.7-229
      Ra-226           4.4E-03    4.4E-03    4.3E-03    4.2E-03    4.1E-03    4.0E-03    3.9E-03    3.8E-03    3.6E-03    3.5E-03
3.4E-03   3.3E-03    3.2E-03    3.0E-03    2.8E-03    2.7E-03    2.5E-03    2.3E-03    1.7E-03    1.2E-03
******* SUM OF NUCLIDE DOSES FOR GIVEN TIMES ******
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                      1.6E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00
1.3E+00  1.3E+00  1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.3E+00   1.2E+00   1.2E+00
****** SUM OF NUCLIDE RISKS FOR GIVEN TIMES ******
                      4.5E-07   3.6E-07   3.6E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07
3.5E-07  3.5E-07  3.5E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07   3.5E-07
 FRACTIONAL MIXING OF TRENCH MATERIAL IN SURFACE SOIL IS  8.64E-01

********** CUMULATIVE TOTAL DOSES PER YEAR FOR GIVEN TIMES *********
     5                7.31E+01  1.51E+03  7.37E+01  7.46E+01  7.54E+01  7.70E+01  7.85E+01  7.97E+01  8.07E+01  8.14E+01
8.13E+01 8.09E+01 8.07E+01  8.57E+01  8.34E+01  8.23E+01  8.03E+01  7.77E+01  7.14E+01  6.76E+01

********** CUMULATIVE TOTAL RISKS PER YEAR FOR GIVEN TIMES *********
     5                2.05E-05  4.23E-04  2.06E-05  2.09E-05  2.11E-05  2.16E-05  2.20E-05  2.23E-05  2.26E-05  2.29E-05
2.28E-05 2.26E-05 2.26E-05  2.40E-05  2.33E-05  2.30E-05  2.25E-05  2.17E-05  2.00E-05  1.89E-05

        NUCLIDE HALFLIFE AND INVENTORY (CI) ASSUMING NO TRANSPORT FROM THE FACILITY
 (TIMES IN YEARS) HALFLIFE        0.        25.        50.        75.       100.       150.       200.       250.       300.
350.     400.     450.      500.      600.      700.      750.      850.     1000.     1500.     2000.
   Th-234             4.47E+09  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Pa-234m            4.47E+09  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Rn-222             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Po-218             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Pb-214             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Bi-214             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Po-214             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Pb-210             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Bi-210             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Po-210             1.60E+03  5.24E-01  5.18E-01  5.13E-01  5.07E-01  5.02E-01  4.91E-01  4.81E-01  4.70E-01  4.60E-01
4.50E-01 4.41E-01 4.31E-01  4.22E-01  4.04E-01  3.87E-01  3.79E-01  3.63E-01  3.40E-01  2.74E-01  2.20E-01
   Ra-228             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Ac-228             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Th-228             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Ra-224             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Rn-220             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Po-216             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Pb-212             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Bi-212             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Po-212             1.40E+10  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01
3.35E-01 3.35E-01 3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01  3.35E-01
   Tl-208             1.40E+10  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01
1.89E-01 1.89E-01 1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01  1.89E-01
   Ac-227             3.28E+04  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.40E-02  2.40E-02  2.40E-02  2.40E-02
2.39E-02 2.39E-02 2.39E-02  2.39E-02  2.38E-02  2.38E-02  2.37E-02  2.37E-02  2.36E-02  2.34E-02  2.31E-02
   Th-227             3.28E+04  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.40E-02  2.40E-02  2.40E-02  2.40E-02
2.39E-02 2.39E-02 2.39E-02  2.39E-02  2.38E-02  2.38E-02  2.37E-02  2.37E-02  2.36E-02  2.34E-02  2.31E-02
   Ra-223             3.28E+04  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.40E-02  2.40E-02  2.40E-02  2.40E-02
2.39E-02 2.39E-02 2.39E-02  2.39E-02  2.38E-02  2.38E-02  2.37E-02  2.37E-02  2.36E-02  2.34E-02  2.31E-02
   Rn-219             3.28E+04  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.40E-02  2.40E-02  2.40E-02  2.40E-02
2.39E-02 2.39E-02 2.39E-02  2.39E-02  2.38E-02  2.38E-02  2.37E-02  2.37E-02  2.36E-02  2.34E-02  2.31E-02
   Pb-211             3.28E+04  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.40E-02  2.40E-02  2.40E-02  2.40E-02
2.39E-02 2.39E-02 2.39E-02  2.39E-02  2.38E-02  2.38E-02  2.37E-02  2.37E-02  2.36E-02  2.34E-02  2.31E-02
   Bi-211             3.28E+04  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.40E-02  2.40E-02  2.40E-02  2.40E-02
2.39E-02 2.39E-02 2.39E-02  2.39E-02  2.38E-02  2.38E-02  2.37E-02  2.37E-02  2.36E-02  2.34E-02  2.31E-02
   Th-230             7.77E+04  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Th-232             1.40E+10  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   U-234              2.44E+05  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   U-235              7.04E+08  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02
2.41E-02 2.41E-02 2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02
   U-238              4.47E+09  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
   Th-231             7.04E+08  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02
2.41E-02 2.41E-02 2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02
   Pa-231             3.28E+04  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02
2.41E-02 2.41E-02 2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02  2.41E-02
   Ra-226             1.60E+03  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
5.24E-01 5.24E-01 5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01  5.24E-01
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NUCLIDE HALFLIFE AND INVENTORY (CI) REMAINING IN THE FACILITY
(TIMES IN YEARS)

NUCLIDE	HALFLIFE	0.	25.	50.	75.	100.	150.	200.	250.	300.
Th-234	4.47E+09	5.24E-01	7.68E-04	1.13E-06	1.65E-09	2.42E-12	5.21E-18	1.12E-23	2.41E-29	5.18E-35
Pa-234m	4.47E+09	5.24E-01	7.68E-04	1.13E-06	1.65E-09	2.42E-12	5.21E-18	1.12E-23	2.41E-29	5.18E-35
Rn-222	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Po-218	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Pb-214	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Bi-214	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Po-214	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Pb-210	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Bi-210	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Po-210	1.60E+03	5.24E-01	5.10E-01	4.96E-01	4.83E-01	4.70E-01	4.46E-01	4.22E-01	4.00E-01	3.79E-01
Ra-228	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Ac-228	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Th-228	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Ra-224	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Rn-220	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Po-216	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Pb-212	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Bi-212	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Po-212	1.40E+10	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.35E-01
Tl-208	1.40E+10	1.89E-01	1.89E-01	1.89E-01	1.89E-01	1.89E-01	1.89E-01	1.88E-01	1.88E-01	1.88E-01
Ac-227	3.28E+04	2.41E-02	3.53E-05	5.18E-08	7.59E-11	1.11E-13	2.39E-19	5.13E-25	1.10E-30	2.37E-36
Th-227	3.28E+04	2.41E-02	3.53E-05	5.18E-08	7.59E-11	1.11E-13	2.39E-19	5.13E-25	1.10E-30	2.37E-36
Ra-223	3.28E+04	2.41E-02	3.53E-05	5.18E-08	7.59E-11	1.11E-13	2.39E-19	5.13E-25	1.10E-30	2.37E-36
Rn-219	3.28E+04	2.41E-02	3.53E-05	5.18E-08	7.59E-11	1.11E-13	2.39E-19	5.13E-25	1.10E-30	2.37E-36
Pb-211	3.28E+04	2.41E-02	3.53E-05	5.18E-08	7.59E-11	1.11E-13	2.39E-19	5.13E-25	1.10E-30	2.37E-36
Bi-211	3.28E+04	2.41E-02	3.53E-05	5.18E-08	7.59E-11	1.11E-13	2.39E-19	5.13E-25	1.10E-30	2.37E-36
Th-230	7.77E+04	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
Th-232	1.40E+10	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.24E-01	5.23E-01	5.23E-01
U-234	2.44E+05	5.24E-01	7.68E-04	1.13E-06	1.65E-09	2.42E-12	5.21E-18	1.12E-23	2.41E-29	5.18E-35
U-235	7.04E+08	2.41E-02	3.53E-05	5.18E-08	7.60E-11	1.11E-13	2.40E-19	5.15E-25	1.11E-30	2.38E-36
U-238	4.47E+09	5.24E-01	7.68E-04	1.13E-06	1.65E-09	2.42E-12	5.21E-18	1.12E-23	2.41E-29	5.18E-35
Th-231	7.04E+08	2.41E-02	3.53E-05	5.18E-08	7.60E-11	1.11E-13	2.40E-19	5.15E-25	1.11E-30	2.38E-36
Pa-231	3.28E+04	2.41E-02	3.53E-05	5.18E-08	7.60E-11	1.11E-13	2.40E-19	5.15E-25	1.11E-30	2.38E-36
Ra-226	1.60E+03	5.24E-01	5.16E-01	5.07E-01	4.99E-01	4.91E-01	4.75E-01	4.60E-01	4.46E-01	4.31E-01

NUCLIDE	350.	400.	450.	500.	600.	700.	750.	850.	1000.	1500.	2000.
Th-234	1.11E-40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pa-234m	1.11E-40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rn-222	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Po-218	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Pb-214	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Bi-214	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Po-214	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Pb-210	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Bi-210	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Po-210	3.59E-01	3.40E-01	3.22E-01	3.05E-01	2.74E-01	2.46E-01	2.33E-01	2.09E-01	1.78E-01	1.04E-01	6.03E-02
Ra-228	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Ac-228	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Th-228	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Ra-224	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Rn-220	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Po-216	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Pb-212	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Bi-212	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Po-212	3.35E-01	3.35E-01	3.35E-01	3.35E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.33E-01	3.32E-01
Tl-208	1.88E-01	1.88E-01	1.88E-01	1.88E-01	1.88E-01	1.88E-01	1.88E-01	1.88E-01	1.88E-01	1.87E-01	1.87E-01
Ac-227	5.08E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th-227	5.08E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra-223	5.08E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rn-219	5.08E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pb-211	5.08E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bi-211	5.08E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th-230	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
Th-232	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.23E-01	5.22E-01	5.22E-01	5.22E-01	5.22E-01	5.20E-01	5.19E-01
U-234	1.11E-40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-235	5.12E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-238	1.11E-40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th-231	5.12E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pa-231	5.12E-42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra-226	4.18E-01	4.04E-01	3.91E-01	3.79E-01	3.55E-01	3.33E-01	3.22E-01	3.02E-01	2.74E-01	1.98E-01	1.43E-01

*********** MAXIMUM DOSES & DOMINANT NUCLIDES BY PATHWAY **********

RISK ASSESSMENT

PATHWAY	DUST	ATMOSPHERIC	GAMMA	WELL	FOOD
ANNUAL DOSE	1.62E+00	0.00E+00	7.98E+01	1.44E+03	2.17E-01
YEAR	0	0	350	25	75
DOMINANT NUCLIDE	Th-232		Tl-208	Ac-227	Pb-210

Whetstone Associates

ATTACHMENT 6
PATHRAE VERTICAL MODEL OUTPUT FILES

Prepared for

Envirocare of Utah, Inc.
46 West Broadway, Suite 116
Salt Lake City, Utah 84101

Prepared by

Whetstone Associates, Inc..
13685 West Wesley Avenue
Lakewood, Colorado 80228-4744
303-716-9303
Document 4101M.000719

July 19, 2000

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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date:  7-17-2000
  Time:  9:36: 4
Env.Western LARW, run VT265, vert., 0.265 cm/yr, 10 cm d.
*****  Mirror Image of Input Files  *****
-- Input File:  ABCDEF.DAT
Env.Western LARW, run VT265, vert., 0.265 cm/yr, 10 cm d.

116,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,1
30.,135.,14
59,0,1
1,2
0,1.,1.,2.65E-03,2.65e-03,4.43,0
1566.,0.100,0,0,0.266,3.1E-02,100.9,0
1,0,0,0,0,0
0,1.,1.,4.43,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
4,7
1,0,1,0
0.00265,0.028,0.094,0,0,1.,0,1.,0,0.353

-- Input File:  BRCDCF.DAT
101,Ac-227  0,0,0,0,0,0,0
102,Ag-108m 0,0,0,0,0,0,0
103,Al-26   0,0,0,0,0,0,0
48,Am-241   0,0,0,0,0,0,0
104,Am-242m 0,0,0,0,0,0,0
105,Am-243  0,0,0,0,0,0,0
106,Ba-133  0,0,0,0,0,0,0
107,Be-10   0,0,0,0,0,0,0
108,Bi-207  0,0,0,0,0,0,0
109,Bi-210m 0,0,0,0,0,0,0
110,Bk-247  0,0,0,0,0,0,0
111,C-14    0,0,0,0,0,0,0
112,Ca-41   0,0,0,0,0,0,0
113,Cd-113  0,0,0,0,0,0,0
114,Cd-113m 0,0,0,0,0,0,0
115,Cf-249  0,0,0,0,0,0,0
116,Cf-250  0,0,0,0,0,0,0
117,Cf-251  0,0,0,0,0,0,0
118,Cf-252  0,0,0,0,0,0,0
119,Cl-36   0,0,0,0,0,0,0
120,Cm-243  0,0,0,0,0,0,0
50,Cm-244   0,0,0,0,0,0,0
121,Cm-245  0,0,0,0,0,0,0
122,Cm-246  0,0,0,0,0,0,0
123,Cm-247  0,0,0,0,0,0,0
124,Cm-248  0,0,0,0,0,0,0
125,Co-60   0,0,0,0,0,0,0
126,Cs-135  0,0,0,0,0,0,0
127,Cs-137  0,0,0,0,0,0,0
128,Eu-152  0,0,0,0,0,0,0
129,Eu-154  0,0,0,0,0,0,0
130,Eu-155  0,0,0,0,0,0,0
131,Fe-55   0,0,0,0,0,0,0
132,Fe-60   0,0,0,0,0,0,0
133,Gd-148  0,0,0,0,0,0,0
134,H-3     0,0,0,0,0,0,0
135,Hg-194  0,0,0,0,0,0,0
136,Ho-166m 0,0,0,0,0,0,0
137,I-129   0,0,0,0,0,0,0
138,K-40    0,0,0,0,0,0,0
139,Mn-53   0,0,0,0,0,0,0
140,Na-22   0,0,0,0,0,0,0
141,Nb-91   0,0,0,0,0,0,0
142,Nb-92   0,0,0,0,0,0,0
143,Nb-93m  0,0,0,0,0,0,0
144,Nb-94   0,0,0,0,0,0,0
146,Ni-59   0,0,0,0,0,0,0
147,Ni-63   0,0,0,0,0,0,0
42,Np-237   0,0,0,0,0,0,0
148,Os-194  0,0,0,0,0,0,0
149,Pa-231  0,0,0,0,0,0,0
150,Pb-202  0,0,0,0,0,0,0
151,Pb-210  0,0,0,0,0,0,0
152,Pd-107  0,0,0,0,0,0,0
153,Pm-145  0,0,0,0,0,0,0
154,Pm-147  0,0,0,0,0,0,0
155,Po-208  0,0,0,0,0,0,0
156,Po-209  0,0,0,0,0,0,0
157,Pt-193  0,0,0,0,0,0,0
-- Input File:  INVNTRY.DAT
101,2.18E+01,1.30E-08,0,0,0,0,0
102,4.18E+02,4.69E-07,0,0,0,0,0
103,7.40E+05,1.21E-07,0,0,0,0,0
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48,4.32E-02,1.80E-02,0,0,0,0,0
104,1.41E-02,1.80E-02,0,0,0,0,0
105,7.37E-03,1.80E-02,0,0,0,0,0
106,1.05E-01,4.61E+08,0,0,0,0,0
107,1.51E+06,3.96E+04,0,0,0,0,0
108,3.16E-01,9.66E+07,0,0,0,0,0
109,3.04E+06,1.02E+03,0,0,0,0,0
110,1.40E-03,1.78E-10,0,0,0,0,0
111,5.73E-03,9.00E-00,0,0,0,0,0
112,1.03E+05,2.90E-06,0,0,0,0,0
113,9.30E+15,7.75E-07,0,0,0,0,0
114,1.41E+01,4.04E+08,0,0,0,0,0
115,3.51E-02,2.70E-10,0,0,0,0,0
116,1.31E-01,1.53E-04,0,0,0,0,0
117,2.46E+00,1.80E-02,0,0,0,0,0
118,2.65E+00,7.92E-02,0,0,0,0,0
119,3.01E+05,5.09E-07,0,0,0,0,0
120,2.91E+01,1.80E-02,0,0,0,0,0
50,1.81E+01,1.80E-02,0,0,0,0,0
121,8.50E+03,1.80E-02,0,0,0,0,0
122,4.73E+03,1.80E-02,0,0,0,0,0
123,1.56E+07,1.80E-02,0,0,0,0,0
124,3.40E+05,1.80E-02,0,0,0,0,0
125,5.27E+00,7.92E+02,0,0,0,0,0
126,2.30E+06,2.07E+03,0,0,0,0,0
127,3.01E-01,1.13E+00,0,0,0,0,0
128,1.35E-01,3.11E+08,0,0,0,0,0
129,8.59E-00,4.87E+08,0,0,0,0,0
130,4.76E+00,7.92E+02,0,0,0,0,0
131,2.73E+00,7.92E+02,0,0,0,0,0
132,1.50E-06,7.15E+03,0,0,0,0,0
133,7.46E-01,5.80E+07,0,0,0,0,0
134,1.23E+01,4.50E+01,0,0,0,0,0
135,4.44E+02,6.38E-06,0,0,0,0,0
136,1.20E+03,3.24E+06,0,0,0,0,0
137,1.57E+07,9.00E-03,0,0,0,0,0
138,1.29E+09,1.26E+01,0,0,0,0,0
139,3.74E+06,3.24E+03,0,0,0,0,0
140,2.60E+00,7.92E+02,0,0,0,0,0
141,6.80E+02,1.04E+07,0,0,0,0,0
142,3.47E+07,2.02E+02,0,0,0,0,0
143,1.61E+01,4.74E+08,0,0,0,0,0
144,2.03E+04,2.34E-02,0,0,0,0,0
146,7.60E-04,2.52E+01,0,0,0,0,0
147,1.00E+02,3.96E+00,0,0,0,0,0
42,2.14E+06,1.80E-02,0,0,0,0,0
148,6.00E+00,5.53E+08,0,0,0,0,0
149,3.28E+04,8.46E+04,0,0,0,0,0
150,5.25E+04,6.12E+03,0,0,0,0,0
151,2.23E+01,1.37E+08,0,0,0,0,0
152,6.50E-06,9.18E-02,0,0,0,0,0
153,1.77E+01,2.52E+08,0,0,0,0,0
154,2.62E+00,7.92E+02,0,0,0,0,0
155,2.90E-00,7.92E+02,0,0,0,0,0
156,1.02E-02,3.02E+07,0,0,0,0,0
157,5.00E+01,6.66E+07,0,0,0,0,0
-- Input File:  RQSITE.DAT
101,3.25E-04,4.5,4.5
102,5.39E-04,2.7,2.7
103,4.42E-02,0.001,0.001
48,1.43E-03,1.0,1.0
104,1.43E-03,1.0,1.0
105,1.43E-03,1.0,1.0
106,1.47E-04,10.0,10.0
107,5.81E-04,2.5,2.5
108,1.43E-03,1.0,1.0
109,1.43E-03,1.0,1.0
110,4.42E-02,0.001,0.001
111,1.72E-04,8.52,8.52
112,1.79E-02,0.05,0.05
113,1.43E-03,1.0,1.0
114,1.43E-03,1.0,1.0
115,4.42E-02,0.001,0.001
116,4.42E-02,0.001,0.001
117,4.42E-02,0.001,0.001
118,4.42E-02,0.001,0.001
119,4.42E-02,0.001,0.001
120,1.58E-05,93.3,93.3
50,1.58E-05,93.3,93.3
121,1.58E-05,93.3,93.3
122,1.58E-05,93.3,93.3
123,1.58E-05,93.3,93.3
124,1.58E-05,93.3,93.3
125,3.98E-06,370.0,370.0
126,1.11E-05,133.0,133.0
127,1.11E-05,133.0,133.0
128,1.43E-03,1.0,1.0
129,1.43E-03,1.0,1.0
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130,1.43E-03,1.0,1.0
131,1.03E-03,1.4,1.4
132,1.03E-03,1.4,1.4
133,1.43E-03,1.0,1.0
134,2.04E-02,0.04,0.04
135,1.47E-04,10.0,10.0
136,5.81E-04,2.5,2.5
137,9.67E-03,0.12,0.12
138,8.08E-03,0.15,0.15
139,2.29E-04,6.4,6.4
140,4.42E-02,0.001,0.001
141,9.02E-04,1.6,1.6
142,9.02E-04,1.6,1.6
143,9.02E-04,1.6,1.6
144,9.02E-04,1.6,1.6
146,1.47E-04,10.0,10.0
147,1.47E-04,10.0,10.0
42,4.86E-04,3.0,3.0
148,2.93E-04,5.0,5.0
149,2.66E-04,5.5,5.5
150,7.74E-05,19.0,19.0
151,7.74E-05,19.0,19.0
152,2.53E-03,0.55,0.55
153,2.25E-04,6.5,6.5
154,2.25E-04,6.5,6.5
155,1.63E-04,9.0,9.0
156,1.63E-04,9.0,9.0
157,1.58E-03,0.9,0.9
-- Input File:  UPTAKE.DAT
2.65E-03,3.53E-01,1.566
0,0,0,0,0
0,0,0
0,0,0,0
0,0,0,0,0
0,0,0,0,0,730.,0
101,0.00E+00,0.0,0.0,0,0,0,0
102,0.00E+00,0.0,0.0,0,0,0,0
103,0.00E+00,0.0,0.0,0,0,0,0
48,0.00E+00,0.0,0.0,0,0,0,0
104,0.00E+00,0.0,0.0,0,0,0,0
105,0.00E+00,0.0,0.0,0,0,0,0
106,0.00E+00,0.0,0.0,0,0,0,0
107,0.00E+00,0.0,0.0,0,0,0,0
108,0.00E+00,0.0,0.0,0,0,0,0
109,0.00E+00,0.0,0.0,0,0,0,0
110,0.00E+00,0.0,0.0,0,0,0,0
111,0.00E+00,0.0,0.0,0,0,0,0
112,0.00E+00,0.0,0.0,0,0,0,0
113,0.00E+00,0.0,0.0,0,0,0,0
114,0.00E+00,0.0,0.0,0,0,0,0
115,0.00E+00,0.0,0.0,0,0,0,0
116,0.00E+00,0.0,0.0,0,0,0,0
117,0.00E+00,0.0,0.0,0,0,0,0
118,0.00E+00,0.0,0.0,0,0,0,0
119,0.00E+00,0.0,0.0,0,0,0,0
120,0.00E+00,0.0,0.0,0,0,0,0
50,0.00E+00,0.0,0.0,0,0,0,0
121,0.00E+00,0.0,0.0,0,0,0,0
122,0.00E+00,0.0,0.0,0,0,0,0
123,0.00E+00,0.0,0.0,0,0,0,0
124,0.00E+00,0.0,0.0,0,0,0,0
125,0.00E+00,0.0,0.0,0,0,0,0
126,0.00E+00,0.0,0.0,0,0,0,0
127,0.00E+00,0.0,0.0,0,0,0,0
128,0.00E+00,0.0,0.0,0,0,0,0
129,0.00E+00,0.0,0.0,0,0,0,0
130,0.00E+00,0.0,0.0,0,0,0,0
131,0.00E+00,0.0,0.0,0,0,0,0
132,0.00E+00,0.0,0.0,0,0,0,0
133,0.00E+00,0.0,0.0,0,0,0,0
134,0.00E+00,0.0,0.0,0,0,0,0
135,0.00E+00,0.0,0.0,0,0,0,0
136,0.00E+00,0.0,0.0,0,0,0,0
137,0.00E+00,0.0,0.0,0,0,0,0
138,0.00E+00,0.0,0.0,0,0,0,0
139,0.00E+00,0.0,0.0,0,0,0,0
140,0.00E+00,0.0,0.0,0,0,0,0
141,0.00E+00,0.0,0.0,0,0,0,0
142,0.00E+00,0.0,0.0,0,0,0,0
143,0.00E+00,0.0,0.0,0,0,0,0
144,0.00E+00,0.0,0.0,0,0,0,0
146,0.00E+00,0.0,0.0,0,0,0,0
147,0.00E+00,0.0,0.0,0,0,0,0
42,0.00E+00,0.0,0.0,0,0,0,0
148,0.00E+00,0.0,0.0,0,0,0,0
149,0.00E+00,0.0,0.0,0,0,0,0
150,0.00E+00,0.0,0.0,0,0,0,0
151,0.00E+00,0.0,0.0,0,0,0,0
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 152,0.00E+00,0.0,0.0,0,0,0,0
 153,0.00E+00,0.0,0.0,0,0,0,0
 154,0.00E+00,0.0,0.0,0,0,0,0
 155,0.00E+00,0.0,0.0,0,0,0,0
 156,0.00E+00,0.0,0.0,0,0,0,0
 157,0.00E+00,0.0,0.0,0,0,0,0
1
                       TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
                UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
                 RIVER     WELL     EROSION   BATHTUB  SPILLAGE    FOOD
 NUCLIDE          L/YR      L/YR      L/YR      L/YR      L/YR     KG/YR
   Ac-227      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
   Ag-108m     0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
   Al-26       0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
•
•
•
Po-209      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
   Pt-193      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
 **********  PATHRAE INPUT SUMMARY  **********
 THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
 NUMBER OF TIMES FOR CALCULATION IS116
 YEARS TO BE CALCULATED ARE ...
      6.00      9.00     12.00     15.00     18.00
     21.00     24.00     27.00     30.00     35.00
     40.00     45.00     50.00     55.00     60.00
     65.00     70.00     75.00     80.00     85.00
     90.00     95.00    100.00    105.00    110.00
    115.00    120.00    125.00    130.00    135.00
    140.00    145.00    150.00    155.00    160.00
    165.00    170.00    175.00    180.00    185.00
    190.00    195.00    200.00    205.00    210.00
    215.00    220.00    225.00    230.00    235.00
    240.00    245.00    250.00    255.00    260.00
    265.00    270.00    275.00    280.00    285.00
    290.00    295.00    300.00    310.00    320.00
    330.00    340.00    350.00    360.00    370.00
    380.00    390.00    400.00    410.00    420.00
    430.00    440.00    450.00    460.00    470.00
    480.00    490.00    500.00    510.00    520.00
    530.00    540.00    550.00    560.00    570.00
    580.00    590.00    600.00    610.00    620.00
    630.00    640.00    650.00    660.00    670.00
    680.00    690.00    700.00    720.00    740.00
    760.00    780.00    800.00    825.00    850.00
    875.00    900.00    925.00    950.00    975.00
   1000.00
 THERE ARE  59 ISOTOPES IN THE INVENTORY FILE
 THE VALUE OF IFLAG IS 0
 NUMBER OF PATHWAYS IS  1
            PATHWAY              TYPE OF USAGE
                               FOR UPTAKE FACTORS
    1  GROUNDWATER TO RIVER         2
 TIME OF OPERATION OF WASTE FACILITY IN YEARS                        0.
 LENGTH OF REPOSITORY (M)                                            1.
 WIDTH OF REPOSITORY (M)                                             1.
 RIVER FLOW RATE (M**3/YR)                                           2.65E-03
 STREAM FLOW RATE (M**3/YR)                                          2.65E-03
 DISTANCE TO RIVER (M)                                               4.
 OPERATIONAL SPILLAGE FRACTION                                       0.00E+00
 DENSITY OF AQUIFER (KG/M**3)                                     1566.
 LONGITUDINAL DISPERSIVITY (M)                                       1.00E-01
 LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)                  0.00E+00
 NUMBER OF MESH POINTS FOR DISPERSION CALCULATION                    1
 FLAG FOR GAMMA PATHWAY OPTIONS                                      0
 FLAG FOR GAMMA BUILDUP CALCULATION                                  0
 FLAG FOR ATMOSPHERIC PATHWAY                                        0
 COVER THICKNESS OVER WASTE (M)                                       .00
 THICKNESS OF WASTE IN PITS (M)                                      1.00
 TOTAL WASTE VOLUME (M**3)                                           1.000E+00
 DISTANCE TO WELL -- X COORDINATE (M)                                4.
 DISTANCE TO WELL -- Y COORDINATE (M)                                0.
 DENSITY OF WASTE (KG/M**3)                                       1800.
 FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE                     1.000
 FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD                     .000
 DEPTH OF PLANT ROOT ZONE (M)                                         .000
 AREAL DENSITY OF PLANTS (KG/M**2)                                    .000
 AVERAGE DUST LOADING IN AIR (KG/M**3)                               0.00E+00
 ANNUAL ADULT BREATHING RATE (M**3/YR)                               0.
 FRACTION OF YEAR EXPOSED TO DUST                                     .000
 CANISTER LIFETIME (YEARS)                                           0.
 INVENTORY SCALING FACTOR                                            1.00E+00
 HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                             0.
 AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)                    0.00E+00
 RADON EMANATING POWER OF THE WASTE                                  0.00E+00
 DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                      0.00E+00
 DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                      0.00E+00
 THICKNESS OF CONCRETE SLAB FLOOR (CM)                                .0
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DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)	0.00E+00
ATMOSPHERIC STABILITY CLASS	0
AVERAGE WIND SPEED (M/S)	.00
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR	.0000
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)	.0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)	0.00E+00
DEPOSITION VELOCITY (M/S)	.0000
STACK HEIGHT (M)	.0
STACK INSIDE DIAMETER (M)	.00
STACK GAS VELOCITY (M/S)	.0
HEAT EMISSION RATE FROM BURNING (CAL/S)	0.00E+00
DECAY CHAIN FLAGS	4 7 0 0 0 0 0
FLAG FOR INPUT SUMMARY PRINTOUT	1
FLAG FOR DIRECTION OF TRENCH FILLING	1
FLAG FOR GROUNDWATER PATHWAY OPTIONS	0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)	2.65E-03
DEGREE OF SOIL SATURATION	.266
RESIDUAL SOIL SATURATION	.031
PERMEABILITY OF VERTICAL ZONE (M/YR)	100.90
SOIL NUMBER	.000
POROSITY OF AQUIFER	.09
POROSITY OF UNSATURATED ZONE	.35
DISTANCE FROM AQUIFER TO WASTE (M)	.0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)	2.82E-02
HORIZONTAL VELOCITY OF AQUIFER (M/YR)	.0
LENGTH OF PERFORATED WELL CASING (M)	1.000
SURFACE EROSION RATE (M/YR)	0.000E+00
LEACH RATE SCALING FACTOR	1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)	0.00E+00

NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Ac-227	0.000E+00	0.000E+00	0.000E+00	2.180E+01
Ag-108m	0.000E+00	0.000E+00	0.000E+00	4.180E+02
Al-26	0.000E+00	0.000E+00	0.000E+00	7.400E+05
Am-242m	0.000E+00	0.000E+00	0.000E+00	1.410E+02
Am-243	0.000E+00	0.000E+00	0.000E+00	7.370E+03
Ba-133	0.000E+00	0.000E+00	0.000E+00	1.050E+01
Be-10	0.000E+00	0.000E+00	0.000E+00	1.510E+06
Bi-207	0.000E+00	0.000E+00	0.000E+00	3.160E+01
Bi-210m	0.000E+00	0.000E+00	0.000E+00	3.040E+06
Bk-247	0.000E+00	0.000E+00	0.000E+00	1.400E+03
C-14	0.000E+00	0.000E+00	0.000E+00	5.730E+03
Ca-41	0.000E+00	0.000E+00	0.000E+00	1.030E+05
Cd-113	0.000E+00	0.000E+00	0.000E+00	9.300E+15
Cd-113m	0.000E+00	0.000E+00	0.000E+00	1.410E+01
Cf-249	0.000E+00	0.000E+00	0.000E+00	3.510E+02
Cf-250	0.000E+00	0.000E+00	0.000E+00	1.310E+01
Cf-251	0.000E+00	0.000E+00	0.000E+00	2.460E+00
Cf-252	0.000E+00	0.000E+00	0.000E+00	2.650E+00
Cl-36	0.000E+00	0.000E+00	0.000E+00	3.010E+05
Cm-243	0.000E+00	0.000E+00	0.000E+00	2.910E+01
Cm-245	0.000E+00	0.000E+00	0.000E+00	8.500E+03
Cm-246	0.000E+00	0.000E+00	0.000E+00	4.730E+03
Cm-247	0.000E+00	0.000E+00	0.000E+00	1.560E+07
Cm-248	0.000E+00	0.000E+00	0.000E+00	3.400E+05
Co-60	0.000E+00	0.000E+00	0.000E+00	5.270E+00
Cs-135	0.000E+00	0.000E+00	0.000E+00	2.300E+06
Cs-137	0.000E+00	0.000E+00	0.000E+00	3.010E+01
Eu-152	0.000E+00	0.000E+00	0.000E+00	1.350E+01
Eu-154	0.000E+00	0.000E+00	0.000E+00	8.590E+00
Eu-155	0.000E+00	0.000E+00	0.000E+00	4.760E+00
Fe-55	0.000E+00	0.000E+00	0.000E+00	2.730E+00
Fe-60	0.000E+00	0.000E+00	0.000E+00	1.500E+06
Gd-148	0.000E+00	0.000E+00	0.000E+00	7.460E+01
H-3	0.000E+00	0.000E+00	0.000E+00	1.230E+01
Hg-194	0.000E+00	0.000E+00	0.000E+00	4.440E+02
Np-237	0.000E+00	0.000E+00	0.000E+00	2.140E+06
Am-241	0.000E+00	0.000E+00	0.000E+00	4.320E+02
Cm-244	0.000E+00	0.000E+00	0.000E+00	1.810E+01
Ho-166m	0.000E+00	0.000E+00	0.000E+00	1.200E+03
I-129	0.000E+00	0.000E+00	0.000E+00	1.570E+07
K-40	0.000E+00	0.000E+00	0.000E+00	1.280E+09
Mn-53	0.000E+00	0.000E+00	0.000E+00	3.740E+06
Na-22	0.000E+00	0.000E+00	0.000E+00	2.600E+00
Nb-91	0.000E+00	0.000E+00	0.000E+00	6.800E+02
Nb-92	0.000E+00	0.000E+00	0.000E+00	3.470E+07
Nb-93m	0.000E+00	0.000E+00	0.000E+00	1.610E+01
Nb-94	0.000E+00	0.000E+00	0.000E+00	2.030E+04
Ni-59	0.000E+00	0.000E+00	0.000E+00	7.600E+04
Ni-63	0.000E+00	0.000E+00	0.000E+00	1.000E+02
Os-194	0.000E+00	0.000E+00	0.000E+00	6.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	3.280E+04
Pb-202	0.000E+00	0.000E+00	0.000E+00	5.250E+04
Pb-210	0.000E+00	0.000E+00	0.000E+00	2.230E+01
Pd-107	0.000E+00	0.000E+00	0.000E+00	6.500E+06
Pm-145	0.000E+00	0.000E+00	0.000E+00	1.770E+01
Pm-147	0.000E+00	0.000E+00	0.000E+00	2.620E+00

Po-208	0.000E+00	0.000E+00	0.000E+00	2.900E+00
Po-209	0.000E+00	0.000E+00	0.000E+00	1.020E+02
Pt-193	0.000E+00	0.000E+00	0.000E+00	5.000E+01

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Ac-227	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00
Al-26	0.000E+00	0.000E+00	0.000E+00
•			
•			
•			
Po-209	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Ac-227	3.250E-04	3.250E-04	0.000E+00	1.300E+08
Ag-108m	5.390E-04	5.390E-04	0.000E+00	4.690E+07
Al-26	4.420E-02	4.420E-02	0.000E+00	1.210E-07
Am-242m	1.430E-03	1.430E-03	0.000E+00	1.800E-02
Am-243	1.430E-03	1.430E-03	0.000E+00	1.800E-02
Ba-133	1.470E-04	1.470E-04	0.000E+00	4.610E+08
Be-10	5.810E-04	5.810E-04	0.000E+00	3.960E+04
Bi-207	1.430E-03	1.430E-03	0.000E+00	9.660E+07
Bi-210m	1.430E-03	1.430E-03	0.000E+00	1.020E+03
Bk-247	4.420E-02	4.420E-02	0.000E+00	1.780E-10
C-14	1.720E-04	1.720E-04	0.000E+00	9.000E+00
Ca-41	1.790E-02	1.790E-02	0.000E+00	2.900E-06
Cd-113	1.430E-03	1.430E-03	0.000E+00	7.750E-07
Cd-113m	1.430E-03	1.430E-03	0.000E+00	4.040E+08
Cf-249	4.420E-02	4.420E-02	0.000E+00	2.700E-10
Cf-250	4.420E-02	4.420E-02	0.000E+00	1.530E-04
Cf-251	4.420E-02	4.420E-02	0.000E+00	1.800E-02
Cf-252	4.420E-02	4.420E-02	0.000E+00	7.920E+02
Cl-36	4.420E-02	4.420E-02	0.000E+00	5.090E-07
Cm-243	1.580E-05	1.580E-05	0.000E+00	1.800E-02
Cm-245	1.580E-05	1.580E-05	0.000E+00	1.800E-02
Cm-246	1.580E-05	1.580E-05	0.000E+00	1.800E-02
Cm-247	1.580E-05	1.580E-05	0.000E+00	1.800E-02
Cm-248	1.580E-05	1.580E-05	0.000E+00	1.800E-02
Co-60	3.980E-06	3.980E-06	0.000E+00	7.920E+02
Cs-135	1.110E-05	1.110E-05	0.000E+00	2.070E+03
Cs-137	1.110E-05	1.110E-05	0.000E+00	1.130E+00
Eu-152	1.430E-03	1.430E-03	0.000E+00	3.110E+08
Eu-154	1.430E-03	1.430E-03	0.000E+00	4.870E+08
Eu-155	1.430E-03	1.430E-03	0.000E+00	7.920E+02
Fe-55	1.030E-03	1.030E-03	0.000E+00	7.920E+02
Fe-60	1.030E-03	1.030E-03	0.000E+00	7.150E+03
Gd-148	1.430E-03	1.430E-03	0.000E+00	5.800E+07
H-3	2.040E-02	2.040E-02	0.000E+00	4.500E+01
Hg-194	1.470E-04	1.470E-04	0.000E+00	6.380E+06
Np-237	4.860E-04	4.860E-04	0.000E+00	1.800E-02
Am-241	1.430E-03	1.430E-03	0.000E+00	1.800E-02
Cm-244	1.580E-05	1.580E-05	0.000E+00	1.800E-02
Ho-166m	5.810E-04	5.810E-04	0.000E+00	3.240E+06
I-129	9.670E-03	9.670E-03	0.000E+00	9.000E-03
K-40	8.080E-03	8.080E-03	0.000E+00	1.260E+01
Mn-53	2.290E-04	2.290E-04	0.000E+00	3.240E+03
Na-22	4.420E-02	4.420E-02	0.000E+00	7.920E+02
Nb-91	9.020E-04	9.020E-04	0.000E+00	1.040E+07
Nb-92	9.020E-04	9.020E-04	0.000E+00	2.020E+02
Nb-93m	9.020E-04	9.020E-04	0.000E+00	4.740E+08
Nb-94	9.020E-04	9.020E-04	0.000E+00	2.340E-02
Ni-59	1.470E-04	1.470E-04	0.000E+00	2.520E+01
Ni-63	1.470E-04	1.470E-04	0.000E+00	3.960E+00
Os-194	2.930E-04	2.930E-04	0.000E+00	5.530E+08
Pa-231	2.660E-04	2.660E-04	0.000E+00	8.460E+04
Pb-202	7.740E-05	7.740E-05	0.000E+00	6.120E+03
Pb-210	7.740E-05	7.740E-05	0.000E+00	1.370E+08
Pd-107	2.530E-03	2.530E-03	0.000E+00	9.180E+02
Pm-145	2.250E-04	2.250E-04	0.000E+00	2.520E+08
Pm-147	2.250E-04	2.250E-04	0.000E+00	7.920E+02
Po-208	1.630E-04	1.630E-04	0.000E+00	7.920E+02
Po-209	1.630E-04	1.630E-04	0.000E+00	3.020E+07
Pt-193	1.580E-03	1.580E-03	0.000E+00	6.660E-07

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Ac-227	4.500E+00	7.597E+01	4.500E+00	7.605E+01
Ag-108m	2.700E+00	4.598E+01	2.700E+00	4.603E+01
Al-26	1.000E-03	1.017E+00	1.000E-03	1.017E+00
Am-242m	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Am-243	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Ba-133	1.000E+01	1.676E+02	1.000E+01	1.678E+02
Be-10	2.500E+00	4.265E+01	2.500E+00	4.269E+01
Bi-207	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Bi-210m	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Bk-247	1.000E-03	1.017E+00	1.000E-03	1.017E+00
C-14	8.520E+00	1.429E+02	8.520E+00	1.431E+02

Ca-41	5.000E-02	1.833E+00	5.000E-02	1.834E+00
Cd-113	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Cd-113m	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Cf-249	1.000E-03	1.017E+00	1.000E-03	1.017E+00
Cf-250	1.000E-03	1.017E+00	1.000E-03	1.017E+00
Cf-251	1.000E-03	1.017E+00	1.000E-03	1.017E+00
Cf-252	1.000E-03	1.017E+00	1.000E-03	1.017E+00
Cl-36	1.000E-03	1.017E+00	1.000E-03	1.017E+00
Cm-243	9.330E+01	1.555E+03	9.330E+01	1.557E+03
Cm-245	9.330E+01	1.555E+03	9.330E+01	1.557E+03
Cm-246	9.330E+01	1.555E+03	9.330E+01	1.557E+03
Cm-247	9.330E+01	1.555E+03	9.330E+01	1.557E+03
Cm-248	9.330E+01	1.555E+03	9.330E+01	1.557E+03
Co-60	3.700E+02	6.165E+03	3.700E+02	6.172E+03
Cs-135	1.330E+02	2.217E+03	1.330E+02	2.219E+03
Cs-137	1.330E+02	2.217E+03	1.330E+02	2.219E+03
Eu-152	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Eu-154	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Eu-155	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Fe-55	1.400E+00	2.432E+01	1.400E+00	2.435E+01
Fe-60	1.400E+00	2.432E+01	1.400E+00	2.435E+01
Gd-148	1.000E+00	1.766E+01	1.000E+00	1.768E+01
H-3	4.000E-02	1.666E+00	4.000E-02	1.667E+00
Hg-194	1.000E+01	1.676E+02	1.000E+01	1.678E+02
Np-237	3.000E+00	5.098E+01	3.000E+00	5.103E+01
Am-241	1.000E+00	1.766E+01	1.000E+00	1.768E+01
Cm-244	9.330E+01	1.555E+03	9.330E+01	1.557E+03
Ho-166m	2.500E+00	4.265E+01	2.500E+00	4.269E+01
I-129	1.200E-01	2.999E+00	1.200E-01	3.001E+00
K-40	1.500E-01	3.499E+00	1.500E-01	3.502E+00
Mn-53	6.400E+00	1.076E+02	6.400E+00	1.077E+02
Na-22	1.000E-03	1.017E+00	1.000E-03	1.017E+00
Nb-91	1.600E+00	2.766E+01	1.600E+00	2.768E+01
Nb-92	1.600E+00	2.766E+01	1.600E+00	2.768E+01
Nb-93m	1.600E+00	2.766E+01	1.600E+00	2.768E+01
Nb-94	1.600E+00	2.766E+01	1.600E+00	2.768E+01
Ni-59	1.000E+01	1.676E+02	1.000E+01	1.678E+02
Ni-63	1.000E+01	1.676E+02	1.000E+01	1.678E+02
Os-194	5.000E+00	8.430E+01	5.000E+00	8.439E+01
Pa-231	5.500E+00	9.263E+01	5.500E+00	9.273E+01
Pb-202	1.900E+01	3.175E+02	1.900E+01	3.179E+02
Pb-210	1.900E+01	3.175E+02	1.900E+01	3.179E+02
Pd-107	5.500E-01	1.016E+01	5.500E-01	1.017E+01
Pm-145	6.500E+00	1.093E+02	6.500E+00	1.094E+02
Pm-147	6.500E+00	1.093E+02	6.500E+00	1.094E+02
Po-208	9.000E+00	1.509E+02	9.000E+00	1.511E+02
Po-209	9.000E+00	1.509E+02	9.000E+00	1.511E+02
Pt-193	9.000E-01	1.599E+01	9.000E-01	1.601E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00
•				
•				
•				
Po-209	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PATHWAY 1
GROUNDWATER TO RIVER

NUCLIDE CONCENTRATIONS IN RIVER (Ci/m**3)

NUCLIDE/TIME		6.	9.	12.	15.	18.	21.	24.	27.	30.	35.
40.	45.	50.	55.	60.	65.	70.	75.	80.	85.	90.	95.
100.	105.	110.	115.	120.	125.	130.	135.	140.	145.	150.	155.
160.	165.	170.	175.	180.	185.	190.	195.	200.	205.	210.	215.
220.	225.	230.	235.	240.	245.	250.	255.	260.	265.	270.	275.
280.	285.	290.	295.	300.	310.	320.	330.	340.	350.	360.	370.
380.	390.	400.	410.	420.	430.	440.	450.	460.	470.	480.	490.
500.	510.	520.	530.	540.	550.	560.	570.	580.	590.	600.	610.
620.	630.	640.	650.	660.	670.	680.	690.	700.	720.	740.	760.
780.	800.	825.	850.	875.	900.	925.	950.	975.	1000.		
Ac-227		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Ag-109m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Al-26		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	2.0E-19	2.0E-17	9.5E-16	1.8E-14	2.3E-13	2.0E-12	1.2E-11	5.6E-11	2.1E-10	6.8E-10	1.8E-09
4.4E-09	9.5E-09	1.8E-08	3.3E-08	5.4E-08	9.3E-08	1.2E-07	1.7E-07	2.2E-07	2.7E-07	3.3E-07	3.8E-07
4.3E-07	4.7E-07	5.0E-07	5.1E-07	5.2E-07	5.1E-07	5.0E-07	4.8E-07	4.5E-07	4.1E-07	3.8E-07	3.4E-07
3.0E-07	2.6E-07	2.3E-07	2.0E-07	1.7E-07	1.4E-07	1.2E-07	1.0E-07	8.3E-08	6.8E-08	5.5E-08	4.3E-08
3.6E-08	2.9E-08	2.3E-08	1.8E-08	1.5E-08	9.0E-09	5.5E-09	3.3E-09	2.0E-09	1.2E-09	6.7E-10	3.9E-10
2.2E-10	1.2E-10	7.0E-11	3.9E-11	2.2E-11	1.2E-11	6.6E-12	3.6E-12	2.0E-12	1.1E-12	5.7E-13	3.1E-13
1.6E-13	8.8E-14	4.7E-14	2.5E-14	1.3E-14	6.9E-15	3.7E-15	1.9E-15	1.0E-15	5.3E-16	2.9E-16	1.4E-16
7.5E-17	3.9E-17	2.0E-17	1.0E-17	5.4E-18	2.8E-18	1.5E-18	7.5E-19	3.9E-19	1.0E-19	2.7E-20	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Am-242m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-20	3.1E-20	6.4E-20	1.3E-19	5.1E-19	1.8E-18	6.1E-18
1.9E-17	5.5E-17	1.9E-16	6.1E-16	1.8E-15	5.0E-15	1.3E-14	3.1E-14	7.1E-14	1.6E-13		
Am-243		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	1.1E-20	2.7E-20	6.7E-20	1.6E-19	3.6E-19	8.2E-19	1.8E-18	3.8E-18	1.6E-17	6.5E-17	2.4E-16
8.1E-16	2.6E-15	1.0E-14	3.7E-14	1.2E-13	3.8E-13	1.1E-12	3.0E-12	7.9E-12	1.9E-11		
Ba-133		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Be-10		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Bi-207		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-20	6.5E-20	1.8E-19	4.6E-19	1.1E-18	2.7E-18	6.3E-18	1.4E-17
3.0E-17	6.2E-17	1.2E-16	2.4E-16	4.6E-16	9.6E-16	1.6E-15	2.7E-15	4.7E-15	1.3E-14	3.3E-14	7.3E-14
1.7E-13	3.6E-13	8.2E-13	1.7E-12	3.3E-12	5.9E-12	1.0E-11	1.6E-11	2.4E-11	3.4E-11		
Bi-210m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-20	1.2E-19	4.0E-19	1.3E-18	4.0E-18	1.2E-17	3.4E-17	9.5E-17
2.5E-16	6.6E-16	1.6E-15	4.0E-15	9.5E-15	2.2E-14	4.9E-14	1.1E-13	2.3E-13	1.0E-12	3.9E-12	1.4E-11
4.9E-11	1.6E-10	6.2E-10	2.3E-09	7.6E-09	2.4E-08	6.9E-08	1.9E-07	4.9E-07	1.2E-06		
Bk-247		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	2.9E-20	1.2E-18	2.6E-17	3.3E-16	2.8E-15	1.7E-14	8.0E-14	3.0E-13	9.6E-13	2.6E-12
6.2E-12	1.3E-11	2.6E-11	4.5E-11	7.5E-11	1.1E-10	1.7E-10	2.3E-10	3.0E-10	3.7E-10	4.5E-10	5.2E-10
5.8E-10	6.3E-10	6.7E-10	6.9E-10	7.0E-10	6.9E-10	6.7E-10	6.4E-10	6.0E-10	5.5E-10	5.0E-10	4.5E-10
4.0E-10	3.5E-10	3.0E-10	2.6E-10	2.2E-10	1.9E-10	1.6E-10	1.3E-10	1.1E-10	9.8E-11	7.1E-11	5.5E-11
4.6E-11	3.7E-11	3.0E-11	2.3E-11	1.9E-11	1.1E-11	6.9E-12	4.1E-12	2.4E-12	1.4E-12	8.3E-13	4.7E-13
2.7E-13	1.5E-13	8.5E-14	4.7E-14	2.6E-14	1.4E-14	7.8E-15	4.2E-15	2.3E-15	1.2E-15	6.6E-16	3.5E-16
1.9E-16	1.0E-16	5.3E-17	2.8E-17	1.5E-17	7.8E-18	4.1E-18	2.1E-18	1.1E-18	5.8E-19	3.0E-19	1.6E-19
8.1E-20	4.2E-20	2.2E-20	1.1E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
C-14		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Ca-41		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-20	1.0E-18	1.6E-17	1.8E-16	1.6E-15
1.1E-14	6.4E-14	3.1E-13	1.3E-12	4.5E-12	1.5E-11	4.2E-11	1.1E-10	2.7E-10	6.2E-10	1.3E-09	2.6E-09
5.0E-09	9.1E-09	1.6E-08	2.6E-08	4.2E-08	6.5E-08	9.8E-08	1.4E-07	2.0E-07	2.8E-07	3.8E-07	5.1E-07
6.6E-07	8.4E-07	1.1E-06	1.3E-06	1.6E-06	1.9E-06	2.2E-06	2.6E-06	2.9E-06	3.3E-06	3.7E-06	4.1E-06
4.5E-06	4.9E-06	5.2E-06	5.5E-06	5.8E-06	6.3E-06	6.6E-06	6.8E-06	6.7E-06	6.5E-06	6.2E-06	5.8E-06
5.3E-06	4.8E-06	4.2E-06	3.7E-06	3.2E-06	2.7E-06	2.3E-06	1.9E-06	1.6E-06	1.3E-06	1.0E-06	8.3E-07
6.6E-07	5.2E-07	4.1E-07	3.2E-07	2.5E-07	1.9E-07	1.5E-07	1.1E-07	8.6E-08	6.5E-08	4.9E-08	3.7E-08
2.8E-08	2.1E-08	1.5E-08	1.1E-08	8.4E-09	6.2E-09	4.6E-09	3.4E-09	2.5E-09	1.3E-09	6.8E-10	3.6E-10
1.9E-10	9.5E-11	4.1E-11	1.8E-11	7.5E-12	3.2E-12	1.3E-12	5.6E-13	2.3E-13	9.6E-14		
Cd-113		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-20
3.8E-20	1.2E-19	4.7E-19	1.7E-18	5.7E-18	1.8E-17	5.2E-17	1.4E-16	3.7E-16	9.1E-16		
Cd-113m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cf-249		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	4.1E-20	1.7E-18	3.6E-17	4.5E-16	3.8E-15	2.3E-14	1.1E-13	4.0E-13	1.3E-12	3.4E-12
6.1E-12	1.7E-11	3.3E-11	5.8E-11	9.5E-11	1.4E-10	2.1E-10	2.8E-10	3.7E-10	4.6E-10	5.4E-10	6.3E-10
7.0E-10	7.5E-10	7.9E-10	8.1E-10	8.1E-10	8.0E-10	7.7E-10	7.2E-10	6.7E-10	6.2E-10	5.6E-10	4.9E-10
4.4E-10	3.8E-10	3.3E-10	2.8E-10	2.3E-10	2.0E-10	1.6E-10	1.3E-10	1.1E-10	9.0E-11	7.3E-11	5.8E-11
4.7E-11	3.7E-11	2.9E-11	2.3E-11	1.8E-11	1.1E-11	6.5E-12	3.9E-12	2.2E-12	1.3E-12	7.4E-13	4.2E-13
2.3E-13	1.3E-13	7.1E-14	3.9E-14	2.1E-14	1.1E-14	6.2E-15	3.3E-15	1.8E-15	9.4E-16	4.9E-16	2.6E-16
1.4E-16	7.2E-17	3.7E-17	1.9E-17	1.0E-17	5.2E-18	2.7E-18	1.4E-18	7.2E-19	3.7E-19	1.9E-19	9.6E-20
4.9E-20	2.5E-20	1.3E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cf-250		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
8.7E-20	2.3E-17	1.8E-15	5.9E-14	9.6E-13	9.3E-12	6.1E-11	2.9E-10	1.0E-09	3.0E-09	7.3E-09	1.5E-08
2.8E-08	4.6E-08	6.9E-08	9.4E-08	1.2E-07	1.4E-07	1.6E-07	1.7E-07	1.7E-07	1.6E-07	1.5E-07	1.3E-07
1.1E-07	9.5E-08	7.8E-08	6.2E-08	4.8E-08	3.6E-08	2.7E-08	2.0E-08	1.4E-08	1.0E-08	7.1E-09	4.9E-09
3.4E-09	2.3E-09	1.5E-09	1.0E-09	6.5E-10	4.2E-10	2.7E-10	1.7E-10	1.1E-10	7.0E-11	4.4E-11	2.7E-11
1.7E-11	1.0E-11	6.4E-12	3.9E-12	2.4E-12	8.6E-13	3.1E-13	1.1E-13	3.8E-14	1.3E-14	4.5E-15	1.5E-15
5.2E-16	1.7E-16	5.7E-17	1.9E-17	6.1E-18	2.0E-18	6.5E-19	2.1E-19	6.7E-20	2.1E-20	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cf-251		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	9.3E-20	2.3E-18	2.4E-17	1.2E-16	3.8E-16	7.9E-16	1.2E-15	1.4E-15	1.3E-15	9.8E-16	6.5E-16
3.8E-16	2.0E-16	9.4E-17	4.1E-17	1.7E-17	6.2E-18	2.2E-18	7.5E-19	2.4E-19	7.3E-20	2.2E-20	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cf-252		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-19
1.1E-16	1.0E-14	2.8E-13	3.1E-12	1.8E-11	6.2E-11	1.4E-10	2.4E-10	3.0E-10	3.1E-10	2.7E-10	2.0E-10
1.3E-10	7.3E-11	3.8E-11	1.9E-11	8.2E-12	3.4E-12	1.3E-12	5.0E-13	1.8E-13	6.0E-14	2.0E-14	6.2E-15
1.9E-15	5.5E-16	1.6E-16	4.4E-17	1.2E-17	3.2E-18	8.5E-19	2.2E-19	5.6E-20	1.4E-20	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cl-36		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	3.4E-19	8.6E-17	3.6E-15	7.6E-14	9.7E-13	9.2E-12	5.0E-11	2.4E-10	9.0E-10	2.9E-09	7.8E-09
1.9E-08	4.0E-08	7.7E-08	1.4E-07	2.3E-07	3.5E-07	5.1E-07	7.0E-07	9.1E-07	1.1E-06	1.4E-06	1.6E-06
1.8E-06	2.0E-06	2.1E-06	2.2E-06	2.2E-06	2.2E-06	2.1E-06	2.0E-06	1.9E-06	1.7E-06	1.6E-06	1.4E-06
1.3E-06	1.1E-06	9.7E-07	8.3E-07	7.1E-07	6.0E-07	5.0E-07	4.2E-07	3.5E-07	2.9E-07	2.3E-07	1.9E-07
1.5E-07	1.2E-07	9.8E-08	7.8E-08	6.1E-08	3.8E-08	2.3E-08	1.4E-08	8.3E-09	4.9E-09	2.8E-09	1.6E-09
9.3E-10	5.3E-10	2.9E-10	1.6E-10	9.1E-11	5.0E-11	2.8E-11	1.5E-11	8.2E-12	4.5E-12	2.4E-12	1.3E-12
6.9E-13	3.7E-13	2.0E-13	1.0E-13	5.5E-14	2.9E-14	1.5E-14	8.1E-15	4.2E-15	2.2E-15	1.2E-15	6.0E-16
3.1E-16	1.6E-16	8.5E-17	4.4E-17	2.3E-17	1.2E-17	6.1E-18	3.1E-18	1.6E-18	4.3E-19	1.1E-19	3.0E-20
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-243		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-245		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-246		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-247		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-248		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Co-60		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cs-135		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cs-137		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Eu-152		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Eu-154		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Eu-155		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Fe-55		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Fe-60		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-20	1.2E-19	7.5E-19
4.3E-18	2.2E-17	1.6E-16	9.7E-16	5.4E-15	2.7E-14	1.3E-13	5.3E-13	2.1E-12	7.7E-12		
Gd-148		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-20
7.1E-20	2.8E-19	1.1E-18	3.8E-18	1.3E-17	4.1E-17	1.3E-16	3.7E-16	1.0E-15	2.8E-15	7.4E-15	1.9E-14
4.5E-14	1.1E-13	2.4E-13	5.4E-13	1.2E-12	2.5E-12	5.1E-12	1.0E-11	2.0E-11	7.0E-11	2.3E-10	7.0E-10
2.0E-09	5.3E-09	1.7E-08	4.8E-08	1.3E-07	3.1E-07	7.2E-07	1.6E-06	3.2E-06	6.3E-06		
H-3		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	1.6E-19	3.4E-17	1.6E-15	5.4E-14	1.1E-12	1.4E-11	1.3E-10	8.6E-10	4.5E-09
1.9E-08	6.8E-08	2.1E-07	5.5E-07	1.3E-06	2.7E-06	5.2E-06	9.3E-06	1.5E-05	2.4E-05	3.4E-05	4.7E-05
6.2E-05	7.8E-05	9.4E-05	1.1E-04	1.2E-04	1.3E-04	1.4E-04	1.5E-04	1.5E-04	1.5E-04	1.4E-04	1.3E-04
1.2E-04	1.1E-04	9.9E-05	8.7E-05	7.6E-05	6.5E-05	5.4E-05	4.5E-05	3.7E-05	3.0E-05	2.4E-05	1.9E-05
1.5E-05	1.2E-05	9.1E-06	7.0E-06	5.3E-06	3.0E-06	1.6E-06	8.7E-07	4.5E-07	2.3E-07	1.2E-07	5.7E-08
2.8E-08	1.3E-08	6.2E-09	2.9E-09	1.3E-09	6.0E-10	2.7E-10	1.2E-10	5.3E-11	2.3E-11	1.0E-11	4.3E-12
1.9E-12	7.9E-13	3.3E-13	1.4E-13	5.9E-14	2.5E-14	1.0E-14	4.2E-15	1.7E-15	7.1E-16	2.9E-16	1.2E-16
4.8E-17	1.9E-17	7.7E-18	3.1E-18	1.2E-18	5.0E-19	2.0E-19	7.9E-20	3.1E-20	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Hg-194		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Np-237		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Am-241		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	1.0E-20	2.5E-20	5.8E-20	1.3E-19	2.9E-19	6.3E-19	1.3E-18	5.5E-18	2.1E-17	7.5E-17
2.5E-16	7.7E-16	2.9E-15	1.0E-14	3.3E-14	9.8E-14	2.7E-13	7.2E-13	1.9E-12	4.3E-12		

Cm-244		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Ho-166m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
I-129		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	1.3E-20	2.0E-19	2.3E-18	2.3E-17	1.8E-16	1.2E-15	7.1E-15	3.6E-14	1.6E-13	6.6E-13	2.4E-12
8.2E-12	2.6E-11	7.4E-11	2.0E-10	5.1E-10	1.2E-09	2.8E-09	6.2E-09	1.3E-08	2.6E-08	5.0E-08	9.4E-08
1.7E-07	3.0E-07	5.0E-07	5.3E-07	1.3E-06	2.1E-06	3.3E-06	4.9E-06	7.3E-06	1.1E-05	1.5E-05	2.1E-05
3.0E-05	4.1E-05	5.5E-05	7.2E-05	9.5E-05	1.6E-04	2.5E-04	3.8E-04	5.6E-04	8.0E-04	1.1E-03	1.5E-03
2.0E-03	2.5E-03	3.2E-03	3.9E-03	4.6E-03	5.5E-03	6.3E-03	7.2E-03	8.1E-03	9.0E-03	9.8E-03	1.1E-02
1.1E-02	1.2E-02	1.2E-02	1.2E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.2E-02	1.2E-02	1.2E-02	1.1E-02
1.1E-02	9.9E-03	9.3E-03	8.7E-03	8.1E-03	7.5E-03	6.9E-03	6.3E-03	5.7E-03	4.7E-03	3.7E-03	3.0E-03
2.3E-03	1.8E-03	1.3E-03	8.8E-04	6.1E-04	4.1E-04	2.8E-04	1.8E-04	1.2E-04	7.8E-05		
K-40		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	1.6E-20	2.3E-19	4.3E-18	5.0E-17	4.8E-16	3.8E-15	2.6E-14	1.6E-13	8.4E-13	4.0E-12
1.7E-11	6.6E-11	2.3E-10	7.7E-10	2.4E-09	6.9E-09	1.9E-08	4.8E-08	1.2E-07	2.7E-07	6.0E-07	1.3E-06
2.6E-06	5.2E-06	1.0E-05	1.9E-05	3.3E-05	5.9E-05	1.0E-04	1.7E-04	2.7E-04	4.4E-04	6.8E-04	1.0E-03
1.6E-03	2.3E-03	3.4E-03	4.9E-03	6.9E-03	1.3E-02	2.4E-02	4.2E-02	6.9E-02	1.1E-01	1.7E-01	2.6E-01
3.8E-01	5.3E-01	7.3E-01	9.9E-01	1.3E+00	1.7E+00	2.1E+00	2.7E+00	3.3E+00	3.9E+00	4.7E+00	5.5E+00
6.3E+00	7.2E+00	8.1E+00	9.0E+00	9.9E+00	1.1E+01	1.2E+01	1.2E+01	1.3E+01	1.4E+01	1.4E+01	1.5E+01
1.5E+01	1.5E+01	1.5E+01	1.5E+01	1.5E+01	1.5E+01	1.5E+01	1.4E+01	1.4E+01	1.3E+01	1.2E+01	1.0E+01
9.2E+00	7.9E+00	6.5E+00	5.2E+00	4.1E+00	3.2E+00	2.4E+00	1.8E+00	1.3E+00	9.8E-01		
Mn-53		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Na-22		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-19
8.8E-17	8.1E-15	2.2E-13	2.4E-12	1.3E-11	4.5E-11	1.0E-10	1.6E-10	2.0E-10	2.0E-10	1.7E-10	1.2E-10
7.6E-11	4.3E-11	2.2E-11	1.0E-11	4.5E-12	1.8E-12	7.0E-13	2.5E-13	8.8E-14	2.9E-14	9.2E-15	2.8E-15
8.4E-16	2.4E-16	6.7E-17	1.8E-17	4.9E-18	1.3E-18	3.3E-19	8.3E-20	2.0E-20	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Nb-91		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-20
2.8E-19	1.8E-18	1.7E-17	1.3E-16	9.2E-16	5.7E-15	3.2E-14	1.7E-13	7.7E-13	3.4E-12		
Nb-92		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-20	2.9E-19	1.6E-18	8.4E-18	4.1E-17	1.8E-16		
Nb-93m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Nb-94		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-20		
Ni-59		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Ni-63		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Os-194		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Pa-231		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Pb-202		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Pb-210		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Pd-107		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-20	4.0E-19	3.1E-18	2.1E-17	1.3E-16	6.9E-16	3.4E-15
1.6E-14	6.5E-14	2.5E-13	9.2E-13	3.1E-12	1.0E-11	3.0E-11	8.8E-11	2.4E-10	6.4E-10	1.6E-09	3.9E-09
9.0E-09	2.0E-08	4.4E-08	9.2E-08	1.9E-07	3.7E-07	7.2E-07	1.4E-06	2.5E-06	4.5E-06	8.0E-06	1.4E-05
2.3E-05	3.9E-05	6.3E-05	1.0E-04	1.6E-04	2.5E-04	3.9E-04	5.7E-04	9.6E-04	1.8E-03	3.7E-03	7.3E-03
1.4E-02	2.5E-02	4.9E-02	9.4E-02	1.7E-01	3.0E-01	5.0E-01	8.1E-01	1.3E+00	1.9E+00		
Pm-145		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

```
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pm-147        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-208        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Po-209        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Pt-193        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   1.1E-20   5.2E-20   2.2E-19   8.5E-19   3.1E-18
1.1E-17   3.6E-17   1.1E-16   3.3E-16   9.4E-16   2.5E-15   6.6E-15   1.7E-14   4.0E-14   9.2E-14   2.1E-13   4.5E-13
9.5E-13   1.9E-12   3.8E-12   7.4E-12   1.4E-11   2.6E-11   4.7E-11   8.2E-11   1.4E-10   4.0E-10   1.0E-09   2.5E-09
5.7E-09   1.2E-08   2.9E-08   6.6E-08   1.4E-07   2.7E-07   4.9E-07   8.4E-07   1.4E-06   2.2E-06
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PATHRAE-RAD(PC)  Version 2.2d  February 1995
  Date:  7-14-2000
  Time: 12:59:29
Env.Western LARW, run VS364, vert., 0.364 cm/yr, 10 cm d.
*****  Mirror Image of Input Files  *****
-- Input File:  ABCDEF.DAT
Env.Western LARW, run VS364, vert., 0.364 cm/yr, 10 cm d.

116,6.,9.,12.,15.,18.,21.,24.,27.,30.,35.,40.,45.,50.,55.,60.,65.,70.,75.,80.,85.,90.,95.,100.,105.,110.,115.,120.,125.,1
30.,135.,14
59,0,1
1,2
0,1.,1.,3.64E-03,3.64e-03,4.43,0
1566.,0.100,0,0,0.272,3.1E-02,100.9,0
1,0,0,0,0,0
0,1.,1.,4.43,0,1800.,1.,0,0,0
0,0,0,0.0,1.
0,0,0,0,0,0,0
0,0,0,0,0,0,0,0,0,0,0
4,7
1,0,1,0
0.00364,0.038,0.096,0,0,1.,0,1.,0,0.353

-- Input File:  BRCDCF.DAT
 101,Ac-227  0,0,0,0,0,0,0
 102,Ag-108m 0,0,0,0,0,0,0
 103,Al-26   0,0,0,0,0,0,0
 48,Am-241   0,0,0,0,0,0,0
 104,Am-242m 0,0,0,0,0,0,0
 105,Am-243  0,0,0,0,0,0,0
 106,Ba-133  0,0,0,0,0,0,0
 107,Be-10   0,0,0,0,0,0,0
 108,Bi-207  0,0,0,0,0,0,0
 109,Bi-210m 0,0,0,0,0,0,0
 110,Bk-247  0,0,0,0,0,0,0
 111,C-14    0,0,0,0,0,0,0
 112,Ca-41   0,0,0,0,0,0,0
 113,Cd-113  0,0,0,0,0,0,0
 114,Cd-113m 0,0,0,0,0,0,0
 115,Cf-249  0,0,0,0,0,0,0
 116,Cf-250  0,0,0,0,0,0,0
 117,Cf-251  0,0,0,0,0,0,0
 118,Cf-252  0,0,0,0,0,0,0
 119,Cl-36   0,0,0,0,0,0,0
 120,Cm-243  0,0,0,0,0,0,0
 50,Cm-244   0,0,0,0,0,0,0
 121,Cm-245  0,0,0,0,0,0,0
 122,Cm-246  0,0,0,0,0,0,0
 123,Cm-247  0,0,0,0,0,0,0
 124,Cm-248  0,0,0,0,0,0,0
 125,Co-60   0,0,0,0,0,0,0
 126,Cs-135  0,0,0,0,0,0,0
 127,Cs-137  0,0,0,0,0,0,0
 128,Eu-152  0,0,0,0,0,0,0
 129,Eu-154  0,0,0,0,0,0,0
 130,Eu-155  0,0,0,0,0,0,0
 131,Fe-55   0,0,0,0,0,0,0
 132,Fe-60   0,0,0,0,0,0,0
 133,Gd-148  0,0,0,0,0,0,0
 134,H-3     0,0,0,0,0,0,0
 135,Hg-194  0,0,0,0,0,0,0
 136,Ho-166m 0,0,0,0,0,0,0
 137,I-129   0,0,0,0,0,0,0
 138,K-40    0,0,0,0,0,0,0
 139,Mn-53   0,0,0,0,0,0,0
 140,Na-22   0,0,0,0,0,0,0
 141,Nb-91   0,0,0,0,0,0,0
 142,Nb-92   0,0,0,0,0,0,0
 143,Nb-93m  0,0,0,0,0,0,0
 144,Nb-94   0,0,0,0,0,0,0
 146,Ni-59   0,0,0,0,0,0,0
 147,Ni-63   0,0,0,0,0,0,0
 42,Np-237   0,0,0,0,0,0,0
 148,Os-194  0,0,0,0,0,0,0
 149,Pa-231  0,0,0,0,0,0,0
 150,Pb-202  0,0,0,0,0,0,0
 151,Pb-210  0,0,0,0,0,0,0
 152,Pd-107  0,0,0,0,0,0,0
 153,Pm-145  0,0,0,0,0,0,0
 154,Pm-147  0,0,0,0,0,0,0
 155,Po-208  0,0,0,0,0,0,0
 156,Po-209  0,0,0,0,0,0,0
 157,Pt-193  0,0,0,0,0,0,0
 -- Input File:  INVNTRY.DAT
 101,2.18E-01,1.30E+08,0,0,0,0,0
 102,4.18E+02,4.69E+07,0,0,0,0,0
 103,7.40E+05,1.21E-07,0,0,0,0,0
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48,4.32E+02,1.80E-02,0,0,0,0,0
104,1.41E+02,1.80E-02,0,0,0,0,0
105,7.37E+03,1.80E-02,0,0,0,0,0
106,1.05E+01,4.61E+08,0,0,0,0,0
107,1.51E+06,3.96E-04,0,0,0,0,0
108,3.16E+01,9.66E+07,0,0,0,0,0
109,3.04E+06,1.02E+03,0,0,0,0,0
110,1.40E+03,1.78E-10,0,0,0,0,0
111,5.73E+03,9.00E+00,0,0,0,0,0
112,1.03E+05,2.90E-06,0,0,0,0,0
113,9.30E+15,7.75E-07,0,0,0,0,0
114,1.41E+01,4.04E+08,0,0,0,0,0
115,3.51E+02,2.70E-10,0,0,0,0,0
116,1.31E-01,1.53E-04,0,0,0,0,0
117,2.46E+00,1.80E-02,0,0,0,0,0
118,2.65E+00,7.92E+02,0,0,0,0,0
119,3.01E+05,5.09E-07,0,0,0,0,0
120,2.91E+01,1.80E-02,0,0,0,0,0
50,1.81E+01,1.80E-02,0,0,0,0,0
121,8.50E+03,1.80E-02,0,0,0,0,0
122,4.73E+03,1.80E-02,0,0,0,0,0
123,1.56E+07,1.80E-02,0,0,0,0,0
124,3.40E+05,1.80E-02,0,0,0,0,0
125,5.27E+00,7.92E+02,0,0,0,0,0
126,2.30E+06,2.07E+03,0,0,0,0,0
127,3.01E+01,1.13E+00,0,0,0,0,0
128,1.35E+01,3.11E+08,0,0,0,0,0
129,8.59E+00,4.87E+08,0,0,0,0,0
130,4.76E+00,7.92E+02,0,0,0,0,0
131,2.73E+00,7.92E-02,0,0,0,0,0
132,1.50E+06,7.15E+03,0,0,0,0,0
133,7.46E+01,5.80E-07,0,0,0,0,0
134,1.23E+01,4.50E+01,0,0,0,0,0
135,4.44E+02,6.38E+06,0,0,0,0,0
136,1.20E+08,3.24E+06,0,0,0,0,0
137,1.57E+07,9.00E-03,0,0,0,0,0
138,1.28E+09,1.26E+01,0,0,0,0,0
139,3.74E+06,3.24E+03,0,0,0,0,0
140,2.60E+00,7.92E+02,0,0,0,0,0
141,6.80E-02,1.04E+07,0,0,0,0,0
142,3.47E+07,2.02E+02,0,0,0,0,0
143,1.61E+01,4.74E+08,0,0,0,0,0
144,2.03E+04,2.34E-02,0,0,0,0,0
146,7.60E+04,2.52E-01,0,0,0,0,0
147,1.00E+02,3.96E+00,0,0,0,0,0
42,2.14E+06,1.80E-02,0,0,0,0,0
148,6.00E+00,5.53E+08,0,0,0,0,0
149,3.28E+04,8.46E+04,0,0,0,0,0
150,5.25E+04,6.12E+03,0,0,0,0,0
151,2.23E+01,1.37E+08,0,0,0,0,0
152,6.50E+06,9.18E+02,0,0,0,0,0
153,1.77E-01,2.52E+08,0,0,0,0,0
154,2.62E-00,7.92E+02,0,0,0,0,0
155,2.90E+00,7.92E+02,0,0,0,0,0
156,1.02E+02,3.02E-07,0,0,0,0,0
157,5.00E+01,6.66E-07,0,0,0,0,0
-- Input File:  RQSITE.DAT
101,4.46E-04,4.5,4.5
102,7.40E-04,2.7,2.7
103,5.80E-02,0.001,0.001
48,1.96E-03,1.0,1.0
104,1.96E-03,1.0,1.0
105,1.96E-03,1.0,1.0
106,2.02E-04,10.0,10.0
107,7.98E-04,2.5,2.5
108,1.96E-03,1.0,1.0
109,1.96E-03,1.0,1.0
110,5.80E-02,0.001,0.001
111,2.36E-04,8.52,8.52
112,2.41E-02,0.05,0.05
113,1.96E-03,1.0,1.0
114,1.96E-03,1.0,1.0
115,5.80E-02,0.001,0.001
116,5.80E-02,0.001,0.001
117,5.80E-02,0.001,0.001
118,5.80E-02,0.001,0.001
119,5.80E-02,0.001,0.001
120,2.17E-05,93.3,93.3
50,2.17E-05,93.3,93.3
121,2.17E-05,93.3,93.3
122,2.17E-05,93.3,93.3
123,2.17E-05,93.3,93.3
124,2.17E-05,93.3,93.3
125,5.46E-06,370.0,370.0
126,1.52E-05,133.0,133.0
127,1.52E-05,133.0,133.0
128,1.96E-03,1.0,1.0
129,1.96E-03,1.0,1.0
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130,1.96E-03,1.0,1.0
131,1.41E-03,1.4,1.4
132,1.41E-03,1.4,1.4
133,1.96E-03,1.0,1.0
134,2.74E-02,0.04,0.04
135,2.02E-04,10.0,10.0
136,7.98E-04,2.5,2.5
137,1.31E-02,0.12,0.12
138,1.10E-02,0.15,0.15
139,3.14E-04,6.4,6.4
140,5.80E-02,0.001,0.001
141,1.24E-03,1.6,1.6
142,1.24E-03,1.6,1.6
143,1.24E-03,1.6,1.6
144,1.24E-03,1.6,1.6
146,2.02E-04,10.0,10.0
147,2.02E-04,10.0,10.0
42,6.67E-04,3.0,3.0
148,4.02E-04,5.0,5.0
149,3.65E-04,5.5,5.5
150,1.06E-04,19.0,19.0
151,1.06E-04,19.0,19.0
152,3.46E-03,0.55,0.55
153,3.09E-04,6.5,6.5
154,3.09E-04,6.5,6.5
155,2.24E-04,9.0,9.0
156,2.24E-04,9.0,9.0
157,2.17E-03,0.9,0.9
-- Input File:  UPTAKE.DAT
3.64E-03,3.53E-01,1.566
0,0,0,0,0
0,0,0
0,0,0,0
0,0,0,0,0
0,0,0,0,0,730.,0
101,0.00E+00,0.0,0.0,0,0,0,0
102,0.00E+00,0.0,0.0,0,0,0,0
103,0.00E+00,0.0,0.0,0,0,0,0
48,0.00E+00,0.0,0.0,0,0,0,0
104,0.00E+00,0.0,0.0,0,0,0,0
105,0.00E+00,0.0,0.0,0,0,0,0
106,0.00E+00,0.0,0.0,0,0,0,0
107,0.00E+00,0.0,0.0,0,0,0,0
108,0.00E+00,0.0,0.0,0,0,0,0
109,0.00E+00,0.0,0.0,0,0,0,0
110,0.00E+00,0.0,0.0,0,0,0,0
111,0.00E+00,0.0,0.0,0,0,0,0
112,0.00E+00,0.0,0.0,0,0,0,0
113,0.00E+00,0.0,0.0,0,0,0,0
114,0.00E+00,0.0,0.0,0,0,0,0
115,0.00E+00,0.0,0.0,0,0,0,0
116,0.00E+00,0.0,0.0,0,0,0,0
117,0.00E+00,0.0,0.0,0,0,0,0
118,0.00E+00,0.0,0.0,0,0,0,0
119,0.00E+00,0.0,0.0,0,0,0,0
120,0.00E+00,0.0,0.0,0,0,0,0
50,0.00E+00,0.0,0.0,0,0,0,0
121,0.00E+00,0.0,0.0,0,0,0,0
122,0.00E+00,0.0,0.0,0,0,0,0
123,0.00E+00,0.0,0.0,0,0,0,0
124,0.00E+00,0.0,0.0,0,0,0,0
125,0.00E+00,0.0,0.0,0,0,0,0
126,0.00E+00,0.0,0.0,0,0,0,0
127,0.00E+00,0.0,0.0,0,0,0,0
128,0.00E+00,0.0,0.0,0,0,0,0
129,0.00E+00,0.0,0.0,0,0,0,0
130,0.00E+00,0.0,0.0,0,0,0,0
131,0.00E+00,0.0,0.0,0,0,0,0
132,0.00E+00,0.0,0.0,0,0,0,0
133,0.00E+00,0.0,0.0,0,0,0,0
134,0.00E+00,0.0,0.0,0,0,0,0
135,0.00E+00,0.0,0.0,0,0,0,0
136,0.00E+00,0.0,0.0,0,0,0,0
137,0.00E+00,0.0,0.0,0,0,0,0
138,0.00E+00,0.0,0.0,0,0,0,0
139,0.00E+00,0.0,0.0,0,0,0,0
140,0.00E+00,0.0,0.0,0,0,0,0
141,0.00E+00,0.0,0.0,0,0,0,0
142,0.00E+00,0.0,0.0,0,0,0,0
143,0.00E+00,0.0,0.0,0,0,0,0
144,0.00E+00,0.0,0.0,0,0,0,0
146,0.00E+00,0.0,0.0,0,0,0,0
147,0.00E+00,0.0,0.0,0,0,0,0
42,0.00E+00,0.0,0.0,0,0,0,0
148,0.00E+00,0.0,0.0,0,0,0,0
149,0.00E+00,0.0,0.0,0,0,0,0
150,0.00E+00,0.0,0.0,0,0,0,0
151,0.00E+00,0.0,0.0,0,0,0,0
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152,0.00E-00,0.0,0.0,0,0,0,0
153,0.00E-00,0.0,0.0,0,0,0,0
154,0.00E-00,0.0,0.0,0,0,0,0
155,0.00E-00,0.0,0.0,0,0,0,0
156,0.00E+00,0.0,0.0,0,0,0,0
157,0.00E+00,0.0,0.0,0,0,0,0
1
                    TOTAL EQUIVALENT UPTAKE FACTORS FOR PATHRAE
             UT(J,1)   UT(J,2)   UT(J,3)   UT(J,4)   UT(J,5)   UT(J,6)
             RIVER     WELL      EROSION   BATHTUB   SPILLAGE  FOOD
NUCLIDE      L/YR      L/YR      L/YR      L/YR      L/YR      KG/YR
  Ac-227    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Ag-108m   0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
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.
.
Po-209      0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
  Pt-193    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
 **********  PATHRAE INPUT SUMMARY  **********
 THERE ARE 80 ISOTOPES IN THE DOSE FACTOR LIBRARY
 NUMBER OF TIMES FOR CALCULATION IS116
 YEARS TO BE CALCULATED ARE ...
     6.00      9.00     12.00     15.00     18.00
    21.00     24.00     27.00     30.00     35.00
    40.00     45.00     50.00     55.00     60.00
    65.00     70.00     75.00     80.00     85.00
    90.00     95.00    100.00    105.00    110.00
   115.00    120.00    125.00    130.00    135.00
   140.00    145.00    150.00    155.00    160.00
   165.00    170.00    175.00    180.00    185.00
   190.00    195.00    200.00    205.00    210.00
   215.00    220.00    225.00    230.00    235.00
   240.00    245.00    250.00    255.00    260.00
   265.00    270.00    275.00    280.00    285.00
   290.00    295.00    300.00    310.00    320.00
   330.00    340.00    350.00    360.00    370.00
   380.00    390.00    400.00    410.00    420.00
   430.00    440.00    450.00    460.00    470.00
   480.00    490.00    500.00    510.00    520.00
   530.00    540.00    550.00    560.00    570.00
   580.00    590.00    600.00    610.00    620.00
   630.00    640.00    650.00    660.00    670.00
   680.00    690.00    700.00    720.00    740.00
   760.00    780.00    800.00    825.00    850.00
   875.00    900.00    925.00    950.00    975.00
  1000.00
 THERE ARE  59 ISOTOPES IN THE INVENTORY FILE
 THE VALUE OF IFLAG IS 0
 NUMBER OF PATHWAYS IS  1
           PATHWAY            TYPE OF USAGE
                            FOR UPTAKE FACTORS
   1  GROUNDWATER TO RIVER          2
 TIME OF OPERATION OF WASTE FACILITY IN YEARS                     0.
 LENGTH OF REPOSITORY (M)                                         1.
 WIDTH OF REPOSITORY (M)                                          1.
 RIVER FLOW RATE (M**3/YR)                                        3.64E-03
 STREAM FLOW RATE (M**3/YR)                                       3.64E-03
 DISTANCE TO RIVER (M)                                            4.
 OPERATIONAL SPILLAGE FRACTION                                    0.00E+00
 DENSITY OF AQUIFER (KG/M**3)                                  1566.
 LONGITUDINAL DISPERSIVITY (M)                                    1.00E-01
 LATERAL DISPERSION COEFFICIENT -- Y AXIS (M**2/YR)               0.00E+00
 NUMBER OF MESH POINTS FOR DISPERSION CALCULATION                 1
 FLAG FOR GAMMA PATHWAY OPTIONS                                   0
 FLAG FOR GAMMA BUILDUP CALCULATION                               0
 FLAG FOR ATMOSPHERIC PATHWAY                                     0
 COVER THICKNESS OVER WASTE (M)                                    .00
 THICKNESS OF WASTE IN PITS (M)                                   1.00
 TOTAL WASTE VOLUME (M**3)                                        1.000E+00
 DISTANCE TO WELL -- X COORDINATE (M)                             4.
 DISTANCE TO WELL -- Y COORDINATE (M)                             0.
 DENSITY OF WASTE (KG/M**3)                                    1800.
 FRACTION OF FOOD CONSUMED THAT IS GROWN ON SITE                  1.000
 FRACTION OF YEAR SPENT IN DIRECT RADIATION FIELD                  .000
 DEPTH OF PLANT ROOT ZONE (M)                                      .000
 AREAL DENSITY OF PLANTS (KG/M**2)                                 .000
 AVERAGE DUST LOADING IN AIR (KG/M**3)                            0.00E+00
 ANNUAL ADULT BREATHING RATE (M**3/YR)                            0.
 FRACTION OF YEAR EXPOSED TO DUST                                  .000
 CANISTER LIFETIME (YEARS)                                        0.
 INVENTORY SCALING FACTOR                                         1.00E+00
 HEIGHT OF ROOMS IN RECLAIMER HOUSE (CM)                          0.
 AIR CHANGE RATE IN RECLAIMER HOUSE (CHANGES/SEC)                 0.00E+00
 RADON EMANATING POWER OF THE WASTE                               0.00E+00
 DIFFUSION COEFF. OF RADON IN WASTE (CM**2/SEC)                   0.00E+00
 DIFFUSION COEFF. OF RN IN CONCRETE (CM**2/SEC)                   0.00E+00
 THICKNESS OF CONCRETE SLAB FLOOR (CM)                             .0
 DIFFUSION COEFF. OF RADON IN COVER (CM**2/SEC)                   0.00E+00
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ATMOSPHERIC STABILITY CLASS	0
AVERAGE WIND SPEED (M/S)	.00
FRACTION OF TIME WIND BLOWS TOWARD RECEPTOR	.0000
RECEPTOR DISTANCE FOR ATMOSPHERIC PATHWAY (M)	.0
DUST RESUSPENSION RATE FOR OFFSITE TRANSPORT (M**3/S)	0.00E+00
DEPOSITION VELOCITY (M/S)	.0000
STACK HEIGHT (M)	.0
STACK INSIDE DIAMETER (M)	.00
STACK GAS VELOCITY (M/S)	.0
HEAT EMISSION RATE FROM BURNING (CAL/S)	0.00E+00
DECAY CHAIN FLAGS	4 7 0 0 0 0 0
FLAG FOR INPUT SUMMARY PRINTOUT	1
FLAG FOR DIRECTION OF TRENCH FILLING	1
FLAG FOR GROUNDWATER PATHWAY OPTIONS	0
AMOUNT OF WATER PERCOLATING THROUGH WASTE ANNUALLY (M)	3.64E-03
DEGREE OF SOIL SATURATION	.272
RESIDUAL SOIL SATURATION	.031
PERMEABILITY OF VERTICAL ZONE (M/YR)	100.90
SOIL NUMBER	.000
POROSITY OF AQUIFER	.10
POROSITY OF UNSATURATED ZONE	.35
DISTANCE FROM AQUIFER TO WASTE (M)	.0
AVERAGE VERTICAL GROUNDWATER VELOCITY (M/YR)	3.79E-02
HORIZONTAL VELOCITY OF AQUIFER (M/YR)	.0
LENGTH OF PERFORATED WELL CASING (M)	1.000
SURFACE EROSION RATE (M/YR)	0.000E+00
LEACH RATE SCALING FACTOR	1.000E+00
ANNUAL RUNOFF OF PRECIPITATION (M)	0.00E+00

NUCLIDE	INGESTION DOSE FACTORS (MREM/PCI)	INHALATION DOSE FACTORS (MREM/PCI)	DIRECT GAMMA DOSE FACTORS (MREM-M2/PCI-YR)	HALF LIFE (YR)
Ac-227	0.000E+00	0.000E+00	0.000E+00	2.180E+01
Ag-108m	0.000E+00	0.000E+00	0.000E+00	4.180E+02
Al-26	0.000E+00	0.000E+00	0.000E+00	7.400E+05
Am-242m	0.000E+00	0.000E+00	0.000E+00	1.410E+02
Am-243	0.000E+00	0.000E+00	0.000E+00	7.370E+03
Ba-133	0.000E+00	0.000E+00	0.000E+00	1.050E+01
Be-10	0.000E+00	0.000E+00	0.000E+00	1.510E+06
Bi-207	0.000E+00	0.000E+00	0.000E+00	3.160E+01
Bi-210m	0.000E+00	0.000E+00	0.000E+00	3.040E+06
Bk-247	0.000E+00	0.000E+00	0.000E+00	1.400E+03
C-14	0.000E+00	0.000E+00	0.000E+00	5.730E+03
Ca-41	0.000E+00	0.000E+00	0.000E+00	1.030E+05
Cd-113	0.000E+00	0.000E+00	0.000E+00	9.300E+15
Cd-113m	0.000E+00	0.000E+00	0.000E+00	1.410E+01
Cf-249	0.000E+00	0.000E+00	0.000E+00	3.510E+02
Cf-250	0.000E+00	0.000E+00	0.000E+00	1.310E+01
Cf-251	0.000E+00	0.000E+00	0.000E+00	2.460E+00
Cf-252	0.000E+00	0.000E+00	0.000E+00	2.650E+00
Cl-36	0.000E+00	0.000E+00	0.000E+00	3.010E+05
Cm-243	0.000E+00	0.000E+00	0.000E+00	2.910E+01
Cm-245	0.000E+00	0.000E+00	0.000E+00	8.500E+03
Cm-246	0.000E+00	0.000E+00	0.000E+00	4.730E+03
Cm-247	0.000E+00	0.000E+00	0.000E+00	1.560E+07
Cm-248	0.000E+00	0.000E+00	0.000E+00	3.400E+05
Co-60	0.000E+00	0.000E+00	0.000E+00	5.270E+00
Cs-135	0.000E+00	0.000E+00	0.000E+00	2.300E+06
Cs-137	0.000E+00	0.000E+00	0.000E+00	3.010E+01
Eu-152	0.000E+00	0.000E+00	0.000E+00	1.350E+01
Eu-154	0.000E+00	0.000E+00	0.000E+00	8.590E+00
Eu-155	0.000E+00	0.000E+00	0.000E+00	4.760E+00
Fe-55	0.000E+00	0.000E+00	0.000E+00	2.730E+00
Fe-60	0.000E+00	0.000E+00	0.000E+00	1.500E+06
Gd-148	0.000E+00	0.000E+00	0.000E+00	7.460E+01
H-3	0.000E+00	0.000E+00	0.000E+00	1.230E+01
Hg-194	0.000E+00	0.000E+00	0.000E+00	4.440E+02
Np-237	0.000E+00	0.000E+00	0.000E+00	2.140E+06
Am-241	0.000E+00	0.000E+00	0.000E+00	4.320E+02
Cm-244	0.000E+00	0.000E+00	0.000E+00	1.810E+01
Ho-166m	0.000E+00	0.000E+00	0.000E+00	1.200E+03
I-129	0.000E+00	0.000E+00	0.000E+00	1.570E+07
K-40	0.000E+00	0.000E+00	0.000E+00	1.280E+09
Mn-53	0.000E+00	0.000E+00	0.000E+00	3.740E+06
Na-22	0.000E+00	0.000E+00	0.000E+00	2.600E+00
Nb-91	0.000E+00	0.000E+00	0.000E+00	6.800E+02
Nb-92	0.000E+00	0.000E+00	0.000E+00	3.470E+07
Nb-93m	0.000E+00	0.000E+00	0.000E+00	1.610E+01
Nb-94	0.000E+00	0.000E+00	0.000E+00	2.030E+04
Ni-59	0.000E+00	0.000E+00	0.000E+00	7.600E+04
Ni-63	0.000E+00	0.000E+00	0.000E+00	1.000E+02
Os-194	0.000E+00	0.000E+00	0.000E+00	6.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	3.280E+04
Pb-202	0.000E+00	0.000E+00	0.000E+00	5.250E+04
Pb-210	0.000E+00	0.000E+00	0.000E+00	2.230E+01
Pd-107	0.000E+00	0.000E+00	0.000E+00	6.500E+06
Pm-145	0.000E+00	0.000E+00	0.000E+00	1.770E+01
Pm-147	0.000E+00	0.000E+00	0.000E+00	2.620E+00
Po-208	0.000E+00	0.000E+00	0.000E+00	2.900E+00

Po-209	0.000E+00	0.000E+00	0.000E+00	1.020E+02
Pt-193	0.000E+00	0.000E+00	0.000E+00	5.000E+01

NUCLIDE	VOLATILITY FRACTION	GAMMA ENERGY (MEV)	GAMMA ATTENUATION (1/M)
Ac-227	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00
Al-26	0.000E+00	0.000E+00	0.000E+00

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Po-209	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E-00	0.000E+00

NUCLIDE	INPUT LEACH RATE (1/YR)	FINAL LEACH RATE (1/YR)	SOLUBILITY (MOLE/L)	INPUT INVENTORY (CI)
Ac-227	4.460E-04	4.460E-04	0.000E+00	1.300E+06
Ag-108m	7.400E-04	7.400E-04	0.000E+00	4.690E+07
Al-26	5.800E-02	5.800E-02	0.000E+00	1.210E-07
Am-242m	1.960E-03	1.960E-03	0.000E+00	1.800E-02
Am-243	1.960E-03	1.960E-03	0.000E+00	1.800E-02
Ba-133	2.020E-04	2.020E-04	0.000E+00	4.610E+08
Be-10	7.980E-04	7.980E-04	0.000E+00	3.960E+04
Bi-207	1.960E-03	1.960E-03	0.000E+00	9.660E+07
Bi-210m	1.960E-03	1.960E-03	0.000E+00	1.020E+03
Bk-247	5.800E-02	5.800E-02	0.000E+00	1.780E-10
C-14	2.360E-04	2.360E-04	0.000E+00	9.000E+00
Ca-41	2.410E-02	2.410E-02	0.000E+00	2.900E-06
Cd-113	1.960E-03	1.960E-03	0.000E+00	7.750E-07
Cd-113m	1.960E-03	1.960E-03	0.000E+00	4.040E+08
Cf-249	5.800E-02	5.800E-02	0.000E+00	2.700E-10
Cf-250	5.800E-02	5.800E-02	0.000E+00	1.530E-04
Cf-251	5.800E-02	5.800E-02	0.000E+00	1.800E-02
Cf-252	5.800E-02	5.800E-02	0.000E+00	7.920E+02
Cl-36	5.800E-02	5.800E-02	0.000E+00	5.090E-07
Cm-243	2.170E-05	2.170E-05	0.000E+00	1.800E-02
Cm-245	2.170E-05	2.170E-05	0.000E+00	1.800E-02
Cm-246	2.170E-05	2.170E-05	0.000E+00	1.800E-02
Cm-247	2.170E-05	2.170E-05	0.000E+00	1.800E-02
Cm-248	2.170E-05	2.170E-05	0.000E+00	1.800E-02
Co-60	5.460E-06	5.460E-06	0.000E+00	7.920E+02
Cs-135	1.520E-05	1.520E-05	0.000E+00	2.070E+03
Cs-137	1.520E-05	1.520E-05	0.000E+00	1.130E+00
Eu-152	1.960E-03	1.960E-03	0.000E+00	3.110E+08
Eu-154	1.960E-03	1.960E-03	0.000E+00	4.870E+08
Eu-155	1.960E-03	1.960E-03	0.000E+00	7.920E+02
Fe-55	1.410E-03	1.410E-03	0.000E+00	7.920E+02
Fe-60	1.410E-03	1.410E-03	0.000E+00	7.150E+03
Gd-148	1.960E-03	1.960E-03	0.000E+00	5.800E+07
H-3	2.740E-02	2.740E-02	0.000E+00	4.500E+01
Hg-194	2.020E-04	2.020E-04	0.000E+00	6.380E-06
Np-237	6.670E-04	6.670E-04	0.000E+00	1.800E-02
Am-241	1.960E-03	1.960E-03	0.000E+00	1.800E-02
Cm-244	2.170E-05	2.170E-05	0.000E+00	1.800E-02
Ho-166m	7.980E-04	7.980E-04	0.000E+00	3.240E+06
I-129	1.310E-02	1.310E-02	0.000E+00	9.000E-03
K-40	1.100E-02	1.100E-02	0.000E+00	1.260E+01
Mn-53	3.140E-04	3.140E-04	0.000E+00	3.240E+03
Na-22	5.800E-02	5.800E-02	0.000E+00	7.920E+02
Nb-91	1.240E-03	1.240E-03	0.000E+00	1.040E+07
Nb-92	1.240E-03	1.240E-03	0.000E+00	2.020E+02
Nb-93m	1.240E-03	1.240E-03	0.000E+00	4.740E+08
Nb-94	1.240E-03	1.240E-03	0.000E+00	2.340E-02
Ni-59	2.020E-04	2.020E-04	0.000E+00	2.520E+01
Ni-63	2.020E-04	2.020E-04	0.000E+00	3.960E+00
Os-194	4.020E-04	4.020E-04	0.000E+00	5.530E-08
Pa-231	3.650E-04	3.650E-04	0.000E+00	8.460E-04
Pb-202	1.060E-04	1.060E-04	0.000E+00	6.120E+03
Pb-210	1.060E-04	1.060E-04	0.000E+00	1.370E+08
Pd-107	3.460E-03	3.460E-03	0.000E+00	9.180E+02
Pm-145	3.090E-04	3.090E-04	0.000E+00	2.520E+08
Pm-147	3.090E-04	3.090E-04	0.000E+00	7.920E+02
Po-208	2.240E-04	2.240E-04	0.000E+00	7.920E+02
Po-209	2.240E-04	2.240E-04	0.000E+00	3.020E+07
Pt-193	2.170E-03	2.170E-03	0.000E+00	6.660E+07

NUCLIDE	AQUIFER SORPTION	AQUIFER RETARDATION	VERTICAL SORPTION	VERTICAL RETARDATION
Ac-227	4.500E+00	7.441E+01	4.500E+00	7.439E+01
Ag-108m	2.700E+00	4.504E+01	2.700E+00	4.504E+01
Al-26	1.000E-03	1.016E+00	1.000E-03	1.016E+00
Am-242m	1.000E+00	1.731E+01	1.000E+00	1.731E-01
Am-243	1.000E+00	1.731E-01	1.000E+00	1.731E+01
Ba-133	1.000E+01	1.641E-02	1.000E+01	1.641E+02
Be-10	2.500E+00	4.178E+01	2.500E+00	4.177E+01
Bi-207	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Bi-210m	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Bk-247	1.000E-03	1.016E+00	1.000E-03	1.016E+00
C-14	8.520E+00	1.400E+02	8.520E+00	1.400E+02
Ca-41	5.000E-02	1.816E+00	5.000E-02	1.815E+00

Cd-113	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Cd-113m	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Cf-249	1.000E-03	1.016E+00	1.000E-03	1.016E+00
Cf-250	1.000E-03	1.016E+00	1.000E-03	1.016E+00
Cf-251	1.000E-03	1.016E+00	1.000E-03	1.016E+00
Cf-252	1.000E-03	1.016E+00	1.000E-03	1.016E+00
Cl-36	1.000E-03	1.016E+00	1.000E-03	1.016E+00
Cm-243	9.330E+01	1.523E+03	9.330E+01	1.523E+03
Cm-245	9.330E+01	1.523E+03	9.330E+01	1.523E+03
Cm-246	9.330E+01	1.523E+03	9.330E+01	1.523E+03
Cm-247	9.330E+01	1.523E+03	9.330E+01	1.523E+03
Cm-248	9.330E+01	1.523E+03	9.330E+01	1.523E+03
Co-60	3.700E+02	6.037E+03	3.700E+02	6.036E+03
Cs-135	1.330E+02	2.171E+03	1.330E+02	2.170E+03
Cs-137	1.330E+02	2.171E+03	1.330E+02	2.170E+03
Eu-152	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Eu-154	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Eu-155	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Fe-55	1.400E+00	2.384E+01	1.400E+00	2.383E+01
Fe-60	1.400E+00	2.384E+01	1.400E+00	2.383E+01
Gd-148	1.000E+00	1.731E+01	1.000E+00	1.731E+01
H-3	4.000E-02	1.653E+00	4.000E-02	1.652E+00
Hg-194	1.000E+01	1.641E+02	1.000E+01	1.641E+02
Np-237	3.000E+00	4.994E+01	3.000E+00	4.993E+01
Am-241	1.000E+00	1.731E+01	1.000E+00	1.731E+01
Cm-244	9.330E+01	1.523E+03	9.330E+01	1.523E+03
Ho-166m	2.500E+00	4.178E+01	2.500E+00	4.177E+01
I-129	1.200E-01	2.958E+00	1.200E-01	2.957E+00
K-40	1.500E-01	3.447E+00	1.500E-01	3.446E+00
Mn-53	6.400E+00	1.054E+02	6.400E+00	1.054E+02
Na-22	1.000E-03	1.016E+00	1.000E-03	1.016E+00
Nb-91	1.600E+00	2.710E+01	1.600E+00	2.710E+01
Nb-92	1.600E+00	2.710E+01	1.600E+00	2.710E+01
Nb-93m	1.600E+00	2.710E+01	1.600E+00	2.710E+01
Nb-94	1.600E+00	2.710E+01	1.600E+00	2.710E+01
Ni-59	1.000E+01	1.641E+02	1.000E+01	1.641E+02
Ni-63	1.000E+01	1.641E+02	1.000E+01	1.641E+02
Os-194	5.000E+00	8.256E+01	5.000E+00	8.255E+01
Pa-231	5.500E+00	9.072E+01	5.500E+00	9.070E+01
Pb-202	1.900E+01	3.109E+02	1.900E+01	3.109E+02
Pb-210	1.900E+01	3.109E+02	1.900E+01	3.109E+02
Pd-107	5.500E-01	9.972E+00	5.500E-01	9.970E+00
Pm-145	6.500E+00	1.070E+02	6.500E+00	1.070E+02
Pm-147	6.500E+00	1.070E+02	6.500E+00	1.070E+02
Po-208	9.000E+00	1.478E+02	9.000E+00	1.478E+02
Po-209	9.000E+00	1.478E+02	9.000E+00	1.478E+02
Pt-193	9.000E-01	1.568E+01	9.000E-01	1.568E+01

BIOACCUMULATION FACTORS

NUCLIDE	SOIL-PLANT Bv	SOIL-PLANT Br	FORAGE-MILK Fm (D/L)	FORAGE-MEAT Ff (D/KG)
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ag-108m	0.000E+00	0.000E+00	0.000E+00	0.000E+00
•				
•				
•				
Po-209	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pt-193	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PATHWAY 1

NUCLIDE CONCENTRATIONS IN RIVER (Ci/m**3)

NUCLIDE/TIME		6.	9.	12.	15.	18.	21.	24.	27.	30.	35.
40.	45.	50.	55.	60.	65.	70.	75.	80.	85.	90.	95.
100.	105.	110.	115.	120.	125.	130.	135.	140.	145.	150.	155.
160.	165.	170.	175.	180.	185.	190.	195.	200.	205.	210.	215.
220.	225.	230.	235.	240.	245.	250.	255.	260.	265.	270.	275.
280.	285.	290.	295.	300.	310.	320.	330.	340.	350.	360.	370.
380.	390.	400.	410.	420.	430.	440.	450.	460.	470.	480.	490.
500.	510.	520.	530.	540.	550.	560.	570.	580.	590.	600.	610.
620.	630.	640.	650.	660.	670.	680.	690.	700.	720.	740.	760.
780.	800.	825.	850.	875.	900.	925.	950.	975.	1000.		
Ac-227		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Ag-108m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-20	1.5E-19	1.1E-18	6.8E-18	4.0E-17		
Al-26		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-18
5.1E-16	3.1E-14	7.9E-13	1.0E-11	9.1E-11	4.4E-10	1.8E-09	5.6E-09	1.5E-08	3.3E-08	6.3E-08	1.1E-07
1.7E-07	2.4E-07	3.1E-07	3.8E-07	4.4E-07	4.9E-07	5.1E-07	5.1E-07	4.9E-07	4.6E-07	4.2E-07	3.7E-07
3.2E-07	2.7E-07	2.3E-07	1.8E-07	1.5E-07	1.2E-07	9.0E-08	6.9E-08	5.2E-08	3.9E-08	2.9E-08	2.2E-08
1.6E-08	1.1E-08	8.2E-09	5.9E-09	4.2E-09	2.9E-09	2.1E-09	1.4E-09	1.0E-09	6.9E-10	4.7E-10	3.3E-10
2.2E-10	1.5E-10	1.0E-10	6.9E-11	4.7E-11	2.1E-11	9.4E-12	4.1E-12	1.8E-12	7.8E-13	3.4E-13	1.5E-13
6.2E-14	2.6E-14	1.1E-14	4.6E-15	1.9E-15	9.1E-16	3.3E-16	1.4E-16	5.7E-17	2.3E-17	9.6E-18	3.9E-18
1.6E-18	6.5E-19	2.7E-19	1.1E-19	4.4E-20	1.8E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Am-242m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-20	6.8E-20
1.9E-19	5.2E-19	1.3E-18	3.4E-18	8.0E-18	1.9E-17	4.2E-17	9.0E-17	1.9E-16	3.9E-16	7.7E-16	1.5E-15
2.8E-15	5.3E-15	9.5E-15	1.7E-14	2.9E-14	5.0E-14	8.3E-14	1.4E-13	2.2E-13	5.5E-13	1.3E-12	2.8E-12
6.0E-12	1.2E-11	2.7E-11	5.7E-11	1.1E-10	2.2E-10	3.9E-10	6.8E-10	1.1E-09	1.8E-09		
Am-243		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-20	7.1E-20	2.3E-19	7.2E-19
2.1E-18	6.1E-18	1.7E-17	4.3E-17	1.1E-16	2.6E-16	6.2E-16	1.4E-15	3.1E-15	6.7E-15	1.4E-14	2.8E-14
5.7E-14	1.1E-13	2.1E-13	3.9E-13	7.0E-13	1.3E-12	2.2E-12	3.8E-12	6.4E-12	1.5E-11	4.5E-11	1.1E-10
2.6E-10	5.7E-10	1.4E-09	3.4E-09	7.8E-09	1.7E-08	3.4E-08	6.7E-08	1.3E-07	2.3E-07		
Ba-133		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Be-10		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-20	1.6E-19	1.0E-18	5.8E-18	3.1E-17		
Bi-207		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-20
1.2E-19	6.1E-19	2.8E-18	1.2E-17	4.4E-17	1.6E-16	5.3E-16	1.6E-15	4.8E-15	1.3E-14	3.5E-14	8.8E-14
2.1E-13	4.7E-13	1.0E-12	2.2E-12	4.4E-12	8.6E-12	1.6E-11	3.0E-11	5.3E-11	9.1E-11	1.5E-10	2.5E-10
4.0E-10	6.2E-10	9.5E-10	1.4E-09	2.1E-09	3.0E-09	4.2E-09	5.8E-09	7.9E-09	1.4E-08	2.3E-08	3.7E-08
5.5E-08	7.9E-08	1.2E-07	1.6E-07	2.1E-07	2.6E-07	3.1E-07	3.5E-07	3.8E-07	4.0E-07		
Bi-210m		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	3.3E-20	1.9E-19	9.8E-19	4.7E-18	2.1E-17	8.7E-17	3.4E-16	1.2E-15	4.2E-15	1.4E-14	4.3E-14
1.3E-13	3.6E-13	9.8E-13	2.6E-12	6.5E-12	1.6E-11	3.7E-11	8.4E-11	1.9E-10	4.0E-10	8.4E-10	1.7E-09
3.4E-09	6.6E-09	1.3E-08	2.3E-08	4.2E-08	7.6E-08	1.3E-07	2.3E-07	3.9E-07	1.1E-06	2.8E-06	6.7E-06
1.6E-05	3.5E-05	8.8E-05	2.1E-04	4.8E-04	1.0E-03	2.1E-03	4.1E-03	7.8E-03	1.4E-02		
Bk-247		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
7.3E-19	4.5E-17	1.1E-15	1.5E-14	1.2E-13	6.3E-13	2.5E-12	8.0E-12	2.1E-11	4.6E-11	8.9E-11	1.5E-10
2.4E-10	3.3E-10	4.4E-10	5.3E-10	6.1E-10	6.7E-10	7.0E-10	7.0E-10	6.8E-10	6.3E-10	5.7E-10	5.1E-10
4.4E-10	3.7E-10	3.0E-10	2.5E-10	2.0E-10	1.6E-10	1.2E-10	9.2E-11	7.0E-11	5.2E-11	3.9E-11	2.8E-11
2.1E-11	1.5E-11	1.1E-11	7.7E-12	5.4E-12	3.8E-12	2.7E-12	1.9E-12	1.3E-12	8.9E-13	6.1E-13	4.2E-13
2.8E-13	1.9E-13	1.3E-13	8.8E-14	5.9E-14	2.7E-14	1.2E-14	5.2E-15	2.2E-15	9.7E-16	4.2E-16	1.8E-16
7.5E-17	3.2E-17	1.3E-17	5.6E-18	2.3E-18	9.6E-19	4.0E-19	1.6E-19	6.7E-20	2.7E-20	1.1E-20	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
C-14		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

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0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Ca-41        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  5.3E-20  3.5E-18  1.2E-16  2.3E-15  2.9E-14  2.7E-13  1.8E-12  9.7E-12  4.3E-11
1.6E-10  5.1E-10  1.4E-09  3.6E-09  8.3E-09  1.8E-08  3.5E-08  6.4E-08  1.1E-07  1.8E-07  2.9E-07  4.3E-07
6.2E-07  8.7E-07  1.2E-06  1.5E-06  1.9E-06  2.4E-06  2.9E-06  3.4E-06  4.0E-06  4.5E-06  5.0E-06  5.5E-06
5.9E-06  6.2E-06  6.5E-06  6.6E-06  6.7E-06  6.8E-06  6.7E-06  6.6E-06  6.4E-06  6.1E-06  5.8E-06  5.5E-06
5.1E-06  4.8E-06  4.4E-06  4.0E-06  3.7E-06  3.0E-06  2.4E-06  1.8E-06  1.4E-06  1.1E-06  7.8E-07  5.7E-07
4.1E-07  2.9E-07  2.1E-07  1.4E-07  9.9E-08  6.8E-08  4.6E-08  3.1E-08  2.1E-08  1.4E-08  9.2E-09  6.1E-09
4.0E-09  2.6E-09  1.7E-09  1.1E-09  7.0E-10  4.5E-10  2.9E-10  1.8E-10  1.2E-10  7.4E-11  4.7E-11  2.9E-11
1.8E-11  1.2E-11  7.2E-12  4.5E-12  2.8E-12  1.7E-12  1.1E-12  6.7E-13  4.1E-13  1.6E-13  6.0E-14  3.2E-14
8.4E-15  3.1E-15  9.1E-16  2.6E-16  7.5E-17  2.2E-17  6.1E-18  1.7E-18  4.9E-19  1.4E-19
     Cd-113       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  1.2E-20  2.8E-20  6.4E-20  1.4E-19  3.0E-19  6.4E-19  1.3E-18
2.6E-18  5.0E-18  9.5E-18  1.8E-17  3.2E-17  5.8E-17  1.0E-16  1.7E-16  3.0E-16  8.1E-16  2.1E-15  5.1E-15
1.2E-14  2.6E-14  6.7E-14  1.6E-13  3.6E-13  7.8E-13  1.6E-12  3.1E-12  5.9E-12  1.1E-11
     Cd-113m      0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  1.4E-20  3.3E-20  7.3E-20  1.5E-19  3.1E-19  5.9E-19
1.1E-18  1.9E-18  3.1E-18  4.9E-18  7.6E-18  1.1E-17  1.6E-17  2.3E-17  3.1E-17  4.0E-17  5.1E-17  6.4E-17
7.8E-17  9.3E-17  1.1E-16  1.2E-16  1.4E-16  1.5E-16  1.6E-16  1.7E-16  1.8E-16  1.8E-16  1.7E-16  1.6E-16
1.4E-16  1.1E-16  8.5E-17  6.0E-17  4.0E-17  2.5E-17  1.5E-17  8.5E-18  4.7E-18  2.5E-18
     Cf-249       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
1.0E-18  6.4E-17  1.6E-15  2.0E-14  1.6E-13  8.7E-13  3.5E-12  1.1E-11  2.8E-11  6.2E-11  1.2E-10  2.0E-10
3.1E-10  4.3E-10  5.6E-10  6.8E-10  7.8E-10  8.5E-10  8.8E-10  8.7E-10  8.4E-10  7.8E-10  7.0E-10  6.1E-10
5.2E-10  4.4E-10  3.6E-10  2.9E-10  2.3E-10  1.8E-10  1.4E-10  1.0E-10  7.9E-11  5.9E-11  4.3E-11  3.1E-11
2.3E-11  1.6E-11  1.2E-11  8.2E-12  5.8E-12  4.0E-12  2.8E-12  1.9E-12  1.3E-12  9.1E-13  6.2E-13  4.2E-13
2.9E-13  1.9E-13  1.3E-13  8.6E-14  5.8E-14  2.5E-14  1.1E-14  4.8E-15  2.1E-15  6.8E-16  3.7E-16  1.6E-16
6.5E-17  2.7E-17  1.1E-17  4.6E-18  1.9E-18  7.7E-19  3.1E-19  1.3E-19  5.1E-20  2.1E-20  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cf-250       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  3.6E-19  4.4E-16
7.7E-14  3.7E-12  7.1E-11  7.0E-10  4.3E-09  1.8E-08  5.5E-08  1.4E-07  2.7E-07  4.6E-07  6.8E-07  9.0E-07
1.1E-06  1.2E-06  1.2E-06  1.1E-06  9.8E-07  8.2E-07  6.6E-07  5.1E-07  3.8E-07  2.7E-07  1.9E-07  1.3E-07
8.6E-08  5.5E-08  3.5E-08  2.2E-08  1.4E-08  8.2E-09  4.9E-09  2.9E-09  1.7E-09  9.7E-10  5.5E-10  3.1E-10
1.7E-10  9.7E-11  5.4E-11  2.9E-11  1.6E-11  8.7E-12  4.7E-12  2.5E-12  1.3E-12  7.1E-13  3.7E-13  2.0E-13
1.0E-13  5.4E-14  2.8E-14  1.5E-14  7.5E-15  2.0E-15  5.2E-16  1.4E-16  3.5E-17  9.0E-18  2.3E-18  5.8E-19
1.4E-19  3.6E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cf-251       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  4.5E-20  1.7E-17
9.6E-16  1.5E-14  8.9E-14  2.8E-13  5.5E-13  7.3E-13  7.2E-13  5.6E-13  3.6E-13  1.9E-13  9.1E-14  3.8E-14
1.4E-14  5.0E-15  1.6E-15  4.8E-16  1.4E-16  3.7E-17  9.4E-18  2.3E-18  5.4E-19  1.2E-19  2.8E-20  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cf-252       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  3.5E-20  2.4E-17  3.6E-15  1.5E-12
9.5E-11  1.6E-09  1.1E-08  3.8E-08  8.1E-08  1.2E-07  1.3E-07  1.1E-07  7.9E-08  4.7E-08  2.5E-08  1.1E-08
4.8E-09  1.8E-09  6.5E-10  2.2E-10  6.8E-11  2.0E-11  5.7E-12  1.5E-12  4.0E-13  1.0E-13  2.5E-14  6.0E-15
1.4E-15  3.2E-16  7.2E-17  1.6E-17  3.4E-18  7.3E-19  1.5E-19  3.2E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cl-36        0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  9.4E-18
2.1E-15  1.3E-13  3.3E-12  4.3E-11  3.4E-10  1.9E-09  7.5E-09  2.4E-08  6.2E-08  1.4E-07  2.7E-07  4.6E-07
7.1E-07  1.0E-06  1.3E-06  1.6E-06  1.9E-06  2.0E-06  2.1E-06  2.1E-06  2.1E-06  1.9E-06  1.8E-06  1.6E-06
1.4E-06  1.1E-06  9.5E-07  7.7E-07  6.2E-07  4.9E-07  3.8E-07  2.9E-07  2.2E-07  1.7E-07  1.2E-07  8.1E-08
6.6E-08  4.8E-08  3.4E-08  2.5E-08  1.7E-08  1.2E-08  8.6E-09  6.0E-09  4.2E-09  2.9E-09  2.0E-09  1.4E-09
9.3E-10  6.4E-10  4.3E-10  2.9E-10  2.0E-10  8.8E-11  3.9E-11  1.7E-11  7.6E-12  3.3E-12  1.4E-12  6.1E-13
2.6E-13  1.1E-13  4.6E-14  1.9E-14  8.1E-15  3.4E-15  1.4E-15  5.8E-16  2.4E-16  9.8E-17  4.0E-17  1.7E-17
6.7E-18  2.7E-18  1.1E-18  4.5E-19  1.8E-19  7.4E-20  3.0E-20  1.2E-20  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
     Cm-243       0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00  0.0E+00
```

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-245		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-246		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-247		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cm-248		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Co-60		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cs-135		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Cs-137		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Eu-152		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-20	4.3E-20	8.4E-20	1.6E-19
2.8E-19	4.7E-19	7.6E-19	1.2E-18	1.8E-18	2.6E-18	3.7E-18	5.0E-18	6.6E-18	8.5E-18	1.1E-17	1.3E-17
1.5E-17	1.8E-17	2.0E-17	2.3E-17	2.5E-17	2.7E-17	2.8E-17	2.9E-17	2.9E-17	2.9E-17	2.7E-17	2.3E-17
1.9E-17	1.5E-17	1.1E-17	7.2E-18	4.5E-18	2.7E-18	1.5E-18	8.2E-19	4.3E-19	2.2E-19		
Eu-154		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Eu-155	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Fe-55	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Fe-60	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	1.7E-20	6.8E-20	2.5E-19	8.7E-19	2.9E-18	9.3E-18	2.9E-17	8.5E-17	2.4E-16	6.6E-16
1.8E-15	4.5E-15	1.1E-14	2.7E-14	6.5E-14	1.5E-13	3.3E-13	7.2E-13	1.5E-12	6.6E-12	2.6E-11	9.4E-11
3.2E-10	1.0E-09	4.0E-09	1.4E-08	4.7E-08	1.5E-07	4.2E-07	1.2E-06	3.0E-06	7.3E-06		
Gd-148	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-20	2.0E-19	1.4E-18
9.0E-18	5.1E-17	2.6E-16	1.2E-15	5.4E-15	2.2E-14	8.3E-14	2.9E-13	9.7E-13	3.1E-12	9.1E-12	2.6E-11
7.0E-11	1.8E-10	4.5E-10	1.1E-09	2.4E-09	5.4E-09	1.2E-08	2.4E-08	4.8E-08	9.5E-08	1.8E-07	3.4E-07
6.1E-07	1.1E-06	1.9E-06	3.2E-06	5.2E-06	8.5E-06	1.4E-05	2.1E-05	3.3E-05	7.6E-05	1.6E-04	3.3E-04
6.3E-04	1.2E-03	2.4E-03	4.5E-03	8.0E-03	1.4E-02	2.2E-02	3.4E-02	5.1E-02	7.4E-02		
H-3	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
2.6E-19	2.5E-16	5.3E-14	3.8E-12	1.3E-10	2.2E-09	2.4E-08	1.8E-07	9.6E-07	4.0E-06	1.3E-05	3.7E-05
8.8E-05	1.8E-04	3.4E-04	5.8E-04	8.9E-04	1.3E-03	1.7E-03	2.2E-03	2.6E-03	2.9E-03	3.2E-03	3.4E-03
3.4E-03	3.3E-03	3.1E-03	2.9E-03	2.6E-03	2.2E-03	1.9E-03	1.6E-03	1.3E-03	1.0E-03	8.1E-04	6.3E-04
4.8E-04	3.6E-04	2.7E-04	1.9E-04	1.4E-04	1.0E-04	7.1E-05	5.0E-05	3.5E-05	2.4E-05	1.6E-05	1.1E-05
7.4E-06	4.9E-06	3.3E-06	2.2E-06	1.4E-06	6.0E-07	2.5E-07	1.0E-07	4.0E-08	1.6E-08	6.2E-09	2.4E-09
9.0E-10	3.4E-10	1.3E-10	4.7E-11	1.7E-11	6.2E-12	2.2E-12	8.1E-13	2.9E-13	1.0E-13	3.6E-14	1.3E-14
4.4E-15	1.5E-15	5.3E-16	1.8E-16	6.3E-17	2.2E-17	7.4E-18	2.5E-18	8.6E-19	2.9E-19	9.9E-20	3.3E-20
1.1E-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Hg-194	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Np-237	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00		
Am-241	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-20	3.5E-20	1.1E-19	3.5E-19
1.0E-18	2.8E-18	7.5E-18	1.9E-17	4.8E-17	1.1E-16	2.7E-16	6.0E-16	1.3E-15	2.7E-15	5.6E-15	1.1E-14
2.2E-14	4.2E-14	7.9E-14	1.4E-13	2.6E-13	4.6E-13	7.9E-13	1.3E-12	2.2E-12	5.9E-12	1.5E-11	3.5E-11
7.9E-11	1.7E-10	4.2E-10	9.5E-10	2.1E-09	4.3E-09	8.4E-09	1.6E-08	2.9E-08	5.0E-08		

```
      Cm-244         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Ho-166m        0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   1.5E-20   1.4E-19   1.1E-18   7.5E-18   4.7E-17   2.7E-16   1.4E-15
      I-129          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   2.0E-19   5.8E-18   1.1E-16   1.6E-15
1.7E-14   1.4E-13   9.4E-13   5.4E-12   2.6E-11   1.1E-10   4.2E-10   1.4E-09   4.3E-09   1.2E-08   3.1E-08   7.5E-08
1.7E-07   3.7E-07   7.4E-07   1.4E-06   2.7E-06   4.7E-06   8.1E-06   1.3E-05   2.2E-05   3.4E-05   5.1E-05   7.5E-05
1.1E-04   1.5E-04   2.1E-04   2.9E-04   3.8E-04   5.0E-04   6.5E-04   8.2E-04   1.0E-03   1.3E-03   1.5E-03   1.9E-03
2.2E-03   2.6E-03   3.1E-03   3.5E-03   4.0E-03   5.1E-03   6.3E-03   7.5E-03   8.7E-03   9.9E-03   1.1E-02   1.2E-02
1.2E-02   1.3E-02   1.3E-02   1.3E-02   1.2E-02   1.2E-02   1.1E-02   1.1E-02   9.8E-03   9.0E-03   8.1E-03   7.3E-03
6.4E-03   5.7E-03   4.9E-03   4.3E-03   3.7E-03   3.1E-03   2.6E-03   2.2E-03   1.9E-03   1.5E-03   1.3E-03   1.0E-03
8.6E-04   7.0E-04   5.7E-04   4.6E-04   3.7E-04   3.0E-04   2.4E-04   1.9E-04   1.5E-04   9.3E-05   5.8E-05   3.5E-05
2.1E-05   1.3E-05   6.7E-06   3.5E-06   1.8E-06   9.0E-07   4.5E-07   2.3E-07   1.1E-07   5.5E-08
      K-40           0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   1.8E-20   9.2E-19   3.1E-17   6.9E-16
1.1E-14   1.4E-13   1.4E-12   1.1E-11   7.1E-11   4.0E-10   1.9E-09   8.3E-09   3.2E-08   1.1E-07   3.5E-07   1.0E-06
2.8E-06   7.0E-06   1.7E-05   3.8E-05   8.0E-05   1.6E-04   3.2E-04   6.0E-04   1.1E-03   1.9E-03   3.2E-03   5.2E-03
8.4E-03   1.3E-02   2.0E-02   2.9E-02   4.3E-02   6.1E-02   8.5E-02   1.2E-01   1.6E-01   2.1E-01   2.8E-01   3.6E-01
4.6E-01   5.7E-01   7.2E-01   8.8E-01   1.1E+00   1.6E+00   2.2E+00   2.9E+00   3.8E+00   4.8E+00   5.9E+00   7.1E+00
8.4E+00   9.6E+00   1.1E+01   1.2E+01   1.3E+01   1.4E+01   1.4E+01   1.5E+01   1.5E+01   1.5E+01   1.5E+01   1.5E+01
1.4E+01   1.4E+01   1.3E+01   1.2E+01   1.2E+01   1.1E+01   9.8E+00   8.9E+00   8.1E+00   7.2E+00   6.5E+00   5.7E+00
5.0E+00   4.4E+00   3.9E+00   3.3E+00   2.9E+00   2.5E+00   2.1E+00   1.8E+00   1.5E+00   1.1E+00   7.7E-01   5.4E-01
3.7E-01   2.5E-01   1.5E-01   9.2E-02   5.5E-02   3.2E-02   1.9E-02   1.1E-02   6.1E-03   3.5E-03
      Mn-53          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Na-22          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   3.1E-20   2.1E-17   3.1E-15   1.3E-12
7.7E-11   1.3E-09   8.4E-09   2.9E-08   6.0E-08   8.6E-08   9.2E-08   7.7E-08   5.3E-08   3.1E-08   1.6E-08   7.1E-09
2.9E-09   1.1E-09   3.8E-10   1.2E-10   3.7E-11   1.1E-11   3.0E-12   7.8E-13   2.0E-13   4.9E-14   1.2E-14   2.8E-15
6.3E-16   1.4E-16   3.1E-17   6.6E-18   1.4E-18   2.9E-19   5.9E-20   1.2E-20   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
      Nb-91          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   1.4E-20   5.9E-20   2.3E-19   8.7E-19   3.1E-18   1.1E-17   3.5E-17   1.1E-16
3.3E-16   9.7E-16   2.7E-15   7.5E-15   2.0E-14   5.1E-14   1.3E-13   3.1E-13   7.3E-13   3.8E-12   1.8E-11   7.7E-11
3.1E-10   1.2E-09   5.4E-09   2.3E-08   9.0E-08   3.2E-07   1.1E-06   3.4E-06   9.8E-06   2.7E-05
      Nb-92          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
1.2E-20   3.6E-20   1.0E-19   2.8E-19   7.6E-19   2.0E-18   4.9E-18   1.2E-17   2.9E-17   1.5E-16   7.4E-16   3.3E-15
1.3E-14   5.1E-14   2.4E-13   1.1E-12   4.3E-12   1.6E-11   5.4E-11   1.7E-10   5.2E-10   1.5E-09
      Nb-93m         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
```

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0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Nb-94          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   1.7E-20   8.3E-20   3.7E-19
1.5E-18   5.7E-18   2.7E-17   1.2E-16   4.8E-16   1.8E-15   6.0E-15   1.9E-14   5.8E-14   1.6E-13
     Ni-59          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Ni-63          0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Os-194         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pa-231         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pb-202         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pb-210         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
     Pd-107         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
1.2E-20   5.9E-20   2.7E-19   1.1E-18   4.5E-18   1.7E-17   5.9E-17   2.0E-16   6.4E-16   2.0E-15   5.6E-15   1.6E-14
4.4E-14   1.2E-13   2.9E-13   7.2E-13   1.7E-12   8.7E-12   4.0E-11   1.7E-10   6.5E-10   2.3E-09   7.5E-09   2.3E-08
6.6E-08   1.8E-07   4.6E-07   1.1E-06   2.6E-06   5.9E-06   1.3E-05   2.6E-05   5.2E-05   1.0E-04   1.9E-04   3.4E-04
6.1E-04   1.1E-03   1.8E-03   2.9E-03   4.7E-03   7.4E-03   1.2E-02   1.8E-02   2.6E-02   3.9E-02   5.6E-02   8.0E-02
1.1E-01   1.6E-01   2.1E-01   2.9E-01   3.9E-01   5.1E-01   6.7E-01   8.8E-01   1.1E+00   1.8E+00   2.8E+00   4.2E+00
6.2E+00   8.8E+00   1.3E+01   1.9E+01   2.7E+01   3.7E+01   4.9E+01   6.4E+01   8.1E+01   1.0E+02
     Pm-145         0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00   0.0E+00
```

0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			
Pm-147		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			
Po-208		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			
Po-209		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00			
Pt-193		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-20	1.9E-19	1.4E-18	9.9E-18	6.0E-17	3.3E-16	
1.6E-15	7.4E-15	3.1E-14	1.2E-13	4.2E-13	1.4E-12	4.3E-12	1.3E-11	3.6E-11	9.4E-11	2.4E-10	5.7E-10	
1.3E-09	2.9E-09	6.3E-09	1.3E-08	2.6E-08	5.0E-08	9.3E-08	1.7E-07	3.0E-07	5.1E-07	8.6E-07	1.4E-06	
2.3E-06	3.6E-06	5.5E-06	8.4E-06	1.2E-05	1.8E-05	2.6E-05	3.7E-05	5.1E-05	9.5E-05	1.7E-04	2.8E-04	
4.5E-04	6.8E-04	1.1E-03	1.7E-03	2.4E-03	3.3E-03	4.4E-03	5.6E-03	6.9E-03	8.2E-03			

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Whetstone Associates

ATTACHMENT 7
WESTERN LARW CELL SENSITIVITY ANALYSIS OUTPUT FILES

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July 19, 2000

LIST OF TABLES

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Table A7.1 Precipitation Values for High and Low Precipitation Sensitivity Analyses (in Inches)

	BASE CASE	HIGH PRECIPITATION SENSITIVITY ANALYSIS			LOW PRECIPITATION SENSITIVITY ANALYSIS		
		1997	1998	MODEL AVG	1993	1999	MODEL AVG
J	0.54	1.56	0.71	1.13	1.17	0.81	0.99
F	0.61	0.87	2.21	1.54	0.40	0.64	0.52
M	0.79	0.17	1.67	0.92	0.67	0.46	0.57
A	0.81	1.42	1.63	1.53	0.17	2.65	1.41
M	1.01	0.98	1.04	1.01	0.99	0.41	0.70
J	0.58	2.36	2.91	2.64	0.70	1.84	1.27
J	0.53	1.19	0.43	0.81	0.03	0.06	0.04
A	0.56	0.32	0.28	0.30	0.10	0.68	0.39
S	0.59	0.90	0.52	0.71	0.27	0.12	0.19
O	0.72	0.47	1.94	1.21	0.78	0.04	0.41
N	0.55	0.72	0.10	0.41	0.33	0.13	0.23
D	0.56	0.60	0.54	0.57	0.18	0.40	0.29
ANNUAL	7.85	11.57	13.98	12.78	5.79	8.24	7.01

Table A7.2 Western LARW Cell HELP Infiltration Model Results for Base Case and Sensitivity Analyses

HELP MODEL RUN	DESCRIPTION	INFILTRATION (IN/YR)	INFILTRATION (CM/YR)
T1	Top Slope, 540 ft length, 3% slope	0.104	0.265
T2	Top Slope, increase drainage layer thickness to 12"	0.106	0.268
HT1	High Precipitation sensitivity analysis	0.122	0.310
LT1	Low Precipitation sensitivity analysis	0.090	0.229
TTR_3	Top Slope, Decrease lower radon barrier thickness to 3 ft	0.104	0.265
TTR_2	Top Slope, Decrease lower radon barrier thickness to 2 ft	0.104	0.265
TTR_1	Top Slope, Decrease lower radon barrier thickness to 1 ft	0.104	0.265
S1	Side-slope, degraded 100x, length 160 ft, no run-on	0.431	1.096
S1-R4	Side-slope, degraded 100x, length 887 ft, with run-on	0.676	1.717
SP1	Side-slope, frost prot. layer, length 160 ft, no run-on	0.076	0.193
SP1-R3	Side-slope, frost prot. layer, length 747 ft, with run-on	0.143	0.364
SH1	Side-slope, High Precip., degraded 100x, 160', no run-on	0.574	1.459
SH1-R3	Side-slope, High Precip., degraded 100x, 787', with run-on	0.827	2.102
SL1	Side-slope, Low Precip., degraded 100x, 160', no run-on	0.386	0.980
SL1-R4	Side-slope, Low Precip., degraded 100x, 757', with run-on	0.594	1.508
ST1	Side-slope, frost prot. layer, thicker filter, no run-on	0.057	0.146
ST1-R3	Side-slope, frost prot. layer, thicker filter, 741', with run-on	0.093	0.237
S2	Side-slope, degraded 100x, thicker filter, no run-on	0.393	0.998
S2-R4	Side-slope, degraded 100x, thicker filter, 859', with run-on	0.577	1.464

TABLE A7.3. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR INFILTRATION RATE)

	Total Time -> RUN ->	10 years HTOP_01		20 years HTOP_02		30 years HTOP_03		40 years HTOP_04	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ	θ	AVG θ	θ	AVG θ
1	0	0.426609		0.426611		0.426611		0.426611	
2	0.1	0.426591		0.426592		0.426592		0.426592	
3	0.3	0.426553		0.426555		0.426555		0.426555	
4	0.6	0.426497		0.426498		0.426498		0.426498	
5	1.1	0.4264		0.426402		0.426402		0.426402	
6	2	0.426222		0.426223		0.426223		0.426223	
7	3.5	0.425908		0.425909		0.425909		0.425909	
8	6.5	0.42521		0.425212		0.425212		0.425212	
9	11.5	0.423802		0.423804		0.423804		0.423804	
10	19	0.420879		0.420882		0.420882		0.420882	
11	24	0.418117		0.418121		0.418121		0.418121	
12	27	0.415983		0.415988		0.415988		0.415988	
13	28.5	0.414736		0.414742		0.414742		0.414742	
14	29.4	0.413918		0.413923		0.413923		0.413923	
15	29.9	0.413437		0.413443		0.413443		0.413443	
16	30.2	0.41314		0.413146		0.413146		0.413146	
17	30.4	0.412938		0.412943		0.412943		0.412943	
18	30.5	0.412835	0.420672	0.412841	0.420676	0.412841	0.420676	0.412841	0.420676
19	30.6	0.41282		0.412825		0.412826		0.412826	
20	30.8	0.412828		0.412834		0.412834		0.412834	
21	31.1	0.41284		0.412846		0.412846		0.412846	
22	31.6	0.412861		0.412866		0.412867		0.412867	
23	32.5	0.412898		0.412904		0.412904		0.412904	
24	34	0.41296		0.412966		0.412966		0.412966	
25	37	0.413086		0.413092		0.413092		0.413092	
26	42	0.4133		0.413306		0.413306		0.413306	
27	52	0.413747		0.413753		0.413754		0.413754	
28	72	0.414717		0.414724		0.414724		0.414724	
29	102	0.416375		0.416381		0.416381		0.416381	
30	141.8	0.41898		0.418986		0.418986		0.418986	
31	171.8	0.421257		0.421262		0.421262		0.421262	
32	191.8	0.422921		0.422926		0.422926		0.422926	
33	201.8	0.423795		0.42380		0.42380		0.42380	
34	206.8	0.424242		0.424247		0.424247		0.424247	
35	209.8	0.424513		0.424518		0.424518		0.424518	
36	211.3	0.42465		0.424654		0.424654		0.424654	
37	212.2	0.424732		0.424736		0.424736		0.424736	
38	212.7	0.424778		0.424782		0.424782		0.424782	
39	213	0.424805		0.424809		0.424809		0.424809	
40	213.2	0.424823		0.424828		0.424828		0.424828	
41	213.3	0.424832		0.424837		0.424837		0.424837	
42	213.4	0.424842	0.418848	0.424846	0.418853	0.424846	0.418853	0.424846	0.418853
43	213.5	0.059725		0.059747		0.059747		0.059747	
44	213.7	0.059725		0.059747		0.059747		0.059747	
45	214	0.059725		0.059747		0.059747		0.059747	
46	214.5	0.059724		0.059747		0.059747		0.059747	
47	215.4	0.059724		0.059747		0.059747		0.059747	
48	216.9	0.059723		0.059747		0.059747		0.059747	
49	219.9	0.059722		0.059747		0.059747		0.059747	
50	224.9	0.05972		0.059746		0.059747		0.059747	
51	234.9	0.059716		0.059746		0.059746		0.059747	
52	254.9	0.059705		0.059743		0.059743		0.059747	
53	294.9	0.059717		0.059774		0.059783		0.059739	
54	374.9	0.059185		0.059693		0.059666		0.059785	
55	524.9	0.059105		0.059884		0.059797		0.059641	
56	744.9	0.057881		0.059237		0.059937		0.059811	
57	964.9	0.057235		0.058266		0.059523		0.059881	
58	1114.9	0.057215		0.057595		0.058942		0.059884	
59	1264.9	0.057591		0.057323		0.058235		0.059467	
60	1344.9	0.057999		0.057423		0.058032		0.059315	
61	1384.9	0.057419		0.056673		0.057138		0.058466	
62	1404.9	0.055001		0.054199		0.05459		0.055908	
63	1414.9	0.051609		0.050838		0.051174		0.052401	
64	1419.9	0.048419		0.047714		0.048003		0.049109	
65	1422.9	0.045399		0.044773		0.045016		0.045984	
66	1424.4	0.043276		0.042715		0.042922		0.043781	

TABLE A7.3. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR INFILTRATION RATE)

	Total Time -> RUN ->	10 years HTOP_01		20 years HTOP_02		30 years HTOP_03		40 years HTOP_04	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ	θ	AVG θ	θ	AVG θ
67	1425.3	0.04165		0.041142		0.041319		0.042088	
68	1425.8	0.040569		0.0401		0.040255		0.040959	
69	1426.1	0.039837		0.039395		0.039534		0.04019	
70	1426.3	0.039303		0.038882		0.039009		0.03963	
71	1426.4	0.039021		0.038611		0.038732		0.039333	
72	1426.5	0.038727	0.057782	0.038329	0.058273	0.038442	0.058962	0.039023	0.05943
73	1426.6	0.416503		0.41618		0.416273		0.416736	
74	1426.8	0.416517		0.416194		0.416286		0.416748	
75	1427.1	0.416537		0.416214		0.416307		0.416768	
76	1427.6	0.41657		0.416249		0.416341		0.4168	
77	1428.3	0.416617		0.416297		0.416389		0.416845	
78	1429.3	0.416685		0.416366		0.416457		0.416911	
79	1430.8	0.416786		0.416471		0.41656		0.417009	
80	1432.5	0.416902		0.41659		0.416678		0.417121	
81	1436.5	0.417178		0.416874		0.416958		0.417388	
82	1442.5	0.417601		0.417308		0.417387		0.417798	
83	1452.5	0.418328		0.418054		0.418125		0.418504	
84	1461.5	0.419006		0.41875		0.418814		0.419166	
85	1471.5	0.419787		0.419549		0.419606		0.41993	
86	1477.5	0.420269		0.420041		0.420095		0.420402	
87	1481.5	0.420596		0.420375		0.420427		0.420723	
88	1483.2	0.420737		0.420518		0.420569		0.420861	
89	1484.7	0.420861		0.420646		0.420695		0.420983	
90	1485.7	0.420944		0.420731		0.42078		0.421065	
91	1486.4	0.421003		0.42079		0.420839		0.421123	
92	1486.9	0.421045		0.420833		0.420881		0.421164	
93	1487.2	0.42107		0.420859		0.420907		0.421189	
94	1487.4	0.421087		0.420876		0.420924		0.421205	
95	1487.5	0.421095	0.418956	0.420884	0.418696	0.420932	0.418762	0.421213	0.41912
96	1487.6	0.042497		0.041878		0.042017		0.042856	
97	1487.8	0.042497		0.041878		0.042017		0.042856	
98	1488.1	0.042498		0.041879		0.042016		0.042855	
99	1488.6	0.042499		0.041879		0.042016		0.042854	
100	1489.3	0.042501		0.04188		0.042015		0.042853	
101	1490.3	0.042503		0.04188		0.042014		0.042851	
102	1491.8	0.042506		0.041881		0.042012		0.042848	
103	1493.5	0.04251		0.041883		0.04201		0.042844	
104	1497.5	0.042518		0.041885		0.042005		0.042836	
105	1503.5	0.042532		0.04189		0.041997		0.042824	
106	1513.5	0.042554		0.041898		0.041985		0.042804	
107	1527.5	0.042585		0.041909		0.041969		0.042776	
108	1547.5	0.04263		0.041927		0.041948		0.042734	
109	1576.5	0.042697		0.041955		0.04192		0.042674	
110	1614.5	0.042784		0.041994		0.041887		0.042591	
111	1665.5	0.042916		0.042071		0.041877		0.042502	
112	1717.5	0.042982		0.042051		0.041753		0.042288	
113	1768.5	0.043486	0.042919	0.042734	0.04213	0.042463	0.041987	0.042805	0.042607
114	1806.5	0.050473		0.050183		0.05008		0.0502	
115	1835.5	0.071183		0.071118		0.071095		0.071122	
116	1855.5	0.109558		0.109544		0.109539		0.109545	
117	1869.5	0.171405		0.171401		0.1714		0.171402	
118	1879.5	0.25038		0.250379		0.250378		0.250379	
119	1885.5	0.303579		0.303579		0.303579		0.303579	
120	1889.5	0.328723		0.328723		0.328723		0.328723	
121	1891.2	0.334993		0.334993		0.334993		0.334993	
122	1892.7	0.338277		0.338277		0.338277		0.338277	
123	1893.7	0.339431		0.339431		0.339431		0.339431	
124	1894.4	0.339835		0.339835		0.339835		0.339835	
125	1894.9	0.339964		0.339964		0.339964		0.339964	
126	1895.2	0.339994		0.339994		0.339994		0.339994	
127	1895.4	0.34000		0.34000		0.34000		0.34000	
128	1895.5	0.34000		0.34000		0.34000		0.34000	

TABLE A7.4. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

	Total Time ->	10 years		10 years	
	RUN ->	sid_01		sid_02	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ
1	0.0	0.42204		0.42204	
2	0.1	0.422048		0.422048	
3	0.3	0.422064		0.422064	
4	0.6	0.422088		0.422088	
5	1.1	0.422129		0.422129	
6	2.0	0.422201		0.422201	
7	3.5	0.422323		0.422323	
8	6.5	0.422568		0.422568	
9	11.3	0.422966		0.422966	
10	14.3	0.423219		0.423219	
11	15.8	0.423346		0.423346	
12	16.7	0.423422		0.423422	
13	17.2	0.423465		0.423465	
14	17.5	0.42349		0.42349	
15	17.7	0.423508		0.423508	
16	17.8	0.423516		0.423516	
17	17.9	0.423525		0.423525	
18	18.1	0.423542		0.423542	
19	18.4	0.423567		0.423567	
20	18.9	0.42361		0.42361	
21	19.8	0.423688		0.423688	
22	21.3	0.423817		0.423817	
23	24.1	0.42406		0.42406	
24	27.0	0.424315		0.424315	
25	28.5	0.424447		0.424447	
26	29.4	0.424527		0.424527	
27	29.9	0.424571		0.424571	
28	30.2	0.424598		0.424598	
29	30.4	0.424615		0.424615	
30	30.5	0.424624	0.423409	0.424624	0.423409
31	30.6	0.424631		0.424631	
32	30.8	0.424631		0.424631	
33	31.1	0.424632		0.424632	
34	31.6	0.424634		0.424634	
35	32.5	0.424637		0.424637	
36	34.0	0.424643		0.424643	
37	37.0	0.424654		0.424654	
38	42.0	0.424673		0.424673	
39	52.0	0.424716		0.424716	
40	72.0	0.424821		0.424821	
41	102.0	0.425046		0.425046	
42	141.8	0.425529		0.425529	
43	171.8	0.426095		0.426095	
44	191.8	0.426603		0.426603	
45	201.8	0.426906		0.426906	
46	206.8	0.42707		0.42707	
47	209.8	0.427174		0.427174	
48	211.3	0.427227		0.427227	
49	212.2	0.427259		0.427259	
50	212.7	0.427277		0.427277	
51	213.0	0.427288		0.427288	
52	213.2	0.427295		0.427295	
53	213.3	0.427299		0.427299	
54	213.4	0.427302	0.425895	0.427302	0.425895
55	213.5	0.078139		0.078139	
56	213.7	0.078139		0.078139	
57	214.0	0.078139		0.078139	
58	214.5	0.078139		0.078139	
59	215.4	0.078139		0.078139	
60	216.9	0.078139		0.078139	
61	219.9	0.078139		0.078139	
62	224.9	0.078139		0.078139	
63	234.9	0.078139		0.078139	
64	254.9	0.07814		0.07814	
65	294.9	0.078137		0.078136	
66	374.9	0.078145		0.078145	
67	524.2	0.078127		0.078131	
68	604.2	0.07815		0.078153	
69	644.2	0.07809		0.078093	
70	664.2	0.076337		0.076339	
71	674.2	0.072811		0.072813	

TABLE A7.4. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

	Total Time -> RUN ->	10 years sid_01		10 years sid_02	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ
72	679.2	0.069003		0.069005	
73	682.2	0.06523		0.065232	
74	683.7	0.062594		0.062595	
75	684.6	0.060631		0.060632	
76	685.1	0.059371		0.059372	
77	685.4	0.058543		0.058544	
78	685.6	0.057955		0.057956	
79	685.7	0.05765		0.057651	
80	685.8	0.057337	0.077634	0.057338	0.077636
81	685.9	0.424336		0.424336	
82	686.1	0.424336		0.424336	
83	686.4	0.424336		0.424336	
84	686.9	0.424335		0.424336	
85	687.6	0.424335		0.424335	
86	688.6	0.424334		0.424335	
87	690.1	0.424334		0.424334	
88	691.8	0.424332		0.424333	
89	695.8	0.42433		0.42433	
90	701.8	0.424326		0.424326	
91	710.8	0.424319		0.424319	
92	721.8	0.424309		0.424309	
93	730.8	0.4243		0.4243	
94	736.8	0.424293		0.424293	
95	740.8	0.424288		0.424288	
96	742.5	0.424286		0.424286	
97	744.0	0.424284		0.424284	
98	745.0	0.424283		0.424283	
99	745.7	0.424282		0.424282	
100	746.2	0.424281		0.424281	
101	746.5	0.424281		0.424281	
102	746.7	0.424281		0.424281	
103	746.8	0.424281	0.420635	0.424281	0.420635
104	746.9	0.056672		0.056671	
105	747.1	0.056672		0.056671	
106	747.4	0.056672		0.056671	
107	747.9	0.056672		0.056671	
108	748.6	0.056672		0.056671	
109	749.6	0.056672		0.056671	
110	751.1	0.056672		0.056671	
111	752.8	0.056672		0.056671	
112	756.8	0.056672		0.056671	
113	762.8	0.056672		0.056671	
114	772.8	0.056673		0.056671	
115	786.8	0.056673		0.056671	
116	806.8	0.056674		0.056672	
117	835.8	0.056674		0.056671	
118	873.8	0.056683		0.056677	
119	923.8	0.056663		0.056654	
120	978.0	0.056735		0.056723	
121	1028.0	0.05652		0.056505	
122	1066.0	0.057664	0.056795	0.057653	0.056787
123	1095.0	0.073171		0.073167	
124	1115.0	0.109994		0.109993	
125	1129.0	0.171509		0.171509	
126	1139.0	0.250409		0.250409	
127	1145.0	0.303588		0.303588	
128	1149.0	0.328725		0.328725	
129	1150.7	0.334994		0.334994	
130	1152.2	0.338277		0.338277	
131	1153.2	0.339431		0.339431	
132	1153.9	0.339835		0.339835	
133	1154.4	0.339964		0.339964	
134	1154.7	0.339994		0.339994	
135	1154.9	0.34		0.34	
136	1155	0.34		0.34	

TABLE A7.5. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL SIDE SLOPE WITH HIGH PRECIPITATION AND 100-FOLD PERMEABILITY INCREASE (2.10 CM/YR INFILTRATION)

	Total Time ->	10 years		20 years	
	RUN ->	SH_01		SH_02	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ
1	0.0	0.423454		0.423454	
2	0.1	0.423462		0.423462	
3	0.3	0.423478		0.423478	
4	0.6	0.423502		0.423502	
5	1.1	0.423542		0.423542	
6	2.0	0.423614		0.423614	
7	3.5	0.423735		0.423735	
8	6.5	0.423979		0.423979	
9	11.3	0.424375		0.424375	
10	14.3	0.424626		0.424626	
11	15.8	0.424753		0.424753	
12	16.7	0.424829		0.424829	
13	17.2	0.424872		0.424872	
14	17.5	0.424897		0.424897	
15	17.7	0.424914		0.424914	
16	17.8	0.424923		0.424923	
17	17.9	0.424931		0.424931	
18	18.1	0.424948		0.424948	
19	18.4	0.424974		0.424974	
20	18.9	0.425017		0.425017	
21	19.8	0.425094		0.425094	
22	21.3	0.425222		0.425222	
23	24.1	0.425465		0.425465	
24	27.0	0.425718		0.425718	
25	28.5	0.42585		0.42585	
26	29.4	0.425929		0.425929	
27	29.9	0.425973		0.425973	
28	30.2	0.426		0.426	
29	30.4	0.426018		0.426018	
30	30.5	0.426027	0.424816	0.426027	0.424816
31	30.6	0.426033		0.426033	
32	30.8	0.426033		0.426033	
33	31.1	0.426034		0.426034	
34	31.6	0.426034		0.426034	
35	32.5	0.426036		0.426036	
36	34.0	0.426038		0.426038	
37	37.0	0.426043		0.426043	
38	42.0	0.426052		0.426052	
39	52.0	0.426071		0.426071	
40	72.0	0.42612		0.42612	
41	102.0	0.42623		0.42623	
42	141.8	0.426484		0.426484	
43	171.8	0.426802		0.426802	
44	191.8	0.427103		0.427103	
45	201.8	0.427288		0.427288	
46	206.8	0.427391		0.427391	
47	209.8	0.427456		0.427456	
48	211.3	0.427489		0.427489	
49	212.2	0.42751		0.42751	
50	212.7	0.427521		0.427521	
51	213.0	0.427528		0.427528	
52	213.2	0.427533		0.427533	
53	213.3	0.427535		0.427535	
54	213.4	0.427537	0.426810	0.427537	0.426810
55	213.5	0.080822		0.080822	
56	213.7	0.080822		0.080822	
57	214.0	0.080822		0.080822	
58	214.5	0.080822		0.080822	
59	215.4	0.080822		0.080822	
60	216.9	0.080822		0.080822	
61	219.9	0.080822		0.080822	
62	224.9	0.080822		0.080822	
63	234.9	0.080822		0.080822	
64	254.9	0.080823		0.080822	
65	294.9	0.080819		0.080821	
66	374.9	0.080828		0.080824	
67	524.2	0.080821		0.080821	
68	604.2	0.080821		0.080825	
69	644.2	0.080806		0.080813	
70	664.2	0.079322		0.079331	

TABLE A7.5. MOISTURE CONTENT VS. DEPTH - UNSAT-H RESULTS FOR WESTERN LARW CELL SIDE SLOPE WITH HIGH PRECIPITATION AND 100-FOLD PERMEABILITY INCREASE (2.10 CM/YR INFILTRATION)

	Total Time ->	10 years		20 years	
	RUN ->	SH_01		SH_02	
NODE NUMBER	DEPTH	θ	AVG θ	θ	AVG θ
71	674.2	0.076203		0.076216	
72	679.2	0.072815		0.07283	
73	682.2	0.0695		0.069518	
74	683.7	0.067232		0.067252	
75	684.6	0.06558		0.065601	
76	685.1	0.064541		0.064563	
77	685.4	0.063867		0.06389	
78	685.6	0.063395		0.063418	
79	685.7	0.063151		0.063175	
80	685.8	0.062902	0.080388	0.062926	0.080390
81	685.9	0.425407		0.425411	
82	686.1	0.425405		0.425409	
83	686.4	0.425403		0.425407	
84	686.9	0.425399		0.425403	
85	687.6	0.425393		0.425397	
86	688.6	0.425384		0.425388	
87	690.1	0.425372		0.425375	
88	691.8	0.425357		0.425361	
89	695.8	0.42532		0.425324	
90	701.8	0.42526		0.425264	
91	710.8	0.42516		0.425163	
92	721.8	0.425015		0.425017	
93	730.8	0.424876		0.424878	
94	736.8	0.424771		0.424773	
95	740.8	0.424695		0.424697	
96	742.5	0.424662		0.424663	
97	744.0	0.424631		0.424633	
98	745.0	0.42461		0.424612	
99	745.7	0.424596		0.424597	
100	746.2	0.424585		0.424586	
101	746.5	0.424579		0.42458	
102	746.7	0.424574		0.424576	
103	746.8	0.424572	0.421434	0.424573	0.421437
104	746.9	0.05866		0.058668	
105	747.1	0.058659		0.058668	
106	747.4	0.058659		0.058668	
107	747.9	0.058659		0.058668	
108	748.6	0.058659		0.058668	
109	749.6	0.058659		0.058668	
110	751.1	0.058659		0.058668	
111	752.8	0.058659		0.058668	
112	756.8	0.058659		0.058668	
113	762.8	0.058659		0.058668	
114	772.8	0.058659		0.058668	
115	786.8	0.058659		0.058668	
116	806.8	0.058658		0.058668	
117	835.8	0.058657		0.058667	
118	873.8	0.058662		0.058671	
119	923.8	0.058649		0.058656	
120	978.0	0.058694		0.058698	
121	1028.0	0.058575		0.058572	
122	1066.0	0.059172	0.058730	0.059167	0.058734
123	1095.0	0.073681		0.073679	
124	1115.0	0.110111		0.11011	
125	1129.0	0.171538		0.171538	
126	1139.0	0.250417		0.250417	
127	1145.0	0.303591		0.303591	
128	1149.0	0.328726		0.328726	
129	1150.7	0.334995		0.334995	
130	1152.2	0.338277		0.338277	
131	1153.2	0.339431		0.339431	
132	1153.9	0.339835		0.339835	
133	1154.4	0.339964		0.339964	
134	1154.7	0.339994		0.339994	
135	1154.9	0.34		0.34	
136	1155	0.34		0.34	

Table A7.6 UNSAT-H Model Summary Results – Base Case and Sensitivity Analyses

Modeled Results:

MODEL RUN	DESCRIPTION	INFILTR. (cm/yr)	Volumetric Moisture Content (v/v) Radon Barrier (Upper)	Radon Barrier (Lower)	Waste	Clay Liner	Unit 3 Sand
TOP_04	Top Slope, Base Case	0.265	0.4194	0.4184	0.0581	0.4187	0.0420
HTOP_04	Top Slope, High Precip.	0.310	0.4207	0.4189	0.0594	0.4191	0.0426
LTOP_04	Top Slope, Low Precip.	0.229	0.4183	0.4180	0.0573	0.4188	0.0422
FPSS_04	Side Slope, Frost Protected	0.364	0.4125	0.4196	0.0605	0.4158	0.0452
SID_02	Degraded Side Slope (w/o Protection)	1.717	0.4234	0.4259	0.0776	0.4206	0.0568
SH_02	Side Slope, High Precip.	2.102	0.4248	0.4268	0.0804	0.4214	0.0587
SL_03	Side Slope, Low Precip.	1.508	0.4225	0.4253	0.0760	0.4202	0.0556
ST_03	Side Slope, 18" Filter	1.464	0.4223	0.4252	0.0756	0.4201	0.0554
STP_04	Side Slope, 12" filter, Frost Protected	0.237	0.4102	0.4182	0.0568	0.4147	0.0430

TABLE A7.7. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YEAR INFILTRATION)

Waste Characteristics:	Infiltration Rate:	0.0031	m/yr
	Waste Thickness:	1	m
	Waste Moisture Content:	0.059	cm^3/cm^3
	Waste Bulk Density:	1.8	gm/cm^3
Soil Characteristics:	Soil Thickness:	4.432	m
	Soil Moisture Content:	0.094	cm^3/cm^3
	Soil Bulk Density:	1.566	gm/cm^3
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3
	Hydraulic Conductivity:	7.58E-04	cm/sec
	Gradient:	1.00E-03	m/m
	Aquifer Velocity:	0.8243	m/yr
	Aquifer Flux Rate:	0.2390	$m^3/m^2/yr$

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	*Maximum* Concentr. (Ci/m3)	*Distribution* Coefficient (Kd) (L/Kg)	*Fractional* Release Rate (1/yr)	Soil Retardation Factor	1/2 life	*1/2 life* (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	3.80E-04	75.968	21.77 y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	6.30E-04	45.981	418 y	4.18E+02
103	Aluminum	Al-26	0.0670	1.21E-07	0.001	5.07E-02	1.017	740000 y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	1.67E-03	17.660	432 y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	1.67E-03	17.660	141 y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	1.67E-03	17.660	7370 y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	1.72E-04	167.596	11 y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	6.80E-04	42.649	1,510,000 y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	1.67E-03	17.660	31.55 y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	1.67E-03	17.660	3040000 y	3.04E+06
110	Berkelium	Bk-247	0.00010	1.78E-10	0.001	5.07E-02	1.017	1400 y	1.40E+03
111	Carbon	C-14	5,000,000	9.00E+00	8.52	2.01E-04	142.940	5730 y	5.73E+03
112	Calcium	Ca-41	1.6110	2.90E-06	0.05	2.07E-02	1.833	103,000 y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	1.67E-03	17.660	9.30E+15 y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	1.67E-03	17.660	14.1 y	1.41E+01
115	Californium	Cf-249	0.00015	2.70E-10	0.001	5.07E-02	1.017	351 y	3.51E+02
116	Californium	Cf-250	85	1.53E-04	0.001	5.07E-02	1.017	13.08 y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	0.001	5.07E-02	1.017	898 d	2.46E+00
118	Californium	Cf-252	440,000,000	7.92E+02	0.001	5.07E-02	1.017	2.65 y	2.65E+00
119	Chlorine	Cl-36	0.2828	5.09E-07	0.001	5.07E-02	1.017	301,000 y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	1.85E-05	1555.338	29 y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	1.85E-05	1555.338	18 y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	1.85E-05	1555.338	8,500 y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	1.85E-05	1555.338	4730 y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	1.85E-05	1555.338	15600000 y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	1.85E-05	1555.338	340000 y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	4.65E-06	6165.043	5 y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	1.29E-05	2216.723	2,300,000 y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	1.29E-05	2216.723	30.07 y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	1	1.67E-03	17.660	14 y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	1	1.67E-03	17.660	9 y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	1	1.67E-03	17.660	4.76 y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	1.20E-03	24.323	2.73 y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	1.20E-03	24.323	1500000 y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	1	1.67E-03	17.660	75 y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	2.36E-02	1.666	12 y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	1.72E-04	167.596	444 y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	6.80E-04	42.649	1,200 y	1.20E+03
137	Iodine	I-129	5,000	9.00E-03	0.12	1.13E-02	2.999	15,700,000 y	1.57E+07
138	Potassium	K-40	7,003,370	1.26E+01	0.15	9.41E-03	3.499	1,277,000,000 y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	2.68E-04	107.621	3,740,000.00 y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	0.001	5.07E-02	1.017	3 y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	1.05E-03	27.655	680 y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	1.05E-03	27.655	34,700,000 y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	1.05E-03	27.655	16.13 y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	1.05E-03	27.655	20300 y	2.03E+04

TABLE A7.7. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YEAR INFILTRATION)

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
146	Nickel	Ni-59	14,000,000	2.52E+01	10	1.72E-04	167.596	76000 y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	1.72E-04	167.596	100.1 y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	5.68E-04	50.979	2144000 y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	5	3.42E-04	84.298	6 y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	3.11E-04	92.628	32760 y	3.28E+04
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	9.05E-05	317.532	52500 y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	9.05E-05	317.532	22.3 y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	2.95E-03	10.163	6500000 y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	2.64E-04	109.287	17.7 y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	2.64E-04	109.287	2.6234 y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	1.91E-04	150.936	2.9 y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	1.91E-04	150.936	102 y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	1.85E-03	15.994	50 y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	1.72E-04	167.596	2.86 y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	1.72E-04	167.596	87.7 y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	1.72E-04	167.596	24110 y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	1.72E-04	167.596	6564 y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	1.72E-04	167.596	14.35 y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	1.72E-04	167.596	373300 y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	1.72E-04	167.596	80800000 y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	1.72E-04	167.596	1600 y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	1.72E-04	167.596	5.75 y	5.75E+00
164	Rhenium	Re-187	8,800	1.58E-02	0.075	1.59E-02	2.249	43500000000 y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	1.67E-03	17.660	65000 y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	4.50E-03	6.831	172 y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	6.94E-04	41.816	90 y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	3.44E-05	833.979	55 y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	3.44E-05	833.979	100000 y	1.00E+05
170	Strontium	Sr-90	25,000	4.50E-02	0.05	2.07E-02	1.833	28.78 y	2.88E+01
171	Terbium	Tb-157	5.510	9.92E-06	0.001	5.07E-02	1.017	71 y	7.10E+01
172	Terbium	Tb-158	0.590	1.06E-06	0.001	5.07E-02	1.017	180 y	1.80E+02
173	Technetium	Tc-99	187,500	3.38E-01	0.11	1.20E-02	2.833	211100 y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	1.34E-03	21.824	1E+13 y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	1.72E-04	167.596	7880 y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	1.72E-04	167.596	75380 y	7.54E+04
176	Thorium	Th-232	110,000	1.98E-01	10	1.72E-04	167.596	14050000000 y	1.41E+10
177	Titanium	Ti-44	156,350,000,000,000	2.81E+08	10	1.72E-04	167.596	63 y	6.30E+01

TABLE A7.8. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

Waste Characteristics:	Infiltration Rate:	0.01717	m/yr	
	Waste Thickness:	1	m	
	Waste Moisture Content:	0.078	cm^3/cm^3	
	Waste Bulk Density:	1.8	gm/cm^3	
Soil Characteristics:	Soil Thickness:	4.432	m	(liner+soil to top of capillary fringe)
	Soil Moisture Content:	0.107	cm^3/cm^3	"
	Soil Bulk Density:	1.566	gm/cm^3	"
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3	
	Hydraulic Conductivity:	7.58E-04	cm/sec	
	Gradient:	1.00E-03	m/m	
	Aquifer Velocity:	0.8243	m/yr	
	Aquifer Flux Rate:	0.2390	$m^3/m^2/yr$	

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	2.10E-03	66.860	21.77 y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	3.48E-03	40.516	418 y	4.18E+02
103	Aluminum	Al-26	0.0670	1.21E-07	0.001	2.16E-01	1.015	740000 y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	9.14E-03	15.636	432 y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	9.14E-03	15.636	141 y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	9.14E-03	15.636	7370 y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	9.50E-04	147.355	11 y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	3.75E-03	37.589	1,510,000 y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	9.14E-03	15.636	31.55 y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	9.14E-03	15.636	3040000 y	3.04E+06
110	Berkelium	Bk-247	0.00010	1.78E-10	0.001	2.16E-01	1.015	1400 y	1.40E+03
111	Carbon	C-14	5,000,000	9.00E+00	8.52	1.11E-03	125.695	5730 y	5.73E+03
112	Calcium	Ca-41	1.6110	2.90E-06	0.05	1.02E-01	1.732	103,000 y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	9.14E-03	15.636	9.30E+15 y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	9.14E-03	15.636	14.1 y	1.41E+01
115	Californium	Cf-249	0.00015	2.70E-10	0.001	2.16E-01	1.015	351 y	3.51E+02
116	Californium	Cf-250	85	1.53E-04	0.001	2.16E-01	1.015	13.08 y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	0.001	2.16E-01	1.015	898 d	2.46E+00
118	Californium	Cf-252	440,000,000	7.92E+02	0.001	2.16E-01	1.015	2.65 y	2.65E+00
119	Chlorine	Cl-36	0.2828	5.09E-07	0.001	2.16E-01	1.015	301,000 y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	1.02E-04	1366.493	29 y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	1.02E-04	1366.493	18 y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	1.02E-04	1366.493	8,500 y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	1.02E-04	1366.493	4730 y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	1.02E-04	1366.493	15600000 y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	1.02E-04	1366.493	340000 y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	2.58E-05	5416.140	5 y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	7.17E-05	1947.523	2,300,000 y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	7.17E-05	1947.523	30.07 y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	1	9.14E-03	15.636	14 y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	1	9.14E-03	15.636	9 y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	1	9.14E-03	15.636	4.76 y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	6.61E-03	21.490	2.73 y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	6.61E-03	21.490	1500000 y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	1	9.14E-03	15.636	75 y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	1.15E-01	1.585	12 y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	9.50E-04	147.355	444 y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	3.75E-03	37.589	1,200 y	1.20E+03
137	Iodine	I-129	5,000	9.00E-03	0.12	5.85E-02	2.756	15,700,000 y	1.57E+07
138	Potassium	K-40	7,003,370	1.26E+01	0.15	4.94E-02	3.195	1,277,000,000 y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	1.48E-03	94.667	3,740,000.00 y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	0.001	2.16E-01	1.015	3 y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	5.81E-03	24.417	680 y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	5.81E-03	24.417	34,700,000 y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	5.81E-03	24.417	16.13 y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	5.81E-03	24.417	20300 y	2.03E+04

TABLE A7.8. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
146	Nickel	Ni-59	14,000,000	2.52E+01	10	9.50E-04	147.355	76000 y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	9.50E-04	147.355	100.1 y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	3.13E-03	44.907	2144000 y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	5	1.89E-03	74.178	6 y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	1.72E-03	81.495	32760 y	3.28E+04
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	5.01E-04	279.075	52500 y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	5.01E-04	279.075	22.3 y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	1.61E-02	9.050	6500000 y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	1.46E-03	96.131	17.7 y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	1.46E-03	96.131	2.6234 y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	1.05E-03	132.720	2.9 y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	1.05E-03	132.720	102 y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	1.01E-02	14.172	50 y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	9.50E-04	147.355	2.86 y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	9.50E-04	147.355	87.7 y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	9.50E-04	147.355	24110 y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	9.50E-04	147.355	6564 y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	9.50E-04	147.355	14.35 y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	9.50E-04	147.355	373300 y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	9.50E-04	147.355	80800000 y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	9.50E-04	147.355	1600 y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	9.50E-04	147.355	5.75 y	5.75E+00
164	Rhenium	Re-187	8,800	1.58E-02	0.075	8.08E-02	2.098	43500000000 y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	9.14E-03	15.636	65000 y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	2.43E-02	6.122	172 y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	3.83E-03	36.857	90 y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	1.91E-04	732.776	55 y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	1.91E-04	732.776	100000 y	1.00E+05
170	Strontium	Sr-90	25,000	4.50E-02	0.05	1.02E-01	1.732	28.78 y	2.88E+01
171	Terbium	Tb-157	5.510	9.92E-06	0.001	2.16E-01	1.015	71 y	7.10E+01
172	Terbium	Tb-158	0.590	1.06E-06	0.001	2.16E-01	1.015	180 y	1.80E+02
173	Technetium	Tc-99	187,500	3.38E-01	0.11	6.23E-02	2.610	211100 y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	7.38E-03	19.294	1E+13 y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	9.50E-04	147.355	7880 y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	9.50E-04	147.355	75380 y	7.54E+04

TABLE A7.9. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE AND HIGH PRECIPITATION (2.10 CM/YR INFILTRATION)

Waste Characteristics:	Infiltration Rate:	0.021	m/yr	
	Waste Thickness:	1	m	
	Waste Moisture Content:	0.080	cm^3/cm^3	
	Waste Bulk Density:	1.8	gm/cm^3	
Soil Characteristics:	Soil Thickness:	4.432	m	(liner+soil to top of capillary fringe)
	Soil Moisture Content:	0.109	cm^3/cm^3	
	Soil Bulk Density:	1.566	gm/cm^3	
Aquifer Characteristics:	Aquifer Porosity	0.290	cm^3/cm^3	
	Hydraulic Conductivity:	7.58E-04	cm/sec	
	Gradient:	1.00E-03	m/m	
	Aquifer Velocity:	0.8243	m/yr	
	Aquifer Flux Rate:	0.2390	$m^3/m^2/yr$	

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
101	Actinium	Ac-227	72,300,000,000,000	1.30E+08	4.5	2.57E-03	65.651	21.77 y	2.18E+01
102	Silver	Ag-108m	26,081,000,000,000	4.69E+07	2.7	4.25E-03	39.791	418 y	4.18E+02
103	Aluminum	Al-26	0.0670	1.21E-07	0.001	2.55E-01	1.014	740000 y	7.40E+05
48	Americium	Am-241	10,000	1.80E-02	1	1.12E-02	15.367	432 y	4.32E+02
104	Americium	Am-242m	10,000	1.80E-02	1	1.12E-02	15.367	141 y	1.41E+02
105	Americium	Am-243	10,000.00000	1.80E-02	1	1.12E-02	15.367	7370 y	7.37E+03
106	Barium	Ba-133	256,160,000,000,000	4.61E+08	10	1.16E-03	144.670	11 y	1.05E+01
107	Beryllium	Be-10	22,000,000,000	3.96E+04	2.5	4.58E-03	36.917	1,510,000 y	1.51E+06
108	Bismuth	Bi-207	53,670,000,000,000	9.66E+07	1	1.12E-02	15.367	31.55 y	3.16E+01
109	Bismuth	Bi-210m	567,820,000	1.02E+03	1	1.12E-02	15.367	3040000 y	3.04E+06
110	Berkelium	Bk-247	0.00010	1.78E-10	0.001	2.55E-01	1.014	1400 y	1.40E+03
111	Carbon	C-14	5,000,000	9.00E+00	8.52	1.36E-03	123.407	5730 y	5.73E+03
112	Calcium	Ca-41	1.6110	2.90E-06	0.05	1.23E-01	1.718	103,000 y	1.03E+05
113	Cadmium	Cd-113	0.430	7.75E-07	1	1.12E-02	15.367	9.30E+15 y	9.30E+15
114	Cadmium	Cd-113m	224,520,000,000,000	4.04E+08	1	1.12E-02	15.367	14.1 y	1.41E+01
115	Californium	Cf-249	0.00015	2.70E-10	0.001	2.55E-01	1.014	351 y	3.51E+02
116	Californium	Cf-250	85	1.53E-04	0.001	2.55E-01	1.014	13.08 y	1.31E+01
117	Californium	Cf-251	10,000	1.80E-02	0.001	2.55E-01	1.014	898 d	2.46E+00
118	Californium	Cf-252	440,000,000	7.92E+02	0.001	2.55E-01	1.014	2.65 y	2.65E+00
119	Chlorine	Cl-36	0.2828	5.09E-07	0.001	2.55E-01	1.014	301,000 y	3.01E+05
120	Curium	Cm-243	10,000	1.80E-02	93.3	1.25E-04	1341.439	29 y	2.91E+01
50	Curium	Cm-244	10,000	1.80E-02	93.3	1.25E-04	1341.439	18 y	1.81E+01
121	Curium	Cm-245	10,000	1.80E-02	93.3	1.25E-04	1341.439	8,500 y	8.50E+03
122	Curium	Cm-246	10,000	1.80E-02	93.3	1.25E-04	1341.439	4730 y	4.73E+03
123	Curium	Cm-247	10,000	1.80E-02	93.3	1.25E-04	1341.439	15600000 y	1.56E+07
124	Curium	Cm-248	10,000	1.80E-02	93.3	1.25E-04	1341.439	340000 y	3.40E+05
125	Cobalt	Co-60	440,000,000	7.92E+02	370	3.15E-05	5316.780	5 y	5.27E+00
126	Cesium	Cs-135	1,152,100,000	2.07E+03	133	8.77E-05	1911.807	2,300,000 y	2.30E+06
127	Cesium	Cs-137	630,000	1.13E+00	133	8.77E-05	1911.807	30.07 y	3.01E+01
128	Europium	Eu-152	173,050,000,000,000	3.11E+08	1	1.12E-02	15.367	14 y	1.35E+01
129	Europium	Eu-154	270,420,000,000,000	4.87E+08	1	1.12E-02	15.367	9 y	8.59E+00
130	Europium	Eu-155	440,000,000	7.92E+02	1	1.12E-02	15.367	4.76 y	4.76E+00
131	Iron	Fe-55	440,000,000	7.92E+02	1.4	8.08E-03	21.114	2.73 y	2.73E+00
132	Iron	Fe-60	3,974,800,000	7.15E+03	1.4	8.08E-03	21.114	1500000 y	1.50E+06
133	Gadolinium	Gd-148	32,228,000,000,000	5.80E+07	1	1.12E-02	15.367	75 y	7.46E+01
134	Hydrogen	H-3	25,000,000	4.50E+01	0.04	1.38E-01	1.575	12 y	1.23E+01
135	Mercury	Hg-194	3,546,100,000,000	6.38E+06	10	1.16E-03	144.670	444 y	4.44E+02
136	Holmium	Ho-166m	1,800,000,000,000	3.24E+06	2.5	4.58E-03	36.917	1,200 y	1.20E+03
137	Iodine	I-129	5,000	9.00E-03	0.12	7.09E-02	2.724	15,700,000 y	1.57E+07
138	Potassium	K-40	7,003,370	1.26E+01	0.15	5.99E-02	3.155	1,277,000,000 y	1.28E+09
139	Manganese	Mn-53	1,800,000,000	3.24E+03	6.4	1.81E-03	92.949	3,740,000.00 y	3.74E+06
140	Sodium	Na-22	440,000,000	7.92E+02	0.001	2.55E-01	1.014	3 y	2.60E+00
141	Niobium	Nb-91	5,780,000,000,000	1.04E+07	1.6	7.09E-03	23.987	680 y	6.80E+02
142	Niobium	Nb-92	112,000,000	2.02E+02	1.6	7.09E-03	23.987	34,700,000 y	3.47E+07
143	Niobium	Nb-93m	263,460,000,000,000	4.74E+08	1.6	7.09E-03	23.987	16.13 y	1.61E+01
144	Niobium	Nb-94	13,000	2.34E-02	1.6	7.09E-03	23.987	20300 y	2.03E+04

TABLE A7.9. WASTE MAXIMUM SOURCE CONCENTRATIONS, Kds, AND FRACTIONAL RELEASE RATES, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE AND HIGH PRECIPITATION (2.10 CM/YR INFILTRATION)

Pathrae Isotope Number	ELEMENT	NUCLIDE	Maximum Concentration (pCi/gm)	Maximum Concentr. (Ci/m3)	Distribution Coefficient (Kd) (L/Kg)	Fractional Release Rate (1/yr)	Soil Retardation Factor	1/2 life	1/2 life (Years)
146	Nickel	Ni-59	14,000,000	2.52E+01	10	1.16E-03	144.670	76000 y	7.60E+04
147	Nickel	Ni-63	2,200,000	3.96E+00	10	1.16E-03	144.670	100.1 y	1.00E+02
42	Neptunium	Np-237	10,000	1.80E-02	3	3.83E-03	44.101	2144000 y	2.14E+06
148	Osmium	Os-194	307,330,000,000,000	5.53E+08	5	2.31E-03	72.835	6 y	6.00E+00
149	Protactinium	Pa-231	47,000,000,000	8.46E+04	5.5	2.10E-03	80.018	32760 y	3.28E+04
150	Lead	Pb-202	3,400,000,000	6.12E+03	19	6.13E-04	273.972	52500 y	5.25E+04
151	Lead	Pb-210	76,000,000,000,000	1.37E+08	19	6.13E-04	273.972	22.3 y	2.23E+01
152	Palladium	Pd-107	510,000,000	9.18E+02	0.55	1.96E-02	8.902	6500000 y	6.50E+06
153	Promethium	Pm-145	140,000,000,000,000	2.52E+08	6.5	1.78E-03	94.385	17.7 y	1.77E+01
154	Promethium	Pm-147	440,000,000	7.92E+02	6.5	1.78E-03	94.385	2.6234 y	2.62E+00
155	Polonium	Po-208	440,000,000	7.92E+02	9	1.29E-03	130.303	2.9 y	2.90E+00
156	Polonium	Po-209	16,781,000,000,000	3.02E+07	9	1.29E-03	130.303	102 y	1.02E+02
157	Platinum	Pt-193	37,000,000,000,000	6.66E+07	0.9	1.24E-02	13.930	50 y	5.00E+01
158	Plutonium	Pu-236	500	9.00E-04	10	1.16E-03	144.670	2.86 y	2.86E+00
159	Plutonium	Pu-238	10,000	1.80E-02	10	1.16E-03	144.670	87.7 y	8.77E+01
160	Plutonium	Pu-239	10,000	1.80E-02	10	1.16E-03	144.670	24110 y	2.41E+04
45	Plutonium	Pu-240	10,000	1.80E-02	10	1.16E-03	144.670	6564 y	6.56E+03
46	Plutonium	Pu-241	350,000	6.30E-01	10	1.16E-03	144.670	14.35 y	1.44E+01
161	Plutonium	Pu-242	10,000	1.80E-02	10	1.16E-03	144.670	373300 y	3.73E+05
162	Plutonium	Pu-244	500	9.00E-04	10	1.16E-03	144.670	80800000 y	8.08E+07
55	Radium	Ra-226	10,000	1.80E-02	10	1.16E-03	144.670	1600 y	1.60E+03
163	Radium	Ra-228	272,396,000,000,000	4.90E+08	10	1.16E-03	144.670	5.75 y	5.75E+00
164	Rhenium	Re-187	8,800	1.58E-02	0.075	9.75E-02	2.078	43500000000 y	4.35E+10
165	Selenium	Se-79	69,700,000,000	1.25E+05	1	1.12E-02	15.367	65000 y	6.50E+04
166	Silicon	Si-32	65,000,000,000,000	1.17E+08	0.35	2.96E-02	6.028	172 y	1.72E+02
167	Samarium	Sm-151	26,320,000,000,000	4.74E+07	2.45	4.68E-03	36.199	90 y	9.00E+01
168	Tin	Sn-121m	53,754,000,000,000	9.68E+07	50	2.33E-04	719.349	55 y	5.50E+01
169	Tin	Sn-126	28,391,000,000	5.11E+04	50	2.33E-04	719.349	100000 y	1.00E+05
170	Strontium	Sr-90	25,000	4.50E-02	0.05	1.23E-01	1.718	28.78 y	2.88E+01
171	Terbium	Tb-157	5.510	9.92E-06	0.001	2.55E-01	1.014	71 y	7.10E+01
172	Terbium	Tb-158	0.590	1.06E-06	0.001	2.55E-01	1.014	180 y	1.80E+02
173	Technetium	Tc-99	187,500	3.38E-01	0.11	7.54E-02	2.580	211100 y	2.11E+05
174	Tellurium	Te-123	291	5.24E-04	1.25	9.01E-03	18.959	1E+13 y	1.00E+13
175	Thorium	Th-229	212,830,000,000	3.83E+05	10	1.16E-03	144.670	7880 y	7.88E+03
36	Thorium	Th-230	20,628,000,000	3.71E+04	10	1.16E-03	144.670	75380 y	7.54E+04

Table A7.10 Calculation of Equivalent Porous Media Properties based on Western LARW Cell Top Slope Design, High Precipitation Sensitivity Analysis (0.310 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (gm/cm³)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.059	0.0008	5.22	0.052	5.00E-04	157.7
1	Clay Liner	1.35	61	0.419	0.0008	0.74	0.007	1.00E-06	0.315
2	Unit 3 Sand	1.6	382	0.043	0.0008	7.28	0.073	3.71E-04	117.0
1+2	Weighted avg.	1.566		0.094		3.282	0.033	3.20E-04	100.9

Notes: Volumetric water content from UNSAT-H model run HTOP_04
Infiltration from HELP model. Western LARW top slope run HT1
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

Table A7.11 Calculation of Equivalent Porous Media Properties based on Western LARW Cell Side Slope with 100-fold Permeability Increase (1.717 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (gm/cm³)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.078	0.0047	22.13	0.221	5.00E-04	157.7
1	Clay Liner	1.35	61	0.421	0.0047	4.08	0.041	1.00E-06	0.315
2	Unit 3 Sand	1.6	382	0.057	0.0047	30.12	0.301	3.71E-04	117.0
1+2	Weighted avg.	1.566		0.107		16.037	0.160	3.20E-04	100.9

Notes: Volumetric water content from UNSAT-H model run SID_02
Infiltration from HELP model. Western LARW side slope run S1-R4
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

Table A7.12 Calculation of Equivalent Porous Media Properties based on Western LARW Cell Side Slope with 100-fold Permeability Increase and High Precipitation (2.10 cm/year Infiltration)

Layer	Material Type	Soil Bulk Density (gm/cm³)	Layer Thickness (cm)	Volumetric Water Content	Infiltration (cm/day)	Vadose Velocity (cm/yr)	Vadose Velocity (m/yr)	Saturated Hydraulic Conductivity (cm/sec)	Saturated Hydraulic Conductivity (m/yr)
0	Waste	1.8	50	0.080	0.0058	26.25	0.263	5.00E-04	157.7
1	Clay Liner	1.35	61	0.421	0.0058	4.98	0.050	1.00E-06	0.315
2	Unit 3 Sand	1.6	382	0.059	0.0058	35.78	0.358	3.71E-04	117.0
1+2	Weighted avg.	1.566		0.109		19.329	0.193	3.20E-04	100.9

Notes: Volumetric water content from UNSAT-H model run LS_03
Infiltration from HELP model. Western LARW side slope run SL1-R4
Vadose velocity = Infiltration/effective porosity
Vadose velocity for Clay+Unit 3 = (infiltration) / (weighted average effective porosity)

TABLE A7.13. PEAK RADIONUCLIDE CONCENTRATIONS and TIME TO EXCEED GWPL at the WATER TABLE VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	-1	0		> 10,000
Ag-108m	-1	1.7E+02	1.67E+11	5,223
Al-26	135	5.2E-07	5.22E+02	153
Am-241	-1	6.6E-05	6.61E+04	2,426
Am-242m	-1	5.2E-08	5.21E+01	1,933
Am-243	-1	3.3E-03	3.31E+06	2,773
Ba-133	-1	0		> 10,000
Be-10	-1	3.9E+03	3.90E+12	6,776
Bi-207	-1	9.2E-09	9.17E+00	1,121
Bi-210m	760	2.4E+02	2.44E+11	2,799
Bk-247	130	7.1E-10	7.13E-01	153
C-14	-1	0		> 10,000
Ca-41	220	6.8E-06	6.82E+03	283
Cd-113	-1	1.9E-07	1.85E+02	2,799
Cd-113m	-1	0		---
Cf-249	125	8.6E-10	8.63E-01	151
Cf-250	65	5.1E-07	5.12E+02	121
Cf-251	-1	4.7E-14	4.70E-05	73
Cf-252	-1	9.3E-09	9.27E+00	75
Cl-36	135	2.2E-06	2.20E+03	153
Cm-243	-1	0		> 10,000
Cm-244	-1	0		> 10,000
Cm-245	-1	0		> 10,000
Cm-246	-1	0		> 10,000
Cm-247	-1	0		> 10,000
Cm-248	-1	0		> 10,000
Co-60	-1	0		> 10,000
Cs-135	-1	0		> 10,000
Cs-137	-1	0		> 10,000
Eu-152	-1	0		---
Eu-154	-1	0		---
Eu-155	-1	0		---
Fe-55	-1	0		---
Fe-60	975	1.2E+03	1.24E+12	3,863
Gd-148	670	8.5E-02	8.48E+07	1,573
H-3	120	8.4E-04	8.35E+05	177
Hg-194	-1	0		> 10,000
Ho-166m	-1	8.2E+03	8.16E+12	5,976
I-129	170	1.3E-02	1.28E+07	468
K-40	175	1.5E+01	1.54E+10	548
Mn-53	-1	0		> 10,000
Na-22	-1	6.4E-09	6.35E+00	75
Nb-91	-1	2.5E+04	2.47E+13	3,808
Nb-92	-1	3.1E+01	3.08E+10	4,393
Nb-93m	-1	0		---
Nb-94	-1	3.1E-03	3.07E+06	4,370
Ni-59	-1	0		> 10,000
Ni-63	-1	0		> 10,000
Np-237	-1	1.5E-03	1.48E+06	8,100
Os-194	-1	0		> 10,000
Pa-231	-1	0		> 10,000
Pb-202	-1	0		> 10,000

TABLE A7.13. PEAK RADIONUCLIDE CONCENTRATIONS and TIME TO EXCEED GWPL at the WATER TABLE VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Pb-210	-1	0		> 10,000
Pd-107	530	3.8E+02	3.82E+11	1,609
Pm-145	-1	0		> 10,000
Pm-147	-1	0		> 10,000
Po-208	-1	0		> 10,000
Po-209	-1	0		> 10,000
Pt-193	875	8.5E-04	8.48E+05	1,274
Ks-20	-1	0		---
Ks-21	-1	0		---
Ks-22	-1	0		---
Ks-23	-1	0		---
Ks-24	-1	0		> 10,000
Ks-25	-1	0		> 10,000
Ks-26	-1	0		---
Pu-236	-1	0		> 10,000
Pu-238	-1	0		> 10,000
Pu-239	-1	0		> 10,000
Pu-240	-1	0		> 10,000
Pu-241	-1	0		> 10,000
Pu-242	-1	0		> 10,000
Pu-244	-1	0		> 10,000
Ra-226	-1	0		> 10,000
Ra-228	-1	0		> 10,000
Re-187	200	3.0E-02	3.02E+07	349
Se-79	700	2.9E+04	2.90E+13	2,799
Si-32	240	1.3E+06	1.27E+15	939
Sm-151	-1	1.4E-07	1.39E+02	2,869
Sn-121m	-1	0		> 10,000
Sn-126	-1	0		> 10,000
Sr-90	105	2.3E-04	2.31E+05	231
Tb-157	100	1.0E-05	9.99E+03	146
Tb-158	115	2.6E-06	2.55E+03	150
Tc-99	170	5.1E-01	5.10E+08	442
Te-123	-1	1.0E-04	1.01E+05	3,466
Th-229	-1	0		> 10,000
Th-230	-1	0		> 10,000
Th-232	-1	0		> 10,000
Ti-44	-1	0		> 10,000
Tl-204	-1	0		---
Tm-170	-1	0		---
U-232	-1	0		> 10,000
U-233	-1	0		> 10,000
U-234	-1	0		> 10,000
U-235	-1	0		> 10,000
U-236	-1	0		> 10,000
U-238	-1	0		> 10,000
V-50	-1	0		> 10,000
Zr-93	-1	0		> 10,000

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled
--- indicates that concentrations do not peak at the water table within 10,000 yrs

TABLE A7.14. PEAK RADIONUCLIDE CONCENTRATIONS and TIME TO EXCEED GWPL at WATER TABLE VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	-1	1.2E-10	1.19E-01	831
Ag-108m	310	5.1E+05	5.13E+14	1,232
Al-26	-1	4.6E-07	4.56E+02	32
Am-241	185	1.9E-03	1.90E+06	497
Am-242m	180	3.8E-04	3.82E+05	470
Am-243	185	4.1E-03	4.06E+06	511
Ba-133	-1	0		---
Be-10	340	3.9E+03	3.89E+12	1,232
Bi-207	120	1.7E+03	1.69E+12	373
Bi-210m	140	2.4E+02	2.41E+11	511
Bk-247	27	6.6E-10	6.60E-01	32
C-14	-1	1.6E-01	1.61E+08	4,053
Ca-41	40	6.3E-06	6.31E+03	55
Cd-113	340	1.8E-07	1.83E+02	511
Cd-113m	115	9.6E-01	9.60E+08	291
Cf-249	24	9.6E-10	9.55E-01	32
Cf-250	12	1.1E-04	1.12E+05	30
Cf-251	9	2.7E-05	2.66E+04	25
Cf-252	6	1.9E+00	1.94E+09	25
Cl-36	-1	1.9E-06	1.92E+03	32
Cm-243	-1	0		> 10,000
Cm-244	-1	0		> 10,000
Cm-245	-1	0		> 10,000
Cm-246	-1	0		> 10,000
Cm-247	-1	0		> 10,000
Cm-248	-1	0		> 10,000
Co-60	-1	0		> 10,000
Cs-135	-1	0		> 10,000
Cs-137	-1	0		> 10,000
Eu-152	130	3.9E-01	3.93E+08	286
Eu-154	145	2.8E-04	2.84E+05	241
Eu-155	-1	5.0E-16	4.97E-07	189
Fe-55	-1	0		---
Fe-60	175	1.2E+03	1.23E+12	704
Gd-148	110	1.7E+05	1.68E+14	440
H-3	18	7.1E+00	7.11E+09	46
Hg-194	-1	2.0E+02	1.95E+11	3,854
Ho-166m	300	1.6E+05	1.58E+14	1,202
I-129	30	1.2E-02	1.22E+07	89
K-40	30	1.5E+01	1.47E+10	103
Mn-53	-1	1.3E+02	1.26E+11	3,103
Na-22	9	1.7E+00	1.71E+09	25
Nb-91	190	7.1E+05	7.05E+14	777
Nb-92	250	3.1E+01	3.06E+10	800
Nb-93m	240	5.1E-03	5.07E+06	405
Nb-94	350	3.4E-03	3.44E+06	799
Ni-59	-1	6.0E-01	6.03E+08	4,823
Ni-63	-1	1.1E-11	1.14E-02	2,469
Np-237	550	1.5E-03	1.48E+06	1,472
Os-194	-1	0		---
Pa-231	660	3.6E+03	3.62E+12	2,667
Pb-202	-1	7.2E+01	7.17E+10	9,111

TABLE A7.14. PEAK RADIONUCLIDE CONCENTRATIONS and TIME TO EXCEED GWPL at WATER TABLE VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Pb-210	-1	0		---
Pd-107	95	3.8E+02	3.76E+11	295
Pm-145	-1	0		---
Pm-147	-1	0		---
Po-208	-1	0		---
Po-209	-1	7.4E-04	7.43E+05	2,330
Pt-193	120	5.2E+04	5.23E+13	381
Ks-20	9	1.5E-04	1.51E+05	19
Ks-21	9	2.3E-05	2.29E+04	21
Ks-22	-1	5.3E-12	5.29E-03	34
Ks-23	-1	0		---
Ks-24	-1	0		> 10,000
Ks-25	-1	0		> 10,000
Ks-26	-1	0		---
Pu-236	-1	0		---
Pu-238	-1	5.0E-15	4.99E-06	2,345
Pu-239	-1	3.9E-04	3.92E+05	4,810
Pu-240	-1	2.7E-04	2.72E+05	4,744
Pu-241	-1	0		---
Pu-242	-1	4.5E-04	4.46E+05	4,830
Pu-244	-1	2.3E-05	2.25E+04	4,830
Ra-226	-1	6.0E-05	5.98E+04	4,501
Ra-228	-1	0		---
Re-187	35	2.8E-02	2.83E+07	67
Se-79	130	2.9E+04	2.94E+13	511
Si-32	40	3.2E+07	3.21E+16	194
Sm-151	320	1.5E+03	1.47E+12	922
Sn-121m	-1	0		> 10,000
Sn-126	-1	0		> 10,000
Sr-90	18	2.7E-02	2.67E+07	53
Tb-157	18	2.7E-05	2.74E+04	32
Tb-158	24	3.5E-06	3.53E+03	32
Tc-99	30	4.9E-01	4.85E+08	84
Te-123	330	1.0E-04	1.00E+05	632
Th-229	-1	6.3E+03	6.29E+12	4,758
Th-230	-1	8.9E+02	8.88E+11	4,823
Th-232	-1	5.0E-03	4.95E+06	4,830
Ti-44	-1	8.8E-08	8.79E+01	2,054
Tl-204	35	3.6E-04	3.55E+05	65
Tm-170	-1	2.3E-14	2.28E-05	13
U-232	740	1.7E-03	1.70E+06	1,564
U-233	-1	5.5E-03	5.54E+06	2,911
U-234	780	4.6E+02	4.61E+11	2,911
U-235	-1	1.4E-04	1.42E+05	2,911
U-236	875	4.8E+00	4.82E+09	2,911
U-238	-1	2.5E-02	2.51E+07	2,911
V-50	-1	2.3E-09	2.30E+00	4,830
Zr-93	-1	1.1E+02	1.13E+11	4,830

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled

— indicates that concentrations do not peak at the water table within 10,000 yrs

TABLE A7.15. PEAK RADIONUCLIDE CONCENTRATIONS and TIME TO EXCEED GWPL at WATER TABLE VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m^3)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Ac-227	530	2.0E-08	2.00E+01	738
Ag-108m	255	7.5E+05	7.53E+14	1,018
Al-26	24	4.5E-07	4.49E+02	26
Am-241	150	2.2E-03	2.20E+06	407
Am-242m	145	5.9E-04	5.90E+05	389
Am-243	150	4.1E-03	4.11E+06	416
Ba-133	-1	0		---
Be-10	280	3.9E+03	3.90E+12	1,003
Bi-207	95	8.0E+03	8.00E+12	320
Bi-210m	110	2.4E+02	2.42E+11	417
Bk-247	21	6.5E-10	6.52E-01	26
C-14	-1	1.8E-01	1.77E+08	3,309
Ca-41	35	6.3E-06	6.27E+03	46
Cd-113	275	1.8E-07	1.84E+02	417
Cd-113m	90	1.5E+01	1.49E+10	254
Cf-249	21	9.5E-10	9.51E-01	26
Cf-250	9	1.5E-04	1.45E+05	25
Cf-251	9	8.7E-05	8.72E+04	21
Cf-252	6	5.9E+00	5.91E+09	22
Cl-36	24	1.9E-06	1.89E+03	26
Cm-243	-1	0		10,000
Cm-244	-1	0		10,000
Cm-245	-1	0		10,000
Cm-246	-1	0		10,000
Cm-247	-1	0		10,000
Cm-248	-1	0		10,000
Co-60	-1	0		10,000
Cs-135	-1	0		10,000
Cs-137	-1	0		10,000
Eu-152	100	6.6E+00	6.61E+09	251
Eu-154	110	1.2E-02	1.21E+07	213
Eu-155	-1	1.0E-13	1.01E-04	168
Fe-55	-1	0		---
Fe-60	145	1.2E+03	1.23E+12	573
Gd-148	85	3.6E+05	3.64E+14	368
H-3	15	1.1E+01	1.12E+10	39
Hg-194	925	6.1E+02	6.09E+11	3,255
Ho-166m	245	1.8E+05	1.80E+14	983
I-129	24	1.2E-02	1.22E+07	73
K-40	27	1.5E+01	1.47E+10	85
Mn-53	875	1.3E+02	1.27E+11	2,526
Na-22	6	5.3E+00	5.31E+09	22
Nb-91	155	8.2E+05	8.19E+14	637
Nb-92	205	3.1E+01	3.07E+10	652
Nb-93m	180	1.5E-01	1.45E+08	356
Nb-94	285	3.5E-03	3.47E+06	651
Ni-59	-1	6.1E-01	6.11E+08	3,933
Ni-63	-1	3.1E-10	3.09E-01	2,169
Np-237	450	1.5E-03	1.48E+06	1,198
Os-194	-1	0		---
Pa-231	540	3.7E+03	3.67E+12	2,172
Pb-202	-1	7.4E+01	7.36E+10	7,427

TABLE A7.15. PEAK RADIONUCLIDE CONCENTRATIONS and TIME TO EXCEED GWPL at WATER TABLE VERTICAL PATHRAE RESULTS FOR WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 CM/YR INFILTRATION)

NUCLIDE	TIME TO EXCEED (Year)	PEAK CONCENTRATION (Ci/m³)	PEAK CONCENTRATION (pCi/L)	PEAK YEAR
Pb-210	-1	0		---
Pd-107	75	3.8E+02	3.76E+11	241
Pm-145	-1	0		---
Pm-147	-1	0		---
Po-208	-1	0		---
Po-209	850	1.6E-02	1.58E+07	2,041
Pt-193	95	1.4E+05	1.42E+14	321
Ks-20	6	1.6E-03	1.57E+06	17
Ks-21	6	3.0E-04	2.99E+05	19
Ks-22	-1	4.1E-10	4.10E-01	30
Ks-23	-1	0		---
Ks-24	-1	0		10,000
Ks-25	-1	0		10,000
Ks-26	-1	0		---
Pu-236	-1	0		---
Pu-238	-1	1.8E-13	1.80E-04	2,065
Pu-239	-1	4.0E-04	4.04E+05	3,922
Pu-240	-1	3.0E-04	2.99E+05	3,879
Pu-241	-1	0		---
Pu-242	-1	4.5E-04	4.49E+05	3,933
Pu-244	-1	2.3E-05	2.26E+04	3,938
Ra-226	-1	8.6E-05	8.63E+04	3,712
Ra-228	-1	0		---
Re-187	30	2.8E-02	2.82E+07	55
Se-79	105	3.0E+04	2.95E+13	417
Si-32	35	3.7E+07	3.71E+16	159
Sm-151	255	5.7E+03	5.66E+12	784
Sn-121m	-1	0		10,000
Sn-126	-1	0		10,000
Sr-90	15	3.3E-02	3.32E+07	44
Tb-157	15	2.9E-05	2.85E+04	26
Tb-158	18	3.6E-06	3.55E+03	26
Tc-99	24	4.8E-01	4.83E+08	69
Te-123	270	1.0E-04	1.01E+05	515
Th-229	900	6.8E+03	6.82E+12	3,889
Th-230	-1	9.0E+02	8.99E+11	3,933
Th-232	-1	5.0E-03	4.97E+06	3,938
Ti-44	-1	7.0E-06	7.01E+03	1,817
Tl-204	27	3.3E-03	3.29E+06	57
Tm-170	-1	2.0E-12	2.04E-03	12
U-232	590	3.5E-02	3.54E+07	1,371
U-233	875	5.6E-03	5.57E+06	2,370
U-234	630	4.6E+02	4.64E+11	2,370
U-235	-1	1.4E-04	1.43E+05	2,370
U-236	700	4.8E+00	4.84E+09	2,370
U-238	825	2.5E-02	2.52E+07	2,370
V-50	-1	2.3E-09	2.31E+00	3,938
Zr-93	-1	1.1E+02	1.14E+11	3,938

NOTES: -1 indicates that nuclide did not exceed standard within the 1,000 years modeled
--- indicates that concentrations do not peak at the water table within 10,000 yrs

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RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	YEAR TO EXCEED:	27	30	35	40	45	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145
Ac-227	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	135	0	0	0	1.6E-09	2.1E-07	2.5E-03	2.0E-02	1.1E-01	4.7E-01	1.6E+00	4.5E+00	1.1E+01	2.3E+01	4.3E+01	7.4E+01	1.2E+02	1.7E+02	2.3E+02	3.0E+02	3.6E+02	4.2E+02	4.7E+02	5.0E+02
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	760	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	130	0	0	0	0	3.0E-10	3.6E-06	2.8E-05	1.6E-04	6.6E-04	2.2E-03	6.3E-03	1.5E-02	3.2E-02	6.0E-02	1.0E-01	1.6E-01	2.4E-01	3.2E-01	4.1E-01	5.0E-01	5.8E-01	6.4E-01	6.9E-01
C-14	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	220	0	0	0	0	0	0	1.2E-10	4.1E-09	8.6E-08	1.2E-06	1.2E-05	8.9E-05	5.3E-04	2.6E-03	1.1E-02	3.9E-02	1.2E-01	3.4E-01	8.7E-01	2.0E+00	4.4E+00	9.0E+00	1.7E+01
Cd-113	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	125	0	0	0	0	4.3E-10	5.0E-06	3.9E-05	2.1E-04	9.0E-04	3.0E-03	8.4E-03	2.0E-02	4.2E-02	7.9E-02	1.3E-01	2.1E-01	3.0E-01	4.1E-01	5.2E-01	6.2E-01	7.2E-01	7.9E-01	8.4E-01
Cf-250	65	0	0	5.5E-10	2.5E-07	2.5E-05	1.3E-01	8.1E-01	3.4E+00	1.1E+01	2.9E+01	6.3E+01	1.2E+02	1.9E+02	2.8E+02	3.6E+02	4.4E+02	4.9E+02	5.1E+02	5.0E+02	4.7E+02	4.2E+02	3.6E+02	3.0E+02
Cf-251	-1	0	0	2.2E-11	3.1E-09	9.8E-08	1.7E-05	3.3E-05	4.5E-05	4.6E-05	3.8E-05	2.6E-05	1.6E-05	8.1E-06	3.7E-06	1.6E-06	6.0E-07	2.1E-07	7.1E-08	2.2E-08	6.7E-09	1.9E-09	5.1E-10	1.3E-10
Cf-252	-1	0	1.3E-09	1.9E-06	3.0E-04	1.1E-02	2.5E+00	5.4E+00	8.1E+00	9.3E+00	8.5E+00	6.5E+00	4.2E+00	2.4E+00	1.2E+00	5.7E-01	2.4E-01	9.6E-02	3.5E-02	1.2E-02	4.0E-03	1.3E-03	3.8E-04	1.1E-04
Cl-36	135	0	0	1.2E-11	6.8E-09	8.9E-07	1.1E-02	8.3E-02	4.6E-01	2.0E+00	6.7E+00	1.9E+01	4.5E+01	9.6E+01	1.8E+02	3.1E+02	4.9E+02	7.1E+02	9.7E+02	1.2E+03	1.5E+03	1.8E+03	2.0E+03	2.1E+03
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	670	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	120	0	0	0	0	2.5E-11	1.5E-04	4.9E-03	8.8E-02	1.0E+00	8.0E+00	4.7E+01	2.1E+02	7.9E+02	2.4E+03	6.5E+03	1.5E+04	3.1E+04	5.8E+04	9.8E+04	1.5E+05	2.3E+05	3.2E+05	4.1E+05
Hg-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	170	0	0	0	0	0	0	0	0	0	0	0	2.3E-11	5.3E-10	8.7E-09	1.1E-07	1.1E-06	8.5E-06	5.6E-05	3.2E-04	1.5E-03	6.6E-03	2.6E-02	8.9E-02
K-40	175	0	0	0	0	0	0	0	0	0	0	0	0	5.1E-11	1.4E-09	2.7E-08	4.1E-07	4.7E-06	4.4E-05	3.5E-04	2.3E-03	1.3E-02	6.5E-02	2.9E-01
Mn-53	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	1.1E-09	1.6E-06	2.5E-04	8.5E-03	1.9E+00	3.9E+00	5.7E+00	6.3E+00	5.7E+00	4.2E+00	2.7E+00	1.5E+00	7.5E-01	3.4E-01	1.4E-01	5.4E-02	1.9E-02	6.6E-03	2.1E-03	6.4E-04	1.9E-04	5.3E-05
Nb-91	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	5.2E+02	5.2E+02	5.1E+02	4.8E+02	4.5E+02	4.1E+02	3.7E+02	3.2E+02	2.8E+02	2.4E+02	2.0E+02	1.6E+02	1.3E+02	1.1E+02	8.7E+01	6.9E+01	5.4E+01	4.2E+01	3.3E+01	2.5E+01	1.9E+01
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	7.1E-01	7.1E-01	6.9E-01	6.6E-01	6.1E-01	5.5E-01	4.9E-01	4.3E-01	3.7E-01	3.1E-01	2.6E-01	2.2E-01	1.8E-01	1.4E-01	1.1E-01	9.1E-02	7.1E-02	5.5E-02	4.3E-02	3.3E-02	2.5E-02
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	3.1E+01	5.3E+01	8.6E+01	1.4E+02	2.1E+02	3.0E+02	4.3E+02	5.9E+02	7.9E+02	1.0E+03	1.3E+03	1.6E+03	2.0E+03	2.4E+03	2.9E+03	3.3E+03	3.8E+03	4.2E+03	4.7E+03	5.1E+03	5.5E+03
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	8.6E-01	8.6E-01	8.3E-01	7.8E-01	7.2E-01	6.5E-01	5.7E-01	5.0E-01	4.2E-01	3.6E-01	3.0E-01	2.4E-01	2.0E-01	1.6E-01	1.3E-01	9.9E-02	7.7E-02	5.9E-02	4.6E-02	3.5E-02	2.6E-02
Cf-250	2.3E+02	1.8E+02	1.4E+02	9.9E+01	7.1E+01	4.9E+01	3.4E+01	2.3E+01	1.5E+01	9.8E+00	6.3E+00	4.0E+00	2.5E+00	1.6E+00	9.7E-01	5.9E-01	3.6E-01	2.1E-01	1.3E-01	7.5E-02	4.4E-02
Cf-251	3.4E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	3.1E-05	8.4E-06	2.2E-06	5.7E-07	1.4E-07	3.5E-08	8.5E-09	2.0E-09	4.7E-10	1.1E-10	2.5E-11	0	0	0	0	0	0	0	0	0	0
Cl-36	2.2E+03	2.2E+03	2.1E+03	2.0E+03	1.9E+03	1.7E+03	1.5E+03	1.3E+03	1.2E+03	9.9E+02	8.3E+02	6.9E+02	5.6E+02	4.6E+02	3.6E+02	2.9E+02	2.3E+02	1.8E+02	1.4E+02	1.1E+02	8.1E+01
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	5.1E+05	6.1E+05	7.0E+05	7.6E+05	8.1E+05	8.3E+05	8.3E+05	8.1E+05	7.6E+05	7.1E+05	6.4E+05	5.6E+05	4.9E+05	4.2E+05	3.5E+05	2.9E+05	2.3E+05	1.9E+05	1.5E+05	1.1E+05	8.8E+04
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.8E-01	8.3E-01	2.2E+00	5.7E+00	1.4E+01	3.1E+01	6.6E+01	1.3E+02	2.6E+02	4.9E+02	8.9E+02	1.6E+03	2.6E+03	4.3E+03	6.9E+03	1.1E+04	1.6E+04	2.4E+04	3.5E+04	5.1E+04	7.1E+04
K-40	1.2E+00	4.2E+00	1.4E+01	4.3E+01	1.2E+02	3.3E+02	8.3E+02	2.0E+03	4.5E+03	9.7E+03	2.0E+04	4.0E+04	7.7E+04	1.4E+05	2.5E+05	4.4E+05	7.5E+05	1.2E+06	2.0E+06	3.1E+06	4.7E+06
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	1.5E-05	3.9E-06	9.9E-07	2.5E-07	6.1E-08	1.5E-08	3.5E-09	8.0E-10	1.8E-10	4.1E-11	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TA[illegible]:16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390	400	410
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	1.5E+01	1.1E+01	8.3E+00	6.2E+00	4.6E+00	3.4E+00	2.5E+00	1.8E+00	1.3E+00	9.8E-01	5.1E-01	2.7E-01	1.4E-01	6.9E-02	3.5E-02	1.7E-02	8.6E-03	4.2E-03	2.1E-03	1.0E-03	4.8E-04
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-210m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.9E-02	1.4E-02	1.1E-02	8.0E-03	5.9E-03	4.4E-03	3.2E-03	2.3E-03	1.7E-03	1.2E-03	6.5E-04	3.3E-04	1.7E-04	8.6E-05	4.3E-05	2.1E-05	1.1E-05	5.2E-06	2.5E-06	1.2E-06	5.8E-07
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	5.9E+03	6.2E+03	6.4E+03	6.6E+03	6.7E+03	6.8E+03	6.8E+03	6.8E+03	6.7E+03	6.5E+03	6.1E+03	5.5E+03	4.9E+03	4.3E+03	3.6E+03	3.0E+03	2.5E+03	2.0E+03	1.6E+03	1.3E+03	9.9E+02
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.0E-02	1.5E-02	1.1E-02	8.1E-03	6.0E-03	4.4E-03	3.2E-03	2.3E-03	1.7E-03	1.2E-03	6.2E-04	3.2E-04	1.6E-04	7.9E-05	3.9E-05	1.9E-05	9.2E-06	4.5E-06	2.1E-06	1.0E-06	4.8E-07
Cf-250	2.6E-02	1.5E-02	8.5E-03	4.9E-03	2.8E-03	1.6E-03	9.0E-04	5.0E-04	2.8E-04	1.6E-04	4.9E-05	1.5E-05	4.5E-06	1.3E-06	4.0E-07	1.2E-07	3.4E-08	9.9E-09	2.8E-09	8.1E-10	2.3E-10
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	6.1E+01	4.6E+01	3.5E+01	2.6E+01	1.9E+01	1.4E+01	1.1E+01	7.7E+00	5.7E+00	4.1E+00	2.2E+00	1.1E+00	5.7E-01	2.9E-01	1.5E-01	7.3E-02	3.6E-02	1.8E-02	8.7E-03	4.2E-03	2.0E-03
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11
H-3	6.7E+04	5.1E+04	3.8E+04	2.8E+04	2.0E+04	1.5E+04	1.1E+04	7.6E+03	5.4E+03	3.8E+03	1.8E+03	8.7E+02	4.0E+02	1.8E+02	8.2E+01	3.6E+01	1.6E+01	6.7E+00	2.8E+00	1.2E+00	4.9E-01
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	9.8E+04	1.3E+05	1.8E+05	2.3E+05	3.0E+05	3.8E+05	4.8E+05	6.0E+05	7.4E+05	9.1E+05	1.3E+06	1.8E+06	2.5E+06	3.2E+06	4.1E+06	5.0E+06	6.0E+06	7.1E+06	8.1E+06	9.1E+06	1.0E+07
K-40	7.1E+06	1.0E+07	1.5E+07	2.1E+07	3.0E+07	4.1E+07	5.6E+07	7.5E+07	9.9E+07	1.3E+08	2.1E+08	3.4E+08	5.1E+08	7.5E+08	1.1E+09	1.5E+09	1.9E+09	2.5E+09	3.2E+09	4.0E+09	4.9E+09
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	2.0E-11	7.6E-11	2.7E-10	9.4E-10	3.1E-09	9.6E-09	2.9E-08	8.3E-08	2.3E-07	1.6E-06	1.0E-05	5.6E-05	2.8E-04	1.3E-03	5.2E-03	2.0E-02	7.1E-02	2.3E-01	7.3E-01	2.1E+00
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	2.3E-04	1.1E-04	5.3E-05	2.5E-05	1.2E-05	5.6E-06	2.6E-06	1.2E-06	5.7E-07	2.7E-07	1.2E-07	5.7E-08	2.6E-08	1.2E-08	5.6E-09	2.6E-09	1.2E-09	5.4E-10	2.5E-10	1.1E-10	5.2E-11
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5E-11	6.8E-11	1.8E-10	4.5E-10	1.1E-09	2.6E-09	6.1E-09	1.4E-08
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-11	2.7E-11	6.7E-11	1.6E-10	3.6E-10	8.1E-10	1.8E-09
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	2.0E-11	5.7E-11	1.6E-10	4.2E-10	1.1E-09	2.7E-09	6.6E-09	1.5E-08	3.5E-08
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	0	0	1.2E-11	4.7E-11	1.8E-10	6.1E-10	2.0E-09	6.2E-09	1.8E-08	5.0E-08	1.3E-07	3.3E-07	8.1E-07	1.9E-06	4.2E-06	8.9E-06	1.8E-05	3.7E-05	7.2E-05	1.3E-04	2.5E-04
Bi-210m	0	0	0	0	4.5E-11	1.9E-10	7.9E-10	3.0E-09	1.1E-08	3.8E-08	1.3E-07	4.0E-07	1.2E-06	3.4E-06	9.5E-06	2.5E-05	6.5E-05	1.6E-04	3.9E-04	9.2E-04	2.1E-03
Bk-247	2.8E-07	1.3E-07	6.3E-08	3.0E-08	1.4E-08	6.5E-09	3.0E-09	1.4E-09	6.6E-10	3.0E-10	1.4E-10	6.5E-11	3.0E-11	1.4E-11	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	7.6E+02	5.8E+02	4.4E+02	3.3E+02	2.4E+02	1.8E+02	1.3E+02	9.5E+01	6.9E+01	4.9E+01	3.5E+01	2.5E+01	1.8E+01	1.2E+01	8.7E+00	6.1E+00	4.2E+00	2.9E+00	2.0E+00	1.4E+00	9.5E-01
Cd-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-11	1.6E-11	2.4E-11	3.5E-11	4.8E-11
Cf-249	2.3E-07	1.1E-07	4.9E-08	2.3E-08	1.1E-08	4.9E-09	2.3E-09	1.0E-09	4.7E-10	2.2E-10	9.9E-11	4.5E-11	2.0E-11	0	0	0	0	0	0	0	0
Cf-250	6.6E-11	1.8E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	9.8E-04	4.7E-04	2.2E-04	1.1E-04	5.0E-05	2.3E-05	1.1E-05	5.1E-06	2.4E-06	1.1E-06	5.2E-07	2.4E-07	1.1E-07	5.1E-08	2.4E-08	1.1E-08	5.0E-09	2.3E-09	1.0E-09	4.8E-10	2.2E-10
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-11	4.9E-11
Gd-148	7.0E-11	3.7E-10	1.8E-09	8.3E-09	3.5E-08	1.4E-07	5.2E-07	1.8E-06	6.0E-06	1.9E-05	5.7E-05	1.6E-04	4.5E-04	1.2E-03	3.0E-03	7.2E-03	1.7E-02	3.9E-02	8.5E-02	1.8E-01	3.8E-01
H-3	2.0E-01	8.1E-02	3.2E-02	1.3E-02	5.1E-03	2.0E-03	7.9E-04	3.1E-04	1.2E-04	4.6E-05	1.7E-05	6.7E-06	2.5E-06	9.5E-07	3.6E-07	1.3E-07	5.0E-08	1.9E-08	7.0E-09	2.6E-09	9.6E-10
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.1E+07	1.2E+07	1.2E+07	1.3E+07	1.3E+07	1.3E+07	1.3E+07	1.2E+07	1.2E+07	1.2E+07	1.1E+07	1.0E+07	9.6E+06	8.9E+06	8.2E+06	7.4E+06	6.7E+06	6.0E+06	5.4E+06	4.8E+06	4.2E+06
K-40	5.9E+09	6.9E+09	8.0E+09	9.0E+09	1.0E+10	1.1E+10	1.2E+10	1.3E+10	1.4E+10	1.4E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.4E+10	1.4E+10	1.3E+10	1.2E+10
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	5.9E+00	1.6E+01	3.9E+01	9.4E+01	2.2E+02	4.9E+02	1.0E+03	2.2E+03	4.3E+03	8.4E+03	1.6E+04	2.9E+04	5.3E+04	9.3E+04	1.6E+05	2.7E+05	4.4E+05	7.1E+05	1.1E+06	1.8E+06	2.7E+06
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	2.4E-11	1.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	3.0E-08	6.3E-08	1.3E-07	2.7E-07	5.3E-07	1.0E-06	1.9E-06	3.6E-06	1.2E-05	3.6E-05	1.0E-04	2.7E-04	6.9E-04	2.1E-03	5.8E-03	1.5E-02	3.7E-02	8.5E-02	1.9E-01	3.9E-01	7.9E-01
Am-242m	3.7E-09	7.6E-09	1.5E-08	3.0E-08	5.7E-08	1.1E-07	2.0E-07	3.5E-07	1.1E-06	3.1E-06	8.2E-06	2.1E-05	4.9E-05	1.3E-04	3.5E-04	8.3E-04	1.9E-03	4.0E-03	8.0E-03	1.6E-02	2.9E-02
Am-243	7.7E-08	1.7E-07	3.5E-07	7.2E-07	1.4E-06	2.8E-06	5.5E-06	1.0E-05	3.5E-05	1.1E-04	3.2E-04	8.8E-04	2.3E-03	7.2E-03	2.1E-02	5.6E-02	1.4E-01	3.4E-01	7.8E-01	1.7E+00	3.6E+00
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	4.4E-04	7.6E-04	1.3E-03	2.1E-03	3.4E-03	5.4E-03	8.4E-03	1.3E-02	2.8E-02	5.6E-02	1.1E-01	1.9E-01	3.2E-01	5.8E-01	9.7E-01	1.5E+00	2.2E+00	3.1E+00	4.1E+00	5.2E+00	6.2E+00
Bi-210m	4.6E-03	1.0E-02	2.1E-02	4.3E-02	8.7E-02	1.7E-01	3.3E-01	6.2E-01	2.1E+00	6.6E+00	1.9E+01	5.4E+01	1.4E+02	4.4E+02	1.3E+03	3.5E+03	8.8E+03	2.1E+04	4.9E+04	1.1E+05	2.2E+05
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	6.5E-01	4.4E-01	3.0E-01	2.1E-01	1.4E-01	9.4E-02	6.3E-02	4.3E-02	1.9E-02	8.6E-03	3.8E-03	1.7E-03	7.4E-04	2.6E-04	9.3E-05	3.3E-05	1.1E-05	3.9E-06	1.4E-06	4.7E-07	1.6E-07
Cd-113	0	0	1.6E-11	3.3E-11	6.6E-11	1.3E-10	2.5E-10	4.7E-10	1.6E-09	5.0E-09	1.5E-08	4.1E-08	1.1E-07	3.4E-07	9.7E-07	2.6E-06	6.7E-06	1.6E-05	3.7E-05	8.1E-05	1.7E-04
Cd-113m	6.5E-11	8.6E-11	1.1E-10	1.4E-10	1.7E-10	2.1E-10	2.4E-10	2.8E-10	3.5E-10	4.2E-10	4.6E-10	4.8E-10	4.7E-10	4.3E-10	3.6E-10	2.9E-10	2.1E-10	1.5E-10	1.0E-10	6.4E-11	3.9E-11
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	9.9E-11	4.5E-11	2.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	1.3E-11	1.6E-11	2.1E-11	2.5E-11	3.1E-11	3.6E-11	4.1E-11	4.7E-11	5.6E-11	6.3E-11	6.7E-11	6.7E-11	6.3E-11	5.4E-11	4.3E-11	3.2E-11	2.3E-11	1.5E-11	0	0	0
Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	1.5E-10	4.5E-10	1.3E-09	3.6E-09	9.6E-09	2.5E-08	6.3E-08	1.6E-07	8.7E-07	4.4E-06	2.1E-05	8.9E-05	3.5E-04	1.8E-03	8.4E-03	3.5E-02	1.4E-01	4.9E-01	1.6E+00	5.1E+00	1.5E+01
Gd-148	7.6E-01	1.5E+00	2.9E+00	5.4E+00	9.8E+00	1.8E+01	3.1E+01	5.3E+01	1.5E+02	3.9E+02	9.5E+02	2.2E+03	4.8E+03	1.2E+04	2.7E+04	5.8E+04	1.2E+05	2.2E+05	4.1E+05	7.0E+05	1.2E+06
H-3	3.5E-10	1.3E-10	4.8E-11	1.7E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5E-11
I-129	3.7E+06	3.2E+06	2.8E+06	2.4E+06	2.1E+06	1.8E+06	1.5E+06	1.3E+06	9.2E+05	6.5E+05	4.5E+05	3.1E+05	2.1E+05	1.3E+05	7.7E+04	4.6E+04	2.7E+04	1.6E+04	9.0E+03	5.1E+03	2.9E+03
K-40	1.2E+10	1.1E+10	1.0E+10	9.4E+09	8.7E+09	7.9E+09	7.2E+09	6.6E+09	5.3E+09	4.3E+09	3.4E+09	2.6E+09	2.0E+09	1.4E+09	9.7E+08	6.7E+08	4.5E+08	3.0E+08	2.0E+08	1.3E+08	8.2E+07
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	2.5E-11	8.2E-11	2.6E-10	7.9E-10	2.4E-09	6.7E-09	1.9E-08	1.3E-07	8.4E-07	4.8E-06	2.5E-05	1.2E-04	7.6E-04	4.3E-03	2.2E-02	1.0E-01	4.3E-01	1.7E+00	6.1E+00	2.1E+01
Nb-92	0	0	0	0	0	0	0	0	0	3.5E-11	2.0E-10	1.1E-09	5.3E-09	3.4E-08	2.0E-07	1.0E-06	4.9E-06	2.2E-05	8.6E-05	3.2E-04	1.1E-03
Nb-93m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2E-11	1.2E-10	5.6E-10	2.4E-09	9.7E-09	3.6E-08	1.3E-07
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	4.1E+06	6.0E+06	8.8E+06	1.3E+07	1.8E+07	2.6E+07	3.6E+07	4.9E+07	9.0E+07	1.6E+08	2.7E+08	4.4E+08	7.1E+08	1.2E+09	2.0E+09	3.2E+09	4.8E+09	7.2E+09	1.0E+10	1.5E+10	2.0E+10
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TA[illegible].16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	YEAR TO EXCEED:	27	30	35	40	45	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145
Pt-193	875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	-1	0	0	0	0	3.9E-11	1.4E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	200	0	0	0	0	0	0	0	4.8E-10	2.2E-08	5.9E-07	1.1E-05	1.4E-04	1.3E-03	1.0E-02	6.3E-02	3.3E-01	1.4E+00	5.5E+00	1.9E+01	5.8E+01	1.6E+02	4.2E+02	9.9E+02
Se-79	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sm-151	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	105	0	0	0	0	0	7.0E-09	4.0E-07	1.2E-05	2.2E-04	2.7E-03	2.4E-02	1.6E-01	8.4E-01	3.7E+00	1.3E+01	4.3E+01	1.2E+02	3.0E+02	6.7E+02	1.4E+03	2.7E+03	4.8E+03	8.1E+03
Tb-157	100	0	0	1.6E-10	9.0E-08	1.1E-05	1.2E-01	8.6E-01	4.6E+00	1.8E+01	6.0E+01	1.6E+02	3.7E+02	7.4E+02	1.3E+03	2.2E+03	3.3E+03	4.5E+03	5.9E+03	7.2E+03	8.3E+03	9.2E+03	9.8E+03	1.0E+04
Tb-158	115	0	0	2.1E-11	1.2E-08	1.6E-06	1.8E-02	1.4E-01	7.4E-01	3.1E+00	1.0E+01	2.8E+01	6.7E+01	1.4E+02	2.6E+02	4.3E+02	6.7E+02	9.5E+02	1.3E+03	1.6E+03	1.9E+03	2.2E+03	2.4E+03	2.5E+03
Tc-99	170	0	0	0	0	0	0	0	0	0	2.3E-11	9.3E-10	2.5E-08	4.7E-07	6.6E-06	7.0E-05	6.0E-04	4.2E-03	2.5E-02	1.2E-01	5.5E-01	2.1E+00	7.6E+00	2.4E+01

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

TABLE A7.16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE–VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.2E+03	4.6E+03	9.1E+03	1.7E+04	3.1E+04	5.3E+04	8.8E+04	1.4E+05	2.2E+05	3.3E+05	4.8E+05	6.8E+05	9.4E+05	1.3E+06	1.7E+06	2.2E+06	2.9E+06	3.6E+06	4.5E+06	5.5E+06	6.6E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1.8E-11	2.6E-10	3.1E-09	3.1E-08	2.8E-07	2.1E-06	1.5E-05	9.1E-05	5.1E-04	2.6E-03	1.2E-02	5.3E-02	2.1E-01	8.1E-01	2.9E+00	9.5E+00	3.0E+01	9.0E+01	2.6E+02	7.0E+02	1.8E+03
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.3E+04	2.0E+04	2.9E+04	4.0E+04	5.3E+04	6.9E+04	8.7E+04	1.1E+05	1.3E+05	1.5E+05	1.7E+05	1.8E+05	2.0E+05	2.1E+05	2.2E+05	2.3E+05	2.3E+05	2.3E+05	2.3E+05	2.2E+05	2.1E+05
Tb-157	9.8E+03	9.4E+03	8.8E+03	7.9E+03	7.0E+03	6.1E+03	5.2E+03	4.3E+03	3.6E+03	2.9E+03	2.3E+03	1.8E+03	1.4E+03	1.1E+03	8.3E+02	6.3E+02	4.7E+02	3.5E+02	2.6E+02	1.9E+02	1.4E+02
Tb-158	2.6E+03	2.5E+03	2.4E+03	2.2E+03	2.0E+03	1.8E+03	1.6E+03	1.4E+03	1.2E+03	9.7E+02	8.0E+02	6.5E+02	5.2E+02	4.1E+02	3.3E+02	2.5E+02	2.0E+02	1.5E+02	1.1E+02	8.6E+01	6.4E+01
Tc-99	7.1E+01	1.9E+02	4.9E+02	1.2E+03	2.6E+03	5.6E+03	1.1E+04	2.2E+04	4.1E+04	7.3E+04	1.3E+05	2.1E+05	3.4E+05	5.4E+05	8.3E+05	1.2E+06	1.8E+06	2.6E+06	3.7E+06	5.1E+06	6.9E+06

TA /.16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380	390	400	410
Pt-193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1E-11	1.3E-10	7.1E-10	3.6E-09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	7.8E+06	9.2E+06	1.1E+07	1.2E+07	1.4E+07	1.5E+07	1.7E+07	1.9E+07	2.0E+07	2.2E+07	2.5E+07	2.7E+07	2.9E+07	3.0E+07	3.0E+07	3.0E+07	2.9E+07	2.7E+07	2.5E+07	2.3E+07	2.1E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	4.5E+03	1.1E+04	2.5E+04	5.7E+04	1.2E+05	2.6E+05	5.4E+05	1.1E+06	2.1E+06	4.0E+06	1.3E+07	4.1E+07	1.2E+08	3.2E+08	7.9E+08	1.9E+09	4.2E+09	8.9E+09	1.8E+10	3.5E+10	6.5E+10
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.0E+05	1.8E+05	1.7E+05	1.5E+05	1.4E+05	1.3E+05	1.1E+05	9.8E+04	8.5E+04	7.4E+04	5.4E+04	3.9E+04	2.7E+04	1.8E+04	1.2E+04	8.1E+03	5.3E+03	3.3E+03	2.1E+03	1.3E+03	8.0E+02
Tb-157	9.9E+01	7.1E+01	5.1E+01	3.6E+01	2.6E+01	1.8E+01	1.3E+01	8.9E+00	6.2E+00	4.3E+00	2.0E+00	9.6E-01	4.5E-01	2.1E-01	9.4E-02	4.2E-02	1.9E-02	8.5E-03	3.8E-03	1.7E-03	7.2E-04
Tb-158	4.8E+01	3.6E+01	2.6E+01	1.9E+01	1.4E+01	1.0E+01	7.3E+00	5.3E+00	3.8E+00	2.7E+00	1.4E+00	6.8E-01	3.4E-01	1.6E-01	7.9E-02	3.8E-02	1.8E-02	8.6E-03	4.0E-03	1.9E-03	8.7E-04
Tc-99	9.2E+06	1.2E+07	1.6E+07	2.0E+07	2.5E+07	3.1E+07	3.9E+07	4.7E+07	5.7E+07	6.7E+07	9.3E+07	1.2E+08	1.6E+08	2.0E+08	2.4E+08	2.9E+08	3.3E+08	3.7E+08	4.1E+08	4.4E+08	4.7E+08

TA[illegible]:16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620
Pt-193	1.7E-08	7.1E-08	2.8E-07	1.1E-06	3.6E-06	1.2E-05	3.7E-05	1.1E-04	3.0E-04	8.0E-04	2.0E-03	4.9E-03	1.1E-02	2.6E-02	5.6E-02	1.2E-01	2.4E-01	4.8E-01	9.1E-01	1.7E+00	3.1E+00
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.9E+07	1.6E+07	1.4E+07	1.2E+07	1.0E+07	8.7E+06	7.3E+06	6.0E+06	4.9E+06	4.0E+06	3.2E+06	2.6E+06	2.0E+06	1.6E+06	1.3E+06	1.0E+06	7.8E+05	6.0E+05	4.6E+05	3.6E+05	2.7E+05
Se-79	0	4.4E-11	2.3E-10	1.2E-09	5.4E-09	2.4E-08	9.6E-08	3.7E-07	1.4E-06	4.7E-06	1.5E-05	4.8E-05	1.4E-04	4.2E-04	1.2E-03	3.1E-03	8.0E-03	2.0E-02	4.8E-02	1.1E-01	2.6E-01
Si-32	1.2E+11	2.1E+11	3.5E+11	5.7E+11	9.1E+11	1.4E+12	2.1E+12	3.2E+12	4.6E+12	6.5E+12	9.1E+12	1.2E+13	1.7E+13	2.2E+13	2.9E+13	3.8E+13	4.8E+13	6.0E+13	7.4E+13	9.1E+13	1.1E+14
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.8E+02	2.9E+02	1.7E+02	1.0E+02	5.9E+01	3.4E+01	2.0E+01	1.1E+01	6.3E+00	3.6E+00	2.0E+00	1.1E+00	6.2E-01	3.4E-01	1.9E-01	1.0E-01	5.7E-02	3.1E-02	1.7E-02	9.1E-03	4.9E-03
Tb-157	3.2E-04	1.4E-04	5.9E-05	2.5E-05	1.1E-05	4.6E-06	2.0E-06	8.4E-07	3.6E-07	1.5E-07	6.3E-08	2.7E-08	1.1E-08	4.7E-09	1.9E-09	8.1E-10	3.4E-10	1.4E-10	5.8E-11	2.4E-11	0
Tb-158	4.0E-04	1.9E-04	8.5E-05	3.9E-05	1.8E-05	8.0E-06	3.6E-06	1.6E-06	7.3E-07	3.3E-07	1.5E-07	6.5E-08	2.9E-08	1.3E-08	5.7E-09	2.5E-09	1.1E-09	4.9E-10	2.2E-10	9.5E-11	4.2E-11
Tc-99	4.9E+08	5.0E+08	5.1E+08	5.1E+08	5.0E+08	4.8E+08	4.6E+08	4.4E+08	4.1E+08	3.8E+08	3.5E+08	3.2E+08	2.9E+08	2.6E+08	2.3E+08	2.0E+08	1.8E+08	1.6E+08	1.4E+08	1.2E+08	1.0E+08

TA /.16.

RADIONUCLIDE CONCENTRATIONS (pCi/L) AT THE WATER TABLE--VERTICAL PATHRAE MODEL RESULTS FOR WESTERN LARW CELL TOP SLOPE, HIGH PRECIPITATION SENSITIVITY ANALYSIS (0.310 CM/YR)

NUCLIDE:	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Pt-193	5.5E+00	9.6E+00	1.6E+01	2.7E+01	4.4E+01	7.0E+01	1.1E+02	1.7E+02	3.7E+02	7.9E+02	1.6E+03	2.9E+03	5.2E+03	1.0E+04	1.8E+04	3.2E+04	5.1E+04	7.9E+04	1.2E+05	1.6E+05	2.2E+05
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.1E+05	1.6E+05	1.2E+05	9.0E+04	6.8E+04	5.1E+04	3.8E+04	2.9E+04	1.6E+04	8.6E+03	4.7E+03	2.5E+03	1.3E+03	6.1E+02	2.7E+02	1.2E+02	5.4E+01	2.4E+01	1.0E+01	4.5E+00	1.9E+00
Se-79	5.7E-01	1.2E+00	2.6E+00	5.3E+00	1.1E+01	2.1E+01	4.0E+01	7.6E+01	2.6E+02	8.0E+02	2.4E+03	6.6E+03	1.7E+04	5.4E+04	1.6E+05	4.2E+05	1.1E+06	2.6E+06	5.9E+06	1.3E+07	2.7E+07
Si-32	1.3E+14	1.6E+14	1.9E+14	2.2E+14	2.5E+14	2.9E+14	3.3E+14	3.7E+14	4.6E+14	5.6E+14	6.6E+14	7.7E+14	8.7E+14	9.9E+14	1.1E+15	1.2E+15	1.2E+15	1.3E+15	1.3E+15	1.2E+15	1.2E+15
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.6E-03	1.4E-03	7.6E-04	4.0E-04	2.2E-04	1.1E-04	6.1E-05	3.2E-05	8.9E-06	2.5E-06	6.8E-07	1.8E-07	5.0E-08	9.8E-09	1.9E-09	3.6E-10	6.9E-11	1.3E-11	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	1.8E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	8.6E+07	7.3E+07	6.2E+07	5.2E+07	4.3E+07	3.6E+07	3.0E+07	2.5E+07	1.7E+07	1.1E+07	7.6E+06	5.0E+06	3.2E+06	1.9E+06	1.1E+06	6.0E+05	3.3E+05	1.8E+05	1.0E+05	5.5E+04	2.9E+04

TABLE A7.17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95
Ac-227	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al-26	-1	0	5.2E-08	8.8E-04	2.0E-01	5.4E+00	4.3E+01	1.5E+02	3.1E+02	4.3E+02	4.0E+02	2.2E+02	8.7E+01	2.7E+01	7.0E+00	1.6E+00	3.4E-01	6.8E-02	1.3E-02	2.3E-03	3.9E-04	6.5E-05	1.1E-05
Am-241	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0E-10	2.3E-08	1.5E-06	5.8E-05	1.5E-03
Bi-210m	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.9E-11	4.4E-09	1.3E-07
Bk-247	27	0	7.7E-11	1.3E-06	2.9E-04	7.9E-03	6.2E-02	2.2E-01	4.6E-01	6.3E-01	5.8E-01	3.2E-01	1.2E-01	3.9E-02	1.0E-02	2.3E-03	4.9E-04	9.7E-05	1.8E-05	3.2E-06	5.5E-07	9.1E-08	1.5E-08
C-14	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	40	0	0	0	2.3E-07	1.9E-04	2.0E-02	5.6E-01	6.6E+00	4.2E+01	3.7E+02	1.5E+03	3.5E+03	5.5E+03	6.3E+03	5.8E+03	4.4E+03	2.9E+03	1.7E+03	9.3E+02	4.7E+02	2.2E+02	9.9E+01
Cd-113	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-10	1.1E-08	6.0E-07	2.1E-05	4.7E-04
Cf-249	24	0	1.1E-10	1.9E-06	4.3E-04	1.2E-02	9.1E-02	3.2E-01	6.6E-01	9.1E-01	8.4E-01	4.6E-01	1.8E-01	5.4E-02	1.4E-02	3.2E-03	6.8E-04	1.3E-04	2.4E-05	4.3E-06	7.3E-07	1.2E-07	2.0E-08
Cf-250	12	0	4.1E-05	5.9E-01	1.1E+02	2.6E+03	1.8E+04	5.4E+04	9.5E+04	1.1E+05	8.0E+04	3.4E+04	1.0E+04	2.4E+03	4.8E+02	8.6E+01	1.4E+01	2.1E+00	3.0E-01	4.1E-02	5.5E-03	7.0E-04	8.8E-05
Cf-251	9	0	6.2E-04	4.4E+00	4.4E+02	5.0E+03	1.7E+04	2.6E+04	2.3E+04	1.4E+04	3.1E+03	4.2E+02	4.0E+01	3.0E+00	1.9E-01	1.1E-02	5.7E-04	2.7E-05	1.3E-06	5.4E-08	2.3E-09	9.3E-11	0
Cf-252	6	9.2E-08	3.3E+01	2.5E+05	2.6E+07	3.2E+08	1.2E+09	1.9E+09	1.8E+09	1.1E+09	2.8E+08	4.1E+07	4.4E+06	3.7E+05	2.6E+04	1.6E+03	9.3E+01	5.0E+00	2.5E-01	1.2E-02	5.6E-04	2.5E-05	1.1E-06
Cl-36	-1	0	2.2E-07	3.7E-03	8.4E-01	2.3E+01	1.8E+02	6.4E+02	1.3E+03	1.8E+03	1.7E+03	9.3E+02	3.6E+02	1.1E+02	3.0E+01	6.9E+00	1.5E+00	2.9E-01	5.3E-02	9.5E-03	1.6E-03	2.7E-04	4.4E-05
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.0E-11	7.0E-09	3.9E-07	1.3E-05	3.0E-04
Eu-154	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	1.0E-09	5.0E-08	1.5E-06	2.9E-05
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1E-10	3.7E-08	2.6E-06	1.1E-04	3.0E-03
H-3	18	0	5.9E-10	5.1E-03	5.3E+01	1.9E+04	1.0E+06	1.7E+07	1.2E+08	5.1E+08	2.4E+09	5.3E+09	7.1E+09	6.4E+09	4.4E+09	2.4E+09	1.1E+09	4.7E+08	1.7E+08	6.0E+07	1.9E+07	5.9E+06	1.7E+06
Hg-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	30	0	0	0	0	4.9E-10	1.4E-06	5.0E-04	4.5E-02	1.5E+00	1.2E+02	2.7E+03	2.7E+04	1.5E+05	5.7E+05	1.5E+06	3.2E+06	5.6E+06	8.2E+06	1.0E+07	1.2E+07	1.2E+07	1.1E+07
K-40	30	0	0	0	0	7.2E-11	8.2E-07	8.4E-04	1.7E-01	1.1E+01	2.2E+03	9.8E+04	1.7E+06	1.5E+07	8.0E+07	3.0E+08	8.5E+08	1.9E+09	3.7E+09	6.0E+09	8.7E+09	1.1E+10	1.3E+10
Mn-53	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	9	8.9E-08	3.1E+01	2.3E+05	2.4E+07	2.9E+08	1.0E+09	1.7E+09	1.5E+09	9.6E+08	2.3E+08	3.4E+07	3.5E+06	2.9E+05	2.0E+04	1.2E+03	6.7E+01	3.5E+00	1.7E-01	8.1E-03	3.7E-04	1.6E-05	6.9E-07
Nb-91	190	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-92	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-94	350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	660	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	95	0	0	0	0	0	0	0	0	0	0	0	0	4.7E-10	2.1E-07	3.2E-05	2.2E-03	8.0E-02	1.8E+00	2.6E+01	2.7E+02	2.1E+03	1.3E+04
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	YEAR TO EXCEED:	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95
Pl-193	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8E-09	3.9E-07	2.9E-05	1.3E-03	3.6E-02	7.1E-01
Ks-20	9	6.9E-09	6.7E-01	1.4E+03	4.0E+04	1.4E+05	1.3E+05	6.0E+04	1.5E+04	2.6E+03	7.7E+01	1.3E+00	1.6E-02	1.6E-04	1.3E-06	9.3E-09	6.1E-11	0	0	0	0	0	0
Ks-21	9	0	3.0E-03	2.8E+01	2.1E+03	1.4E+04	2.3E+04	1.6E+04	6.1E+03	1.5E+03	7.6E+01	2.1E+00	3.8E-02	5.4E-04	6.2E-06	6.3E-08	5.6E-10	0	0	0	0	0	0
Ks-22	-1	0	0	0	2.5E-11	7.0E-08	9.9E-06	2.2E-04	1.4E-03	3.7E-03	5.1E-03	2.3E-03	4.9E-04	6.2E-05	5.5E-06	3.6E-07	1.9E-08	8.2E-10	3.1E-11	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	35	0	0	0	1.5E-07	6.6E-04	2.3E-01	1.7E+01	4.1E+02	4.8E+03	9.7E+04	7.6E+05	3.2E+06	8.5E+06	1.6E+07	2.4E+07	2.8E+07	2.8E+07	2.4E+07	1.9E+07	1.3E+07	8.6E+06	5.3E+06
Se-79	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E-10	1.2E-08	5.4E-07	1.6E-05
Si-32	40	0	0	0	0	0	0	0	0	1.5E-08	7.4E-04	2.3E+00	1.1E+03	1.5E+05	7.5E+06	1.9E+08	2.8E+09	2.7E+10	1.9E+11	9.6E+11	4.0E+12	1.4E+13	3.9E+13
Sm-151	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	18	0	0	8.0E-08	2.4E-03	1.9E+00	1.9E+02	4.9E+03	5.3E+04	3.2E+05	2.5E+06	8.9E+06	1.8E+07	2.5E+07	2.6E+07	2.1E+07	1.4E+07	8.4E+06	4.4E+06	2.1E+06	9.4E+05	3.9E+05	1.6E+05
Tb-157	18	0	3.9E-06	6.4E-02	1.4E+01	3.7E+02	2.9E+03	9.9E+03	2.0E+04	2.7E+04	2.3E+04	1.2E+04	4.6E+03	1.4E+03	3.4E+02	7.4E+01	1.5E+01	2.8E+00	5.0E-01	8.5E-02	1.4E-02	2.2E-03	3.4E-04
Tb-158	24	0	4.4E-07	7.3E-03	1.7E+00	4.4E+01	3.4E+02	1.2E+03	2.5E+03	3.4E+03	3.1E+03	1.7E+03	6.4E+02	1.9E+02	5.0E+01	1.1E+01	2.4E+00	4.5E-01	8.3E-02	1.5E-02	2.4E-03	4.0E-04	6.4E-05
Tc-99	30	0	0	0	0	3.8E-07	6.9E-04	1.7E-01	1.2E+01	3.1E+02	1.8E+04	3.4E+05	2.8E+06	1.3E+07	4.3E+07	1.0E+08	2.0E+08	3.0E+08	4.0E+08	4.7E+08	4.8E+08	4.5E+08	3.9E+08
Te-123	330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	35	0	0	0	0	1.7E-10	1.1E-06	6.4E-04	7.6E-02	2.9E+00	2.2E+02	4.0E+03	2.8E+04	9.7E+04	2.1E+05	3.1E+05	3.6E+05	3.2E+05	2.5E+05	1.6E+05	9.3E+04	4.8E+04	2.3E+04
Tm-170	-1	0	5.2E-07	2.0E-05	1.1E-05	7.6E-07	1.6E-08	1.6E-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclid Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

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RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3E-11	1.8E-10	1.2E-09	7.6E-09	4.4E-08	2.3E-07
Al-26	1.7E-06	2.6E-07	4.1E-08	6.2E-09	9.4E-10	1.4E-10	2.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	4.0E-11	6.0E-10	7.1E-09	6.6E-08	5.1E-07	3.3E-06	1.8E-05	8.9E-05	3.8E-04	1.5E-03	5.2E-03	1.7E-02	4.9E-02	1.3E-01	3.4E-01	8.3E-01	1.9E+00	4.2E+00	8.6E+00	1.7E+01	3.3E+01	6.0E+01	1.1E+02	1.8E+02
Am-242m	2.8E-11	4.2E-10	4.9E-09	4.5E-08	3.4E-07	2.2E-06	1.2E-05	5.7E-05	2.4E-04	9.1E-04	3.1E-03	9.9E-03	2.9E-02	7.8E-02	2.0E-01	4.7E-01	1.1E+00	2.3E+00	4.6E+00	9.0E+00	1.7E+01	3.0E+01	5.3E+01	9.0E+01
Am-243	4.6E-11	7.0E-10	8.3E-09	7.9E-08	6.1E-07	4.0E-06	2.2E-05	1.1E-04	4.7E-04	1.8E-03	6.5E-03	2.1E-02	6.2E-02	1.7E-01	4.5E-01	1.1E+00	2.5E+00	5.5E+00	1.1E+01	2.3E+01	4.4E+01	8.2E+01	1.5E+02	2.5E+02
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0E-11	3.6E-10	2.0E-09	9.9E-09	4.6E-08
Bi-207	2.8E-02	3.8E-01	4.0E+00	3.4E+01	2.4E+02	1.4E+03	7.0E+03	3.1E+04	1.2E+05	4.2E+05	1.3E+06	3.8E+06	1.0E+07	2.5E+07	5.8E+07	1.3E+08	2.6E+08	5.2E+08	9.7E+08	1.7E+09	3.0E+09	5.0E+09	8.0E+09	1.2E+10
Bi-210m	2.6E-06	4.0E-05	4.8E-04	4.5E-03	3.5E-02	2.3E-01	1.3E+00	6.3E+00	2.7E+01	1.1E+02	3.7E+02	1.2E+03	3.6E+03	9.9E+03	2.6E+04	6.3E+04	1.4E+05	3.2E+05	6.6E+05	1.3E+06	2.6E+06	4.7E+06	8.5E+06	1.5E+07
Bk-247	2.4E-09	3.7E-10	5.7E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	4.3E+01	1.8E+01	7.2E+00	2.8E+00	1.1E+00	4.1E-01	1.5E-01	5.6E-02	2.0E-02	7.1E-03	2.5E-03	8.8E-04	3.0E-04	1.0E-04	3.6E-05	1.2E-05	4.1E-06	1.4E-06	4.6E-07	1.5E-07	5.1E-08	1.7E-08	5.5E-09	1.8E-09
Cd-113	0	0	0	0	2.7E-11	1.7E-10	9.7E-10	4.8E-09	2.1E-08	8.0E-08	2.8E-07	9.1E-07	2.7E-06	7.5E-06	2.0E-05	4.8E-05	1.1E-04	2.4E-04	5.0E-04	1.0E-03	1.9E-03	3.6E-03	6.4E-03	1.1E-02
Cd-113m	7.7E-03	9.2E-02	8.5E-01	6.3E+00	3.8E+01	1.9E+02	8.5E+02	3.3E+03	1.1E+04	3.4E+04	9.2E+04	2.3E+05	5.4E+05	1.2E+06	2.4E+06	4.6E+06	8.2E+06	1.4E+07	2.3E+07	3.6E+07	5.4E+07	7.9E+07	1.1E+08	1.5E+08
Cf-249	3.1E-09	4.8E-10	7.3E-11	1.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	1.1E-05	1.3E-06	1.5E-07	1.8E-08	2.1E-09	2.4E-10	2.7E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	4.8E-08	2.0E-09	8.5E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	7.1E-06	1.1E-06	1.7E-07	2.6E-08	4.0E-09	5.9E-10	8.8E-11	1.3E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	4.7E-03	5.6E-02	5.1E-01	3.7E+00	2.2E+01	1.1E+02	4.9E+02	1.9E+03	6.3E+03	1.9E+04	5.1E+04	1.3E+05	3.0E+05	6.3E+05	1.3E+06	2.4E+06	4.3E+06	7.2E+06	1.2E+07	1.8E+07	2.7E+07	3.9E+07	5.4E+07	7.2E+07
Eu-154	3.9E-04	4.0E-03	3.2E-02	2.0E-01	1.0E+00	4.5E+00	1.7E+01	5.6E+01	1.6E+02	4.2E+02	9.8E+02	2.1E+03	4.2E+03	7.8E+03	1.4E+04	2.2E+04	3.4E+04	5.0E+04	6.9E+04	9.3E+04	1.2E+05	1.5E+05	1.8E+05	2.0E+05
Eu-155	0	0	4.1E-11	1.9E-10	7.0E-10	2.2E-09	6.0E-09	1.4E-08	3.0E-08	5.5E-08	9.4E-08	1.5E-07	2.1E-07	2.8E-07	3.5E-07	4.2E-07	4.6E-07	4.9E-07	5.0E-07	4.8E-07	4.5E-07	4.0E-07	3.4E-07	2.9E-07
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	0	0	0	1.7E-10	3.1E-09	4.3E-08	5.0E-07	4.7E-06	3.8E-05	2.6E-04	1.6E-03	8.6E-03	4.2E-02	1.8E-01	7.2E-01	2.6E+00	8.9E+00	2.8E+01	8.3E+01	2.3E+02	6.1E+02	1.5E+03	3.7E+03	8.4E+03
Gd-148	5.9E-02	8.6E-01	9.8E+00	8.8E+01	6.5E+02	4.1E+03	2.2E+04	1.0E+05	4.2E+05	1.6E+06	5.2E+06	1.6E+07	4.6E+07	1.2E+08	3.0E+08	7.0E+08	1.5E+09	3.2E+09	6.4E+09	1.2E+10	2.3E+10	4.0E+10	6.8E+10	1.1E+11
H-3	4.8E+05	1.3E+05	3.5E+04	9.1E+03	2.3E+03	5.8E+02	1.4E+02	3.5E+01	8.3E+00	2.0E+00	4.6E-01	1.1E-01	2.5E-02	5.8E-03	1.3E-03	3.0E-04	6.8E-05	1.5E-05	3.5E-06	7.7E-07	1.7E-07	3.8E-08	8.5E-09	1.9E-09
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-11	9.1E-11	6.6E-10	4.4E-09	2.6E-08	1.4E-07	7.2E-07	3.3E-06
I-129	1.0E+07	8.3E+06	6.4E+06	4.8E+06	3.4E+06	2.3E+06	1.6E+06	1.0E+06	6.4E+05	4.0E+05	2.4E+05	1.4E+05	8.5E+04	4.9E+04	2.8E+04	1.6E+04	8.8E+03	4.9E+03	2.7E+03	1.5E+03	7.9E+02	4.3E+02	2.3E+02	1.2E+02
K-40	1.5E+10	1.5E+10	1.4E+10	1.3E+10	1.1E+10	8.8E+09	7.0E+09	5.3E+09	4.0E+09	2.9E+09	2.0E+09	1.4E+09	9.5E+08	6.4E+08	4.2E+08	2.7E+08	1.7E+08	1.1E+08	6.9E+07	4.2E+07	2.6E+07	1.6E+07	9.6E+06	5.8E+06
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	2.9E-08	1.2E-09	4.9E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	0	0	0	1.5E-11	4.0E-10	8.2E-09	1.3E-07	1.8E-06	1.9E-05	1.8E-04	1.4E-03	9.5E-03	5.7E-02	3.1E-01	1.5E+00	6.7E+00	2.7E+01	1.0E+02	3.6E+02	1.2E+03	3.5E+03	1.0E+04	2.8E+04	7.3E+04
Nb-92	0	0	0	0	0	0	0	3.9E-11	4.3E-10	4.0E-09	3.1E-08	2.2E-07	1.3E-06	7.1E-06	3.5E-05	1.6E-04	6.3E-04	2.4E-03	8.4E-03	2.7E-02	8.4E-02	2.4E-01	6.7E-01	1.8E+00
Nb-93m	0	0	0	0	1.2E-10	2.0E-09	2.6E-08	2.8E-07	2.4E-06	1.8E-05	1.2E-04	6.4E-04	3.1E-03	1.4E-02	5.4E-02	1.9E-01	6.4E-01	2.0E+00	5.5E+00	1.5E+01	3.6E+01	8.4E+01	1.9E+02	3.9E+02
Nb-94	0	0	0	0	0	0	0	0	0	0	0	2.5E-11	1.5E-10	8.2E-10	4.0E-09	1.8E-08	7.3E-08	2.8E-07	9.6E-07	3.2E-06	9.7E-06	2.8E-05	7.7E-05	2.0E-04
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	6.7E+04	2.9E+05	1.1E+06	3.4E+06	9.9E+06	2.6E+07	6.2E+07	1.4E+08	2.8E+08	5.5E+08	1.0E+09	1.7E+09	2.9E+09	4.6E+09	7.2E+09	1.1E+10	1.5E+10	2.1E+10	2.9E+10	3.9E+10	5.0E+10	6.4E+10	8.0E+10	9.7E+10
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A.17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
Pt-193	1.0E+01	1.1E+02	9.3E+02	6.5E+03	3.8E+04	1.9E+05	8.3E+05	3.2E+06	1.1E+07	3.4E+07	9.8E+07	2.6E+08	6.4E+08	1.5E+09	3.2E+09	6.5E+09	1.3E+10	2.4E+10	4.2E+10	7.2E+10	1.2E+11	1.9E+11	3.0E+11	4.4E+11
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.1E+06	1.7E+06	9.1E+05	4.7E+05	2.4E+05	1.2E+05	5.5E+04	2.6E+04	1.2E+04	5.5E+03	2.4E+03	1.1E+03	4.8E+02	2.1E+02	8.9E+01	3.8E+01	1.6E+01	6.8E+00	2.8E+00	1.2E+00	4.9E-01	2.0E-01	8.2E-02	3.4E-02
Se-79	3.2E-04	4.9E-03	5.8E-02	5.5E-01	4.3E+00	2.8E+01	1.6E+02	7.7E+02	3.3E+03	1.3E+04	4.6E+04	1.5E+05	4.4E+05	1.2E+06	3.1E+06	7.7E+06	1.8E+07	3.9E+07	8.1E+07	1.6E+08	3.1E+08	5.8E+08	1.0E+09	1.8E+09
Si-32	1.0E+14	2.3E+14	4.6E+14	8.6E+14	1.5E+15	2.4E+15	3.8E+15	5.5E+15	7.6E+15	1.0E+16	1.3E+16	1.6E+16	1.9E+16	2.2E+16	2.5E+16	2.8E+16	3.0E+16	3.1E+16	3.2E+16	3.2E+16	3.2E+16	3.1E+16	2.9E+16	2.8E+16
Sm-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5E-11	2.1E-10	1.6E-09	1.1E-08	6.6E-08	3.7E-07	1.9E-06	8.7E-06	3.8E-05
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	6.0E+04	2.2E+04	7.9E+03	2.8E+03	9.4E+02	3.1E+02	1.0E+02	3.3E+01	1.1E+01	3.4E+00	1.1E+00	3.3E-01	1.0E-01	3.1E-02	9.3E-03	2.8E-03	8.3E-04	2.5E-04	7.4E-05	2.2E-05	6.4E-06	1.9E-06	5.5E-07	1.6E-07
Tb-157	5.2E-05	7.8E-06	1.1E-06	1.7E-07	2.4E-08	3.4E-09	4.8E-10	6.8E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	1.0E-05	1.5E-06	2.3E-07	3.5E-08	5.2E-09	7.6E-10	1.1E-10	1.6E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	3.2E+08	2.4E+08	1.8E+08	1.2E+08	8.1E+07	5.2E+07	3.2E+07	2.0E+07	1.2E+07	6.9E+06	3.9E+06	2.2E+06	1.2E+06	6.8E+05	3.7E+05	2.0E+05	1.0E+05	5.5E+04	2.9E+04	1.5E+04	7.6E+03	3.9E+03	2.0E+03	1.0E+03
Te-123	0	0	0	0	0	0	2.0E-11	1.5E-10	9.5E-10	5.3E-09	2.6E-08	1.2E-07	4.7E-07	1.7E-06	5.9E-06	1.9E-05	5.5E-05	1.5E-04	3.9E-04	9.7E-04	2.3E-03	5.1E-03	1.1E-02	2.3E-02
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	9.9E+03	4.0E+03	1.5E+03	5.5E+02	1.9E+02	6.2E+01	1.9E+01	5.9E+00	1.8E+00	5.1E-01	1.4E-01	4.0E-02	1.1E-02	2.9E-03	7.6E-04	2.0E-04	5.0E-05	1.3E-05	3.2E-06	7.9E-07	1.9E-07	4.7E-08	1.1E-08	2.7E-09
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-11	7.5E-11
Ag-108m	1.1E-06	5.0E-06	2.1E-05	8.4E-05	3.2E-04	1.1E-03	3.7E-03	1.2E-02	3.6E-02	1.1E-01	3.0E-01	8.0E-01	2.1E+00	5.2E+00	1.2E+01	2.9E+01	6.7E+01	3.2E+02	1.4E+03	5.3E+03	1.9E+04	6.3E+04	1.9E+05	5.6E+05
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	3.1E+02	5.0E+02	7.9E+02	1.2E+03	1.8E+03	2.7E+03	3.9E+03	5.6E+03	7.8E+03	1.1E+04	1.4E+04	1.9E+04	2.5E+04	3.3E+04	4.2E+04	5.3E+04	6.6E+04	9.9E+04	1.4E+05	2.0E+05	2.7E+05	3.6E+05	4.6E+05	5.8E+05
Am-242m	1.5E+02	2.4E+02	3.7E+02	5.6E+02	8.3E+02	1.2E+03	1.7E+03	2.4E+03	3.3E+03	4.4E+03	5.9E+03	7.7E+03	1.0E+04	1.3E+04	1.6E+04	2.0E+04	2.4E+04	3.6E+04	5.0E+04	6.8E+04	8.9E+04	1.1E+05	1.4E+05	1.7E+05
Am-243	4.3E+02	7.0E+02	1.1E+03	1.7E+03	2.6E+03	3.9E+03	5.7E+03	8.2E+03	1.2E+04	1.6E+04	2.2E+04	2.9E+04	3.8E+04	5.0E+04	6.5E+04	8.2E+04	1.0E+05	1.6E+05	2.3E+05	3.3E+05	4.6E+05	6.1E+05	8.0E+05	1.0E+06
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	2.0E-07	8.2E-07	3.1E-06	1.1E-05	3.8E-05	1.2E-04	3.8E-04	1.1E-03	3.1E-03	8.5E-03	2.2E-02	5.5E-02	1.3E-01	3.1E-01	7.1E-01	1.6E+00	3.4E+00	1.4E+01	5.6E+01	2.0E+02	6.4E+02	2.0E+03	5.6E+03	1.5E+04
Bi-207	1.9E+10	2.8E+10	3.9E+10	5.5E+10	7.5E+10	1.0E+11	1.3E+11	1.7E+11	2.1E+11	2.6E+11	3.2E+11	3.8E+11	4.6E+11	5.3E+11	6.2E+11	7.0E+11	7.9E+11	9.8E+11	1.2E+12	1.3E+12	1.5E+12	1.6E+12	1.7E+12	1.7E+12
Bi-210m	2.5E+07	4.0E+07	6.5E+07	1.0E+08	1.5E+08	2.3E+08	3.3E+08	4.8E+08	6.7E+08	9.3E+08	1.3E+09	1.7E+09	2.2E+09	2.9E+09	3.8E+09	4.8E+09	6.0E+09	9.3E+09	1.4E+10	1.9E+10	2.7E+10	3.6E+10	4.7E+10	6.0E+10
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	5.9E-10	1.9E-10	6.3E-11	2.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113	1.9E-02	3.1E-02	4.9E-02	7.6E-02	1.2E-01	1.7E-01	2.5E-01	3.6E-01	5.1E-01	7.0E-01	9.6E-01	1.3E+00	1.7E+00	2.2E+00	2.9E+00	3.6E+00	4.6E+00	7.0E+00	1.0E+01	1.5E+01	2.0E+01	2.7E+01	3.6E+01	4.5E+01
Cd-113m	2.0E+08	2.5E+08	3.1E+08	3.8E+08	4.6E+08	5.3E+08	6.1E+08	6.8E+08	7.5E+08	8.1E+08	8.6E+08	9.0E+08	9.3E+08	9.5E+08	9.6E+08	9.6E+08	9.4E+08	8.8E+08	8.0E+08	7.0E+08	5.9E+08	4.8E+08	3.8E+08	3.0E+08
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	9.4E+07	1.2E+08	1.5E+08	1.8E+08	2.1E+08	2.4E+08	2.7E+08	3.0E+08	3.3E+08	3.5E+08	3.7E+08	3.8E+08	3.9E+08	3.9E+08	3.9E+08	3.9E+08	3.8E+08	3.5E+08	3.1E+08	2.6E+08	2.1E+08	1.7E+08	1.3E+08	1.0E+08
Eu-154	2.3E+05	2.5E+05	2.7E+05	2.8E+05	2.8E+05	2.8E+05	2.7E+05	2.6E+05	2.5E+05	2.3E+05	2.1E+05	1.9E+05	1.6E+05	1.4E+05	1.2E+05	1.1E+05	8.8E+04	6.1E+04	4.0E+04	2.5E+04	1.6E+04	9.3E+03	5.4E+03	3.1E+03
Eu-155	2.3E-07	1.9E-07	1.4E-07	1.1E-07	7.9E-08	5.7E-08	4.0E-08	2.8E-08	1.9E-08	1.3E-08	8.2E-09	5.3E-09	3.4E-09	2.1E-09	1.3E-09	8.2E-10	5.0E-10	1.8E-10	6.2E-11	2.0E-11	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	1.8E+04	3.9E+04	7.9E+04	1.6E+05	3.0E+05	5.5E+05	9.9E+05	1.7E+06	3.0E+06	5.0E+06	8.2E+06	1.3E+07	2.1E+07	3.2E+07	4.8E+07	7.2E+07	1.1E+08	2.2E+08	4.2E+08	7.8E+08	1.4E+09	2.4E+09	3.9E+09	6.1E+09
Gd-148	1.8E+11	2.8E+11	4.3E+11	6.4E+11	9.3E+11	1.3E+12	1.9E+12	2.5E+12	3.4E+12	4.5E+12	5.8E+12	7.5E+12	9.4E+12	1.2E+13	1.4E+13	1.8E+13	2.1E+13	3.0E+13	4.0E+13	5.2E+13	6.5E+13	7.9E+13	9.4E+13	1.1E+14
H-3	4.2E-10	9.1E-11	2.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	1.4E-05	5.9E-05	2.2E-04	8.0E-04	2.7E-03	8.7E-03	2.7E-02	7.9E-02	2.2E-01	5.9E-01	1.5E+00	3.8E+00	9.3E+00	2.2E+01	4.9E+01	1.1E+02	2.3E+02	9.8E+02	3.8E+03	1.3E+04	4.3E+04	1.3E+05	3.7E+05	9.8E+05
I-129	6.4E+01	3.4E+01	1.8E+01	9.1E+00	4.7E+00	2.4E+00	1.3E+00	6.5E-01	3.3E-01	1.7E-01	8.6E-02	4.4E-02	2.2E-02	1.1E-02	5.7E-03	2.9E-03	1.4E-03	3.6E-04	9.0E-05	2.2E-05	5.5E-06	1.4E-06	3.3E-07	8.1E-08
K-40	3.4E+06	2.0E+06	1.2E+06	7.1E+05	4.1E+05	2.4E+05	1.4E+05	8.0E+04	4.6E+04	2.6E+04	1.5E+04	8.5E+03	4.8E+03	2.7E+03	1.5E+03	8.7E+02	4.9E+02	1.5E+02	4.8E+01	1.5E+01	4.5E+00	1.4E+00	4.2E-01	1.3E-01
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	1.8E+05	4.3E+05	9.7E+05	2.1E+06	4.5E+06	9.2E+06	1.8E+07	3.5E+07	6.6E+07	1.2E+08	2.1E+08	3.7E+08	6.3E+08	1.0E+09	1.7E+09	2.7E+09	4.3E+09	1.0E+10	2.2E+10	4.5E+10	9.0E+10	1.7E+11	3.0E+11	5.3E+11
Nb-92	4.4E+00	1.0E+01	2.4E+01	5.3E+01	1.1E+02	2.3E+02	4.6E+02	8.9E+02	1.7E+03	3.1E+03	5.5E+03	9.5E+03	1.6E+04	2.7E+04	4.4E+04	7.1E+04	1.1E+05	2.7E+05	5.9E+05	1.2E+06	2.5E+06	4.7E+06	8.5E+06	1.5E+07
Nb-93m	7.9E+02	1.5E+03	2.8E+03	5.0E+03	8.6E+03	1.4E+04	2.3E+04	3.6E+04	5.4E+04	8.0E+04	1.1E+05	1.6E+05	2.2E+05	3.0E+05	3.9E+05	5.1E+05	6.5E+05	1.0E+06	1.4E+06	2.0E+06	2.5E+06	3.1E+06	3.7E+06	4.2E+06
Nb-94	5.0E-04	1.2E-03	2.7E-03	6.1E-03	1.3E-02	2.6E-02	5.3E-02	1.0E-01	1.9E-01	3.5E-01	6.3E-01	1.1E+00	1.9E+00	3.1E+00	5.1E+00	8.2E+00	1.3E+01	3.0E+01	6.8E+01	1.4E+02	2.8E+02	5.4E+02	9.8E+02	1.7E+03
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0E-11	2.8E-11	7.2E-11	1.8E-10	1.1E-09	5.6E-09	2.6E-08	1.1E-07	4.3E-07	1.6E-06	5.2E-06
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	1.2E+11	1.4E+11	1.6E+11	1.8E+11	2.1E+11	2.3E+11	2.6E+11	2.8E+11	3.0E+11	3.2E+11	3.4E+11	3.5E+11	3.6E+11	3.7E+11	3.7E+11	3.8E+11	3.7E+11	3.6E+11	3.4E+11	3.2E+11	2.8E+11	2.5E+11	2.1E+11	1.8E+11
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table ...17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370
Pt-193	6.5E+11	9.3E+11	1.3E+12	1.8E+12	2.4E+12	3.1E+12	4.0E+12	5.1E+12	6.3E+12	7.7E+12	9.4E+12	1.1E+13	1.3E+13	1.5E+13	1.8E+13	2.0E+13	2.3E+13	2.8E+13	3.3E+13	3.9E+13	4.3E+13	4.7E+13	5.0E+13	5.2E+13
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.4E-02	5.6E-03	2.3E-03	9.1E-04	3.7E-04	1.5E-04	5.9E-05	2.4E-05	9.4E-06	3.7E-06	1.5E-06	5.9E-07	2.3E-07	9.2E-08	3.6E-08	1.4E-08	5.7E-09	8.7E-10	1.3E-10	2.1E-11	0	0	0	0
Se-79	3.0E+09	4.9E+09	7.9E+09	1.2E+10	1.9E+10	2.8E+10	4.1E+10	5.8E+10	8.2E+10	1.1E+11	1.5E+11	2.1E+11	2.7E+11	3.6E+11	4.6E+11	5.9E+11	7.4E+11	1.1E+12	1.7E+12	2.4E+12	3.3E+12	4.4E+12	5.7E+12	7.3E+12
Si-32	2.5E+16	2.3E+16	2.1E+16	1.9E+16	1.7E+16	1.4E+16	1.2E+16	1.1E+16	9.1E+15	7.6E+15	6.4E+15	5.3E+15	4.4E+15	3.6E+15	2.9E+15	2.4E+15	1.9E+15	1.2E+15	7.7E+14	4.7E+14	2.9E+14	1.7E+14	1.0E+14	6.0E+13
Sm-151	1.5E-04	5.9E-04	2.1E-03	7.0E-03	2.2E-02	6.8E-02	2.0E-01	5.4E-01	1.4E+00	3.7E+00	9.0E+00	2.1E+01	4.9E+01	1.1E+02	2.3E+02	4.8E+02	9.8E+02	3.7E+03	1.3E+04	4.2E+04	1.2E+05	3.4E+05	8.7E+05	2.1E+06
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	4.6E-08	1.3E-08	3.9E-09	1.1E-09	3.2E-10	9.2E-11	2.6E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	5.1E+02	2.5E+02	1.3E+02	6.3E+01	3.1E+01	1.5E+01	7.6E+00	3.7E+00	1.8E+00	8.8E-01	4.3E-01	2.1E-01	1.0E-01	4.9E-02	2.4E-02	1.1E-02	5.5E-03	1.3E-03	2.9E-04	6.6E-05	1.5E-05	3.4E-06	7.5E-07	1.7E-07
Te-123	4.5E-02	8.7E-02	1.6E-01	2.9E-01	5.1E-01	8.8E-01	1.5E+00	2.4E+00	3.8E+00	5.9E+00	9.1E+00	1.4E+01	2.0E+01	2.9E+01	4.2E+01	5.9E+01	8.1E+01	1.5E+02	2.7E+02	4.5E+02	7.2E+02	1.1E+03	1.7E+03	2.5E+03
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	6.5E-10	1.5E-10	3.6E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610
Ac-227	3.2E-10	1.2E-09	4.4E-09	1.4E-08	4.3E-08	1.2E-07	3.3E-07	8.1E-07	1.9E-06	4.3E-06	9.3E-06	1.9E-05	3.7E-05	7.0E-05	1.3E-04	2.2E-04	3.7E-04	6.0E-04	9.5E-04	1.5E-03	2.2E-03	3.2E-03	4.5E-03	6.2E-03
Ag-108m	1.5E+06	3.9E+06	9.4E+06	2.2E+07	4.8E+07	1.0E+08	2.1E+08	4.1E+08	7.8E+08	1.4E+09	2.6E+09	4.5E+09	7.7E+09	1.3E+10	2.1E+10	3.3E+10	5.0E+10	7.7E+10	1.1E+11	1.7E+11	2.4E+11	3.4E+11	4.8E+11	6.6E+11
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	7.1E+05	8.5E+05	9.9E+05	1.1E+06	1.3E+06	1.4E+06	1.5E+06	1.6E+06	1.7E+06	1.8E+06	1.9E+06	1.9E+06	1.9E+06	1.9E+06	1.8E+06	1.8E+06	1.7E+06	1.6E+06	1.5E+06	1.4E+06	1.3E+06	1.2E+06	1.1E+06	1.0E+06
Am-242m	2.0E+05	2.3E+05	2.6E+05	2.9E+05	3.2E+05	3.4E+05	3.6E+05	3.7E+05	3.8E+05	3.8E+05	3.8E+05	3.7E+05	3.6E+05	3.5E+05	3.3E+05	3.1E+05	2.9E+05	2.6E+05	2.4E+05	2.2E+05	2.0E+05	1.8E+05	1.5E+05	1.4E+05
Am-243	1.3E+06	1.5E+06	1.8E+06	2.1E+06	2.4E+06	2.7E+06	3.0E+06	3.3E+06	3.5E+06	3.7E+06	3.8E+06	4.0E+06	4.0E+06	4.1E+06	4.0E+06	4.0E+06	3.9E+06	3.7E+06	3.6E+06	3.4E+06	3.2E+06	3.0E+06	2.8E+06	2.6E+06
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	3.8E+04	9.0E+04	2.1E+05	4.5E+05	9.5E+05	1.9E+06	3.7E+06	7.0E+06	1.3E+07	2.3E+07	3.9E+07	6.5E+07	1.1E+08	1.7E+08	2.7E+08	4.1E+08	6.2E+08	9.2E+08	1.3E+09	1.9E+09	2.7E+09	3.7E+09	5.1E+09	6.9E+09
Bi-207	1.7E+12	1.6E+12	1.6E+12	1.5E+12	1.3E+12	1.2E+12	1.1E+12	9.4E+11	8.1E+11	6.9E+11	5.8E+11	4.8E+11	3.9E+11	3.2E+11	2.5E+11	2.0E+11	1.6E+11	1.2E+11	9.4E+10	7.2E+10	5.4E+10	4.1E+10	3.1E+10	2.3E+10
Bi-210m	7.4E+10	9.0E+10	1.1E+11	1.2E+11	1.4E+11	1.6E+11	1.8E+11	1.9E+11	2.1E+11	2.2E+11	2.3E+11	2.4E+11	2.4E+11	2.4E+11	2.4E+11	2.4E+11	2.3E+11	2.2E+11	2.1E+11	2.0E+11	1.9E+11	1.8E+11	1.7E+11	1.5E+11
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113	5.6E+01	6.8E+01	8.1E+01	9.4E+01	1.1E+02	1.2E+02	1.3E+02	1.5E+02	1.6E+02	1.7E+02	1.7E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02	1.7E+02	1.6E+02	1.6E+02	1.5E+02	1.4E+02	1.3E+02	1.2E+02
Cd-113m	2.3E+08	1.7E+08	1.2E+08	8.7E+07	6.1E+07	4.2E+07	2.8E+07	1.9E+07	1.2E+07	8.0E+06	5.1E+06	3.2E+06	2.0E+06	1.2E+06	7.5E+05	4.5E+05	2.7E+05	1.6E+05	9.4E+04	5.5E+04	3.2E+04	1.8E+04	1.0E+04	5.8E+03
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	7.6E+07	5.5E+07	3.9E+07	2.7E+07	1.9E+07	1.3E+07	8.3E+06	5.4E+06	3.5E+06	2.2E+06	1.4E+06	8.5E+05	5.2E+05	3.1E+05	1.9E+05	1.1E+05	6.4E+04	3.7E+04	2.1E+04	1.2E+04	6.8E+03	3.8E+03	2.1E+03	1.2E+03
Eu-154	1.7E+03	9.2E+02	4.9E+02	2.5E+02	1.3E+02	6.5E+01	3.2E+01	1.6E+01	7.5E+00	3.5E+00	1.6E+00	7.6E-01	3.4E-01	1.5E-01	6.9E-02	3.0E-02	1.3E-02	5.7E-03	2.4E-03	1.0E-03	4.3E-04	1.8E-04	7.5E-05	3.1E-05
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	9.3E+09	1.4E+10	2.0E+10	2.8E+10	3.9E+10	5.3E+10	7.0E+10	9.0E+10	1.2E+11	1.4E+11	1.8E+11	2.2E+11	2.6E+11	3.1E+11	3.6E+11	4.2E+11	4.8E+11	5.4E+11	6.1E+11	6.7E+11	7.4E+11	8.0E+11	8.7E+11	9.3E+11
Gd-148	1.2E+14	1.4E+14	1.5E+14	1.6E+14	1.6E+14	1.7E+14	1.7E+14	1.7E+14	1.6E+14	1.6E+14	1.5E+14	1.4E+14	1.3E+14	1.2E+14	1.1E+14	9.8E+13	8.7E+13	7.7E+13	6.7E+13	5.8E+13	5.0E+13	4.3E+13	3.6E+13	3.0E+13
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	2.5E+06	5.9E+06	1.3E+07	2.9E+07	6.1E+07	1.2E+08	2.4E+08	4.4E+08	8.0E+08	1.4E+09	2.4E+09	4.0E+09	6.6E+09	1.0E+10	1.6E+10	2.5E+10	3.7E+10	5.5E+10	7.9E+10	1.1E+11	1.6E+11	2.2E+11	3.0E+11	4.0E+11
I-129	2.0E-08	4.8E-09	1.2E-09	2.8E-10	6.8E-11	1.6E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	3.8E-02	1.1E-02	3.4E-03	1.0E-03	3.0E-04	9.0E-05	2.6E-05	7.8E-06	2.3E-06	6.7E-07	2.0E-07	5.8E-08	1.7E-08	4.9E-09	1.4E-09	4.2E-10	1.2E-10	3.5E-11	1.0E-11	0	0	0	0	0
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7E-11	1.0E-10	3.7E-10	1.3E-09	4.1E-09	1.3E-08	3.8E-08	1.1E-07	3.0E-07	8.0E-07	2.1E-06
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	8.8E+11	1.4E+12	2.2E+12	3.4E+12	5.0E+12	7.2E+12	1.0E+13	1.4E+13	1.9E+13	2.5E+13	3.3E+13	4.2E+13	5.4E+13	6.7E+13	8.2E+13	1.0E+14	1.2E+14	1.4E+14	1.7E+14	1.9E+14	2.2E+14	2.5E+14	2.8E+14	3.2E+14
Nb-92	2.5E+07	4.1E+07	6.5E+07	1.0E+08	1.5E+08	2.2E+08	3.1E+08	4.3E+08	5.9E+08	7.9E+08	1.0E+09	1.4E+09	1.7E+09	2.2E+09	2.7E+09	3.3E+09	4.0E+09	4.8E+09	5.7E+09	6.7E+09	7.7E+09	8.9E+09	1.0E+10	1.1E+10
Nb-93m	4.6E+06	4.9E+06	5.1E+06	5.0E+06	4.9E+06	4.7E+06	4.3E+06	3.9E+06	3.5E+06	3.0E+06	2.6E+06	2.2E+06	1.8E+06	1.5E+06	1.2E+06	9.6E+05	7.6E+05	5.9E+05	4.5E+05	3.4E+05	2.6E+05	1.9E+05	1.4E+05	1.1E+05
Nb-94	2.9E+03	4.7E+03	7.4E+03	1.1E+04	1.7E+04	2.5E+04	3.5E+04	4.9E+04	6.7E+04	9.0E+04	1.2E+05	1.5E+05	2.0E+05	2.5E+05	3.1E+05	3.8E+05	4.6E+05	5.5E+05	6.5E+05	7.6E+05	8.8E+05	1.0E+06	1.1E+06	1.3E+06
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	1.6E-05	4.8E-05	1.3E-04	3.5E-04	8.8E-04	2.1E-03	4.8E-03	1.1E-02	2.2E-02	4.6E-02	9.0E-02	1.7E-01	3.2E-01	5.9E-01	1.0E+00	1.8E+00	3.0E+00	5.0E+00	8.0E+00	1.3E+01	2.0E+01	3.0E+01	4.5E+01	6.7E+01
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	3.6E-11	1.9E-10	9.6E-10	4.4E-09	1.9E-08	7.6E-08	2.9E-07	1.0E-06	3.5E-06	1.2E-05	3.6E-05	1.1E-04	3.0E-04	8.1E-04	2.1E-03	5.4E-03	1.3E-02	3.2E-02	7.3E-02	1.6E-01
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	1.5E+11	1.2E+11	1.0E+11	8.0E+10	6.3E+10	4.9E+10	3.8E+10	2.9E+10	2.2E+10	1.6E+10	1.2E+10	9.1E+09	6.7E+09	4.9E+09	3.5E+09	2.6E+09	1.8E+09	1.3E+09	9.3E+08	6.6E+08	4.7E+08	3.3E+08	2.3E+08	1.6E+08
Pm-145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610
Pt-193	5.2E+13	5.2E+13	5.0E+13	4.8E+13	4.5E+13	4.1E+13	3.8E+13	3.4E+13	3.0E+13	2.6E+13	2.2E+13	1.9E+13	1.6E+13	1.3E+13	1.1E+13	8.7E+12	7.0E+12	5.6E+12	4.4E+12	3.5E+12	2.7E+12	2.1E+12	1.6E+12	1.3E+12
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	9.0E+12	1.1E+13	1.3E+13	1.5E+13	1.7E+13	1.9E+13	2.2E+13	2.3E+13	2.5E+13	2.7E+13	2.8E+13	2.9E+13	2.9E+13	2.9E+13	2.9E+13	2.9E+13	2.8E+13	2.7E+13	2.6E+13	2.5E+13	2.3E+13	2.2E+13	2.0E+13	1.9E+13
Si-32	3.5E+13	2.0E+13	1.1E+13	6.5E+12	3.6E+12	2.0E+12	1.1E+12	6.2E+11	3.4E+11	1.9E+11	1.0E+11	5.4E+10	2.9E+10	1.6E+10	8.4E+09	4.5E+09	2.4E+09	1.3E+09	6.6E+08	3.5E+08	1.8E+08	9.7E+07	5.1E+07	2.6E+07
Sm-151	4.8E+06	1.0E+07	2.2E+07	4.3E+07	8.2E+07	1.5E+08	2.7E+08	4.6E+08	7.6E+08	1.2E+09	1.9E+09	3.0E+09	4.4E+09	6.5E+09	9.3E+09	1.3E+10	1.8E+10	2.4E+10	3.3E+10	4.3E+10	5.5E+10	7.0E+10	8.8E+10	1.1E+11
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	3.8E-08	8.4E-09	1.9E-09	4.1E-10	9.1E-11	2.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Te-123	3.5E+03	4.9E+03	6.6E+03	8.7E+03	1.1E+04	1.4E+04	1.8E+04	2.2E+04	2.6E+04	3.1E+04	3.7E+04	4.2E+04	4.8E+04	5.4E+04	6.0E+04	6.6E+04	7.2E+04	7.7E+04	8.2E+04	8.7E+04	9.1E+04	9.4E+04	9.7E+04	9.9E+04
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	1.0E-11	4.9E-11	2.2E-10	9.2E-10	3.6E-09	1.3E-08	4.5E-08	1.5E-07	4.7E-07	1.4E-06	3.9E-06	1.1E-05	2.8E-05	7.0E-05	1.7E-04	4.0E-04	9.0E-04	2.0E-03
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6E-11	7.3E-11	2.0E-10	5.1E-10	1.3E-09	3.1E-09
U-234	0	0	0	0	0	0	0	0	0	2.9E-11	1.3E-10	5.1E-10	2.0E-09	7.1E-09	2.5E-08	8.0E-08	2.5E-07	7.6E-07	2.2E-06	6.1E-06	1.6E-05	4.2E-05	1.1E-04	2.6E-04
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-11	3.2E-11	7.8E-11
U-236	0	0	0	0	0	0	0	0	0	0	0	0	2.0E-11	7.4E-11	2.5E-10	8.3E-10	2.6E-09	7.9E-09	2.3E-08	6.3E-08	1.7E-07	4.4E-07	1.1E-06	2.7E-06
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4E-11	4.1E-11	1.2E-10	3.3E-10	8.8E-10	2.3E-09	5.7E-09	1.4E-08
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975
Ac-227	8.5E-03	1.1E-02	1.5E-02	1.9E-02	2.3E-02	2.9E-02	3.5E-02	4.1E-02	4.8E-02	6.3E-02	7.9E-02	9.3E-02	1.1E-01	1.1E-01	1.2E-01	1.2E-01	1.1E-01	9.8E-02	8.3E-02	6.8E-02	5.4E-02
Ag-108m	9.0E+11	1.2E+12	1.6E+12	2.1E+12	2.7E+12	3.5E+12	4.4E+12	5.6E+12	7.0E+12	1.1E+13	1.5E+13	2.2E+13	3.0E+13	4.1E+13	5.7E+13	7.8E+13	1.0E+14	1.3E+14	1.6E+14	2.0E+14	2.4E+14
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	9.3E+05	8.3E+05	7.4E+05	6.6E+05	5.8E+05	5.1E+05	4.5E+05	3.9E+05	3.4E+05	2.5E+05	1.8E+05	1.3E+05	9.2E+04	6.5E+04	4.1E+04	2.5E+04	1.6E+04	9.5E+03	5.7E+03	3.4E+03	2.0E+03
Am-242m	1.2E+05	1.0E+05	8.9E+04	7.7E+04	6.5E+04	5.5E+04	4.7E+04	3.9E+04	3.3E+04	2.3E+04	1.6E+04	1.1E+04	7.0E+03	4.6E+03	2.7E+03	1.5E+03	8.6E+02	4.8E+02	2.6E+02	1.4E+02	7.8E+01
Am-243	2.4E+06	2.2E+06	2.0E+06	1.8E+06	1.6E+06	1.4E+06	1.2E+06	1.1E+06	9.7E+05	7.4E+05	5.5E+05	4.1E+05	3.0E+05	2.2E+05	1.4E+05	9.2E+04	5.9E+04	3.7E+04	2.3E+04	1.4E+04	8.6E+03
Ba-133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	9.3E+09	1.2E+10	1.6E+10	2.1E+10	2.6E+10	3.3E+10	4.2E+10	5.2E+10	6.4E+10	9.4E+10	1.3E+11	1.9E+11	2.6E+11	3.4E+11	4.7E+11	6.3E+11	8.2E+11	1.0E+12	1.3E+12	1.6E+12	1.9E+12
Bi-207	1.7E+10	1.2E+10	8.9E+09	6.4E+09	4.6E+09	3.3E+09	2.4E+09	1.7E+09	1.2E+09	5.9E+08	2.8E+08	1.4E+08	6.4E+07	3.0E+07	1.1E+07	4.3E+06	1.6E+06	5.7E+05	2.1E+05	7.4E+04	2.6E+04
Bi-210m	1.4E+11	1.3E+11	1.2E+11	1.1E+11	9.5E+10	8.5E+10	7.5E+10	6.6E+10	5.8E+10	4.5E+10	3.4E+10	2.5E+10	1.8E+10	1.3E+10	8.7E+09	5.6E+09	3.6E+09	2.3E+09	1.4E+09	8.7E+08	5.3E+08
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-14	0	0	0	0	0	0	0	0	0	0	1.8E-11	9.3E-11	4.4E-10	1.9E-09	1.1E-08	5.7E-08	2.7E-07	1.1E-06	4.4E-06	1.6E-05	5.5E-05
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113	1.1E+02	9.8E+01	8.9E+01	8.0E+01	7.2E+01	6.4E+01	5.7E+01	5.0E+01	4.4E+01	3.4E+01	2.6E+01	1.9E+01	1.4E+01	1.0E+01	6.6E+00	4.3E+00	2.7E+00	1.7E+00	1.1E+00	6.6E-01	4.0E-01
Cd-113m	3.3E+03	1.8E+03	1.0E+03	5.6E+02	3.1E+02	1.7E+02	9.0E+01	4.9E+01	2.6E+01	7.5E+00	2.1E+00	5.9E-01	1.6E-01	4.4E-02	8.4E-03	1.6E-03	3.0E-04	5.5E-05	1.0E-05	1.8E-06	3.2E-07
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	6.5E+02	3.5E+02	1.9E+02	1.0E+02	5.6E+01	3.0E+01	1.6E+01	8.3E+00	4.4E+00	1.2E+00	3.2E-01	8.6E-02	2.3E-02	5.9E-03	1.1E-03	1.9E-04	3.4E-05	5.9E-06	1.0E-06	1.7E-07	2.9E-08
Eu-154	1.3E-05	5.2E-06	2.1E-06	8.4E-07	3.4E-07	1.3E-07	5.3E-08	2.1E-08	8.2E-09	1.3E-09	1.9E-10	2.8E-11	0	0	0	0	0	0	0	0	0
Eu-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	9.9E+11	1.0E+12	1.1E+12	1.1E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.1E+12	1.1E+12	9.7E+11	8.6E+11	7.4E+11	6.2E+11	5.1E+11	4.2E+11	3.4E+11	2.6E+11
Gd-148	2.5E+13	2.1E+13	1.7E+13	1.4E+13	1.2E+13	9.5E+12	7.7E+12	6.2E+12	5.0E+12	3.2E+12	2.0E+12	1.2E+12	7.4E+11	4.5E+11	2.3E+11	1.2E+11	6.0E+10	3.0E+10	1.5E+10	7.3E+09	3.5E+09
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	7.2E-11	4.9E-10	3.0E-09	1.7E-08	1.3E-07	8.6E-07	5.2E-06	2.8E-05	1.4E-04	6.1E-04	2.5E-03
Ho-166m	5.3E+11	6.9E+11	9.0E+11	1.2E+12	1.5E+12	1.8E+12	2.3E+12	2.8E+12	3.5E+12	5.1E+12	7.2E+12	9.9E+12	1.3E+13	1.8E+13	2.4E+13	3.2E+13	4.1E+13	5.1E+13	6.2E+13	7.4E+13	8.7E+13
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mn-53	5.2E-06	1.3E-05	3.0E-05	6.8E-05	1.5E-04	3.3E-04	7.1E-04	1.5E-03	3.0E-03	1.2E-02	4.2E-02	1.4E-01	4.4E-01	1.3E+00	4.7E+00	1.6E+01	4.8E+01	1.4E+02	3.7E+02	9.4E+02	2.3E+03
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	3.5E+14	3.8E+14	4.2E+14	4.5E+14	4.9E+14	5.2E+14	5.5E+14	5.8E+14	6.0E+14	6.5E+14	6.8E+14	7.0E+14	7.0E+14	7.0E+14	6.7E+14	6.3E+14	5.7E+14	5.1E+14	4.5E+14	3.9E+14	3.3E+14
Nb-92	1.3E+10	1.4E+10	1.6E+10	1.7E+10	1.9E+10	2.0E+10	2.1E+10	2.3E+10	2.4E+10	2.6E+10	2.8E+10	2.9E+10	3.0E+10	3.1E+10	3.0E+10	2.9E+10	2.7E+10	2.5E+10	2.3E+10	2.0E+10	1.7E+10
Nb-93m	7.7E+04	5.5E+04	4.0E+04	2.8E+04	2.0E+04	1.4E+04	9.7E+03	6.7E+03	4.6E+03	2.1E+03	9.6E+02	4.3E+02	1.9E+02	7.9E+01	2.7E+01	8.7E+00	2.8E+00	8.7E-01	2.7E-01	8.1E-02	2.4E-02
Nb-94	1.4E+06	1.6E+06	1.8E+06	1.9E+06	2.1E+06	2.3E+06	2.4E+06	2.6E+06	2.7E+06	3.0E+06	3.2E+06	3.3E+06	3.4E+06	3.4E+06	3.4E+06	3.3E+06	3.1E+06	2.8E+06	2.5E+06	2.2E+06	1.9E+06
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-11	8.0E-11	4.5E-10	2.3E-09	1.1E-08	4.5E-08
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	9.7E+01	1.4E+02	2.0E+02	2.8E+02	3.8E+02	5.2E+02	7.1E+02	9.4E+02	1.2E+03	2.1E+03	3.5E+03	5.5E+03	8.4E+03	1.2E+04	2.0E+04	3.0E+04	4.5E+04	6.4E+04	8.9E+04	1.2E+05	1.6E+05
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	3.6E-01	7.6E-01	1.6E+00	3.2E+00	6.3E+00	1.2E+01	2.3E+01	4.3E+01	7.8E+01	2.4E+02	7.2E+02	2.0E+03	5.2E+03	1.3E+04	3.8E+04	1.0E+05	2.6E+05	6.4E+05	1.5E+06	3.2E+06	6.6E+06
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	1.1E+08	7.7E+07	5.3E+07	3.7E+07	2.5E+07	1.7E+07	1.2E+07	8.1E+06	5.5E+06	2.5E+06	1.2E+06	5.3E+05	2.4E+05	1.1E+05	3.9E+04	1.4E+04	5.1E+03	1.8E+03	6.5E+02	2.3E+02	8.0E+01
Pm-145	0	0	1.3E-11	2.0E-11	3.1E-11	4.7E-11	6.8E-11	9.7E-11	1.3E-10	2.5E-10	4.1E-10	6.5E-10	9.5E-10	1.3E-09	1.8E-09	2.3E-09	2.7E-09	2.9E-09	3.0E-09	3.0E-09	2.7E-09
Pm-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	0	0	0	0	0	1.9E-11	5.1E-11	1.4E-10	3.6E-10	2.2E-09	1.2E-08	6.1E-08	2.8E-07	1.2E-06	6.3E-06	3.0E-05	1.3E-04	5.1E-04	1.9E-03	6.2E-03	1.9E-02

TABLE [illegible].17.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE with 100-FOLD PERMEABILITY INCREASE (1.717 CM/YR INFILTRATION)

NUCLIDE:	620	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975
Pt-193	9.5E+11	7.2E+11	5.4E+11	4.1E+11	3.0E+11	2.3E+11	1.7E+11	1.2E+11	9.1E+10	4.8E+10	2.5E+10	1.3E+10	6.8E+09	3.4E+09	1.5E+09	6.1E+08	2.5E+08	1.0E+08	4.1E+07	1.6E+07	6.5E+06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.2E-11
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.0E-11
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3E-11
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1E-11
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	1.7E+13	1.6E+13	1.4E+13	1.3E+13	1.2E+13	1.0E+13	9.1E+12	8.1E+12	7.1E+12	5.4E+12	4.1E+12	3.0E+12	2.2E+12	1.6E+12	1.1E+12	6.9E+11	4.4E+11	2.8E+11	1.7E+11	1.1E+11	6.5E+10
Si-32	1.4E+07	7.2E+06	3.7E+06	1.9E+06	1.0E+06	5.2E+05	2.7E+05	1.4E+05	7.1E+04	1.9E+04	4.9E+03	1.3E+03	3.4E+02	8.7E+01	1.6E+01	3.0E+00	5.5E-01	1.0E-01	1.8E-02	3.3E-03	6.0E-04
Sm-151	1.3E+11	1.6E+11	1.9E+11	2.3E+11	2.7E+11	3.1E+11	3.6E+11	4.1E+11	4.7E+11	5.8E+11	7.1E+11	8.4E+11	9.6E+11	1.1E+12	1.2E+12	1.3E+12	1.4E+12	1.5E+12	1.5E+12	1.5E+12	1.4E+12
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Te-123	1.0E+05	1.0E+05	1.0E+05	9.9E+04	9.8E+04	9.5E+04	9.3E+04	9.0E+04	8.6E+04	7.9E+04	7.0E+04	6.1E+04	5.3E+04	4.5E+04	3.6E+04	2.8E+04	2.2E+04	1.6E+04	1.2E+04	9.0E+03	6.5E+03
Th-229	0	0	0	0	0	0	0	0	0	0	1.3E-11	9.0E-11	5.7E-10	3.3E-09	2.6E-08	1.8E-07	1.1E-06	6.3E-06	3.2E-05	1.5E-04	6.4E-04
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	5.9E-11	3.4E-10	2.7E-09	1.9E-08	1.2E-07	6.6E-07	3.3E-06	1.6E-05	6.7E-05
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8E-11	8.4E-11	3.6E-10
Ti-44	0	0	0	0	0	0	0	0	0	0	0	1.7E-11	8.4E-11	3.9E-10	2.3E-09	1.2E-08	5.9E-08	2.5E-07	9.7E-07	3.4E-06	1.1E-05
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	4.2E-03	8.7E-03	1.7E-02	3.4E-02	6.6E-02	1.2E-01	2.2E-01	4.0E-01	7.1E-01	2.0E+00	5.5E+00	1.4E+01	3.3E+01	7.4E+01	1.9E+02	4.4E+02	9.8E+02	2.0E+03	3.9E+03	7.3E+03	1.3E+04
U-233	7.3E-09	1.7E-08	3.7E-08	8.0E-08	1.7E-07	3.5E-07	7.1E-07	1.4E-06	2.7E-06	9.7E-06	3.2E-05	9.9E-05	2.9E-04	7.8E-04	2.6E-03	7.8E-03	2.2E-02	5.9E-02	1.5E-01	3.5E-01	7.9E-01
U-234	6.0E-04	1.4E-03	3.1E-03	6.7E-03	1.4E-02	2.9E-02	5.9E-02	1.2E-01	2.3E-01	8.1E-01	2.7E+00	8.2E+00	2.4E+01	6.5E+01	2.1E+02	6.5E+02	1.8E+03	4.9E+03	1.2E+04	2.9E+04	6.6E+04
U-235	1.8E-10	4.2E-10	9.4E-10	2.0E-09	4.3E-09	9.0E-09	1.8E-08	3.6E-08	6.9E-08	2.5E-07	8.1E-07	2.5E-06	7.3E-06	2.0E-05	6.5E-05	2.0E-04	5.6E-04	1.5E-03	3.7E-03	8.9E-03	2.0E-02
U-236	6.3E-06	1.4E-05	3.2E-05	6.9E-05	1.5E-04	3.0E-04	6.1E-04	1.2E-03	2.4E-03	8.4E-03	2.8E-02	8.5E-02	2.5E-01	6.8E-01	2.2E+00	6.7E+00	1.9E+01	5.0E+01	1.3E+02	3.0E+02	6.8E+02
U-238	3.3E-08	7.5E-08	1.7E-07	3.6E-07	7.7E-07	1.6E-06	3.2E-06	6.3E-06	1.2E-05	4.4E-05	1.4E-04	4.4E-04	1.3E-03	3.5E-03	1.2E-02	3.5E-02	9.9E-02	2.6E-01	6.6E-01	1.6E+00	3.6E+00
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	4.2E-11	3.3E-10	2.3E-09	1.4E-08	8.1E-08	4.1E-07	1.9E-06	8.2E-06

TABLE A.7.18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	YEAR TO EXCEED:	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Ac-227	530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ag-108m	255	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Al-26	24	0	4E-05	0.091	5.7	60	220	400	450	360	150	41	8.6	1.5	0.22	0.031	0.0039	0.00047	5.5E-05	6.1E-06	6.6E-07	7E-08	7.3E-09	7.4E-10
Am-241	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4E-11	4.4E-10	9E-09	1.3E-07	1.5E-06
Am-242m	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1E-11	3.3E-10	6.7E-09	9.8E-08	1.1E-06
Am-243	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6E-11	5E-10	1E-08	1.5E-07	1.7E-06
Ba-133	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Be-10	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bi-207	95	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-11	2.6E-08	4.2E-06	3.3E-04	1.5E-02	4.2E-01	7.8E+00	1.0E+02	1.1E+03
Bi-210m	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1E-10	1.8E-08	9.1E-07	2.8E-05	0.00059	0.0089	0.1
Bk-247	21	0	6E-08	0.00013	0.0083	0.087	0.32	0.57	0.65	0.52	0.22	0.06	0.012	0.0021	0.00032	4.4E-05	5.6E-06	6.7E-07	7.8E-08	8.6E-09	9.3E-10	9.8E-11	1E-11	0
C-14	-1	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ca-41	35	0	0	7.0E-08	2.9E-04	5.8E-02	2.1E+00	2.6E+01	1.6E+02	5.9E+02	2.4E+03	5.0E+03	6.3E+03	5.6E+03	3.8E+03	2.2E+03	1.1E+03	4.6E+02	1.8E+02	6.8E+01	2.4E+01	8.0E+00	2.6E+00	8.1E-01
Cd-113	275	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-11
Cd-113m	90	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-11	1.8E-08	2.6E-06	1.8E-04	7.1E-03	1.7E-01	2.8E+00	3.3E+01	2.9E+02
Cf-249	21	0	9E-08	0.0002	0.012	0.13	0.47	0.84	0.94	0.76	0.31	0.085	0.018	0.003	0.00045	6.1E-05	7.7E-06	9.2E-07	1.1E-07	1.2E-08	1.2E-09	1.3E-10	1.3E-11	0
Cf-250	9	0	0.033	61	3300	29000	90000	140000	140000	93000	30000	6300	1600	130	15	1.6	0.16	0.015	0.0013	0.00011	9.3E-06	7.6E-07	6E-08	4.7E-09
Cf-251	9	0	0.5	460	12000	56000	87000	68000	33000	11000	1200	78	4	0.17	0.0062	0.00021	6.5E-06	1.9E-07	5.4E-09	1.5E-10	0	0	0	0
Cf-252	6	0	26000	2.6E+07	7.4E+08	3.5E+09	5.9E+09	4.9E+09	2.5E+09	9.2E+08	1E+08	7700000	440000	20000	830	31	1.1	0.035	0.0011	3.3E-05	9.6E-07	2.7E-08	7.7E-10	2.1E-11
Cl-36	24	0	0.0002	0.38	24	250	910	1700	1900	1500	630	170	36	6.2	0.94	0.13	0.017	0.002	0.00023	2.6E-05	2.8E-06	2.9E-07	3.1E-08	3.1E-09
Cm-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-248	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-137	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	100	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-11	1.2E-08	1.7E-06	1.2E-04	4.6E-03	1.1E-01	1.8E+00	2.1E+01	1.8E+02
Eu-154	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9E-09	3.5E-07	2.1E-05	0.00069	0.014	0.2	2	15
Eu-155	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.3E-11	9.4E-10	6.8E-09	3.7E-08
Fe-55	-1	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fe-60	145	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-11	4.5E-10	1.4E-08
Gd-148	85	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-11	3.5E-08	6.1E-06	5.2E-04	2.5E-02	7.3E-01	1.5E+01	2.1E+02	2.2E+03
H-3	15	0	5.4E-05	2.1E+01	3.2E+04	3.1E+06	6.2E+07	4.7E+08	1.8E+09	4.5E+09	9.8E+09	1.1E+10	7.8E+09	4.0E+09	1.6E+09	5.5E+08	1.7E+08	4.5E+07	1.1E+07	2.6E+06	5.9E+05	1.3E+05	2.6E+04	5.2E+03
Hg-194	925	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ho-166m	245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	24	0	0	0	1.2E-09	1.1E-05	0.0066	0.7	24	360	10000	110000	550000	1800000	4100000	7200000	1E+07	1.2E+07	1.2E+07	1.1E+07	8700000	6500000	4500000	2900000
K-40	27	0	0	0	2.3E-10	9.9E-06	0.018	4.7	320	8600	510000	9400000	7.9E+07	3.8E+08	1.2E+09	3E+09	5.7E+09	8.9E+09	1.2E+10	1.4E+10	1.5E+10	1.4E+10	1.2E+10	9.9E+09
Mn-53	875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	6	0	25000	2.4E+07	6.8E+08	3.2E+09	5.3E+09	4.3E+09	2.2E+09	7.9E+08	8.7E+07	6300000	350000	16000	630	23	0.77	0.024	0.00074	2.2E-05	6.2E-07	1.7E-08	4.8E-10	1.3E-11
Nb-91	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.6E-11	2.3E-09
Nb-92	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-93m	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9E-11	1.5E-09
Nb-94	285	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-59	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	75	0	0	0	0	0	0	0	0	0	0	1.3E-10	2.5E-07	0.0001	0.014	0.76	22	390	4500	37000	230000	1200000	4700000	1.6E+07
Pm-145	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pm-147	-1	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-208	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Po-209	850	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

TABLE [illegible]7.18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
Ac-227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00
Ag-108m	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-11	3.4E-10	3.5E-09	3.1E-08	2.4E-07	1.7E-06	0.00001	5.8E-05	0.0003	0.0014	0.0061	0.025	0.094	0.34
Al-26	7.5E-11	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Am-241	1.3E-05	9.3E-05	0.00055	0.0028	0.012	0.047	0.16	5.1E-01	1.4E+00	3.8E+00	9.4E+00	2.2E+01	4.7E+01	9.8E+01	1.9E+02	3.6E+02	6.5E+02	1.1E+03	1.9E+03	3.0E+03	4.8E+03	7.3E+03	1.1E+04	1.6E+04
Am-242m	9.3E-06	6.5E-05	0.00038	0.0019	0.008	0.03	0.1	3.2E-01	9.0E-01	2.3E+00	5.7E+00	1.3E+01	2.7E+01	5.6E+01	1.1E+02	2.0E+02	3.5E+02	6.0E+02	9.8E+02	1.6E+03	2.4E+03	3.6E+03	5.3E+03	7.6E+03
Am-243	1.5E-05	0.00011	0.00065	0.0033	0.015	0.057	0.2	0.62	1.8	4.8	12	28	61	130	250	470	850	1500	2500	4100	6500	10000	15000	22000
Ba-133	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Be-10	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-11	1.0E-10	8.9E-10	6.7E-09	4.5E-08	2.7E-07	1.5E-06	7.4E-06	3.4E-05	1.4E-04	5.6E-04	2.0E-03	7.0E-03	2.3E-02
Bi-207	8.3E+03	5.3E+04	2.8E+05	1.3E+06	5.1E+06	1.8E+07	5.6E+07	1.6E+08	4.1E+08	9.8E+08	2.2E+09	4.5E+09	8.9E+09	1.7E+10	2.9E+10	5E+10	8.1E+10	1.3E+11	1.9E+11	2.8E+11	4E+11	5.4E+11	7.3E+11	9.6E+11
Bi-210m	0.88	6.3	37	190	840	3300	11000	36000	100000	280000	690000	1600000	3500000	7300000	1.4E+07	2.7E+07	4.9E+07	8.6E+07	1.4E+08	2.4E+08	3.7E+08	5.8E+08	8.6E+08	1.3E+09
Bk-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0	0	0	0	0
Ca-41	2.4E-01	7.2E-02	2.1E-02	6.0E-03	1.7E-03	4.6E-04	1.3E-04	3.4E-05	9.2E-06	2.5E-06	6.5E-07	1.7E-07	4.5E-08	1.2E-08	3E-09	7.8E-10	2E-10	5.1E-11	1.3E-11	0	0	0	0	0
Cd-113	6.7E-10	4.8E-09	2.8E-08	1.4E-07	6.4E-07	2.5E-06	8.6E-06	2.7E-05	7.9E-05	2.1E-04	5.2E-04	1.2E-03	0.0027	0.0055	0.011	0.021	0.037	0.065	0.11	0.18	0.28	0.44	0.66	0.96
Cd-113m	2.0E+03	1.1E+04	5.2E+04	2.1E+05	7.1E+05	2.2E+06	5.9E+06	1.5E+07	3.3E+07	6.9E+07	1.3E+08	2.4E+08	4.2E+08	6.8E+08	1E+09	1.5E+09	2.2E+09	3E+09	3.9E+09	5E+09	6.2E+09	7.5E+09	8.8E+09	1E+10
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	3.7E-10	2.8E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.2E-10	3.2E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cm-248	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Co-60	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cs-135	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cs-137	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Eu-152	1.2E+03	6.8E+03	3.1E+04	1.2E+05	4.2E+05	1.3E+06	3.4E+06	8.3E+06	1.8E+07	3.8E+07	7.3E+07	1.3E+08	2.2E+08	3.6E+08	5.5E+08	8.0E+08	1.1E+09	1.5E+09	2.0E+09	2.5E+09	3.1E+09	3.6E+09	4.2E+09	4.8E+09
Eu-154	88	420	1700	5700	17000	43000	100000	210000	410000	730000	1200000	1900000	2800000	3800000	5100000	6400000	7700000	9000000	1E+07	1.1E+07	1.2E+07	1.2E+07	1.2E+07	1.2E+07
Eu-155	1.6E-07	5.4E-07	1.6E-06	3.8E-06	8.1E-06	1.5E-05	2.6E-05	3.9E-05	5.4E-05	0.00007	8.4E-05	9.4E-05	0.0001	0.0001	9.6E-05	8.7E-05	7.6E-05	6.4E-05	5.2E-05	4.1E-05	3.2E-05	2.3E-05	1.7E-05	1.2E-05
Fe-55	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fe-60	3.0E-07	4.8E-06	6.1E-05	6.2E-04	5.2E-03	3.7E-02	2.2E-01	1.2E+00	5.5E+00	2.3E+01	8.9E+01	3.1E+02	9.9E+02	2.9E+03	8.2E+03	2.1E+04	5.3E+04	1.2E+05	2.8E+05	5.9E+05	1.2E+06	2.4E+06	4.5E+06	8.2E+06
Gd-148	1.9E+04	1.3E+05	7.3E+05	3.5E+06	1.5E+07	5.5E+07	1.8E+08	5.6E+08	1.5E+09	3.9E+09	9.2E+09	2.1E+10	4.3E+10	8.5E+10	1.6E+11	2.9E+11	5.0E+11	8.4E+11	1.3E+12	2.1E+12	3.2E+12	4.7E+12	6.7E+12	9.3E+12
H-3	1.0E+03	2.0E+02	3.7E+01	6.9E+00	1.3E+00	2.3E-01	4.1E-02	7.2E-03	1.3E-03	2.2E-04	3.8E-05	6.6E-06	1.1E-06	1.9E-07	3.3E-08	5.6E-09	9.5E-10	1.6E-10	2.7E-11	0	0	0	0	0
Hg-194	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ho-166m	0	0	0	0	0	0	0	0	0	6.7E-11	7.8E-10	7.7E-09	6.6E-08	5E-07	3.4E-06	0.00002	1.1E-04	5.4E-04	2.5E-03	1.0E-02	4.1E-02	1.5E-01	5.1E-01	1.6E+00
I-129	1800000	1100000	620000	350000	190000	98000	51000	26000	13000	6200	3000	1400	670	310	150	67	30	14	6.2	2.8	1.2	0.55	0.24	0.11
K-40	7.6E+09	5.5E+09	3.9E+09	2.6E+09	1.7E+09	1.1E+09	6.4E+08	3.9E+08	2.3E+08	1.3E+08	7.3E+07	4.1E+07	2.3E+07	1.2E+07	6600000	3500000	1900000	970000	500000	260000	130000	68000	34000	17000
Mn-53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Nb-91	7.7E-08	1.9E-06	3.4E-05	0.00048	0.0055	0.052	0.41	2.8	16	85	400	1700	6400	23000	74000	220000	640000	1700000	4300000	1E+07	2.4E+07	5.3E+07	1.1E+08	2.3E+08
Nb-92	0	4E-11	7.4E-10	1.1E-08	1.2E-07	1.1E-06	9.1E-06	6.2E-05	0.00037	0.0019	0.009	0.038	0.15	0.52	1.7	5.2	15	40	100	250	580	1300	2700	5500
Nb-93m	4.2E-08	8.3E-07	1.2E-05	0.00014	0.0013	0.01	0.064	0.35	1.7	7.1	27	91	280	810	2100	5300	12000	26000	54000	110000	200000	350000	610000	1000000
Nb-94	0	0	0	0	1.4E-11	1.3E-10	1.1E-09	7.2E-09	4.2E-08	2.2E-07	1E-06	4.4E-06	1.7E-05	0.00006	0.0002	0.0006	0.0017	0.0046	0.012	0.029	0.066	0.15	0.31	0.64
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	5E+07	1.3E+08	3.2E+08	7.1E+08	1.4E+09	2.7E+09	4.9E+09	8.2E+09	1.3E+10	2E+10	2.9E+10	4.1E+10	5.6E+10	7.4E+10	9.6E+10	1.2E+11	1.5E+11	1.7E+11	2E+11	2.3E+11	2.6E+11	2.9E+11	3.1E+11	3.4E+11
Pm-145	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pm-147	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-209	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

TABLE [illegible].18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-11	7.2E-11	2.0E-10	5.3E-10	3.4E-09	1.9E-08	9.2E-08	4.0E-07	1.6E-06	5.5E-06	1.8E-05	5.3E-05
Ag-108m	1.1	3.6	11	31	85	220	560	1400	3200	7200	16000	34000	70000	140000	280000	530000	1800000	5700000	1.7E+07	4.5E+07	1.2E+08	2.8E+08	6.3E+08	1.4E+09
Al-26	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Am-241	2.2E+04	3.1E+04	4.2E+04	5.6E+04	7.4E+04	9.6E+04	1.2E+05	1.5E+05	1.9E+05	2.3E+05	2.8E+05	3.4E+05	4.0E+05	4.7E+05	5.4E+05	6.2E+05	8.0E+05	1.0E+06	1.2E+06	1.4E+06	1.6E+06	1.8E+06	1.9E+06	2.1E+06
Am-242m	1.1E+04	1.4E+04	1.9E+04	2.6E+04	3.3E+04	4.2E+04	5.3E+04	6.5E+04	7.9E+04	9.6E+04	1.1E+05	1.3E+05	1.6E+05	1.8E+05	2.0E+05	2.3E+05	2.9E+05	3.5E+05	4.0E+05	4.6E+05	5.0E+05	5.4E+05	5.7E+05	5.9E+05
Am-243	31000	44000	60000	81000	110000	140000	180000	230000	290000	350000	430000	520000	620000	730000	850000	980000	1300000	1600000	2000000	2400000	2700000	3100000	3400000	3700000
Ba-133	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Be-10	7.0E-02	2.0E-01	5.7E-01	1.5E+00	3.9E+00	9.4E+00	2.2E+01	5.1E+01	1.1E+02	2.4E+02	5.0E+02	1.0E+03	2.0E+03	3.8E+03	7.0E+03	1.3E+04	4.0E+04	1.2E+05	3.1E+05	7.9E+05	1.9E+06	4.3E+06	9.2E+06	1.9E+07
Bi-207	1.2E+12	1.5E+12	1.9E+12	2.3E+12	2.7E+12	3.2E+12	3.7E+12	4.2E+12	4.7E+12	5.2E+12	5.7E+12	6.1E+12	6.5E+12	6.9E+12	7.3E+12	7.5E+12	7.9E+12	8E+12	7.9E+12	7.5E+12	7E+12	6.3E+12	5.6E+12	4.9E+12
Bi-210m	1.8E+09	2.5E+09	3.5E+09	4.7E+09	6.2E+09	8.1E+09	1E+10	1.3E+10	1.7E+10	2E+10	2.5E+10	3E+10	3.6E+10	4.2E+10	4.9E+10	5.7E+10	7.5E+10	9.4E+10	1.2E+11	1.4E+11	1.6E+11	1.8E+11	2E+11	2.1E+11
Bk-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113	1.4	1.9	2.6	3.6	4.7	6.2	7.9	10	13	16	19	23	27	32	38	44	57	72	88	100	120	140	150	160
Cd-113m	1.1E+10	1.2E+10	1.3E+10	1.4E+10	1.5E+10	1.5E+10	1.5E+10	1.5E+10	1.4E+10	1.4E+10	1.3E+10	1.3E+10	1.2E+10	1.1E+10	9.9E+09	8.9E+09	7.1E+09	5.5E+09	4.1E+09	3E+09	2.1E+09	1.5E+09	9.9E+08	6.6E+08
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cm-248	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Co-60	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0
Cs-135	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cs-137	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Eu-152	5.3E+09	5.8E+09	6.1E+09	6.4E+09	6.5E+09	6.6E+09	6.6E+09	6.4E+09	6.2E+09	5.9E+09	5.6E+09	5.2E+09	4.8E+09	4.4E+09	4E+09	3.6E+09	2.8E+09	2.1E+09	1.5E+09	1.1E+09	7.6E+08	5.2E+08	3.4E+08	2.2E+08
Eu-154	1.1E+07	1.1E+07	9700000	8700000	7700000	6700000	5800000	4900000	4100000	3400000	2700000	2200000	1800000	1400000	1100000	840000	490000	280000	150000	80000	41000	21000	10000	4900
Eu-155	8.3E-06	5.6E-06	3.7E-06	2.4E-06	1.6E-06	9.8E-07	6.1E-07	3.7E-07	2.2E-07	1.3E-07	7.9E-08	4.6E-08	2.6E-08	1.5E-08	8.5E-09	4.7E-09	1.4E-09	4.2E-10	1.2E-10	3.4E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fe-55	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0
Fe-60	1.5E+07	2.5E+07	4.3E+07	7.0E+07	1.1E+08	1.7E+08	2.7E+08	4.0E+08	5.9E+08	8.5E+08	1.2E+09	1.7E+09	2.3E+09	3.2E+09	4.3E+09	5.7E+09	9.6E+09	1.5E+10	2.4E+10	3.6E+10	5.2E+10	7.3E+10	1.0E+11	1.3E+11
Gd-148	1.3E+13	1.7E+13	2.2E+13	2.9E+13	3.6E+13	4.5E+13	5.6E+13	6.7E+13	8E+13	9.5E+13	1.1E+14	1.3E+14	1.4E+14	1.6E+14	1.8E+14	2E+14	2.4E+14	2.7E+14	3.1E+14	3.3E+14	3.5E+14	3.6E+14	3.6E+14	3.6E+14
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ho-166m	5.0E+00	1.5E+01	4.1E+01	1.1E+02	2.7E+02	6.7E+02	1.6E+03	3.6E+03	7.9E+03	1.7E+04	3.5E+04	7.0E+04	1.4E+05	2.6E+05	4.8E+05	8.8E+05	2.8E+06	7.9E+06	2.1E+07	5.3E+07	1.3E+08	2.8E+08	6.1E+08	1.2E+09
I-129	0.047	0.02	0.0088	0.0038	0.0017	0.00071	0.00031	0.00013	5.6E-05	2.4E-05	0.00001	4.4E-06	1.9E-06	7.9E-07	3.3E-07	1.4E-07	2.5E-08	4.5E-09	7.9E-10	1.4E-10	2.5E-11	0	0	0
K-40	8700	4400	2200	1100	530	260	130	63	31	15	7.4	3.6	1.7	0.84	0.4	0.19	0.045	0.01	0.0024	0.00054	0.00012	2.7E-05	6.2E-06	1.4E-06
Mn-53	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Na-22	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Nb-91	4.5E+08	8.5E+08	1.6E+09	2.8E+09	4.8E+09	8.2E+09	1.4E+10	2.2E+10	3.5E+10	5.4E+10	8.2E+10	1.2E+11	1.8E+11	2.6E+11	3.7E+11	5.2E+11	9.7E+11	1.7E+12	3E+12	4.9E+12	7.7E+12	1.2E+13	1.7E+13	2.5E+13
Nb-92	11000	21000	38000	69000	120000	210000	340000	550000	880000	1400000	2100000	3200000	4700000	6800000	9700000	1.4E+07	2.6E+07	4.7E+07	8.1E+07	1.3E+08	2.1E+08	3.3E+08	4.9E+08	7.2E+08
Nb-93m	1600000	2400000	3600000	5300000	7400000	1E+07	1.4E+07	1.8E+07	2.3E+07	2.9E+07	3.6E+07	4.3E+07	5.1E+07	6E+07	6.9E+07	7.9E+07	9.7E+07	1.1E+08	1.3E+08	1.4E+08	1.4E+08	1.4E+08	1.4E+08	1.3E+08
Nb-94	1.3	2.4	4.4	7.9	14	24	39	64	100	160	240	360	530	780	1100	1600	3000	5400	9300	15000	25000	38000	57000	82000
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0	0	2.1E-11	7E-11	2.2E-10	6.5E-10	1.8E-09	5E-09	1.3E-08	3.3E-08	8.1E-08	1.9E-07	4.4E-07	9.7E-07	2.1E-06	4.4E-06	1.8E-05	6.6E-05	0.00023	0.00071	0.0021	0.0057	0.015	0.036
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pa-231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4E-11	1.9E-10	1.4E-09	8.6E-09	5E-08
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	3.5E+11	3.7E+11	3.7E+11	3.8E+11	3.8E+11	3.7E+11	3.6E+11	3.5E+11	3.3E+11	3.1E+11	2.9E+11	2.7E+11	2.5E+11	2.3E+11	2.1E+11	1.9E+11	1.5E+11	1.2E+11	9.1E+10	6.9E+10	5.1E+10	3.7E+10	2.6E+10	1.9E+10
Pm-145	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pm-147	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-208	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-209	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE [illegible].18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620
Ac-227	1.5E-04	3.8E-04	9.2E-04	2.1E-03	4.5E-03	9.2E-03	1.8E-02	3.4E-02	6.0E-02	1.0E-01	1.7E-01	2.7E-01	4.1E-01	6.2E-01	9.0E-01	1.3E+00	1.7E+00	2.3E+00	3.0E+00	3.9E+00	4.9E+00	6.0E+00	7.2E+00	8.5E+00
Ag-108m	2.8E+09	5.6E+09	1.1E+10	2E+10	3.5E+10	6.1E+10	1E+11	1.6E+11	2.6E+11	4.1E+11	6.1E+11	9.1E+11	1.3E+12	1.9E+12	2.6E+12	3.6E+12	4.9E+12	6.6E+12	8.7E+12	1.1E+13	1.4E+13	1.8E+13	2.3E+13	2.8E+13
Al-26	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Am-241	2.1E+06	2.2E+06	2.2E+06	2.2E+06	2.1E+06	2.0E+06	1.9E+06	1.8E+06	1.6E+06	1.5E+06	1.3E+06	1.2E+06	1.1E+06	9.2E+05	8.0E+05	6.9E+05	5.9E+05	5.0E+05	4.2E+05	3.5E+05	2.9E+05	2.4E+05	2.0E+05	1.6E+05
Am-242m	5.9E+05	5.8E+05	5.7E+05	5.4E+05	5.1E+05	4.7E+05	4.3E+05	3.9E+05	3.5E+05	3.0E+05	2.6E+05	2.3E+05	1.9E+05	1.6E+05	1.4E+05	1.1E+05	9.5E+04	7.8E+04	6.3E+04	5.1E+04	4.1E+04	3.3E+04	2.6E+04	2.1E+04
Am-243	3900000	4000000	4100000	4100000	4000000	3900000	3800000	3600000	3300000	3100000	2800000	2500000	2300000	2000000	1800000	1600000	1300000	1200000	990000	840000	710000	590000	500000	410000
Ba-133	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Be-10	3.7E+07	7.0E+07	1.3E+08	2.2E+08	3.8E+08	6.3E+08	1.0E+09	1.6E+09	2.5E+09	3.7E+09	5.4E+09	7.8E+09	1.1E+10	1.5E+10	2.1E+10	2.8E+10	3.8E+10	4.9E+10	6.4E+10	8.1E+10	1.0E+11	1.3E+11	1.6E+11	1.9E+11
Bi-207	4.2E+12	3.5E+12	2.8E+12	2.3E+12	1.8E+12	1.4E+12	1.1E+12	8.3E+11	6.2E+11	4.6E+11	3.4E+11	2.5E+11	1.8E+11	1.3E+11	9E+10	6.3E+10	4.4E+10	3E+10	2.1E+10	1.4E+10	9.6E+09	6.5E+09	4.4E+09	2.9E+09
Bi-210m	2.3E+11	2.4E+11	2.4E+11	2.4E+11	2.4E+11	2.3E+11	2.2E+11	2.1E+11	2E+11	1.8E+11	1.7E+11	1.5E+11	1.4E+11	1.2E+11	1.1E+11	9.2E+10	8.0E+10	6.9E+10	5.9E+10	5.0E+10	4.2E+10	3.6E+10	3.0E+10	2.5E+10
Bk-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4E-11	4E-11	1.1E-10
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113	170	180	180	180	180	180	170	160	150	140	130	110	100	91	80	70	61	52	45	38	32	27	23	19
Cd-113m	4.3E+08	2.7E+08	1.7E+08	1E+08	6.2E+07	3.7E+07	2.2E+07	1.3E+07	7200000	4100000	2300000	1300000	690000	380000	200000	110000	57000	30000	16000	8200	4300	2200	1100	570
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cm-248	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cs-137	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Eu-152	1.4E+08	8.7E+07	5.3E+07	3.2E+07	1.9E+07	1.1E+07	6300000	3600000	2000000	1100000	600000	330000	170000	93000	49000	26000	13000	6900	3500	1800	900	450	230	110
Eu-154	2300	1100	490	220	97	42	18	7.6	3.2	1.3	5.4E-01	2.2E-01	8.7E-02	3.4E-02	1.3E-02	5.3E-03	2.0E-03	7.8E-04	3.0E-04	1.1E-04	4.3E-05	1.6E-05	6.0E-06	2.2E-06
Eu-155	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	1.7E+11	2.2E+11	2.8E+11	3.4E+11	4.1E+11	4.8E+11	5.6E+11	6.4E+11	7.2E+11	8E+11	8.8E+11	9.5E+11	1E+12	1.1E+12	1.1E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.2E+12	1.1E+12
Gd-148	3.5E+14	3.3E+14	3E+14	2.8E+14	2.5E+14	2.2E+14	1.9E+14	1.7E+14	1.4E+14	1.2E+14	1E+14	8.2E+13	6.7E+13	5.4E+13	4.4E+13	3.5E+13	2.8E+13	2.2E+13	1.7E+13	1.3E+13	1E+13	7.7E+12	5.8E+12	4.4E+12
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-11	6.7E-11	2.2E-10	7.2E-10
Ho-166m	2.4E+09	4.5E+09	8.2E+09	1.4E+10	2.4E+10	4.0E+10	6.4E+10	1.0E+11	1.5E+11	2.3E+11	3.3E+11	4.8E+11	6.7E+11	9.3E+11	1.3E+12	1.7E+12	2.2E+12	2.9E+12	3.7E+12	4.7E+12	6.0E+12	7.4E+12	9.1E+12	1.1E+13
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
K-40	3.1E-07	6.9E-08	1.5E-08	3.4E-09	7.5E-10	1.7E-10	3.7E-11	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mn-53	0.0E+00	0.0E+00	1.2E-11	6.1E-11	3.0E-10	1.3E-09	5.6E-09	2.2E-08	8.3E-08	2.9E-07	9.7E-07	3.1E-06	9.3E-06	2.7E-05	7.5E-05	2.0E-04	5.1E-04	1.3E-03	3.1E-03	7.1E-03	1.6E-02	3.5E-02	7.5E-02	1.6E-01
Na-22	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	3.5E+13	4.8E+13	6.4E+13	8.3E+13	1.1E+14	1.3E+14	1.6E+14	2E+14	2.4E+14	2.8E+14	3.2E+14	3.7E+14	4.2E+14	4.7E+14	5.2E+14	5.6E+14	6.1E+14	6.5E+14	6.9E+14	7.3E+14	7.5E+14	7.8E+14	8E+14	8.1E+14
Nb-92	1E+09	1.4E+09	1.9E+09	2.5E+09	3.2E+09	4E+09	5E+09	6.1E+09	7.4E+09	8.8E+09	1E+10	1.2E+10	1.4E+10	1.5E+10	1.7E+10	1.9E+10	2.1E+10	2.2E+10	2.4E+10	2.5E+10	2.7E+10	2.8E+10	2.9E+10	3E+10
Nb-93m	1.2E+08	1.1E+08	9.5E+07	8.1E+07	6.8E+07	5.6E+07	4.5E+07	3.6E+07	2.8E+07	2.2E+07	1.7E+07	1.3E+07	9300000	6800000	5000000	3600000	2.5E+06	1.8E+06	1.2E+06	8.5E+05	5.8E+05	4.0E+05	2.7E+05	1.8E+05
Nb-94	120000	160000	210000	280000	360000	460000	570000	700000	850000	1000000	1200000	1400000	1600000	1800000	2.0E+06	2.2E+06	2.4E+06	2.5E+06	2.7E+06	2.9E+06	3.0E+06	3.2E+06	3.3E+06	3.4E+06
Ni-59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ni-63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Np-237	0.085	0.19	0.4	0.82	1.6	3.1	5.7	10	18	30	49	78	120	190	2.9E+02	4.2E+02	6.2E+02	8.9E+02	1.2E+03	1.7E+03	2.4E+03	3.2E+03	4.3E+03	5.7E+03
Os-194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pa-231	2.6E-07	1.2E-06	5.5E-06	2.3E-05	8.7E-05	0.00032	0.0011	0.0035	0.011	0.031	0.086	0.23	0.58	1.4	3.4E+00	7.9E+00	1.7E+01	3.8E+01	7.9E+01	1.6E+02	3.2E+02	6.2E+02	1.2E+03	2.2E+03
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	1.3E+10	9.1E+09	6.2E+09	4.2E+09	2.8E+09	1.9E+09	1.2E+09	8.2E+08	5.4E+08	3.5E+08	2.3E+08	1.4E+08	9.3E+07	5.9E+07	3.7E+07	2.4E+07	1.5E+07	9300000	5800000	3600000	2200000	1400000	860000	530000
Pm-145	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-11	6.2E-11	1.4E-10	3.1E-10	6.4E-10	1.3E-09	2.4E-09	4.5E-09	7.9E-09	1.4E-08	2.2E-08	3.5E-08	5.5E-08	8.2E-08	1.2E-07	1.7E-07
Pm-147	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-208	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-209	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2E-11	7.9E-11	2.7E-10	8.9E-10	2.8E-09	8.5E-09	2.4E-08	6.8E-08	1.8E-07

TABLE A.7.18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Ac-227	9.9E+00	1.1E+01	1.3E+01	1.4E+01	1.5E+01	1.7E+01	1.8E+01	1.9E+01	2.0E+01	2.0E+01	2.0E+01	1.8E+01	1.7E+01	1.4E+01	1.1E+01	8.9E+00	6.6E+00	4.8E+00	3.3E+00	2.3E+00	1.5E+00
Ag-108m	3.5E+13	4.2E+13	5.1E+13	6.1E+13	7.2E+13	8.4E+13	9.8E+13	1.1E+14	1.5E+14	1.9E+14	2.3E+14	2.8E+14	3.4E+14	4.1E+14	4.8E+14	5.5E+14	6.1E+14	6.6E+14	7E+14	7.3E+14	7.5E+14
Al-26	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Am-241	1.3E+05	1.1E+05	8.6E+04	6.9E+04	5.5E+04	4.4E+04	3.5E+04	2.8E+04	1.7E+04	1.1E+04	6.4E+03	3.8E+03	2.3E+03	1.2E+03	6.0E+02	3.0E+02	1.5E+02	7.5E+01	3.7E+01	1.8E+01	8.8E+00
Am-242m	1.6E+04	1.3E+04	1.0E+04	7.8E+03	6.0E+03	4.6E+03	3.6E+03	2.7E+03	1.6E+03	9.1E+02	5.2E+02	2.9E+02	1.6E+02	7.7E+01	3.6E+01	1.7E+01	7.7E+00	3.5E+00	1.6E+00	7.2E-01	3.2E-01
Am-243	340000	280000	230000	190000	150000	120000	99000	80000	51000	32000	20000	12000	7600	4100	2200	1100	590	300	160	79	40
Ba-133	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Be-10	2.3E+11	2.8E+11	3.3E+11	3.9E+11	4.6E+11	5.3E+11	6.1E+11	7.0E+11	9.0E+11	1.1E+12	1.4E+12	1.7E+12	1.9E+12	2.3E+12	2.7E+12	3.0E+12	3.3E+12	3.6E+12	3.7E+12	3.9E+12	3.9E+12
Bi-207	1.9E+09	1.3E+09	8.4E+08	5.5E+08	3.6E+08	2.3E+08	1.5E+08	9.8E+07	4E+07	1.7E+07	6700000	2700000	1100000	330000	100000	31000	9200	2700	810	240	70
Bi-210m	2.0E+10	1.7E+10	1.4E+10	1.1E+10	9.2E+09	7.4E+09	6.0E+09	4.8E+09	3.1E+09	2.0E+09	1.2E+09	7.6E+08	4.7E+08	2.5E+08	1.3E+08	7.0E+07	3.6E+07	1.9E+07	9.6E+06	4.9E+06	2.5E+06
Bk-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
C-14	2.9E-10	7.2E-10	1.8E-09	4.3E-09	1E-08	2.3E-08	5E-08	1.1E-07	4.8E-07	1.9E-06	7.2E-06	2.5E-05	8.1E-05	0.00033	0.0012	0.0041	0.013	0.038	0.11	0.28	0.69
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113	16	13	10	8.6	7	5.6	4.6	3.7	2.3	1.5	0.93	0.58	0.35	0.19	0.1	0.053	0.028	0.014	0.0073	0.0037	0.0019
Cd-113m	290	140	73	36	18	8.9	4.4	2.2	0.52	0.12	0.029	0.0067	0.0015	0.00024	3.8E-05	5.8E-06	8.8E-07	1.3E-07	2E-08	3E-09	4.4E-10
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cm-247	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cm-248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Co-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cs-135	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Cs-137	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Eu-152	56	28	14	6.6	3.2	1.6	0.75	0.36	0.083	0.019	0.0042	0.00094	0.00021	3.1E-05	4.5E-06	6.6E-07	9.5E-08	1.4E-08	1.9E-09	2.7E-10	3.8E-11
Eu-154	8.2E-07	3.0E-07	1.1E-07	4.0E-08	1.5E-08	5.2E-09	1.9E-09	6.8E-10	8.6E-11	1.1E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Eu-155	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fe-55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fe-60	1.1E+12	1E+12	9.8E+11	9.3E+11	8.7E+11	8.1E+11	7.5E+11	7E+11	5.9E+11	4.8E+11	3.9E+11	3.1E+11	2.5E+11	1.8E+11	1.3E+11	9.2E+10	6.4E+10	4.4E+10	3E+10	2E+10	1.3E+10
Gd-148	3.3E+12	2.5E+12	1.9E+12	1.4E+12	1E+12	7.6E+11	5.6E+11	4.1E+11	2.2E+11	1.1E+11	6E+10	3.1E+10	1.6E+10	6.7E+09	2.8E+09	1.2E+09	4.8E+08	2E+08	8E+07	3.2E+07	1.3E+07
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hg-194	2.2E-09	6.6E-09	1.9E-08	5.3E-08	1.4E-07	3.7E-07	9.4E-07	2.3E-06	1.3E-05	6.6E-05	3.1E-04	1.3E-03	5.2E-03	2.6E-02	1.2E-01	5.0E-01	1.9E+00	6.7E+00	2.2E+01	6.8E+01	2.0E+02
Ho-166m	1.3E+13	1.6E+13	1.9E+13	2.2E+13	2.5E+13	2.9E+13	3.4E+13	3.8E+13	4.9E+13	6.0E+13	7.3E+13	8.6E+13	1.0E+14	1.2E+14	1.3E+14	1.5E+14	1.6E+14	1.7E+14	1.8E+14	1.8E+14	1.8E+14
I-129	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
K-40	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mn-53	3.2E-01	6.3E-01	1.2E+00	2.3E+00	4.3E+00	7.8E+00	1.4E+01	2.5E+01	7.2E+01	2.0E+02	5.2E+02	1.3E+03	3.0E+03	8.1E+03	2.1E+04	5.0E+04	1.1E+05	2.4E+05	5.0E+05	9.9E+05	1.9E+06
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nb-91	8.2E+14	8.2E+14	8.1E+14	8E+14	7.9E+14	7.7E+14	7.5E+14	7.2E+14	6.6E+14	5.9E+14	5.2E+14	4.5E+14	3.8E+14	3.1E+14	2.4E+14	1.9E+14	1.4E+14	1E+14	7.7E+13	5.6E+13	4E+13
Nb-92	3E+10	3.1E+10	3.1E+10	3.1E+10	3E+10	3E+10	2.9E+10	2.8E+10	2.7E+10	2.4E+10	2.2E+10	1.9E+10	1.7E+10	1.4E+10	1.1E+10	8.8E+09	6.8E+09	5.2E+09	3.9E+09	2.9E+09	2.1E+09
Nb-93m	1.2E+05	7.7E+04	5.1E+04	3.3E+04	2.1E+04	1.4E+04	8.6E+03	5.5E+03	2.2E+03	8.3E+02	3.2E+02	1.2E+02	4.3E+01	1.2E+01	3.3E+00	9.0E-01	2.4E-01	6.2E-02	1.6E-02	4.0E-03	1.0E-03
Nb-94	3.4E+06	3.5E+06	3.5E+06	3.5E+06	3.4E+06	3.4E+06	3.3E+06	3.2E+06	3.0E+06	2.7E+06	2.5E+06	2.2E+06	1.9E+06	1.6E+06	1.2E+06	9.9E+05	7.7E+05	5.8E+05	4.4E+05	3.3E+05	2.4E+05
Ni-59	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-11	2.7E-11	1.6E-10	8.2E-10	3.9E-09	1.7E-08	7.1E-08	3.7E-07	1.8E-06	7.7E-06	3.0E-05	1.1E-04	3.8E-04	1.2E-03	3.7E-03
Ni-63	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	4.4E-11	1.9E-10	7.8E-10	2.8E-09	9.4E-09	2.9E-08	8.4E-08	2.2E-07	5.7E-07
Np-237	7.4E+03	9.5E+03	1.2E+04	1.5E+04	1.9E+04	2.4E+04	2.9E+04	3.5E+04	5.1E+04	7.2E+04	9.9E+04	1.3E+05	1.7E+05	2.4E+05	3.1E+05	4.0E+05	4.9E+05	6.0E+05	7.1E+05	8.3E+05	9.5E+05
Os-194	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pa-231	3.9E+03	7.0E+03	1.2E+04	2.1E+04	3.5E+04	5.8E+04	9.5E+04	1.5E+05	3.7E+05	8.7E+05	1.9E+06	4.1E+06	8.2E+06	1.9E+07	4.1E+07	8.4E+07	1.6E+08	3.1E+08	5.6E+08	9.7E+08	1.6E+09
Pb-202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pb-210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	330000	200000	120000	75000	45000	28000	17000	10000	3700	1400	490	180	63	18	4.8	1.3	0.36	0.097	0.026	0.007	0.0019
Pm-145	2.4E-07	3.2E-07	4.3E-07	5.5E-07	7.0E-07	8.8E-07	1.1E-06	1.3E-06	1.8E-06	2.2E-06	2.7E-06	3.1E-06	3.4E-06	3.5E-06	3.4E-06	3.2E-06	2.7E-06	2.3E-06	1.8E-06	1.3E-06	9.7E-07
Pm-147	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-208	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Po-209	4.8E-07	1.2E-06	2.9E-06	6.9E-06	1.6E-05	3.5E-05	7.7E-05	0.00016	0.00069	0.0026	0.0093	0.031	0.094	0.35	1.2	3.7	11	28	71	170	380

TABLE A.7.18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	YEAR TO EXCEED:	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Pt-193	95	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-10	1.3E-07	3.0E-05	3.0E-03	1.6E-01	5.1E+00	1.0E+02	1.5E+03	1.6E+04	1.3E+05
Ks-20	6	0	540	150000	1100000	1500000	6.8E+05	1.5E+05	2.2E+04	2.2E+03	2.9E+01	2.5E-01	1.6E-03	8.6E-06	4.1E-08	1.7E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ks-21	6	0	7.3	7000	120000	290000	220000	79000	17000	2400	54	0.74	0.0073	5.8E-05	3.9E-07	2.4E-09	1.3E-11	0	0	0	0	0	0	0
Ks-22	-1	0	0	4.4E-11	1.2E-06	0.00048	0.016	0.12	0.31	0.41	0.22	0.046	0.0054	0.00041	2.3E-05	9.5E-07	3.3E-08	9.4E-10	2.4E-11	0	0	0	0	0
Ks-23	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-236	-1	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-238	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-239	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	-1	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-242	-1	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-244	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	30	0	0	3.9E-08	0.0012	0.97	98	2700	31000	200000	1700000	6700000	1.6E+07	2.4E+07	2.8E+07	2.6E+07	2E+07	1.3E+07	7600000	4100000	2000000	960000	430000	180000
Se-79	105	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-10	2.5E-08	2.2E-06	1.1E-04	3.5E-03	7.3E-02	1.1E+00	1.2E+01
Si-32	35	0	0	0	0	0	0	3.3E-09	1.8E-05	0.016	99	62000	8600000	4.1E+08	9.1E+09	1.1E+11	9.1E+11	5.1E+12	2.2E+13	7.5E+13	2.1E+14	5.1E+14	1.1E+15	2.1E+15
Sm-151	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-121m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	15	0	5E-10	0.00081	3.1	590	20000	230000	1300000	4500000	1.6E+07	2.9E+07	3.3E+07	2.6E+07	1.6E+07	7900000	3400000	1300000	470000	160000	48000	14000	4100	1100
Tb-157	15	0	0.0032	6.7	400	4100	15000	26000	28000	22000	8800	2300	450	75	11	1.4	0.17	0.02	0.0022	0.00023	2.4E-05	2.4E-06	2.4E-07	2.3E-08
Tb-158	18	0	0.0004	0.76	47	490	1800	3200	3500	2800	1200	310	63	11	1.6	0.21	0.027	0.0032	0.00036	3.9E-05	4.2E-06	4.3E-07	4.4E-08	4.4E-09
Tc-99	24	0	0	0	9E-07	0.0048	1.9	150	4100	51000	1100000	9400000	4.2E+07	1.2E+08	2.4E+08	3.7E+08	4.6E+08	4.8E+08	4.4E+08	3.6E+08	2.6E+08	1.8E+08	1.1E+08	6.8E+07
Te-123	270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-229	900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	27	0	0	0	9.2E-10	2.3E-05	0.024	3.6	140	2200	53000	390000	1300000	2500000	3200000	3100000	2400000	1500000	800000	380000	160000	60000	21000	6800
Tm-170	-1	0	0.0004	0.002	0.0003	8.3E-06	8.8E-08	5.3E-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	590	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	825	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicat Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL in years modeled

TABLE A.7.18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
Pt-193	8.4E+05	4.5E+06	2.1E+07	8.2E+07	2.9E+08	8.9E+08	2.5E+09	6.5E+09	1.5E+10	3.4E+10	7.0E+10	1.4E+11	2.5E+11	4.5E+11	7.6E+11	1.2E+12	1.9E+12	2.9E+12	4.2E+12	6.0E+12	8.3E+12	1.1E+13	1.5E+13	1.9E+13
Ks-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-236	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-242	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	76000	31000	12000	4600	1700	630	230	82	29	10	3.5	1.2	0.42	0.14	0.047	0.016	0.0053	0.0018	0.00058	0.00019	6.3E-05	2.1E-05	6.7E-06	2.2E-06
Se-79	1.1E+02	7.7E+02	4.6E+03	2.3E+04	1.0E+05	4.0E+05	1.4E+06	4.4E+06	1.3E+07	3.4E+07	8.4E+07	2.0E+08	4.3E+08	8.9E+08	1.8E+09	3.3E+09	6.0E+09	1.1E+10	1.8E+10	2.9E+10	4.6E+10	7.0E+10	1.1E+11	1.5E+11
Si-32	3.7E+15	5.9E+15	8.9E+15	1.3E+16	1.7E+16	2.1E+16	2.5E+16	3.0E+16	3.3E+16	3.5E+16	3.7E+16	3.7E+16	3.6E+16	3.5E+16	3.3E+16	3.0E+16	2.7E+16	2.4E+16	2.0E+16	1.7E+16	1.5E+16	1.2E+16	9.9E+15	8.0E+15
Sm-151	0	0	0	0	0	0	0	0	1.2E-10	1.5E-09	1.6E-08	1.5E-07	1.2E-06	8.2E-06	5.1E-05	0.00028	0.0014	0.0066	0.028	0.11	0.41	1.4	4.5	14
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	300	79	20	5.2	1.3	0.32	0.077	0.018	0.0044	0.001	0.00024	5.7E-05	1.3E-05	3E-06	6.9E-07	1.6E-07	3.6E-08	8.2E-09	1.8E-09	4.2E-10	9.4E-11	2.1E-11	0	0
Tb-157	2.2E-09	2.1E-10	2E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	4.4E-10	4.3E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	3.9E+07	2.2E+07	1.1E+07	5900000	3000000	1500000	710000	330000	160000	72000	32000	15000	6500	2900	1200	540	230	99	42	18	7.5	3.1	1.3	0.55
Te-123	1.3E-11	1.5E-10	1.4E-09	1.1E-08	7.5E-08	4.2E-07	2.1E-06	9.1E-06	3.6E-05	0.00013	0.00041	0.0012	0.0035	0.009	0.022	0.051	0.11	0.24	0.48	0.93	1.7	3.1	5.4	9.1
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	2100	610	170	45	12	2.9	0.72	0.17	0.04	0.0092	0.0021	0.00047	0.0001	2.2E-05	4.8E-06	1E-06	2.2E-07	4.5E-08	9.4E-09	1.9E-09	4E-10	8.1E-11	1.6E-11	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE [illegible]8.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	310	320	330	340	350	360	370	380
Pt-193	2.4E+13	2.9E+13	3.6E+13	4.3E+13	5.0E+13	5.8E+13	6.6E+13	7.5E+13	8.4E+13	9.2E+13	1.0E+14	1.1E+14	1.2E+14	1.2E+14	1.3E+14	1.3E+14	1.4E+14	1.4E+14	1.4E+14	1.3E+14	1.3E+14	1.1E+14	1E+14	9E+13
Ks-20	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-236	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	7.1E-07	2.3E-07	7.4E-08	2.4E-08	7.7E-09	2.5E-09	7.9E-10	2.5E-10	8.1E-11	2.6E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	2.2E+11	3.1E+11	4.3E+11	5.7E+11	7.6E+11	9.9E+11	1.3E+12	1.6E+12	2E+12	2.5E+12	3E+12	3.7E+12	4.4E+12	5.2E+12	6E+12	7E+12	9.1E+12	1.2E+13	1.4E+13	1.7E+13	1.9E+13	2.2E+13	2.4E+13	2.6E+13
Si-32	6.4E+15	5.1E+15	4.0E+15	3.1E+15	2.4E+15	1.8E+15	1.4E+15	1.0E+15	7.9E+14	5.9E+14	4.4E+14	3.2E+14	2.4E+14	1.7E+14	1.3E+14	9.1E+13	4.7E+13	2.4E+13	1.2E+13	6.1E+12	3.0E+12	1.5E+12	7.2E+11	3.5E+11
Sm-151	40	110	280	710	1700	3900	8800	19000	39000	80000	160000	300000	560000	1000000	1800000	3100000	8800000	2.3E+07	5.6E+07	1.3E+08	2.8E+08	5.7E+08	1.1E+09	2.1E+09
Sn-121m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	0.23	0.094	0.039	0.016	0.0065	0.0026	0.0011	0.00044	0.00018	7.2E-05	2.9E-05	1.2E-05	4.8E-06	1.9E-06	7.7E-07	3.1E-07	5E-08	8E-09	1.3E-09	2E-10	3.2E-11	0	0	0
Te-123	15	24	37	57	85	120	180	250	350	480	650	860	1100	1400	1800	2300	3600	5300	7600	11000	14000	19000	24000	29000
Th-229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Th-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ti-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tm-170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4E-11	2.3E-10	1.4E-09
U-233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8E-11
U-235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U-238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zr-93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE ...18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE--VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620
Pt-193	7.7E+13	6.5E+13	5.4E+13	4.4E+13	3.5E+13	2.8E+13	2.2E+13	1.7E+13	1.3E+13	9.9E+12	7.4E+12	5.5E+12	4.1E+12	3E+12	2.1E+12	1.5E+12	1.1E+12	7.9E+11	5.6E+11	3.9E+11	2.7E+11	1.9E+11	1.3E+11	9.1E+10
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ks-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-236	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-244	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ra-226	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ra-228	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Re-187	0	0	0	0	0	0	0	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Se-79	2.8E+13	2.9E+13	2.9E+13	2.9E+13	2.9E+13	2.8E+13	2.7E+13	2.6E+13	2.4E+13	2.2E+13	2E+13	1.8E+13	1.6E+13	1.5E+13	1.3E+13	1.1E+13	9.8E+12	8.4E+12	7.2E+12	6.1E+12	5.2E+12	4.3E+12	3.6E+12	3E+12
Si-32	1.7E+11	7.9E+10	3.7E+10	1.8E+10	8.2E+09	3.8E+09	1.8E+09	8.1E+08	3.7E+08	1.7E+08	7.8E+07	3.6E+07	1.6E+07	7.3E+06	3.3E+06	1.5E+06	6.7E+05	3.0E+05	1.3E+05	6.0E+04	2.7E+04	1.2E+04	5.3E+03	2.4E+03
Sm-151	3.7E+09	6.3E+09	1.0E+10	1.7E+10	2.6E+10	4.0E+10	5.8E+10	8.4E+10	1.2E+11	1.6E+11	2.2E+11	2.9E+11	3.7E+11	4.7E+11	5.9E+11	7.3E+11	8.9E+11	1.1E+12	1.3E+12	1.5E+12	1.7E+12	2.0E+12	2.2E+12	2.5E+12
Sn-121m	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sn-126	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sr-90	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tb-157	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tb-158	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tc-99	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Te-123	36000	4.3E+04	5.0E+04	5.7E+04	6.5E+04	7.2E+04	7.9E+04	8.5E+04	9.0E+04	9.4E+04	9.7E+04	9.9E+04	1.0E+05	1.0E+05	9.9E+04	9.7E+04	9.5E+04	9.1E+04	8.7E+04	8.2E+04	7.7E+04	7.2E+04	6.7E+04	6.1E+04
Th-229	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-11	1.1E-10
Th-230	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-11
Th-232	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ti-44	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-11	3.1E-11	9.1E-11
Tl-204	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tm-170	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-232	7.8E-09	3.9E-08	1.8E-07	7.8E-07	3.1E-06	1.1E-05	4.0E-05	1.3E-04	4.0E-04	1.2E-03	3.2E-03	8.6E-03	2.2E-02	5.3E-02	1.2E-01	2.8E-01	6.1E-01	1.3E+00	2.7E+00	5.3E+00	1.0E+01	1.9E+01	3.5E+01	6.2E+01
U-233	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-11	4.5E-11	1.5E-10	4.9E-10	1.5E-09	4.5E-09	1.3E-08	3.4E-08	8.8E-08	2.2E-07	5.3E-07	1.2E-06	2.8E-06	6.1E-06	1.3E-05	2.7E-05	5.5E-05	1.1E-04
U-234	1.1E-10	6.2E-10	3.2E-09	1.5E-08	6.6E-08	2.7E-07	1.0E-06	3.7E-06	1.3E-05	4.1E-05	1.3E-04	3.7E-04	1.0E-03	2.8E-03	7.3E-03	1.8E-02	4.4E-02	1.0E-01	2.3E-01	5.1E-01	1.1E+00	2.2E+00	4.5E+00	9.0E+00
U-235	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-11	3.9E-11	1.1E-10	3.2E-10	8.6E-10	2.2E-09	5.6E-09	1.3E-08	3.1E-08	7.1E-08	1.5E-07	3.3E-07	6.9E-07	1.4E-06	2.7E-06
U-236	0	0.0E+00	3.3E-11	1.6E-10	6.8E-10	2.8E-09	1.1E-08	3.9E-08	1.3E-07	4.3E-07	1.3E-06	3.8E-06	1.1E-05	2.9E-05	7.5E-05	1.9E-04	4.5E-04	1.1E-03	2.4E-03	5.3E-03	1.1E-02	2.3E-02	4.7E-02	9.3E-02
U-238	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-11	5.6E-11	2.0E-10	6.9E-10	2.2E-09	6.8E-09	2.0E-08	5.6E-08	1.5E-07	3.9E-07	9.8E-07	2.4E-06	5.5E-06	1.2E-05	2.7E-05	5.8E-05	1.2E-04	2.5E-04	4.9E-04
V-50	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Zr-93	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

TABLE [illegible].18.

RADIONUCLIDE CONCENTRATIONS (pCi/L) at the WATER TABLE–VERTICAL PATHRAE MODEL RESULTS for WESTERN LARW CELL SIDE SLOPE, 100-FOLD K INCREASE, HIGH PRECIPITATION (2.10 cm/yr)

NUCLIDE:	630	640	650	660	670	680	690	700	720	740	760	780	800	825	850	875	900	925	950	975	1000
Pt-193	6.2E+10	4.2E+10	2.9E+10	2E+10	1.3E+10	8.9E+09	6E+09	4E+09	1.8E+09	7.8E+08	3.4E+08	1.5E+08	6.3E+07	2.2E+07	7300000	2500000	820000	270000	89000	29000	9400
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ks-22	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ks-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-26	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-236	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Pu-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	5.4E-11	1.5E-10	4.0E-10	9.8E-10
Pu-239	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	5E-11	2.6E-10	1.2E-09	5.4E-09	2.1E-08	7.8E-08	2.7E-07	8.6E-07	2.6E-06
Pu-240	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	4.7E-11	2.5E-10	1.2E-09	5E-09	2E-08	7.3E-08	2.5E-07	7.9E-07	2.4E-06
Pu-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pu-242	0	0	0	0	0	0	0	0	0	0	0	1.2E-11	5.1E-11	2.7E-10	1.3E-09	5.5E-09	2.2E-08	8E-08	2.7E-07	8.8E-07	2.6E-06
Pu-244	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-11	6.4E-11	2.8E-10	1.1E-09	4.0E-09	1.4E-08	4.4E-08	1.3E-07
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-11	1.9E-10	8.8E-10	3.8E-09	1.5E-08	5.4E-08	1.8E-07	5.8E-07	1.7E-06
Ra-228	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Re-187	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Se-79	2.5E+12	2.1E+12	1.7E+12	1.4E+12	1.1E+12	9E+11	7.3E+11	5.9E+11	3.8E+11	2.4E+11	1.5E+11	9.2E+10	5.7E+10	3E+10	1.6E+10	8.5E+09	4.4E+09	2.3E+09	1.2E+09	5.9E+08	3E+08
Si-32	1.0E+03	4.6E+02	2.0E+02	9.0E+01	4.0E+01	1.8E+01	7.8E+00	3.4E+00	6.6E-01	1.3E-01	2.4E-02	4.7E-03	8.9E-04	1.1E-04	1.4E-05	1.8E-06	2.2E-07	2.7E-08	3.4E-09	4.2E-10	5.2E-11
Sm-151	2.8E+12	3.1E+12	3.4E+12	3.6E+12	3.9E+12	4.2E+12	4.4E+12	4.7E+12	5.1E+12	5.4E+12	5.6E+12	5.7E+12	5.6E+12	5.4E+12	5.1E+12	4.7E+12	4.2E+12	3.6E+12	3.1E+12	2.6E+12	2.1E+12
Sn-121m	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sn-126	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Sr-90	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tb-157	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tb-158	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tc-99	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Te-123	5.6E+04	5.1E+04	4.6E+04	4.1E+04	3.7E+04	3.3E+04	2.9E+04	2.6E+04	2.0E+04	1.5E+04	1.1E+04	8.2E+03	6.0E+03	4.0E+03	2.6E+03	1.7E+03	1.0E+03	6.6E+02	4.1E+02	2.5E+02	1.5E+02
Th-229	3.4E-10	1.0E-09	3.0E-09	8.3E-09	2.3E-08	6.0E-08	1.6E-07	3.9E-07	2.2E-06	1.2E-05	5.6E-05	2.5E-04	1.0E-03	5.3E-03	2.5E-02	1.1E-01	4.3E-01	1.6E+00	5.4E+00	1.7E+01	5.2E+01
Th-230	3.4E-11	1.0E-10	3.0E-10	8.5E-10	2.3E-09	6.2E-09	1.6E-08	4.0E-08	2.3E-07	1.2E-06	5.8E-06	2.6E-05	1.0E-04	5.5E-04	2.6E-03	1.1E-02	4.5E-02	1.6E-01	5.6E-01	1.8E+00	5.4E+00
Th-232	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11	1.4E-10	5.6E-10	3.0E-09	1.4E-08	6.1E-08	2.4E-07	8.9E-07	3.0E-06	9.7E-06	2.9E-05
Ti-44	2.6E-10	6.9E-10	1.8E-09	4.6E-09	1.1E-08	2.6E-08	6.1E-08	1.4E-07	6.4E-07	2.7E-06	1.0E-05	3.7E-05	1.2E-04	4.8E-04	1.7E-03	5.7E-03	1.7E-02	4.8E-02	1.2E-01	3.0E-01	6.9E-01
Tl-204	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tm-170	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
U-232	1.1E+02	1.9E+02	3.1E+02	5.1E+02	8.2E+02	1.3E+03	2.0E+03	3.1E+03	6.8E+03	1.4E+04	2.8E+04	5.3E+04	9.5E+04	1.9E+05	3.4E+05	6.0E+05	9.9E+05	1.6E+06	2.4E+06	3.5E+06	4.8E+06
U-233	2.1E-04	3.9E-04	7.3E-04	1.3E-03	2.3E-03	4.1E-03	7.0E-03	1.2E-02	3.2E-02	8.2E-02	2.0E-01	4.6E-01	1.0E+00	2.5E+00	6.0E+00	1.4E+01	2.9E+01	5.9E+01	1.1E+02	2.1E+02	3.8E+02
U-234	1.7E+01	3.3E+01	6.1E+01	1.1E+02	2.0E+02	3.4E+02	5.8E+02	9.9E+02	2.7E+03	6.8E+03	1.7E+04	3.8E+04	8.4E+04	2.1E+05	5.0E+05	1.1E+06	2.4E+06	4.9E+06	9.5E+06	1.8E+07	3.2E+07
U-235	5.3E-06	1.0E-05	1.9E-05	3.4E-05	6.0E-05	1.0E-04	1.8E-04	3.0E-04	8.2E-04	2.1E-03	5.1E-03	1.2E-02	2.6E-02	6.5E-02	1.5E-01	3.4E-01	7.3E-01	1.5E+00	2.9E+00	5.4E+00	9.7E+00
U-236	1.8E-01	3.4E-01	6.3E-01	1.1E+00	2.0E+00	3.5E+00	6.1E+00	1.0E+01	2.8E+01	7.1E+01	1.7E+02	4.0E+02	8.7E+02	2.2E+03	5.2E+03	1.2E+04	2.5E+04	5.1E+04	9.8E+04	1.8E+05	3.3E+05
U-238	9.4E-04	1.8E-03	3.3E-03	5.9E-03	1.1E-02	1.8E-02	3.2E-02	5.3E-02	1.4E-01	3.7E-01	9.0E-01	2.1E+00	4.5E+00	1.1E+01	2.7E+01	6.1E+01	1.3E+02	2.6E+02	5.1E+02	9.6E+02	1.7E+03
V-50	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-11
Zr-93	0.0E+00	1.3E-11	3.7E-11	1.0E-10	2.9E-10	7.6E-10	1.9E-09	4.9E-09	2.8E-08	1.5E-07	7.1E-07	3.1E-06	1.3E-05	6.8E-05	3.2E-04	1.4E-03	5.5E-03	2.0E-02	6.9E-02	2.2E-01	6.7E-01

TABLE A7.19. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.310 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE HIGH PRECIPITATION SENSITIVITY ANALYSIS

	EXCEEDS	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	205	210	215	220	225	230	235	240	245
Al-26	-1	0	0	0	4.7E-11	3.8E-08	5.3E-06	2.4E-04	5.0E-03	5.4E-02	3.6E-01	1.7E+00	6.0E+00	1.6E+01	3.6E+01	6.9E+01	1.1E+02	1.7E+02	2.2E+02	2.4E+02	2.7E+02	2.9E+02	3.0E+02	3.2E+02	3.2E+02	3.3E+02	3.3E+02	3.2E+02
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	0	0	0	4.3E-11	7.3E-09	3.3E-07	6.6E-06	7.1E-05	4.8E-04	2.2E-03	7.7E-03	2.1E-02	4.6E-02	8.7E-02	1.4E-01	2.1E-01	2.7E-01	3.0E-01	3.3E-01	3.5E-01	3.7E-01	3.8E-01	3.9E-01	4.0E-01	3.9E-01	3.9E-01
Ca-41	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.6E-11	1.4E-09	1.5E-08	1.4E-07	3.8E-07	9.9E-07	2.5E-06	5.8E-06	1.3E-05	2.9E-05	6.4E-05	1.3E-04	2.6E-04
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	-1	0	0	0	0	5.5E-11	9.0E-09	4.0E-07	7.7E-06	8.0E-05	5.2E-04	2.4E-03	8.2E-03	2.2E-02	4.7E-02	8.6E-02	1.4E-01	2.0E-01	2.5E-01	2.7E-01	3.0E-01	3.1E-01	3.3E-01	3.3E-01	3.4E-01	3.4E-01	3.3E-01	3.2E-01
Cf-250	na	0	0	0	2.1E-10	6.6E-08	3.9E-06	7.4E-05	6.1E-04	2.8E-03	8.0E-03	1.6E-02	2.3E-02	2.7E-02	2.7E-02	2.2E-02	1.7E-02	1.1E-02	6.6E-03	5.1E-03	3.8E-03	2.8E-03	2.1E-03	1.5E-03	1.1E-03	7.6E-04	5.3E-04	3.8E-04
Cf-251	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	-1	0	0	0	2.0E-10	1.6E-07	2.3E-05	1.0E-03	2.1E-02	2.2E-01	1.5E+00	7.2E+00	2.5E+01	6.7E+01	1.5E+02	2.9E+02	4.7E+02	7.0E+02	9.2E+02	1.0E+03	1.1E+03	1.2E+03	1.3E+03	1.3E+03	1.3E+03	1.4E+03	1.4E+03	1.3E+03
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	-1	0	0	0	0	0	0	0	0	0	0	2.9E-10	6.2E-09	7.5E-08	5.9E-07	3.4E-06	1.4E-05	4.7E-05	1.3E-04	2.0E-04	2.8E-04	4.1E-04	5.6E-04	7.3E-04	9.2E-04	1.2E-03	1.4E-03	1.6E-03
I-129	710	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	640	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9E-11	1.1E-10	4.0E-10	1.4E-09	4.8E-09	1.5E-08	4.6E-08	1.3E-07
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5E-10	3.8E-09	4.1E-08	3.5E-07	2.2E-06	5.1E-06	1.1E-05	2.4E-05	4.8E-05	9.2E-05	1.7E-04	3.1E-04	5.3E-04	9.0E-04
Tb-157	-1	0	0	0	1.4E-09	9.2E-07	1.1E-04	4.3E-03	7.2E-02	6.7E-01	3.9E+00	1.5E+01	4.6E+01	1.1E+02	2.0E+02	3.3E+02	4.7E+02	5.9E+02	6.7E+02	6.9E+02	7.0E+02	7.0E+02	6.8E+02	6.6E+02	6.3E+02	6.0E+02	5.6E+02	5.1E+02
Tb-158	-1	0	0	0	2.7E-10	2.0E-07	2.8E-05	1.2E-03	2.2E-02	2.2E-01	1.4E+00	6.2E+00	2.1E+01	5.3E+01	1.1E+02	2.0E+02	3.0E+02	4.2E+02	5.2E+02	5.7E+02	6.0E+02	6.3E+02	6.4E+02	6.5E+02	6.4E+02	6.3E+02	6.2E+02	5.9E+02
Tc-99	670	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL within the 2,000 years modeled

TABLE A7.19. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.310 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE HIGH PRECIPITATION SENSITIVITY ANALYSIS

	250	255	260	265	270	275	280	285	290	295	300	305	310	315
Al-26	3.2E+02	3.0E+02	2.9E+02	2.8E+02	2.6E+02	2.5E+02	2.3E+02	2.1E+02	1.9E+02	1.8E+02	1.6E+02	1.5E+02	1.3E+02	1.2E+02
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.8E-01	3.6E-01	3.5E-01	3.3E-01	3.1E-01	2.9E-01	2.7E-01	2.5E-01	2.3E-01	2.1E-01	1.9E-01	1.7E-01	1.5E-01	1.4E-01
Ca-41	5.1E-04	9.6E-04	1.8E-03	3.2E-03	5.4E-03	9.2E-03	1.6E-02	2.5E-02	4.1E-02	6.4E-02	9.9E-02	1.5E-01	2.2E-01	3.3E-01
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	3.1E-01	3.0E-01	2.8E-01	2.6E-01	2.4E-01	2.3E-01	2.1E-01	1.9E-01	1.7E-01	1.6E-01	1.4E-01	1.3E-01	1.1E-01	9.9E-02
Cf-250	2.6E-04	1.8E-04	1.2E-04	8.5E-05	5.8E-05	4.0E-05	2.7E-05	1.8E-05	1.2E-05	8.3E-06	5.5E-06	3.7E-06	2.5E-06	1.7E-06
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.3E+03	1.3E+03	1.2E+03	1.2E+03	1.1E+03	1.0E+03	9.6E+02	8.9E+02	8.1E+02	7.5E+02	6.8E+02	6.1E+02	5.5E+02	5.0E+02
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.8E-03	2.0E-03	2.2E-03	2.3E-03	2.4E-03	2.4E-03	2.4E-03	2.4E-03	2.3E-03	2.2E-03	2.0E-03	1.9E-03	1.7E-03	1.5E-03
I-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.5E-07	9.0E-07	2.2E-06	5.6E-06	1.3E-05	3.0E-05	6.7E-05	1.4E-04	3.0E-04	6.2E-04	1.2E-03	2.4E-03	4.7E-03	8.5E-03
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.5E-03	2.4E-03	3.6E-03	5.6E-03	8.2E-03	1.2E-02	1.6E-02	2.3E-02	3.1E-02	4.2E-02	5.3E-02	6.9E-02	8.6E-02	1.1E-01
Tb-157	4.7E+02	4.2E+02	3.8E+02	3.4E+02	3.0E+02	2.6E+02	2.3E+02	2.0E+02	1.7E+02	1.5E+02	1.3E+02	1.1E+02	9.1E+01	7.7E+01
Tb-158	5.6E+02	5.3E+02	4.9E+02	4.6E+02	4.2E+02	3.8E+02	3.5E+02	3.2E+02	2.8E+02	2.5E+02	2.2E+02	2.0E+02	1.7E+02	1.5E+02
Tc-99	0	0	0	0	0	0	0	0	0	0	0	0	1.4E-11	3.3E-11
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	320	325	330	335	340	345	350	355	360	365	370	375	380	385
Al-26	1.1E+02	9.5E+01	8.4E+01	7.5E+01	6.6E+01	5.8E+01	5.1E+01	4.5E+01	4.0E+01	3.5E+01	3.1E+01	2.7E+01	2.3E+01	2.0E+01
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.2E-01	1.1E-01	9.5E-02	8.5E-02	7.5E-02	6.6E-02	5.8E-02	5.1E-02	4.4E-02	3.9E-02	3.4E-02	2.9E-02	2.6E-02	2.2E-02
Ca-41	4.9E-01	6.9E-01	9.8E-01	1.4E+00	1.9E+00	2.6E+00	3.5E+00	4.6E+00	6.2E+00	8.1E+00	1.0E+01	1.3E+01	1.7E+01	2.1E+01
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	8.7E-02	7.7E-02	6.8E-02	5.9E-02	5.2E-02	4.5E-02	4.0E-02	3.4E-02	3.0E-02	2.6E-02	2.2E-02	1.9E-02	1.7E-02	1.4E-02
Cf-250	1.1E-06	7.4E-07	4.9E-07	3.3E-07	2.2E-07	1.5E-07	9.7E-08	6.4E-08	4.2E-08	2.8E-08	1.9E-08	1.2E-08	8.2E-09	5.4E-09
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	4.5E+02	4.0E+02	3.5E+02	3.1E+02	2.8E+02	2.5E+02	2.2E+02	1.9E+02	1.7E+02	1.5E+02	1.3E+02	1.1E+02	9.7E+01	8.5E+01
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.4E-03	1.2E-03	1.0E-03	9.0E-04	7.5E-04	6.3E-04	5.3E-04	4.4E-04	3.6E-04	2.9E-04	2.3E-04	1.9E-04	1.5E-04	1.2E-04
I-129	0	0	0	0	0	0	0	0	0	0	1.6E-11	5.2E-11	1.1E-10	2.4E-10
K-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.6E-02	2.8E-02	4.9E-02	8.7E-02	1.5E-01	2.4E-01	4.0E-01	6.6E-01	1.0E+00	1.6E+00	2.5E+00	3.9E+00	5.8E+00	8.7E+00
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.3E-01	1.6E-01	1.9E-01	2.2E-01	2.6E-01	3.0E-01	3.4E-01	3.9E-01	4.3E-01	4.7E-01	5.2E-01	5.5E-01	5.9E-01	6.3E-01
Tb-157	6.5E+01	5.5E+01	4.6E+01	3.9E+01	3.2E+01	2.7E+01	2.2E+01	1.9E+01	1.5E+01	1.3E+01	1.1E+01	8.8E+00	7.3E+00	6.0E+00
Tb-158	1.3E+02	1.2E+02	1.0E+02	8.7E+01	7.6E+01	6.5E+01	5.6E+01	4.8E+01	4.2E+01	3.6E+01	3.1E+01	2.6E+01	2.2E+01	1.9E+01
Tc-99	1.3E-10	3.2E-10	7.9E-10	2.0E-09	4.6E-09	1.0E-08	2.3E-08	5.0E-08	1.1E-07	2.2E-07	4.5E-07	9.1E-07	1.8E-06	3.4E-06
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.19. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.310 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE HIGH PRECIPITATION SENSITIVITY ANALYSIS

	390	395	400	405	410	415	420	425	430	435	440	445	450	455
Al-26	1.8E+01	1.5E+01	1.3E+01	1.2E+01	1.0E+01	8.6E+00	7.5E+00	6.5E+00	5.6E+00	4.9E+00	4.2E+00	3.6E+00	3.1E+00	2.7E+00
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.9E-02	1.7E-02	1.4E-02	1.3E-02	1.1E-02	9.4E-03	8.1E-03	7.0E-03	6.0E-03	5.2E-03	4.5E-03	3.9E-03	3.3E-03	2.9E-03
Ca-41	2.7E+01	3.3E+01	4.1E+01	5.0E+01	6.0E+01	7.2E+01	8.6E+01	1.0E+02	1.2E+02	1.4E+02	1.7E+02	1.9E+02	2.2E+02	2.5E+02
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.2E-02	1.1E-02	9.1E-03	7.8E-03	6.7E-03	5.8E-03	4.9E-03	4.2E-03	3.6E-03	3.1E-03	2.7E-03	2.3E-03	2.0E-03	1.7E-03
Cf-250	3.6E-09	2.4E-09	1.5E-09	1.0E-09	6.5E-10	4.2E-10	2.6E-10	1.4E-10	3.1E-11	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	7.3E+01	6.4E+01	5.6E+01	4.8E+01	4.2E+01	3.6E+01	3.1E+01	2.7E+01	2.4E+01	2.0E+01	1.8E+01	1.5E+01	1.3E+01	1.1E+01
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	9.3E-05	7.1E-05	5.5E-05	4.2E-05	3.3E-05	2.5E-05	1.9E-05	1.4E-05	1.0E-05	7.7E-06	5.7E-06	4.2E-06	3.1E-06	2.3E-06
I-129	5.1E-10	1.1E-09	2.1E-09	4.0E-09	7.8E-09	1.5E-08	2.7E-08	4.9E-08	8.8E-08	1.6E-07	2.7E-07	4.8E-07	8.1E-07	1.4E-06
K-40	0	0	0	0	0	0	0	0	0	0	0	1.8E-11	3.7E-11	1.1E-10
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.3E+01	1.9E+01	2.7E+01	4.0E+01	5.5E+01	7.8E+01	1.1E+02	1.5E+02	2.0E+02	2.8E+02	3.7E+02	4.9E+02	6.5E+02	8.5E+02
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	6.6E-01	7.0E-01	7.3E-01	7.4E-01	7.5E-01	7.8E-01	7.8E-01	8.1E-01	7.9E-01	8.0E-01	7.8E-01	7.6E-01	7.4E-01	7.2E-01
Tb-157	5.0E+00	4.1E+00	3.4E+00	2.8E+00	2.3E+00	1.9E+00	1.6E+00	1.3E+00	1.1E+00	8.7E-01	7.2E-01	5.9E-01	4.8E-01	4.0E-01
Tb-158	1.6E+01	1.4E+01	1.2E+01	1.0E+01	8.5E+00	7.2E+00	6.1E+00	5.2E+00	4.4E+00	3.7E+00	3.1E+00	2.7E+00	2.3E+00	1.9E+00
Tc-99	6.5E-06	1.2E-05	2.3E-05	4.0E-05	7.2E-05	1.3E-04	2.2E-04	3.8E-04	6.3E-04	1.0E-03	1.7E-03	2.8E-03	4.5E-03	7.2E-03
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	460	465	470	475	480	485	490	495	500	505	510	515	520	525
Al-26	2.3E+00	2.0E+00	1.7E+00	1.5E+00	1.3E+00	1.1E+00	9.7E-01	8.4E-01	7.2E-01	6.2E-01	5.4E-01	4.6E-01	4.0E-01	3.5E-01
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.5E-03	2.1E-03	1.8E-03	1.6E-03	1.4E-03	1.2E-03	1.0E-03	8.7E-04	7.5E-04	6.5E-04	5.5E-04	4.8E-04	4.1E-04	3.5E-04
Ca-41	2.9E+02	3.3E+02	3.7E+02	4.2E+02	4.7E+02	5.3E+02	5.9E+02	6.5E+02	7.1E+02	7.8E+02	8.5E+02	9.5E+02	1.0E+03	1.1E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.4E-03	1.2E-03	1.0E-03	8.9E-04	7.6E-04	6.5E-04	5.6E-04	4.7E-04	4.1E-04	3.5E-04	2.9E-04	2.5E-04	2.2E-04	1.8E-04
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	9.8E+00	8.5E+00	7.3E+00	6.3E+00	5.4E+00	4.7E+00	4.1E+00	3.5E+00	3.0E+00	2.6E+00	2.2E+00	1.9E+00	1.7E+00	1.4E+00
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.6E-06	1.2E-06	8.7E-07	6.2E-07	4.5E-07	3.2E-07	2.3E-07	1.6E-07	1.1E-07	8.1E-08	5.7E-08	4.0E-08	2.8E-08	2.0E-08
I-129	2.2E-06	3.8E-06	6.1E-06	9.8E-06	1.6E-05	2.4E-05	3.9E-05	6.1E-05	9.4E-05	1.4E-04	2.2E-04	3.2E-04	4.8E-04	7.0E-04
K-40	2.2E-10	4.4E-10	8.4E-10	1.6E-09	3.1E-09	5.9E-09	1.1E-08	2.0E-08	3.5E-08	6.2E-08	1.1E-07	1.9E-07	3.3E-07	5.6E-07
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.1E+03	1.5E+03	1.9E+03	2.4E+03	3.0E+03	3.8E+03	4.8E+03	6.0E+03	7.4E+03	9.3E+03	1.1E+04	1.4E+04	1.7E+04	2.0E+04
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	6.9E-01	6.6E-01	6.3E-01	6.0E-01	5.7E-01	5.3E-01	5.0E-01	4.7E-01	4.3E-01	4.0E-01	3.7E-01	3.4E-01	3.1E-01	2.9E-01
Tb-157	3.3E-01	2.7E-01	2.2E-01	1.8E-01	1.5E-01	1.2E-01	1.0E-01	8.3E-02	6.8E-02	5.6E-02	4.6E-02	3.8E-02	3.1E-02	2.6E-02
Tb-158	1.6E+00	1.4E+00	1.2E+00	9.9E-01	8.4E-01	7.1E-01	6.0E-01	5.1E-01	4.3E-01	3.6E-01	3.1E-01	2.6E-01	2.2E-01	1.9E-01
Tc-99	1.1E-02	1.8E-02	2.8E-02	4.2E-02	6.3E-02	9.6E-02	1.4E-01	2.1E-01	3.1E-01	4.5E-01	6.4E-01	9.2E-01	1.3E+00	1.8E+00
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.19. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.310 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE HIGH PRECIPITATION SENSITIVITY ANALYSIS

	530	535	540	545	550	555	560	565	570	575	580	585	590	595
Al-26	3.0E-01	2.6E-01	2.2E-01	1.9E-01	1.6E-01	1.4E-01	1.2E-01	1.1E-01	9.2E-02	7.9E-02	6.8E-02	5.8E-02	5.1E-02	4.4E-02
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.1E-04	2.6E-04	2.3E-04	1.9E-04	1.7E-04	1.4E-04	1.2E-04	1.1E-04	9.2E-05	7.9E-05	6.8E-05	5.8E-05	5.0E-05	4.3E-05
Ca-41	1.2E+03	1.3E+03	1.4E+03	1.5E+03	1.6E+03	1.6E+03	1.7E+03	1.8E+03	1.9E+03	2.0E+03	2.1E+03	2.2E+03	2.3E+03	2.4E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.6E-04	1.3E-04	1.2E-04	9.8E-05	8.4E-05	7.1E-05	6.1E-05	5.2E-05	4.4E-05	3.8E-05	3.2E-05	2.8E-05	2.4E-05	2.0E-05
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.2E+00	1.1E+00	9.3E-01	8.0E-01	6.9E-01	5.9E-01	5.1E-01	4.4E-01	3.8E-01	3.3E-01	2.9E-01	2.5E-01	2.1E-01	1.8E-01
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.4E-08	9.5E-09	6.6E-09	4.6E-09	3.2E-09	2.2E-09	1.5E-09	1.0E-09	6.7E-10	4.3E-10	2.7E-10	1.5E-10	0	0
I-129	1.0E-03	1.5E-03	2.2E-03	3.1E-03	4.4E-03	6.2E-03	8.7E-03	1.2E-02	1.7E-02	2.3E-02	3.2E-02	4.3E-02	5.8E-02	7.8E-02
K-40	9.5E-07	1.6E-06	2.6E-06	4.3E-06	7.0E-06	1.1E-05	1.8E-05	2.8E-05	4.4E-05	6.9E-05	1.1E-04	1.6E-04	2.4E-04	3.8E-04
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.4E+04	2.9E+04	3.5E+04	4.1E+04	4.9E+04	5.7E+04	6.7E+04	7.9E+04	9.1E+04	1.1E+05	1.2E+05	1.4E+05	1.6E+05	1.8E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	2.6E-01	2.4E-01	2.1E-01	1.9E-01	1.7E-01	1.5E-01	1.4E-01	1.2E-01	1.1E-01	9.6E-02	8.5E-02	7.5E-02	6.6E-02	5.8E-02
Tb-157	2.1E-02	1.7E-02	1.4E-02	1.2E-02	9.5E-03	7.8E-03	6.4E-03	5.3E-03	4.3E-03	3.5E-03	2.9E-03	2.4E-03	2.0E-03	1.6E-03
Tb-158	1.6E-01	1.3E-01	1.1E-01	9.5E-02	8.1E-02	6.8E-02	5.8E-02	4.9E-02	4.1E-02	3.5E-02	3.0E-02	2.5E-02	2.1E-02	1.8E-02
Tc-99	2.6E+00	3.6E+00	5.0E+00	6.7E+00	9.2E+00	1.3E+01	1.7E+01	2.3E+01	3.0E+01	4.0E+01	5.2E+01	6.9E+01	9.0E+01	1.2E+02
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	600	605	610	615	620	625	630	635	640	645	650	655	660	665
Al-26	3.8E-02	3.3E-02	2.8E-02	2.4E-02	2.1E-02	1.8E-02	1.6E-02	1.3E-02	1.2E-02	1.0E-02	8.6E-03	7.4E-03	6.4E-03	5.6E-03
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	3.7E-05	3.2E-05	2.7E-05	2.4E-05	2.0E-05	1.8E-05	1.5E-05	1.3E-05	1.1E-05	9.6E-06	8.3E-06	7.2E-06	6.1E-06	5.3E-06
Ca-41	2.5E+03	2.5E+03	2.6E+03	2.7E+03	2.7E+03	2.8E+03	2.9E+03	2.9E+03	3.0E+03	3.0E+03	3.1E+03	3.1E+03	3.2E+03	3.2E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.7E-05	1.5E-05	1.3E-05	1.1E-05	9.3E-06	7.9E-06	6.7E-06	5.8E-06	4.9E-06	4.2E-06	3.6E-06	3.1E-06	2.6E-06	2.3E-06
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.6E-01	1.4E-01	1.2E-01	1.0E-01	8.8E-02	7.5E-02	6.5E-02	5.6E-02	4.8E-02	4.2E-02	3.6E-02	3.1E-02	2.7E-02	2.3E-02
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.0E-01	1.4E-01	1.9E-01	2.4E-01	3.2E-01	4.3E-01	5.4E-01	7.0E-01	9.2E-01	1.2E+00	1.5E+00	1.9E+00	2.4E+00	3.0E+00
K-40	5.6E-04	8.4E-04	1.2E-03	1.8E-03	2.6E-03	3.9E-03	5.7E-03	8.1E-03	1.2E-02	1.6E-02	2.3E-02	3.2E-02	4.4E-02	6.3E-02
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.1E+05	2.4E+05	2.7E+05	3.1E+05	3.4E+05	3.9E+05	4.3E+05	4.8E+05	5.4E+05	6.0E+05	6.7E+05	7.4E+05	8.1E+05	8.9E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	5.0E-02	4.4E-02	3.8E-02	3.3E-02	2.9E-02	2.5E-02	2.2E-02	1.9E-02	1.6E-02	1.4E-02	1.2E-02	1.0E-02	8.6E-03	7.3E-03
Tb-157	1.3E-03	1.1E-03	9.0E-04	7.4E-04	6.1E-04	5.0E-04	4.1E-04	3.4E-04	2.8E-04	2.3E-04	1.9E-04	1.5E-04	1.3E-04	1.0E-04
Tb-158	1.5E-02	1.3E-02	1.1E-02	9.2E-03	7.8E-03	6.6E-03	5.6E-03	4.7E-03	4.0E-03	3.4E-03	2.9E-03	2.4E-03	2.1E-03	1.7E-03
Tc-99	1.5E+02	1.9E+02	2.4E+02	3.1E+02	3.9E+02	4.9E+02	6.2E+02	7.7E+02	9.6E+02	1.2E+03	1.5E+03	1.8E+03	2.2E+03	2.7E+03
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.19. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.310 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE HIGH PRECIPITATION SENSITIVITY ANALYSIS

	670	675	680	685	690	695	700	705	710	715	720	725	730	735
Al-26	4.8E-03	4.1E-03	3.6E-03	3.1E-03	2.7E-03	2.3E-03	2.0E-03	1.7E-03	1.5E-03	1.3E-03	1.1E-03	9.6E-04	8.3E-04	7.1E-04
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	4.6E-06	3.9E-06	3.4E-06	2.9E-06	2.5E-06	2.2E-06	1.9E-06	1.6E-06	1.4E-06	1.2E-06	1.0E-06	8.9E-07	7.6E-07	6.6E-07
Ca-41	3.2E+03	3.2E+03	3.2E+03	3.2E+03	3.2E+03	3.1E+03	3.1E+03	3.1E+03	3.0E+03	3.0E+03	2.9E+03	2.9E+03	2.8E+03	2.8E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.9E-06	1.6E-06	1.4E-06	1.2E-06	1.0E-06	8.8E-07	7.5E-07	6.4E-07	5.5E-07	4.7E-07	4.0E-07	3.4E-07	2.9E-07	2.5E-07
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	2.0E-02	1.7E-02	1.5E-02	1.3E-02	1.1E-02	9.6E-03	8.3E-03	7.2E-03	6.2E-03	5.4E-03	4.6E-03	4.0E-03	3.4E-03	3.0E-03
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	3.7E+00	4.7E+00	5.8E+00	7.2E+00	8.9E+00	1.1E+01	1.3E+01	1.6E+01	2.0E+01	2.4E+01	2.9E+01	3.5E+01	4.3E+01	5.1E+01
K-40	8.6E-02	1.2E-01	1.6E-01	2.2E-01	3.0E-01	4.0E-01	5.4E-01	7.1E-01	9.4E-01	1.2E+00	1.6E+00	2.2E+00	2.8E+00	3.6E+00
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	9.9E+05	1.1E+06	1.2E+06	1.3E+06	1.4E+06	1.5E+06	1.6E+06	1.8E+06	1.9E+06	2.0E+06	2.2E+06	2.3E+06	2.5E+06	2.7E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	6.2E-03	5.3E-03	4.4E-03	3.7E-03	3.1E-03	2.6E-03	2.2E-03	1.9E-03	1.6E-03	1.3E-03	1.1E-03	9.0E-04	7.5E-04	6.2E-04
Tb-157	8.6E-05	7.1E-05	5.8E-05	4.8E-05	3.9E-05	3.2E-05	2.7E-05	2.2E-05	1.8E-05	1.5E-05	1.2E-05	1.0E-05	8.3E-06	6.8E-06
Tb-158	1.5E-03	1.3E-03	1.1E-03	9.0E-04	7.6E-04	6.4E-04	5.5E-04	4.6E-04	3.9E-04	3.3E-04	2.8E-04	2.4E-04	2.0E-04	1.7E-04
Tc-99	3.3E+03	4.0E+03	4.9E+03	6.0E+03	7.2E+03	8.6E+03	1.0E+04	1.2E+04	1.4E+04	1.7E+04	2.0E+04	2.3E+04	2.7E+04	3.2E+04
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	740	745	750	755	760	765	770	775	780	785	790	795	800	805
Al-26	6.2E-04	5.3E-04	4.6E-04	4.0E-04	3.4E-04	3.0E-04	2.6E-04	2.2E-04	1.9E-04	1.7E-04	1.4E-04	1.2E-04	1.1E-04	9.3E-05
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	5.7E-07	4.9E-07	4.2E-07	3.7E-07	3.1E-07	2.7E-07	2.3E-07	2.0E-07	1.7E-07	1.5E-07	1.3E-07	1.1E-07	9.6E-08	8.3E-08
Ca-41	2.7E+03	2.6E+03	2.6E+03	2.5E+03	2.4E+03	2.4E+03	2.3E+03	2.2E+03	2.2E+03	2.1E+03	2.0E+03	2.0E+03	1.9E+03	1.8E+03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.2E-07	1.8E-07	1.6E-07	1.4E-07	1.2E-07	9.9E-08	8.5E-08	7.2E-08	6.2E-08	5.3E-08	4.6E-08	3.9E-08	3.4E-08	2.9E-08
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	2.6E-03	2.2E-03	1.9E-03	1.7E-03	1.4E-03	1.2E-03	1.1E-03	9.3E-04	8.1E-04	7.0E-04	6.0E-04	5.2E-04	4.5E-04	3.9E-04
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	6.3E+01	7.3E+01	8.8E+01	1.1E+02	1.2E+02	1.5E+02	1.7E+02	2.0E+02	2.4E+02	2.8E+02	3.2E+02	3.7E+02	4.2E+02	5.0E+02
K-40	4.8E+00	6.1E+00	8.0E+00	1.0E+01	1.3E+01	1.7E+01	2.1E+01	2.7E+01	3.3E+01	4.2E+01	5.4E+01	6.6E+01	8.3E+01	1.0E+02
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.8E+06	3.0E+06	3.2E+06	3.4E+06	3.6E+06	3.8E+06	4.0E+06	4.2E+06	4.5E+06	4.7E+06	5.0E+06	5.3E+06	5.6E+06	5.8E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	5.2E-04	4.3E-04	3.5E-04	2.9E-04	2.4E-04	2.0E-04	1.6E-04	1.3E-04	1.1E-04	9.0E-05	7.4E-05	6.1E-05	5.0E-05	4.1E-05
Tb-157	5.6E-06	4.6E-06	3.8E-06	3.1E-06	2.6E-06	2.1E-06	1.7E-06	1.4E-06	1.2E-06	9.8E-07	8.0E-07	6.6E-07	5.5E-07	4.5E-07
Tb-158	1.5E-04	1.2E-04	1.0E-04	8.9E-05	7.5E-05	6.4E-05	5.4E-05	4.6E-05	3.9E-05	3.3E-05	2.8E-05	2.4E-05	2.0E-05	1.7E-05
Tc-99	3.7E+04	4.4E+04	5.1E+04	5.8E+04	6.7E+04	7.8E+04	8.8E+04	1.0E+05	1.2E+05	1.3E+05	1.5E+05	1.7E+05	2.0E+05	2.2E+05
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.19. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.310 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE HIGH PRECIPITATION SENSITIVITY ANALYSIS

	810	815	820	825	830	835	840	845	850	855	860	865	870	875
Al-26	8.0E-05	7.0E-05	6.0E-05	5.2E-05	4.5E-05	3.9E-05	3.3E-05	2.9E-05	2.5E-05	2.2E-05	1.9E-05	1.6E-05	1.4E-05	1.2E-05
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	7.1E-08	6.1E-08	5.3E-08	4.6E-08	3.9E-08	3.4E-08	2.9E-08	2.5E-08	2.2E-08	1.9E-08	1.6E-08	1.4E-08	1.2E-08	1.0E-08
Ca-41	1.7E+03	1.7E+03	1.6E+03	1.6E+03	1.5E+03	1.4E+03	1.4E+03	1.3E+03	1.3E+03	1.2E+03	1.1E+03	1.1E+03	1.1E+03	9.9E+02
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.4E-08	2.1E-08	1.8E-08	1.5E-08	1.3E-08	1.1E-08	9.6E-09	8.2E-09	7.1E-09	6.0E-09	5.2E-09	4.4E-09	3.8E-09	3.2E-09
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.4E-04	2.9E-04	2.5E-04	2.2E-04	1.9E-04	1.6E-04	1.4E-04	1.2E-04	1.0E-04	9.1E-05	7.9E-05	6.8E-05	5.9E-05	5.1E-05
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	5.9E+02	6.6E+02	7.8E+02	8.9E+02	1.0E+03	1.2E+03	1.3E+03	1.5E+03	1.7E+03	1.9E+03	2.2E+03	2.5E+03	2.8E+03	3.1E+03
K-40	1.3E+02	1.6E+02	1.9E+02	2.4E+02	2.9E+02	3.6E+02	4.4E+02	5.2E+02	6.3E+02	7.7E+02	9.2E+02	1.1E+03	1.3E+03	1.6E+03
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	6.1E+06	6.5E+06	6.8E+06	7.0E+06	7.3E+06	7.5E+06	7.7E+06	7.9E+06	8.2E+06	8.4E+06	8.6E+06	8.8E+06	9.1E+06	9.2E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	3.3E-05	2.7E-05	2.2E-05	1.8E-05	1.5E-05	1.2E-05	9.7E-06	7.9E-06	6.4E-06	5.2E-06	4.2E-06	3.4E-06	2.8E-06	2.2E-06
Tb-157	3.7E-07	3.0E-07	2.5E-07	2.1E-07	1.7E-07	1.4E-07	1.2E-07	9.5E-08	7.8E-08	6.5E-08	5.3E-08	4.4E-08	3.6E-08	3.0E-08
Tb-158	1.5E-05	1.2E-05	1.0E-05	8.9E-06	7.5E-06	6.4E-06	5.4E-06	4.6E-06	3.9E-06	3.3E-06	2.8E-06	2.4E-06	2.0E-06	1.7E-06
Tc-99	2.5E+05	2.8E+05	3.2E+05	3.6E+05	4.0E+05	4.5E+05	5.0E+05	5.6E+05	6.2E+05	7.0E+05	7.6E+05	8.5E+05	9.5E+05	1.1E+06
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	880	885	890	895	900	905	910	915	920	925	930	935	940	945
Al-26	1.1E-05	9.1E-06	7.9E-06	6.8E-06	5.9E-06	5.1E-06	4.4E-06	3.8E-06	3.3E-06	2.9E-06	2.5E-06	2.2E-06	1.9E-06	1.6E-06
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	9.0E-09	7.8E-09	6.7E-09	5.8E-09	5.0E-09	4.3E-09	3.7E-09	3.2E-09	2.8E-09	2.4E-09	2.0E-09	1.7E-09	1.5E-09	1.3E-09
Ca-41	9.6E+02	9.0E+02	8.6E+02	8.1E+02	7.7E+02	7.3E+02	7.0E+02	6.6E+02	6.2E+02	5.9E+02	5.6E+02	5.3E+02	5.0E+02	4.7E+02
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.8E-09	2.3E-09	2.0E-09	1.7E-09	1.4E-09	1.2E-09	1.0E-09	8.8E-10	7.4E-10	6.2E-10	5.1E-10	4.2E-10	3.5E-10	2.8E-10
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	4.4E-05	3.8E-05	3.3E-05	2.9E-05	2.5E-05	2.1E-05	1.9E-05	1.6E-05	1.4E-05	1.2E-05	1.0E-05	9.0E-06	7.8E-06	6.8E-06
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	3.5E+03	4.0E+03	4.4E+03	4.9E+03	5.7E+03	6.3E+03	6.9E+03	7.6E+03	8.6E+03	9.5E+03	1.0E+04	1.2E+04	1.3E+04	1.4E+04
K-40	1.9E+03	2.3E+03	2.7E+03	3.2E+03	3.7E+03	4.4E+03	5.2E+03	6.2E+03	7.2E+03	8.4E+03	9.9E+03	1.2E+04	1.3E+04	1.6E+04
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	9.4E+06	9.5E+06	9.8E+06	1.0E+07	1.0E+07	1.0E+07	1.0E+07	1.0E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	1.8E-06	1.5E-06	1.2E-06	9.6E-07	7.7E-07	6.2E-07	5.0E-07	4.0E-07	3.3E-07	2.6E-07	2.1E-07	1.7E-07	1.4E-07	1.1E-07
Tb-157	2.5E-08	2.0E-08	1.7E-08	1.4E-08	1.1E-08	9.3E-09	7.7E-09	6.3E-09	5.2E-09	4.3E-09	3.5E-09	2.9E-09	2.4E-09	1.9E-09
Tb-158	1.5E-06	1.2E-06	1.1E-06	8.9E-07	7.6E-07	6.4E-07	5.5E-07	4.6E-07	3.9E-07	3.4E-07	2.8E-07	2.4E-07	2.1E-07	1.7E-07
Tc-99	1.2E+06	1.3E+06	1.4E+06	1.5E+06	1.7E+06	1.8E+06	2.0E+06	2.2E+06	2.4E+06	2.6E+06	2.8E+06	3.1E+06	3.3E+06	3.6E+06
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.19. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 0.310 CM/YR INFILTRATION, 250 FOOT DISTANCE, TOP SLOPE HIGH PRECIPITATION SENSITIVITY ANALYSIS

	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1030	1040	1050	1060	1070	1080	1100	1300
Al-26	1.4E-06	1.2E-06	1.0E-06	9.1E-07	7.9E-07	6.8E-07	5.9E-07	5.1E-07	4.4E-07	3.8E-07	3.3E-07	2.9E-07	2.5E-07	2.2E-07	1.9E-07	1.4E-07	1.1E-07	7.9E-08	5.9E-08	4.4E-08	3.3E-08	1.9E-08	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.1E-09	9.2E-10	7.9E-10	6.7E-10	5.6E-10	4.7E-10	3.9E-10	3.1E-10	2.5E-10	1.9E-10	1.4E-10	9.7E-11	0	0	0	0	0	0	0	0	0	0	0
Ca-41	4.4E+02	4.1E+02	3.9E+02	3.7E+02	3.4E+02	3.2E+02	3.0E+02	2.9E+02	2.7E+02	2.5E+02	2.4E+02	2.2E+02	2.1E+02	1.9E+02	1.8E+02	1.6E+02	1.4E+02	1.2E+02	1.0E+02	9.0E+01	7.8E+01	5.8E+01	2.3E+00
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.1E-10	1.6E-10	1.1E-10	3.0E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	5.9E-06	5.1E-06	4.4E-06	3.8E-06	3.3E-06	2.8E-06	2.5E-06	2.1E-06	1.9E-06	1.6E-06	1.4E-06	1.2E-06	1.0E-06	9.1E-07	7.8E-07	5.9E-07	4.4E-07	3.3E-07	2.5E-07	1.9E-07	1.4E-07	7.9E-08	1.4E-10
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.6E+04	1.7E+04	1.9E+04	2.0E+04	2.2E+04	2.4E+04	2.7E+04	2.9E+04	3.2E+04	3.4E+04	3.7E+04	4.0E+04	4.4E+04	4.8E+04	5.1E+04	6.0E+04	6.9E+04	8.1E+04	9.4E+04	1.1E+05	1.3E+05	1.8E+05	1.1E+06
K-40	1.8E+04	2.1E+04	2.4E+04	2.8E+04	3.2E+04	3.7E+04	4.3E+04	4.8E+04	5.6E+04	6.3E+04	7.3E+04	8.4E+04	9.5E+04	1.1E+05	1.2E+05	1.6E+05	2.0E+05	2.5E+05	3.2E+05	3.9E+05	5.0E+05	7.4E+05	2.5E+07
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.2E+07	1.1E+07	1.2E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.1E+07	1.0E+07	1.0E+07	9.4E+06	3.4E+06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	8.8E-08	7.0E-08	5.7E-08	4.5E-08	3.6E-08	2.9E-08	2.3E-08	1.9E-08	1.5E-08	1.2E-08	9.5E-09	7.5E-09	6.1E-09	4.8E-09	3.8E-09	2.4E-09	1.5E-09	9.2E-10	5.5E-10	3.3E-10	1.7E-10	0	0
Tb-157	1.6E-09	1.3E-09	1.0E-09	8.5E-10	6.8E-10	5.5E-10	4.4E-10	3.3E-10	2.7E-10	1.9E-10	1.2E-10	6.4E-11	0	0	0	0	0	0	0	0	0	0	0
Tb-158	1.5E-07	1.3E-07	1.1E-07	9.0E-08	7.7E-08	6.5E-08	5.6E-08	4.7E-08	4.0E-08	3.4E-08	2.9E-08	2.5E-08	2.1E-08	1.8E-08	1.5E-08	1.1E-08	7.8E-09	5.6E-09	4.1E-09	2.9E-09	2.1E-09	1.0E-09	0
Tc-99	3.9E+06	4.2E+06	4.5E+06	4.8E+06	5.2E+06	5.6E+06	6.0E+06	6.6E+06	7.0E+06	7.4E+06	7.9E+06	8.7E+06	9.5E+06	1.0E+07	1.1E+07	1.3E+07	1.5E+07	1.6E+07	1.8E+07	2.0E+07	2.2E+07	2.7E+07	9.7E+07
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.20. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 1.717 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE

	EXCEEDS	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	205	210	215	220	225	230	235	240	245	250
Al-26	-1	0	6.8E-05	8.2E-01	3.0E+01	1.5E+02	2.0E+02	1.5E+02	8.8E+01	4.5E+01	2.1E+01	9.6E+00	4.3E+00	1.9E+00	8.3E-01	3.7E-01	1.6E-01	7.1E-02	3.1E-02	1.4E-02	5.9E-03	4.0E-03	2.7E-03	1.8E-03	1.2E-03	8.0E-04	5.3E-04	3.5E-04	2.3E-04	1.6E-04	1.0E-04
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	9.8E-08	8.8E-04	4.4E-02	2.1E-01	2.8E-01	2.1E-01	1.2E-01	6.2E-02	2.9E-02	1.3E-02	5.8E-03	2.8E-03	1.1E-03	4.9E-04	2.1E-04	9.5E-05	4.1E-05	1.8E-05	8.0E-06	5.3E-06	3.5E-06	2.3E-06	1.6E-06	1.0E-06	6.8E-07	4.5E-07	3.0E-07	2.0E-07	1.3E-07
Ca-41	-1	0	0	0	2.5E-07	4.4E-04	5.8E-02	3.3E+00	3.5E+01	1.7E+02	5.1E+02	1.1E+03	1.7E+03	2.3E+03	2.5E+03	2.3E+03	2.0E+03	1.5E+03	1.0E+03	6.9E+02	4.3E+02	3.4E+02	2.6E+02	2.0E+02	1.5E+02	1.2E+02	8.6E+01	6.5E+01	4.8E+01	3.6E+01	2.6E+01
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	-1	0	1.4E-07	1.2E-03	5.9E-02	2.8E-01	3.7E-01	2.8E-01	1.6E-01	7.8E-02	3.6E-02	1.6E-02	7.0E-03	3.1E-03	1.3E-03	5.7E-04	2.5E-04	1.1E-04	4.6E-05	2.0E-05	8.6E-06	5.7E-06	3.7E-06	2.4E-06	1.6E-06	1.1E-06	7.0E-07	4.6E-07	3.1E-07	2.0E-07	1.3E-07
Cf-250	20	0	1.3E-02	5.3E+01	1.2E+03	2.7E+03	1.9E+03	7.9E+02	2.5E+02	7.5E+01	2.0E+01	5.4E+00	1.4E+00	3.7E-01	9.8E-02	2.5E-02	6.4E-03	1.7E-03	4.4E-04	1.1E-04	2.9E-05	1.5E-05	7.6E-06	3.8E-06	2.0E-06	1.0E-06	5.2E-07	2.7E-07	1.4E-07	7.0E-08	3.6E-08
Cf-251	-1	0	5.7E-04	6.7E-02	5.7E-02	6.7E-03	3.3E-04	1.1E-05	3.4E-07	9.6E-09	2.5E-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	10	1.5E-08	5.1E+01	8.2E+03	9.3E+03	1.4E+03	8.4E+01	3.6E+00	1.3E-01	4.4E-03	1.5E-04	4.9E-06	1.6E-07	5.2E-09	1.5E-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	-1	0	2.8E-04	2.6E+00	1.3E+02	6.1E+02	8.3E+02	6.3E+02	3.7E+02	1.9E+02	8.9E+01	4.0E+01	1.8E+01	8.0E+00	3.5E+00	1.5E+00	6.8E-01	3.0E-01	1.3E-01	5.8E-02	2.6E-02	1.7E-02	1.1E-02	7.5E-03	5.0E-03	3.3E-03	2.2E-03	1.5E-03	9.9E-04	6.6E-04	4.4E-04
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	50	0	0	2.9E-03	3.7E+01	9.0E+03	2.5E+05	2.5E+06	6.3E+06	8.6E+06	8.1E+06	5.6E+06	3.0E+06	1.3E+06	5.3E+05	1.9E+05	8.4E+04	2.0E+04	6.2E+03	1.9E+03	5.5E+02	3.0E+02	1.6E+02	8.8E+01	4.7E+01	2.6E+01	1.4E+01	7.3E+00	4.0E+00	2.1E+00	1.1E+00
I-129	120	0	0	0	0	0	0	6.1E-10	3.3E-07	4.6E-05	2.4E-03	3.4E-01	3.4E+00	3.6E+01	1.6E+02	8.2E+02	2.6E+03	8.3E+03	2.4E+04	5.1E+04	1.1E+05	1.5E+05	2.1E+05	2.8E+05	3.5E+05	4.6E+05	5.8E+05	7.0E+05	8.7E+05	1.0E+06	1.2E+06
K-40	140	0	0	0	0	0	0	0	1.8E-10	9.7E-08	1.3E-05	1.1E-03	6.6E-02	1.2E+01	6.7E+01	9.4E+02	3.7E+03	2.6E+04	8.0E+04	3.5E+05	8.7E+05	1.6E+06	2.7E+06	3.9E+06	5.9E+06	9.5E+06	1.4E+07	1.9E+07	2.7E+07	3.9E+07	5.2E+07
Ks-20	-1	0	1.8E-05	6.5E-06	2.9E-08	1.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	3.9E-08	1.6E-07	2.6E-09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	20	1.3E-08	4.1E+01	6.1E+03	6.5E+03	9.2E+02	5.4E+01	2.2E+00	7.6E-02	2.5E-03	7.9E-05	2.5E-06	7.4E-08	2.3E-09	5.8E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	1100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	120	0	0	0	9.6E-11	3.7E-06	7.1E-03	1.2E+00	6.3E+01	2.4E+03	1.9E+04	8.9E+04	3.1E+05	8.4E+05	1.8E+06	3.4E+06	5.3E+06	7.3E+06	8.9E+06	9.8E+06	1.0E+07	9.9E+06	9.5E+06	9.0E+06	8.5E+06	7.8E+06	7.1E+06	6.4E+06	5.6E+06	5.0E+06	4.3E+06
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E-10	8.6E-09	1.1E-07	4.9E-07	1.2E-06
Sr-90	50	0	0	9.8E-09	9.5E-04	1.2E+00	1.1E+02	4.4E+03	3.3E+04	1.2E+05	2.5E+05	3.8E+05	4.6E+05	4.3E+05	3.4E+05	2.4E+05	1.5E+05	8.2E+04	4.3E+04	2.1E+04	1.0E+04	6.7E+03	4.5E+03	3.0E+03	2.0E+03	1.3E+03	8.7E+02	5.7E+02	3.7E+02	2.4E+02	1.5E+02
Tb-157	40	0	3.9E-03	3.1E+01	1.3E+03	5.6E+03	6.5E+03	4.5E+03	2.3E+03	1.1E+03	4.5E+02	1.9E+02	7.6E+01	3.0E+01	1.2E+01	4.8E+00	1.9E+00	7.7E-01	3.1E-01	1.2E-01	4.9E-02	3.1E-02	2.0E-02	1.2E-02	8.0E-03	5.0E-03	3.2E-03	2.0E-03	1.3E-03	8.2E-04	5.2E-04
Tb-158	-1	0	5.3E-04	4.4E+00	2.1E+02	9.4E+02	1.2E+03	8.9E+02	5.0E+02	2.4E+02	1.1E+02	4.8E+01	2.1E+01	8.7E+00	3.7E+00	1.6E+00	6.6E-01	2.8E-01	1.2E-01	5.1E-02	2.2E-02	1.4E-02	9.1E-03	6.0E-03	3.9E-03	2.6E-03	1.7E-03	1.1E-03	7.1E-04	4.7E-04	3.1E-04
Tc-99	120	0	0	0	0	0	6.9E-10	2.0E-06	7.6E-04	8.2E-02	5.9E+00	2.9E+02	2.3E+03	1.3E+04	7.2E+04	2.4E+05	7.2E+05	2.0E+06	4.3E+06	8.6E+06	1.6E+07	2.1E+07	2.7E+07	3.4E+07	4.1E+07	4.9E+07	5.9E+07	6.6E+07	7.6E+07	8.7E+07	9.6E+07
Tl-204	-1	0	0	0	0	0	0	0	0	0	0	0	0	5.4E-11	4.4E-11	5.1E-11	2.4E-11	1.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL within the 2,000 years modeled

TABLE A7.20. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 1.717 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE

	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325
Al-26	7.0E-05	4.7E-05	3.1E-05	2.1E-05	1.4E-05	9.2E-06	6.3E-06	4.1E-06	2.8E-06	1.9E-06	1.2E-06	8.4E-07	5.7E-07	3.8E-07	2.5E-07
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	8.9E-08	5.9E-08	4.0E-08	2.6E-08	1.8E-08	1.2E-08	7.9E-09	5.2E-09	3.5E-09	2.3E-09	1.5E-09	1.0E-09	7.0E-10	4.5E-10	3.0E-10
Ca-41	1.9E+01	1.4E+01	1.0E+01	7.6E+00	5.5E+00	4.0E+00	2.9E+00	2.1E+00	1.5E+00	1.1E+00	8.1E-01	5.9E-01	4.3E-01	3.1E-01	2.2E-01
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	8.8E-08	5.8E-08	3.9E-08	2.6E-08	1.7E-08	1.1E-08	7.5E-09	4.8E-09	3.2E-09	2.2E-09	1.4E-09	9.5E-10	6.1E-10	4.1E-10	2.7E-10
Cf-250	1.8E-08	9.3E-09	4.8E-09	2.5E-09	1.2E-09	6.4E-10	3.1E-10	1.6E-10	8.9E-11	2.3E-11	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	2.9E-04	2.0E-04	1.3E-04	8.7E-05	5.9E-05	3.9E-05	2.6E-05	1.8E-05	1.2E-05	7.9E-06	5.2E-06	3.5E-06	2.4E-06	1.6E-06	1.1E-06
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	6.1E-01	3.3E-01	1.8E-01	9.8E-02	5.1E-02	2.8E-02	1.5E-02	7.9E-03	4.3E-03	2.3E-03	1.2E-03	6.6E-04	3.6E-04	2.0E-04	1.1E-04
I-129	1.4E+06	1.6E+06	1.8E+06	2.0E+06	2.2E+06	2.4E+06	2.6E+06	2.8E+06	3.0E+06	3.1E+06	3.3E+06	3.3E+06	3.3E+06	3.4E+06	3.5E+06
K-40	6.8E+07	9.1E+07	1.2E+08	1.5E+08	1.9E+08	2.4E+08	3.1E+08	3.7E+08	4.4E+08	5.4E+08	6.4E+08	7.3E+08	8.6E+08	1.0E+09	1.1E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.7E+06	3.2E+06	2.7E+06	2.3E+06	1.9E+06	1.6E+06	1.3E+06	1.1E+06	8.6E+05	6.9E+05	5.6E+05	4.5E+05	3.6E+05	2.8E+05	2.3E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	2.3E-06	3.5E-06	4.7E-06	1.8E-05	2.1E-04	1.0E-03	2.8E-03	5.5E-03	8.7E-03	1.2E-02	1.6E-02	6.7E-02	3.3E-01	9.8E-01	2.0E+00
Sr-90	1.0E+02	6.5E+01	4.2E+01	2.7E+01	1.7E+01	1.1E+01	7.1E+00	4.6E+00	2.9E+00	1.9E+00	1.2E+00	7.7E-01	5.0E-01	3.2E-01	2.1E-01
Tb-157	3.3E-04	2.1E-04	1.3E-04	8.5E-05	5.4E-05	3.5E-05	2.2E-05	1.4E-05	8.9E-06	5.7E-06	3.6E-06	2.3E-06	1.5E-06	9.5E-07	6.0E-07
Tb-158	2.0E-04	1.3E-04	8.6E-05	5.6E-05	3.7E-05	2.4E-05	1.6E-05	1.0E-05	6.9E-06	4.4E-06	3.0E-06	2.0E-06	1.3E-06	8.4E-07	5.5E-07
Tc-99	1.1E+08	1.2E+08	1.2E+08	1.3E+08	1.4E+08	1.4E+08	1.4E+08	1.4E+08	1.4E+08	1.4E+08	1.4E+08	1.4E+08	1.4E+08	1.3E+08	1.2E+08
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405
Al-26	1.7E-07	1.1E-07	7.6E-08	5.2E-08	3.5E-08	2.3E-08	1.6E-08	1.0E-08	7.1E-09	4.8E-09	3.2E-09	2.1E-09	1.4E-09	9.5E-10	6.3E-10	4.2E-10
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	1.8E-10	1.2E-10	6.2E-11	4.2E-11	1.1E-11	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.6E-01	1.2E-01	8.5E-02	6.1E-02	4.4E-02	3.2E-02	2.3E-02	1.7E-02	1.2E-02	8.8E-03	6.4E-03	4.6E-03	3.4E-03	2.4E-03	1.8E-03	1.3E-03
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	1.6E-10	1.1E-10	5.5E-11	3.6E-11	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	7.1E-07	4.8E-07	3.2E-07	2.2E-07	1.5E-07	9.7E-08	6.6E-08	4.4E-08	3.0E-08	2.0E-08	1.3E-08	9.0E-09	6.0E-09	4.0E-09	2.7E-09	1.8E-09
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	5.7E-05	3.0E-05	1.6E-05	8.9E-06	4.8E-06	2.6E-06	1.4E-06	7.6E-07	4.1E-07	2.2E-07	1.2E-07	6.5E-08	3.5E-08	1.9E-08	1.0E-08	5.5E-09
I-129	3.4E+06	3.4E+06	3.4E+06	3.3E+06	3.2E+06	3.1E+06	3.0E+06	2.8E+06	2.7E+06	2.6E+06	2.4E+06	2.3E+06	2.1E+06	2.0E+06	1.8E+06	1.7E+06
K-40	1.3E+09	1.4E+09	1.6E+09	1.7E+09	1.9E+09	2.1E+09	2.3E+09	2.4E+09	2.6E+09	2.7E+09	2.9E+09	3.0E+09	3.2E+09	3.4E+09	3.4E+09	3.5E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.8E+05	1.4E+05	1.1E+05	8.5E+04	6.6E+04	5.1E+04	4.0E+04	3.1E+04	2.4E+04	1.8E+04	1.4E+04	1.1E+04	8.1E+03	6.2E+03	4.7E+03	3.6E+03
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	3.3E+00	4.6E+00	5.8E+00	1.0E+01	3.4E+01	1.0E+02	2.2E+02	3.7E+02	5.2E+02	6.7E+02	8.8E+02	1.7E+03	4.2E+03	8.8E+03	1.5E+04	2.2E+04
Sr-90	1.3E-01	8.4E-02	5.4E-02	3.5E-02	2.2E-02	1.4E-02	9.2E-03	5.9E-03	3.8E-03	2.4E-03	1.6E-03	1.0E-03	6.5E-04	4.2E-04	2.7E-04	1.7E-04
Tb-157	3.9E-07	2.5E-07	1.6E-07	1.0E-07	6.4E-08	4.1E-08	2.7E-08	1.7E-08	1.1E-08	6.9E-09	4.5E-09	2.8E-09	1.8E-09	1.2E-09	7.5E-10	4.6E-10
Tb-158	3.7E-07	2.4E-07	1.6E-07	1.0E-07	6.9E-08	4.5E-08	3.0E-08	2.0E-08	1.3E-08	8.8E-09	5.5E-09	3.7E-09	2.4E-09	1.6E-09	1.1E-09	7.0E-10
Tc-99	1.2E+08	1.1E+08	1.1E+08	9.8E+07	9.2E+07	8.4E+07	7.8E+07	7.1E+07	6.5E+07	5.8E+07	5.3E+07	4.7E+07	4.2E+07	3.8E+07	3.3E+07	2.9E+07
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.20. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 1.717 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE

	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480
Al-26	2.8E-10	1.7E-10	1.2E-10	6.0E-11	4.0E-11	1.0E-11	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	9.3E-04	6.7E-04	4.9E-04	3.5E-04	2.6E-04	1.9E-04	1.4E-04	9.9E-05	7.2E-05	5.2E-05	3.8E-05	2.8E-05	2.0E-05	1.5E-05	1.1E-05
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.2E-09	8.3E-10	5.4E-10	3.6E-10	2.5E-10	1.5E-10	1.0E-10	5.3E-11	2.5E-11	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	3.0E-09	1.6E-09	8.5E-10	4.4E-10	2.3E-10	1.1E-10	3.7E-11	0	0	0	0	0	0	0	0
I-129	1.5E+06	1.4E+06	1.3E+06	1.1E+06	1.0E+06	9.4E+05	8.5E+05	7.6E+05	6.7E+05	6.0E+05	5.2E+05	4.7E+05	4.1E+05	3.6E+05	3.2E+05
K-40	3.8E+09	3.7E+09	3.7E+09	3.8E+09	3.7E+09	3.8E+09	3.7E+09	3.7E+09	3.7E+09	3.6E+09	3.5E+09	3.5E+09	3.4E+09	3.2E+09	3.2E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	2.7E+03	2.1E+03	1.6E+03	1.2E+03	9.0E+02	6.8E+02	5.1E+02	3.9E+02	2.9E+02	2.2E+02	1.6E+02	1.2E+02	9.2E+01	6.9E+01	5.2E+01
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	2.8E+04	3.5E+04	4.9E+04	9.6E+04	1.9E+05	3.2E+05	4.8E+05	6.2E+05	7.5E+05	9.2E+05	1.4E+06	2.5E+06	4.2E+06	6.1E+06	8.0E+06
Sr-90	1.1E-04	7.1E-05	4.6E-05	3.0E-05	1.9E-05	1.2E-05	7.9E-06	5.1E-06	3.3E-06	2.1E-06	1.4E-06	8.8E-07	5.7E-07	3.7E-07	2.4E-07
Tb-157	2.9E-10	1.8E-10	1.1E-10	5.3E-11	2.5E-11	0	0	0	0	0	0	0	0	0	0
Tb-158	4.5E-10	2.9E-10	1.8E-10	1.2E-10	8.0E-11	4.0E-11	0	0	0	0	0	0	0	0	0
Tc-99	2.6E+07	2.2E+07	2.0E+07	1.7E+07	1.5E+07	1.3E+07	1.1E+07	9.7E+06	8.1E+06	7.2E+06	6.1E+06	5.2E+06	4.4E+06	3.7E+06	3.2E+06
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	7.8E-06	5.6E-06	4.1E-06	3.0E-06	2.2E-06	1.6E-06	1.2E-06	8.4E-07	6.2E-07	4.5E-07	3.3E-07	2.4E-07	1.7E-07	1.3E-07	9.2E-08	6.8E-08
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.8E+05	2.5E+05	2.1E+05	1.9E+05	1.6E+05	1.4E+05	1.2E+05	1.0E+05	9.0E+04	7.7E+04	6.6E+04	5.7E+04	4.9E+04	4.2E+04	3.5E+04	3.0E+04
K-40	3.1E+09	2.9E+09	2.8E+09	2.7E+09	2.5E+09	2.4E+09	2.3E+09	2.2E+09	2.0E+09	1.9E+09	1.8E+09	1.7E+09	1.6E+09	1.4E+09	1.3E+09	1.3E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	3.9E+01	2.9E+01	2.2E+01	1.7E+01	1.2E+01	9.3E+00	7.0E+00	5.2E+00	3.9E+00	2.9E+00	2.2E+00	1.6E+00	1.2E+00	9.2E-01	6.9E-01	5.2E-01
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	9.7E+06	1.1E+07	1.5E+07	2.4E+07	3.7E+07	5.3E+07	6.9E+07	8.4E+07	9.7E+07	1.2E+08	1.6E+08	2.4E+08	3.4E+08	4.5E+08	5.4E+08	6.2E+08
Sr-90	1.5E-07	1.0E-07	6.4E-08	4.1E-08	2.7E-08	1.7E-08	1.1E-08	7.2E-09	4.6E-09	3.0E-09	1.9E-09	1.2E-09	8.0E-10	5.1E-10	3.1E-10	1.9E-10
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.7E+06	2.2E+06	1.9E+06	1.6E+06	1.3E+06	1.1E+06	9.2E+05	7.8E+05	6.5E+05	5.4E+05	4.5E+05	3.7E+05	3.1E+05	2.5E+05	2.1E+05	1.7E+05
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.20. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 1.717 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE

	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	4.9E-08	3.6E-08	2.6E-08	1.9E-08	1.4E-08	1.0E-08	7.5E-09	5.4E-09	4.0E-09	2.9E-09	2.1E-09	1.5E-09	1.1E-09	8.0E-10	5.8E-10	4.2E-10	2.8E-10	2.0E-10	1.3E-10	7.6E-11	3.1E-11	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.6E+04	2.2E+04	1.9E+04	1.6E+04	1.3E+04	1.1E+04	9.5E+03	8.0E+03	6.8E+03	5.7E+03	4.8E+03	4.0E+03	3.4E+03	2.8E+03	2.3E+03	2.0E+03	1.6E+03	1.4E+03	1.2E+03	9.6E+02	8.0E+02	6.6E+02	5.5E+02	4.6E+02	3.8E+02	3.2E+02	2.6E+02	2.2E+02	1.8E+02	1.5E+02	1.2E+02
K-40	1.2E+09	1.1E+09	1.0E+09	9.2E+08	8.4E+08	7.6E+08	7.1E+08	6.5E+08	5.8E+08	5.4E+08	4.9E+08	4.4E+08	4.0E+08	3.7E+08	3.3E+08	3.0E+08	2.7E+08	2.4E+08	2.2E+08	2.0E+08	1.8E+08	1.6E+08	1.4E+08	1.3E+08	1.1E+08	1.0E+08	9.2E+07	8.1E+07	7.2E+07	6.5E+07	5.8E+07
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	5.2E-11	1.7E-10	4.0E-10	7.6E-10	1.2E-09	1.7E-09	2.3E-09	2.8E-09	3.3E-09	3.8E-09	6.2E-09	1.5E-08	3.7E-08	7.7E-08	1.3E-07	2.0E-07	2.8E-07	3.7E-07	4.4E-07	5.1E-07	6.0E-07	8.6E-07	1.7E-06	3.5E-06	6.6E-06	1.1E-05	1.6E-05	2.2E-05	2.8E-05	3.3E-05
Re-187	3.9E-01	2.9E-01	2.2E-01	1.6E-01	1.2E-01	9.2E-02	6.8E-02	5.1E-02	3.9E-02	2.9E-02	2.2E-02	1.6E-02	1.2E-02	9.1E-03	6.8E-03	5.1E-03	3.9E-03	2.9E-03	2.2E-03	1.6E-03	1.2E-03	9.2E-04	6.9E-04	5.2E-04	3.9E-04	2.9E-04	2.2E-04	1.7E-04	1.2E-04	9.3E-05	7.0E-05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	7.1E+08	9.0E+08	1.2E+09	1.7E+09	2.1E+09	2.6E+09	2.9E+09	3.2E+09	3.9E+09	4.9E+09	6.5E+09	8.1E+09	9.8E+09	1.1E+10	1.2E+10	1.4E+10	1.7E+10	2.1E+10	2.7E+10	3.2E+10	3.6E+10	3.9E+10	4.3E+10	5.0E+10	6.0E+10	7.3E+10	8.5E+10	9.7E+10	1.0E+11	1.1E+11	1.3E+11
Sr-90	1.0E-10	3.5E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.4E+05	1.2E+05	9.5E+04	7.9E+04	6.5E+04	5.3E+04	4.3E+04	3.5E+04	2.9E+04	2.4E+04	1.9E+04	1.6E+04	1.3E+04	1.0E+04	8.4E+03	6.8E+03	5.5E+03	4.5E+03	3.6E+03	2.9E+03	2.4E+03	1.9E+03	1.5E+03	1.3E+03	1.0E+03	8.1E+02	6.5E+02	5.2E+02	4.2E+02	3.4E+02	2.7E+02
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.20. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 1.717 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE

	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.0E+02	8.3E+01	6.8E+01	5.6E+01	4.6E+01	3.8E+01	3.1E+01	2.6E+01	2.1E+01	1.8E+01	1.4E+01	1.2E+01	9.6E+00	7.9E+00	6.4E+00	5.3E+00	4.3E+00	3.5E+00	2.9E+00	2.3E+00	1.9E+00	1.6E+00	1.3E+00	1.0E+00	8.5E-01	6.9E-01	5.7E-01	4.6E-01	3.8E-01	3.1E-01	2.5E-01
K-40	5.1E+07	4.5E+07	4.0E+07	3.5E+07	3.1E+07	2.8E+07	2.5E+07	2.2E+07	1.9E+07	1.7E+07	1.5E+07	1.3E+07	1.2E+07	1.0E+07	8.9E+06	7.9E+06	6.9E+06	6.0E+06	5.3E+06	4.7E+06	4.1E+06	3.6E+06	3.1E+06	2.7E+06	2.4E+06	2.1E+06	1.8E+06	1.6E+06	1.4E+06	1.2E+06	1.1E+06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	3.8E-05	4.2E-05	5.7E-05	9.4E-05	1.8E-04	3.0E-04	4.7E-04	6.6E-04	8.7E-04	1.0E-03	1.2E-03	1.4E-03	1.6E-03	2.1E-03	3.1E-03	5.1E-03	8.2E-03	1.2E-02	1.7E-02	2.2E-02	2.7E-02	3.1E-02	3.4E-02	3.8E-02	4.7E-02	6.6E-02	1.0E-01	1.5E-01	2.1E-01	2.8E-01	3.5E-01
Re-187	5.3E-05	4.0E-05	3.0E-05	2.2E-05	1.7E-05	1.3E-05	9.5E-06	7.1E-06	5.4E-06	4.0E-06	3.1E-06	2.3E-06	1.7E-06	1.3E-06	9.8E-07	7.4E-07	5.6E-07	4.2E-07	3.2E-07	2.4E-07	1.8E-07	1.4E-07	1.0E-07	7.7E-08	5.8E-08	4.4E-08	3.3E-08	2.5E-08	1.9E-08	1.4E-08	1.1E-08
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1.5E+11	1.7E+11	2.0E+11	2.3E+11	2.4E+11	2.6E+11	2.8E+11	3.2E+11	3.7E+11	4.3E+11	4.8E+11	5.2E+11	5.5E+11	5.7E+11	6.4E+11	7.3E+11	8.2E+11	9.2E+11	9.8E+11	1.0E+12	1.1E+12	1.2E+12	1.3E+12	1.4E+12	1.6E+12	1.7E+12	1.7E+12	1.8E+12	2.0E+12	2.1E+12	2.3E+12
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.2E+02	1.7E+02	1.4E+02	1.1E+02	8.9E+01	7.2E+01	5.7E+01	4.6E+01	3.6E+01	2.9E+01	2.3E+01	1.9E+01	1.5E+01	1.2E+01	9.4E+00	7.5E+00	6.0E+00	4.7E+00	3.8E+00	3.0E+00	2.4E+00	1.9E+00	1.5E+00	1.2E+00	9.5E-01	7.5E-01	6.0E-01	4.7E-01	3.7E-01	3.0E-01	2.4E-01
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.20. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 1.717 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE

	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	2.0E-01	1.6E-01	1.3E-01	1.1E-01	8.8E-02	7.2E-02	5.8E-02	4.7E-02	3.8E-02	3.1E-02	2.5E-02	2.0E-02	1.6E-02	1.3E-02	1.1E-02
K-40	9.0E+05	7.9E+05	6.9E+05	6.1E+05	5.2E+05	4.5E+05	3.9E+05	3.4E+05	3.0E+05	2.6E+05	2.2E+05	1.9E+05	1.7E+05	1.4E+05	1.3E+05
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	4.2E-01	4.7E-01	5.3E-01	5.9E-01	7.1E-01	9.6E-01	1.3E+00	1.9E+00	2.6E+00	3.3E+00	4.1E+00	4.7E+00	5.3E+00	5.8E+00	6.5E+00
Re-187	6.0E-09	6.0E-09	4.5E-09	3.4E-09	2.5E-09	1.9E-09	1.4E-09	1.1E-09	7.8E-10	5.8E-10	4.2E-10	3.0E-10	2.0E-10	1.3E-10	4.2E-11
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	2.5E+12	2.7E+12	2.8E+12	2.9E+12	3.0E+12	3.2E+12	3.5E+12	3.8E+12	4.0E+12	4.2E+12	4.3E+12	4.3E+12	4.6E+12	5.0E+12	5.4E+12
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.9E-01	1.5E-01	1.2E-01	9.3E-02	7.3E-02	5.8E-02	4.6E-02	3.6E-02	2.9E-02	2.3E-02	1.8E-02	1.4E-02	1.1E-02	8.9E-03	7.0E-03
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	950	955	960	965	970	975	980	985	990	995	1000	1010	1020	1030	1040	1050
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	8.7E-03	7.1E-03	5.7E-03	4.7E-03	3.8E-03	3.1E-03	2.5E-03	2.0E-03	1.6E-03	1.3E-03	1.0E-03	6.8E-04	4.4E-04	2.8E-04	1.8E-04	1.2E-04
K-40	1.1E+05	9.4E+04	8.2E+04	7.1E+04	6.1E+04	5.3E+04	4.8E+04	3.9E+04	3.4E+04	2.9E+04	2.5E+04	1.9E+04	1.4E+04	1.0E+04	7.6E+03	5.6E+03
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	7.7E+00	1.0E+01	1.3E+01	1.9E+01	2.3E+01	2.9E+01	3.5E+01	4.1E+01	4.6E+01	5.0E+01	5.5E+01	8.0E+01	1.3E+02	2.1E+02	2.8E+02	3.3E+02
Re-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	5.7E+12	6.0E+12	6.0E+12	6.2E+12	6.4E+12	6.7E+12	7.2E+12	7.6E+12	7.9E+12	8.1E+12	8.1E+12	8.7E+12	9.8E+12	1.0E+13	1.0E+13	1.1E+13
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	5.5E-03	4.4E-03	3.4E-03	2.7E-03	2.1E-03	1.7E-03	1.3E-03	1.0E-03	8.2E-04	6.4E-04	5.0E-04	3.1E-04	1.9E-04	1.2E-04	7.3E-05	4.5E-05
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.20. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 1.717 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD PERMEABILITY INCREASE

	1060	1070	1080	1100	1300	1500	2000	1500	2000
Al-26	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	4.8E-07
Cd-113m	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	8.5E-11	0	0
H-3	0	0	0	0	0	0	0	0	0
I-129	7.5E-05	4.8E-05	3.1E-05	1.3E-05	1.7E-09	0	0	0	9.2E-11
K-40	4.2E+03	3.1E+03	2.3E+03	1.2E+03	2.0E+00	3.0E-03	1.5E-10	0	0
Ks-20	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0
Na 22	0	0	0	0	0	0	0	2.6E-03	1.2E-10
Pd-107	4.2E+02	6.5E+02	1.0E+03	1.7E+03	2.5E+05	7.0E+08	1.2E+09	0	0
Re-187	0	0	0	0	0	0	0	0	0
Se-79	0	0	0	0	0	0	5.8E-05	0	0
Si-32	1.2E+13	1.2E+13	1.3E+13	1.4E+13	1.8E+13	1.0E+13	3.3E+11	0	0
Sr-90	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0
Tc-99	2.8E-05	1.7E-05	1.0E-05	4.0E-06	5.2E-11	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	5.7E-05

TABLE A7.21. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 2.10 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD K INCREASE AND HIGH PRECIPITATION

	EXCEEDS	10	20	30	40	50	60	70	80	90	100	110	120	130	140
Al-26	-1	0	2.2E-03	3.9E+00	6.9E+01	1.7E+02	1.6E+02	9.6E+01	5.0E+01	2.4E+01	1.1E+01	4.9E+00	2.2E+00	9.7E-01	4.2E-01
Am-241	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	-1	0	3.2E-06	5.7E-03	9.6E-02	2.3E-01	2.2E-01	1.3E-01	7.0E-02	3.3E-02	1.5E-02	6.6E-03	3.0E-03	1.3E-03	5.6E-04
Ca-41	-1	0	0	3.3E-09	8.6E-05	3.8E-02	2.0E+00	4.0E+01	2.5E+02	7.4E+02	1.4E+03	2.0E+03	2.3E+03	2.1E+03	1.7E+03
Cd-113m	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	-1	0	4.6E-06	7.9E-03	1.4E-01	3.2E-01	2.9E-01	1.8E-01	9.0E-02	4.2E-02	1.9E-02	8.3E-03	3.6E-03	1.6E-03	6.7E-04
Cf-250	20	1.2E-10	4.6E-01	3.6E+02	3.0E+03	3.7E+03	1.9E+03	6.8E+02	2.0E+02	5.5E+01	1.5E+01	3.9E+00	1.0E+00	2.7E-01	7.0E-02
Cf-251	20	1.8E-10	2.2E-02	6.2E-01	2.5E-01	1.9E-02	7.8E-04	2.5E-05	7.4E-07	2.0E-08	5.3E-10	0	0	0	0
Cf-252	10	1.2E-05	1.9E+03	7.3E+04	3.6E+04	3.6E+03	1.9E+02	7.3E+00	2.6E-01	8.9E-03	2.9E-04	9.4E-06	3.1E-07	9.9E-09	3.1E-10
Cl-36	-1	0	9.4E-03	1.6E+01	2.9E+02	7.0E+02	6.5E+02	4.1E+02	2.1E+02	1.0E+02	4.5E+01	2.0E+01	9.2E+00	4.0E+00	1.8E+00
Eu-152	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	40	0	4.5E-08	2.0E+00	4.1E+03	3.2E+05	3.7E+06	1.6E+07	2.5E+07	2.2E+07	1.4E+07	6.8E+06	2.8E+06	1.0E+06	3.4E+05
I-129	100	0	0	0	0	0	4.2E-09	4.0E-06	6.9E-04	4.0E-02	1.0E+00	4.5E+01	3.3E+02	2.1E+03	6.9E+03
K-40	120	0	0	0	0	0	0	5.5E-09	6.1E-06	1.0E-03	6.6E-02	2.6E+00	6.9E+01	3.9E+03	1.8E+04
Ks-20	-1	3.2E-09	1.0E-03	1.1E-04	3.1E-07	2.5E-10	0	0	0	0	0	0	0	0	0
Ks-21	-1	0	8.2E-06	5.7E-06	4.2E-08	5.0E-11	0	0	0	0	0	0	0	0	0
Na-22	10	1.1E-05	1.6E+03	5.7E+04	2.7E+04	2.5E+03	1.2E+02	4.7E+00	1.6E-01	5.1E-03	1.6E-04	4.8E-06	1.5E-07	4.6E-09	1.3E-10
Pd-107	990	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	100	0	0	0	8.9E-07	4.6E-03	2.0E+00	1.4E+02	3.2E+03	5.5E+04	2.7E+05	8.4E+05	2.0E+06	3.7E+06	5.9E+06
Se-79	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sr-90	40	0	0	1.7E-05	3.4E-01	1.0E+02	3.9E+03	5.5E+04	2.5E+05	5.2E+05	7.5E+05	7.9E+05	6.5E+05	4.5E+05	2.7E+05
Tb-157	30	1.8E-11	1.3E-01	2.0E+02	3.0E+03	6.6E+03	5.4E+03	3.0E+03	1.4E+03	8.1E+02	2.5E+02	1.0E+02	4.1E+01	1.6E+01	8.6E+00
Tb-158	-1	0	1.7E-02	2.9E+01	4.8E+02	1.1E+03	9.7E+02	5.9E+02	2.9E+02	1.3E+02	5.9E+01	2.5E+01	1.1E+01	4.5E+00	1.9E+00
Tc-99	100	0	0	0	0	1.1E-09	1.0E-05	6.5E-03	8.3E-01	3.5E+01	9.6E+02	2.3E+04	1.1E+05	4.5E+05	1.6E+06
Tl-204	-1	0	0	0	0	0	0	0	0	6.0E-11	4.5E-10	1.9E-09	4.7E-09	2.0E-08	1.3E-08

	150	160	170	180	190	200	205	210	215	220	225	230	235	240	245	250
Al-26	1.8E-01	8.1E-02	3.6E-02	1.6E-02	7.0E-03	3.1E-03	2.1E-03	1.4E-03	9.1E-04	6.0E-04	4.1E-04	2.7E-04	1.8E-04	1.2E-04	7.9E-05	5.4E-05
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	2.5E-04	1.1E-04	4.8E-05	2.1E-05	9.2E-06	4.0E-06	2.7E-06	1.8E-06	1.2E-06	7.9E-07	5.2E-07	3.5E-07	2.3E-07	1.5E-07	1.0E-07	6.8E-08
Ca-41	1.2E+03	8.3E+02	5.1E+02	3.0E+02	1.7E+02	9.4E+01	6.9E+01	5.1E+01	3.8E+01	2.7E+01	2.0E+01	1.5E+01	1.1E+01	7.7E+00	5.5E+00	4.0E+00
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	2.9E-04	1.3E-04	5.4E-05	2.3E-05	1.0E-05	4.4E-06	2.9E-06	1.9E-06	1.3E-06	8.1E-07	5.5E-07	3.6E-07	2.4E-07	1.6E-07	1.0E-07	6.8E-08
Cf-250	1.8E-02	4.6E-03	1.2E-03	3.1E-04	7.9E-05	2.1E-05	1.1E-05	5.5E-06	2.8E-06	1.4E-06	7.4E-07	3.7E-07	1.9E-07	9.9E-08	5.0E-08	2.6E-08
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	7.9E-01	3.4E-01	1.5E-01	6.6E-02	2.9E-02	1.3E-02	8.6E-03	5.7E-03	3.8E-03	2.6E-03	1.7E-03	1.1E-03	7.4E-04	5.0E-04	3.4E-04	2.2E-04
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.1E+05	3.3E+04	9.9E+03	2.9E+03	8.5E+02	2.4E+02	1.3E+02	7.0E+01	3.8E+01	2.0E+01	1.1E+01	5.8E+00	3.1E+00	1.7E+00	9.1E-01	4.9E-01
I-129	2.4E+04	6.2E+04	1.3E+05	2.8E+05	4.9E+05	8.1E+05	1.0E+06	1.2E+06	1.4E+06	1.7E+06	1.9E+06	2.2E+06	2.4E+06	2.6E+06	2.8E+06	3.0E+06
K-40	1.3E+05	4.2E+05	1.8E+06	4.5E+06	1.3E+07	2.8E+07	4.4E+07	6.2E+07	8.2E+07	1.1E+08	1.6E+08	2.1E+08	2.6E+08	3.5E+08	4.3E+08	5.3E+08
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	7.8E+06	9.1E+06	9.4E+06	8.8E+06	7.5E+06	6.1E+06	5.3E+06	4.6E+06	3.9E+06	3.3E+06	2.7E+06	2.2E+06	1.8E+06	1.5E+06	1.2E+06	9.6E+05
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	0	0	0	0	2.0E-10	9.0E-09	2.2E-08	1.0E-07	1.1E-06	5.3E-06	1.5E-05	2.2E-04	5.1E-03	3.4E-02	1.1E-01	2.3E-01
Sr-90	1.4E+05	7.2E+04	3.4E+04	1.5E+04	8.7E+03	2.9E+03	1.9E+03	1.2E+03	7.7E+02	5.0E+02	3.2E+02	2.1E+02	1.3E+02	8.5E+01	5.5E+01	3.5E+01
Tb-157	2.6E+00	1.0E+00	4.2E-01	1.7E-01	6.6E-02	2.7E-02	1.7E-02	1.1E-02	6.9E-03	4.3E-03	2.8E-03	1.7E-03	1.1E-03	7.0E-04	4.5E-04	2.8E-04
Tb-158	8.2E-01	3.5E-01	1.5E-01	6.2E-02	2.6E-02	1.1E-02	7.3E-03	4.8E-03	3.1E-03	2.0E-03	1.3E-03	8.6E-04	5.7E-04	3.7E-04	2.4E-04	1.6E-04
Tc-99	4.1E+06	9.4E+06	1.9E+07	3.2E+07	5.0E+07	7.2E+07	8.3E+07	9.3E+07	1.1E+08	1.1E+08	1.2E+08	1.3E+08	1.3E+08	1.4E+08	1.4E+08	1.4E+08
Tl-204	8.4E-09	3.3E-09	1.4E-09	4.1E-10	1.3E-10	1.8E-11	0	0	0	0	0	0	0	0	0	0

NOTE: Year to exceed GWPL reported to next lowest model output year. -1 indicates nuclide does not exceed GWPL within the 2,000 years modeled

TABLE A7.21. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 2.10 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD K INCREASE AND HIGH PRECIPITATION

	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325
Al-26	3.6E-05	2.4E-05	1.6E-05	1.1E-05	7.1E-06	4.8E-06	3.2E-06	2.1E-06	1.4E-06	9.6E-07	6.5E-07	4.3E-07	2.9E-07	1.9E-07	1.3E-07
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	4.5E-08	3.0E-08	2.0E-08	1.4E-08	9.0E-09	6.0E-09	4.0E-09	2.7E-09	1.8E-09	1.2E-09	7.9E-10	5.2E-10	3.5E-10	2.2E-10	1.4E-10
Ca-41	2.9E+00	2.1E+00	1.5E+00	1.1E+00	7.9E-01	5.8E-01	4.2E-01	3.0E-01	2.2E-01	1.6E-01	1.1E-01	8.1E-02	5.9E-02	4.3E-02	3.1E-02
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	4.5E-08	3.0E-08	2.0E-08	1.3E-08	8.6E-09	5.7E-09	3.8E-09	2.5E-09	1.7E-09	1.1E-09	7.3E-10	4.7E-10	3.2E-10	2.0E-10	1.3E-10
Cf-250	1.3E-08	6.8E-09	3.5E-09	1.8E-09	9.1E-10	4.6E-10	2.3E-10	1.1E-10	4.2E-11	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	1.5E-04	1.0E-04	6.6E-05	4.5E-05	3.0E-05	2.0E-05	1.3E-05	9.0E-06	6.0E-06	4.0E-06	2.7E-06	1.8E-06	1.2E-06	8.1E-07	5.5E-07
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.6E-01	1.4E-01	7.6E-02	4.1E-02	2.2E-02	1.2E-02	6.3E-03	3.4E-03	1.8E-03	1.0E-03	5.4E-04	2.9E-04	1.6E-04	8.4E-05	4.5E-05
I-129	3.2E+06	3.3E+06	3.4E+06	3.4E+06	3.5E+06	3.4E+06	3.3E+06	3.2E+06	3.1E+06	3.0E+06	2.8E+06	2.7E+06	2.5E+06	2.3E+06	2.1E+06
K-40	6.5E+08	7.9E+08	9.4E+08	1.1E+09	1.2E+09	1.5E+09	1.6E+09	1.8E+09	2.0E+09	2.3E+09	2.4E+09	2.6E+09	2.8E+09	3.0E+09	3.1E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	7.6E+05	6.0E+05	4.7E+05	3.7E+05	2.8E+05	2.2E+05	1.7E+05	1.3E+05	9.9E+04	7.6E+04	5.8E+04	4.4E+04	3.3E+04	2.5E+04	1.9E+04
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	3.9E-01	5.5E-01	7.4E-01	2.8E+00	1.6E+01	5.3E+01	1.2E+02	2.0E+02	2.9E+02	3.6E+02	5.9E+02	1.9E+03	8.0E+03	1.3E+04	2.3E+04
Sr-90	2.2E+01	1.4E+01	9.1E+00	5.9E+00	3.8E+00	2.4E+00	1.6E+00	1.0E+00	6.4E-01	4.1E-01	2.6E-01	1.7E-01	1.1E-01	7.0E-02	4.5E-02
Tb-157	1.8E-04	1.2E-04	7.3E-05	4.6E-05	3.0E-05	1.9E-05	1.2E-05	7.7E-06	4.9E-06	3.2E-06	2.0E-06	1.3E-06	8.3E-07	5.3E-07	3.3E-07
Tb-158	1.0E-04	6.8E-05	4.5E-05	3.0E-05	1.9E-05	1.3E-05	8.4E-06	5.5E-06	3.6E-06	2.4E-06	1.6E-06	1.0E-06	6.7E-07	4.4E-07	2.9E-07
Tc-99	1.4E+08	1.4E+08	1.3E+08	1.3E+08	1.2E+08	1.1E+08	1.0E+08	9.6E+07	8.8E+07	8.0E+07	7.1E+07	6.5E+07	5.7E+07	5.1E+07	4.5E+07
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405
Al-26	8.6E-08	5.9E-08	4.0E-08	2.6E-08	1.8E-08	1.2E-08	8.0E-09	5.4E-09	3.6E-09	2.4E-09	1.6E-09	1.1E-09	7.3E-10	4.8E-10	3.3E-10	2.1E-10
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	9.4E-11	5.6E-11	1.3E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	2.3E-02	1.6E-02	1.2E-02	8.6E-03	6.2E-03	4.5E-03	3.3E-03	2.4E-03	1.7E-03	1.2E-03	9.2E-04	6.6E-04	4.8E-04	3.5E-04	2.5E-04	1.9E-04
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	7.5E-11	4.0E-11	1.1E-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	3.7E-07	2.5E-07	1.7E-07	1.1E-07	7.4E-08	5.0E-08	3.4E-08	2.3E-08	1.5E-08	1.0E-08	6.8E-09	4.6E-09	3.1E-09	2.1E-09	1.4E-09	9.3E-10
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	2.5E-05	1.3E-05	7.1E-06	3.9E-06	2.1E-06	1.1E-06	6.1E-07	3.3E-07	1.8E-07	9.6E-08	5.2E-08	2.8E-08	1.5E-08	8.2E-09	4.5E-09	2.4E-09
I-129	2.0E+06	1.8E+06	1.6E+06	1.5E+06	1.3E+06	1.2E+06	1.0E+06	9.3E+05	8.1E+05	7.0E+05	8.2E+05	5.4E+05	4.7E+05	4.0E+05	3.5E+05	3.0E+05
K-40	3.3E+09	3.4E+09	3.5E+09	3.6E+09	3.6E+09	3.7E+09	3.7E+09	3.8E+09	3.7E+09	3.6E+09	3.4E+09	3.4E+09	3.3E+09	3.2E+09	3.0E+09	2.9E+09
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-187	1.4E+04	1.1E+04	8.1E+03	6.1E+03	4.5E+03	3.4E+03	2.6E+03	1.9E+03	1.4E+03	1.1E+03	8.0E+02	6.0E+02	4.5E+02	3.3E+02	2.5E+02	1.9E+02
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	3.3E+04	4.4E+04	5.6E+04	1.0E+05	2.6E+05	5.5E+05	9.5E+05	1.4E+06	1.8E+06	2.2E+06	3.1E+06	5.8E+06	1.1E+07	1.9E+07	2.7E+07	3.5E+07
Sr-90	2.9E-02	1.9E-02	1.2E-02	7.6E-03	4.9E-03	3.1E-03	2.0E-03	1.3E-03	8.3E-04	5.4E-04	3.5E-04	2.2E-04	1.4E-04	9.2E-05	6.0E-05	3.8E-05
Tb-157	2.1E-07	1.4E-07	8.7E-08	5.6E-08	3.6E-08	2.3E-08	1.5E-08	9.3E-09	6.0E-09	3.8E-09	2.4E-09	1.6E-09	9.9E-10	6.3E-10	4.0E-10	2.5E-10
Tb-158	1.9E-07	1.3E-07	8.4E-08	5.5E-08	3.6E-08	2.4E-08	1.6E-08	1.0E-08	6.8E-09	4.5E-09	3.0E-09	2.0E-09	1.3E-09	8.5E-10	5.5E-10	3.6E-10
Tc-99	3.9E+07	3.4E+07	2.9E+07	2.6E+07	2.2E+07	1.9E+07	1.6E+07	1.3E+07	1.1E+07	9.5E+06	8.0E+06	6.6E+06	5.6E+06	4.6E+06	3.8E+06	3.2E+06
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.21. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 2.10 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD K INCREASE AND HIGH PRECIPITATION

	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480
Al-26	1.3E-10	8.1E-11	5.4E-11	1.3E-11	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.3E-04	9.9E-05	7.1E-05	5.1E-05	3.7E-05	2.7E-05	2.0E-05	1.5E-05	1.1E-05	7.6E-06	5.6E-06	4.0E-06	2.9E-06	2.1E-06	1.6E-06
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	6.4E-10	4.2E-10	2.7E-10	1.6E-10	1.2E-10	7.0E-11	2.8E-11	1.1E-11	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	1.3E-09	7.0E-10	3.7E-10	1.8E-10	9.3E-11	3.6E-11	0	0	0	0	0	0	0	0	0
I-129	2.6E+05	2.2E+05	1.9E+05	1.6E+05	1.3E+05	1.1E+05	9.4E+04	7.8E+04	6.6E+04	5.6E+04	4.6E+04	3.8E+04	3.2E+04	2.6E+04	2.2E+04
K-40	2.8E+09	2.6E+09	2.5E+09	2.3E+09	2.2E+09	2.0E+09	1.9E+09	1.8E+09	1.6E+09	1.5E+09	1.4E+09	1.3E+09	1.2E+09	1.1E+09	9.7E+08
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	0	0	0	0	0	0	0	0	0	3.1E-11	1.3E-10	3.4E-10	7.0E-10	1.2E-09	1.8E-09
Re-187	1.4E+02	1.0E+02	7.8E+01	5.8E+01	4.4E+01	3.3E+01	2.4E+01	1.8E+01	1.4E+01	1.0E+01	7.6E+00	5.7E+00	4.2E+00	3.2E+00	2.4E+00
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	4.3E+07	5.3E+07	8.0E+07	1.3E+08	2.1E+08	3.1E+08	4.0E+08	4.7E+08	5.5E+08	7.5E+08	1.1E+09	1.7E+09	2.3E+09	3.0E+09	3.6E+09
Sr-90	2.5E-05	1.6E-05	1.0E-05	6.7E-06	4.3E-06	2.8E-06	1.8E-06	1.2E-06	7.4E-07	4.8E-07	3.1E-07	2.0E-07	1.3E-07	8.5E-08	5.4E-08
Tb-157	1.5E-10	9.7E-11	5.5E-11	1.2E-11	0	0	0	0	0	0	0	0	0	0	0
Tb-158	2.3E-10	1.4E-10	9.5E-11	5.6E-11	1.3E-11	0	0	0	0	0	0	0	0	0	0
Tc-99	2.6E+06	2.1E+06	1.7E+06	1.4E+06	1.2E+06	9.5E+05	7.7E+05	6.2E+05	5.1E+05	4.1E+05	3.3E+05	2.6E+05	2.1E+05	1.7E+05	1.4E+05
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	1.1E-06	8.5E-07	8.1E-07	4.4E-07	3.3E-07	2.4E-07	1.7E-07	1.3E-07	9.2E-08	6.7E-08	4.9E-08	3.6E-08	2.6E-08	1.9E-08	1.4E-08	1.0E-08
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.8E+04	1.5E+04	1.2E+04	1.0E+04	8.2E+03	6.7E+03	5.5E+03	4.5E+03	3.7E+03	3.0E+03	2.4E+03	2.0E+03	1.6E+03	1.3E+03	1.0E+03	8.4E+02
K-40	8.8E+08	7.9E+08	7.1E+08	6.5E+08	5.9E+08	5.2E+08	4.6E+08	4.1E+08	3.7E+08	3.2E+08	2.9E+08	2.6E+08	2.3E+08	2.0E+08	1.8E+08	1.5E+08
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	2.4E-09	3.0E-09	3.6E-09	4.3E-09	8.1E-09	2.7E-08	8.0E-08	1.9E-07	3.5E-07	5.7E-07	8.1E-07	1.1E-06	1.3E-06	1.5E-06	1.8E-06	3.0E-06
Re-187	1.8E+00	1.3E+00	1.0E+00	7.5E-01	5.6E-01	4.2E-01	3.1E-01	2.4E-01	1.8E-01	1.3E-01	9.9E-02	7.4E-02	5.6E-02	4.2E-02	3.1E-02	2.4E-02
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	4.1E+09	5.0E+09	6.8E+09	9.5E+09	1.3E+10	1.6E+10	1.9E+10	2.2E+10	2.5E+10	3.1E+10	4.1E+10	5.4E+10	6.7E+10	7.8E+10	8.6E+10	9.8E+10
Sr-90	3.5E-08	2.3E-08	1.5E-08	9.6E-09	6.1E-09	4.0E-09	2.6E-09	1.6E-09	1.1E-09	6.8E-10	4.4E-10	2.6E-10	1.6E-10	8.8E-11	4.7E-11	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.1E+05	8.6E+04	6.9E+04	5.5E+04	4.4E+04	3.5E+04	2.7E+04	2.2E+04	1.7E+04	1.4E+04	1.1E+04	8.5E+03	6.7E+03	5.3E+03	4.2E+03	3.3E+03
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.21. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 2.10 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD K INCREASE AND HIGH PRECIPITATION

	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	7.3E-09	5.4E-09	4.0E-09	2.9E-09	2.1E-09	1.5E-09	1.1E-09	8.1E-10	5.8E-10	4.2E-10	3.0E-10	2.2E-10	1.4E-10	9.5E-11	5.2E-11	2.0E-11
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	6.8E+02	5.5E+02	4.4E+02	3.5E+02	2.8E+02	2.3E+02	1.8E+02	1.5E+02	1.2E+02	9.4E+01	7.5E+01	6.0E+01	4.8E+01	3.8E+01	3.0E+01	2.4E+01
K-40	1.3E+08	1.2E+08	1.0E+08	9.0E+07	7.8E+07	6.8E+07	6.0E+07	5.1E+07	4.4E+07	3.9E+07	3.3E+07	2.9E+07	2.5E+07	2.2E+07	1.8E+07	1.6E+07
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	7.0E-06	1.7E-05	3.5E-05	6.0E-05	9.2E-05	1.3E-04	1.6E-04	2.0E-04	2.3E-04	2.7E-04	3.8E-04	7.1E-04	1.4E-03	2.6E-03	4.1E-03	5.9E-03
Re-187	1.8E-02	1.3E-02	9.9E-03	7.5E-03	5.6E-03	4.2E-03	3.2E-03	2.4E-03	1.8E-03	1.3E-03	1.0E-03	7.6E-04	5.7E-04	4.3E-04	3.2E-04	2.4E-04
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1.2E+11	1.5E+11	1.8E+11	2.2E+11	2.6E+11	2.8E+11	3.1E+11	3.5E+11	4.2E+11	5.2E+11	6.1E+11	7.0E+11	7.5E+11	8.1E+11	9.0E+11	1.0E+12
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.6E+03	2.0E+03	1.6E+03	1.2E+03	9.7E+02	7.6E+02	5.9E+02	4.7E+02	3.6E+02	2.8E+02	2.2E+02	1.7E+02	1.4E+02	1.1E+02	8.2E+01	6.4E+01
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.9E+01	1.5E+01	1.2E+01	9.8E+00	7.8E+00	6.2E+00	4.9E+00	3.9E+00	3.1E+00	2.4E+00	1.9E+00	1.5E+00	1.2E+00	9.6E-01	7.6E-01
K-40	1.4E+07	1.2E+07	1.0E+07	8.5E+06	7.3E+06	6.2E+06	5.3E+06	4.6E+06	3.9E+06	3.3E+06	2.8E+06	2.4E+06	2.0E+06	1.7E+06	1.5E+06
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	7.9E-03	9.8E-03	1.1E-02	1.3E-02	1.5E-02	2.1E-02	3.4E-02	5.9E-02	9.7E-02	1.5E-01	2.1E-01	2.6E-01	3.2E-01	3.6E-01	4.1E-01
Re-187	1.8E-04	1.4E-04	1.0E-04	7.6E-05	5.8E-05	4.4E-05	3.3E-05	2.5E-05	1.9E-05	1.4E-05	1.1E-05	8.0E-06	6.1E-06	4.6E-06	3.4E-06
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1.2E+12	1.4E+12	1.6E+12	1.7E+12	1.8E+12	2.0E+12	2.3E+12	2.5E+12	3.0E+12	3.2E+12	3.5E+12	3.8E+12	4.0E+12	4.3E+12	4.8E+12
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	5.0E+01	3.9E+01	3.0E+01	2.4E+01	1.8E+01	1.4E+01	1.1E+01	8.7E+00	6.8E+00	5.3E+00	4.1E+00	3.2E+00	2.5E+00	1.9E+00	1.5E+00
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.21. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 2.10 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD K INCREASE AND HIGH PRECIPITATION

	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	6.0E-01	4.8E-01	3.7E-01	2.9E-01	2.3E-01	1.8E-01	1.5E-01	1.1E-01	9.1E-02	7.1E-02	5.6E-02	4.4E-02	3.5E-02	2.7E-02	2.2E-02	1.7E-02
K-40	1.2E+06	1.0E+06	8.8E+05	7.5E+05	6.4E+05	5.4E+05	4.5E+05	3.8E+05	3.2E+05	2.7E+05	2.3E+05	1.9E+05	1.6E+05	1.4E+05	1.1E+05	9.6E+04
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	4.8E-01	6.2E-01	9.5E-01	1.5E+00	2.3E+00	3.2E+00	4.2E+00	5.3E+00	6.2E+00	7.0E+00	7.9E+00	9.0E+00	1.2E+01	1.8E+01	2.4E+01	3.4E+01
Re-187	2.6E-06	1.9E-06	1.5E-06	1.1E-06	8.3E-07	6.3E-07	4.7E-07	3.8E-07	2.7E-07	2.0E-07	1.5E-07	1.2E-07	8.7E-08	6.5E-08	5.0E-08	3.7E-08
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	5.4E+12	6.0E+12	6.4E+12	6.8E+12	7.1E+12	7.5E+12	8.3E+12	9.3E+12	1.0E+13	1.1E+13	1.1E+13	1.1E+13	1.2E+13	1.3E+13	1.4E+13	1.5E+13
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	1.2E+00	9.0E-01	7.0E-01	5.5E-01	4.3E-01	3.3E-01	2.6E-01	2.0E-01	1.5E-01	1.2E-01	9.3E-02	7.2E-02	5.6E-02	4.4E-02	3.4E-02	2.6E-02
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	1.3E-02	1.1E-02	8.3E-03	6.5E-03	5.1E-03	4.0E-03	3.2E-03	2.5E-03	2.0E-03	1.5E-03	1.2E-03	9.5E-04	7.5E-04	5.9E-04	4.6E-04
K-40	8.0E+04	6.7E+04	5.7E+04	4.7E+04	3.9E+04	3.3E+04	2.8E+04	2.3E+04	2.0E+04	1.6E+04	1.3E+04	1.1E+04	9.4E+03	7.6E+03	6.5E+03
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	4.6E+01	5.8E+01	6.9E+01	8.1E+01	9.0E+01	9.9E+01	1.1E+02	1.4E+02	1.9E+02	2.6E+02	3.5E+02	4.5E+02	5.5E+02	6.5E+02	7.4E+02
Re-187	2.8E-08	2.1E-08	1.6E-08	1.2E-08	9.1E-09	6.9E-09	5.2E-09	3.9E-09	3.0E-09	2.2E-09	1.7E-09	1.2E-09	9.3E-10	7.0E-10	5.2E-10
Se-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	1.6E+13	1.7E+13	1.7E+13	1.8E+13	1.9E+13	2.0E+13	2.2E+13	2.3E+13	2.4E+13	2.4E+13	2.4E+13	2.6E+13	2.7E+13	2.9E+13	3.0E+13
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	2.0E-02	1.6E-02	1.2E-02	9.6E-03	7.5E-03	5.8E-03	4.5E-03	3.5E-03	2.7E-03	2.1E-03	1.6E-03	1.3E-03	9.9E-04	7.7E-04	6.0E-04
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.21. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL

HORIZONTAL PATHRAE MODEL RESULTS BASED ON 2.10 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD K INCREASE AND HIGH PRECIPITATION

	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000	1010	1020	1030	1040	1050
Al-26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-242m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bk-247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cd-113m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I-129	3.6E-04	2.8E-04	2.2E-04	1.8E-04	1.4E-04	1.1E-04	8.5E-05	6.6E-05	5.2E-05	4.1E-05	3.2E-05	2.5E-05	2.0E-05	1.6E-05	1.2E-05	9.6E-06	7.5E-06	5.9E-06	4.6E-06	3.6E-06	2.9E-06	2.2E-06	1.8E-06	1.4E-06	1.1E-06	8.5E-07	5.2E-07	3.2E-07	2.0E-07	1.2E-07	7.5E-08
K-40	5.4E+03	4.6E+03	3.8E+03	3.1E+03	2.6E+03	2.2E+03	1.8E+03	1.5E+03	1.3E+03	1.0E+03	8.7E+02	7.2E+02	6.0E+02	5.0E+02	4.1E+02	3.4E+02	2.8E+02	2.3E+02	2.0E+02	1.6E+02	1.3E+02	1.1E+02	9.1E+01	7.5E+01	6.2E+01	5.1E+01	3.5E+01	2.4E+01	1.6E+01	1.1E+01	7.6E+00
Ks-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pd-107	8.1E+02	9.0E+02	1.0E+03	1.3E+03	1.6E+03	2.1E+03	2.7E+03	3.4E+03	4.0E+03	4.6E+03	5.1E+03	5.6E+03	6.2E+03	7.0E+03	8.5E+03	1.1E+04	1.4E+04	1.7E+04	2.1E+04	2.4E+04	2.6E+04	2.9E+04	3.2E+04	3.4E+04	3.9E+04	4.6E+04	8.9E+04	9.8E+04	1.2E+05	1.4E+05	1.7E+05
Re-187	3.8E-10	2.8E-10	1.9E-10	1.4E-10	7.7E-11	2.2E-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sn-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Si-32	3.1E+13	3.1E+13	3.2E+13	3.3E+13	3.5E+13	3.7E+13	3.8E+13	3.9E+13	3.8E+13	3.9E+13	4.0E+13	4.2E+13	4.3E+13	4.5E+13	4.4E+13	4.5E+13	4.5E+13	4.6E+13	4.7E+13	4.7E+13	4.9E+13	4.9E+13	5.0E+13	4.9E+13	5.0E+13	5.0E+13	5.2E+13	5.3E+13	5.2E+13	5.2E+13	5.4E+13
Sr-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tc-99	4.6E-04	3.6E-04	2.8E-04	2.2E-04	1.7E-04	1.3E-04	1.0E-04	8.0E-05	6.2E-05	4.8E-05	3.7E-05	2.9E-05	2.3E-05	1.8E-05	1.4E-05	1.1E-05	8.3E-06	6.5E-06	5.0E-06	3.9E-06	3.0E-06	2.4E-06	1.8E-06	1.4E-06	1.1E-06	8.7E-07	5.3E-07	3.2E-07	1.9E-07	1.2E-07	7.2E-08
Tl-204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A7.21. RADIONUCLIDE CONCENTRATIONS (pCi/L) AT COMPLIANCE WELL
HORIZONTAL PATHRAE MODEL RESULTS BASED ON 2.10 CM/YR INFILTRATION, 90 FOOT DISTANCE, SIDE SLOPE WITH 100-FOLD K INCREASE AND HIGH PRECIPITATION

	1060	1070	1080	1100	1300	1500	2000	1500	2000
Al-26	0	0	0	0	0	0	0	0	0
Am-241	0	0	0	0	0	0	9.3E-09	0	0
Am-242m	0	0	0	0	0	0	0	0	0
Am-243	0	0	0	0	0	0	2.2E-07	0	1.7E-07
Bk-247	0	0	0	0	0	0	0	0	0
Ca-41	0	0	0	0	0	0	0	6.6E-09	1.2E-02
Cd-113m	0	0	0	0	0	0	0	0	0
Cf-249	0	0	0	0	0	0	0	0	0
Cf-250	0	0	0	0	0	0	0	0	0
Cf-251	0	0	0	0	0	0	0	0	0
Cf-252	0	0	0	0	0	0	0	0	0
Cl-36	0	0	0	0	0	0	0	0	0
Eu-152	0	0	0	0	0	0	0	0	0
Gd-148	0	0	0	0	0	2.0E-10	2.8E-06	0	0
H-3	0	0	0	0	0	0	0	0	0
I-129	4.6E-08	2.8E-08	1.7E-08	6.6E-09	0	0	0	1.7E-10	2.5E-06
K-40	5.2E+00	3.5E+00	2.4E+00	1.1E+00	3.7E-04	1.1E-07	0	0	0
Ks-20	0	0	0	0	0	0	0	0	0
Ks-21	0	0	0	0	0	0	0	0	0
Na-22	0	0	0	0	0	0	0	9.4E-08	0
Pd-107	2.3E+05	3.4E+05	4.2E+05	5.7E+05	2.8E+07	3.5E+08	1.1E+10	0	0
Re-187	0	0	0	0	0	0	0	0	0
Se-79	0	0	0	0	1.5E-10	1.0E-06	1.9E+00	0	0
Si-32	5.3E+13	5.3E+13	5.4E+13	5.1E+13	2.6E+13	6.0E+12	2.9E+10	0	0
Sr-90	0	0	0	0	0	0	0	0	0
Tb-157	0	0	0	0	0	0	0	0	0
Tb-158	0	0	0	0	0	0	0	0	0
Tc-99	4.4E-08	2.6E-08	1.6E-08	5.9E-09	0	0	0	0	0
Tl-204	0	0	0	0	0	0	0	0	0