ENVIRONMENTAL RADIATION MONITORING PLAN FOR

SCHOFIELD BARRACKS
Wahiawa, Hawaii

FINAL

Revision 1

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Prepared by:
U.S. Army Corps of Engineers
Baltimore District, Engineering Division
Environmental and Munitions Design Center
Baltimore, MD

Prepared for:
U.S. Department of Army
Installation Management Command
Fort Sam Houston, TX

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List of Acronyms and Abbreviations

ARS	Archive Search Report
BHHRA	baseline human health risk assessment
CFR	Code of Federal Regulations
cm	centimeter
COC	chain of custody
DI	de-ionized
DOT	U.S. Department of Transportation
DQI	data quality indicator
DQO	data quality objective
DU	depleted uranium
ERMP	Environmental Radiation Monitoring Plan
GWS	gamma walkover survey
ICP-MS	inductively coupled plasma-mass spectroscopy
ID	identification
IDW	investigation derived waste
IMCOM	U.S. Army Installation Management Command
kg	kilogram
km	kilometer
km^2	square kilometer
L	liter
LCS	laboratory control sample
LOR	letter of receipt
m	meter
MCL	maximum contaminant level
MDC	minimum detectable activity
mg/m^3	milligram per cubic meter
MIDAS	Munitions Item Disposition Action System
mL	milliliter
mm	millimeter
mrem	millirem
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
NA	not applicable
NELAC	National Environmental Laboratory Accreditation Conference
NRC	U.S. Nuclear Regulatory Commission
PCBs	polychlorinated biphenols
pCi/g	picocurie per gram

pCi/L	picocurie per liter
pH	Definition: a measure of the acidity or basicity of an aqueous solution
PID	photoionization detector
PPE	personal protective equipment
PTA	Pohakuloa Training Area
QA/QC	quality assurance/quality control
RCA	radiological control area
RSO	radiation safety officer
RSSO	Radiation Safety Staff Officer
SB	Schofield Barracks
SOPC	substance of potential concern
SOW	scope of work
TCE	trichloroethylene
TMDL	total maximum daily load
TSA	technical systems audit
µCi/mL	microcurie per milliliter
µm	micrometer
µR/h	microroentgen per hour
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UXO	unexploded ordnance
WAAF	Wheeler Army Air Field

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1.0 INTRODUCTION

This plan details the environmental radiation monitoring plan (ERMP) for the depleted uranium (DU) radiation control area (RCA) at Schofield Barracks (SB). The ERMP for Pohakuloa Training Area (PTA) is a separate document. The ERMP is being conducted in accordance with the terms and conditions of the U.S. Army Installation Management Command (IMCOM) Nuclear Regulatory Commission (NRC) license application.

Depleted uranium (DU) has been found or suspected to be at a number of Army ranges across the United States as a result of test firing the Davy Crockett weapon system. This weapon system, fielded from 1962 through 1968, consisted of a portable recoilless rifle capable of launching a small yield nuclear warhead that was intended as a last-ditch effort against masses of invading Soviet troops in the event of war in Germany. It used a DU-bearing spotting round (20mm spotting M101) and an inert training warhead that was fired, in accordance with Atomic Energy Commission license conditions, at a number of locations across the country including Hawaii.

Only the spotting rounds were fired in Hawaii; the dummy warhead was not fired in Hawaii (USACE, 2007). An Army shipping manifest showed that for the Hawaiian sites, 714 spotting rounds, containing about 299 pounds of DU, were sent to Hawaii between 1962 and 1968. Evidence of spotting round use has been confirmed at SB and PTA.

Section 1.0 of this plan states the purpose and scope of this ERMP. Section 2.0 provides an overview of the site and its history related to operations involving DU-bearing Davy Crockett M101 spotting rounds that were fired.

The ERMP objectives, strategy, and associated action levels for the environmental media of concern are detailed in Section 3.0. The project organization and the roles and responsibilities of organizations associated with this program are defined in Section 4.0. The field program is presented in Section 5.0 and includes procedures associated with sample collection and management, field measurements, equipment preparation and decontamination, waste management, and recordkeeping. Laboratory sample analytical requirements are specified in Section 6.0 and programmatic quality assurance is specified in Section 7.0. Section 8.0 provides requirements for ERMP reporting. References used in this document are noted in Section 9.0.

1.1 Objective and Scope

The objective of this ERMP is to define the strategy and associated procedures for sampling environmental media within and surrounding the RCA at SB and to provide the basis for determining whether NRC-licensed M101 DU is migrating out of the RCA.

The scope of this plan is limited to the SB RCA and its immediate environs and to sampling media to determine the presence or absence of DU. Sampled media will be analyzed at an off-site laboratory to determine isotopic uranium concentrations. Uranium isotopic activity ratios will be used to establish whether DU is present in sampled media.

2.0 PROJECT BACKGROUND

This section provides an overview of the site (Section 2.1), followed by a summary of NRC-licensed activities (Section 2.2). A brief summary of the environmental sampling program conducted in support of the scoping and characterization surveys and ERMP is presented in Section 2.3.

2.1 Site Description

The military reservation of Schofield Barracks on the Island of Oahu was originally a part of the public domain that was set apart for military purposes. It was declared a military reservation by Executive Order dated July 20, 1899, amended by Executive Order dated November 15, 1909, and enlarged by Executive Order dated August 23, 1910.

In 1872, Major General John M. Schofield, Commanding General of the US Army's Pacific Division, visited the Hawaiian Islands to determine the defense capabilities of its ports. He concluded that a harbor could be formed at the mouth of the Pearl River and that it could be easily defended. After the 1898 United States annexation of Hawaii, military forces began moving to the islands.

The Leilehua Plain saw a temporary camp in 1905 for the Organized Militia, which later became known as the National Guard. Since the Army's role in Hawaii was to guard the Navy while in port, Leilehua's central location was ideal for rapid deployment to all of the islands' coasts. Although there was a small population of Army on Oahu, the first deployment of cavalry troops provided the push needed to start a permanent Army post. The first two squadrons of the 5th Cavalry Regiment arrived in November 1908 and were followed in December by Captain Joseph C. Castner, who made the plans and started the development of today's Schofield Barracks. In April 1909, the War Department named the post Schofield Barracks after Lt Gen John M. Schofield. The name most often used in the area was "Castner Village."

The Secretary of War approved plans for construction and troop build-up at Schofield Barracks in 1911. The plans called for five infantry regiments, and one each of cavalry and field artillery. Those plans were later altered but permanent quarters were needed for the four regiments already on post. The first permanent structures on post, which still exist today, were the quadrangle barracks.

When all of Schofield's troops were called to war in 1917, the Hawaii National Guard moved in and after the Armistice was signed in November 1918 they began beautifying the post. Many of the large trees seen on Schofield Barracks, including the Norfolk Pines, were planted by the National Guard. Construction that was postponed during the war was resumed in the early 1920s.

An extension of the Oahu Railway and Land Company railroad was built to pass in front of the quadrangles.

Construction in the 1930s reflected a style called art deco, characterized by its round edges. Also in the 1930s, many of Schofield Barrack's fields and streets were named to commemorate outstanding military leaders including Generals Henry Butner and Harry Bishop, Colonels Wright Smith and George Stoneman, and Lieutenants William Sills and Guy Benson.

The transition by the War Department from the square division to the triangular division allowed for the formation of the 24th Infantry Division and the 25th Infantry Division at Schofield Barracks on October 1, 1941. Only ten weeks later Japanese planes flew over Schofield Barracks on their way to bomb Wheeler Field and Pearl Harbor. The two divisions were deployed to the north and south shores to defend against further attacks. Up until the 1950s, Schofield Barracks facilities were underutilized while mainland facilities were overrun with draftees. In 1951, a basic training center was established for replacement troops. The 25th Infantry Division returned to Hawaii in 1954 to add to the population of Schofield Barracks. The additional troops and families presented a demand for more facilities to include a new commissary, noncommissioned officers' club and the first elementary school.

During the Vietnam Conflict, the barracks were so underutilized that they were remodeled to form semi-private rooms. In the 1970s, upgraded facilities could be seen all over Schofield Barracks to include commissary, youth and child-care, and restaurant facilities. The post stockade was closed in 1977 and was used as a Correctional Custody Facility until 1990.

"Interstate Highway" H-2, the highway connecting Schofield Barracks to Honolulu, was also completed in 1977.

The general vicinity, Schofield Barracks, and the Davy Crockett ranges on the installation are shown on Plate Numbers 1, 2, and 3 respectively in Appendix A.

2.2 History of Licensed Activities

The Davy Crockett Weapon System consisted of two types of recoilless rifle weapons. One of those, the Davy Crockett Light Weapon M28, fired a 20-millimeter (mm) Spotting M101 cartridge. This cartridge consisted of a body manufactured from a D-38 uranium alloy (^{238}U Depleted Uranium). According to the Munitions Item Disposition Action System (MIDAS) database[1], the M101 cartridge contained approximately 6.7 ounces of DU. Based on Army shipping manifests, 714 spotting rounds were potentially fired in Hawaii. Radiological surveys

[1] https://midas.dac.army.mil/default.aspx (username and password required for access)

and visual inspection have identified evidence of M101 spotting round use at SB and PTA. The precise number of spotting rounds fired at either location is unknown.

The U.S. Army Corps of Engineers (USACE) developed Archive Search Reports (ASR) for each installation or training center at which the M101 spotting rounds were fired. The M101 spotting rounds were fired into designated range areas that consisted of an impact area centered within a target zone. The target zone (impact area) covered approximately one square kilometer. The target zone was surrounded by a larger "Surface Danger Area." A firing position was located approximately 1,000 meters from the edge of the target zone. Each of the M101 DU-affected installations identified by the ASR project contains at least one Davy Crockett Ranges. The individual Davy Crockett impact areas are generally situated within the larger installation active training range complex and in some cases are situated within an existing unexploded ordnance (UXO) hazard area. Each of the individual Davy Crockett impact areas delineated as the target zone and as described in the installation ASRs, will be considered a Radiation Control Area (RCA). The RCA is initially defined as the "Target Zone" shown in Figure 1.

Plate Number 3 in Appendix A indentifies the initially defined RCA boundaries for SB based on the USACE ASR. The ASR identified three possible and likely firing points for training use of the M28 weapons system. Based on the location of the firing points, the location of known or suspected historical target locations, and the characteristics of the weapon system (Figure 1), the outer boundaries of the RCA can be estimated by the limits of the "hatched" areas on the Plate. The current RCA boundaries have been refined from the initial ASR estimates based on data collected during extensive surveys on the range, but are generally consistent with the ASR estimates (see Plate Number 4).

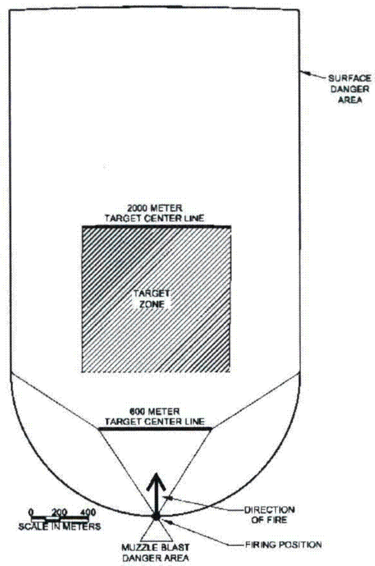

Figure 1: Radiation Control Area Based on Firing Characteristics

2.3 Nature and Extent of Radiological Contamination

The impact area at SB where DU-bearing M101 spotter rounds have been fired has been the subject of numerous radiological investigations and is well characterized. The currently defined RCA is based on these surveys and is shown in Plate Number 4. The results of radiological surveys, summarized in the subsections below, indicate that DU is confined to the range and is not being transported in measureable quantities beyond the RCA via surface runoff, airborne transport, or other mechanisms.

2.3.1 Scoping Survey

The presence of DU at the firing range was the subject of an investigation, completed in January 2007 and is described in the Schofield Barracks Firing Range Phase I, Depleted Uranium Investigation (Cabrera, 2007). The scoping effort consisted of a site visit, surface soil and debris sampling and analysis, and radiological scanning. Laboratory analyses of the samples included gamma spectroscopy and alpha spectroscopy for uranium isotopes. The results of the scoping survey are summarized as follows:

- The visual and radiological scanning survey identified at least three distinct areas with yellow, oxidized metal fragments consistent with the presence of DU fragments.
- Some soil samples from areas identified as potentially containing DU fragments reported elevated thorium-234 (^{234}Th)/uranium-238 (^{238}U) concentrations (i.e., activity concentrations of 21, 32, and 209 picocuries per gram (pCi/g)).
- Samples of metal debris fragments demonstrated ^{238}U to uranium-235 (^{235}U) activity ratios consistent with DU.

The presence of DU at the firing range in north/eastern mostly flat portions of the RCA is addressed in the Technical Memorandum, Depleted Uranium Scoping Investigations for Makua Military Reservation, Pohakuloa Training Area, Schofield Barracks Impact Area Islands of Oahu and Hawaii (Cabrera, 2008a). A supplemental scoping survey performed in August 2007 identified ^{238}U activity concentrations up to 2,180 pCi/g.

2.3.2 Characterization Survey

Cabrera (2008b) presents the characterization data collected from the Schofield Barracks impact area from August to October 2007. The DU sampling data were collected to serve as exposure point concentrations for the ingestion, inhalation, and dermal exposure pathways in the baseline human health risk assessment (BHHRA), and provide an estimate of human health risk associated with DU identified at the Schofield Barracks Impact Area (SBIA). Data were collected from 428 acres of the SBIA. Since the SBIA includes active firing ranges, unexploded ordnance escorts were used as a safety precaution. Three types of data were collected: (1) gamma walkover survey (GWS) data were collected to direct judgmental sampling based on gamma radiation levels; (2) exposure rate measurements were performed to evaluate external radiation exposure; and (3) soil samples were collected from systematic and judgmental locations and analyzed for DU for use in the BHHRA.

Cabrera (2008b) collected a total of 1,226 soil samples at 645 sample locations throughout the Schofield Barracks west range impact area. Both systematic and biased soil sample data were found to be similar to reference area data, demonstrating the ^{238}U concentrations in soil are at or near background concentrations with approximately three percent of the samples found to contain DU or exhibit a DU influence. Concentrations of ^{238}U in soil ranged from 0 to 7,030 pCi/g. Exposure rate measurements indicate the majority of the SBIA has radiation levels consistent with background levels.

2.3.3 Storm Water Sampling

The Geotechnical and Structures Laboratory, Waterways Experiment Station, designed and implemented a storm water sampling program in 2007 and 2008 to investigate the potential for uranium military constituents to be transported off-site in surface water flow from the Live-Fire training ranges located in the western portions of Schofield Barracks (USACE, 2009).

Automated storm water sampling equipment, using Durham GeoSlope Indicators model TR-4002 and Teledyne ISCO model 6712, collected most of the samples with some grab samples collected by project personnel. Sub-watershed, down gradient (outlet) storm water samples were collected at the three streams flowing from the west range of Schofield Barracks, including Mohiakea Gulch, Waikoloa Gulch, and Hale'au'au Stream. One up-gradient water sampler was also monitored at a point where the headwaters of Hale'au'au stream flow onto the range. A few samples were collected from the upstream and downstream location along Waikele Stream for additional background information on uranium; however, it was not believed that DU spotting rounds were fired in the Waikele Stream watershed. This provided for a total of six streamwater sampling stations monitored at the Schofield Barracks ranges.

Sample collection for uranium water samples began in February 2007 by obtaining bottles and contracting with the analytical laboratory. The first samples were collected in March 2007 with the last samples collected in December 2008. Water samples were collected from four small storms and one very large storm in central Oahu during the project sampling period. Additional samples were collected from the groundwater discharge in Hale'au'au stream as this is the only flow from the west range of Schofield Barracks for most of the year.

Flow Results

Surface water samples were collected during storm water flow events. There were a total of four small storms that occurred on 3/14/2007, 11/4/2007, 12/4-12/2007, and 11/22/2008. These represented smaller storms, with small flows of 1 to 40 cubic feet per second in either of the streams. Flow estimations were calculated using Manning's equation. Additional samples were collected of ponded groundwater from the headwaters of Hale'au'au stream on Mt. Kaala to provide background information on uranium concentrations in a location unlikely to have depleted uranium. The most likely Davey Crocket spotting rounds impact area (USACE, 2007) is drained by either Mohiakea Gulch or Hale'au'au Stream.

A large storm occurred on Oahu that began with large rains in the early morning hours of December 11, 2008. All three streams within Schofield Barracks had abundant runoff from this large rain event. Maximum flows in lower Hale'au'au stream during this very large storm were estimated as high as 3,500 cubic feet per second for period of less than an hour. Storm water flows in Mohiakea Gulch and Waikoloa Gulch were not as large, with a peak estimated flow of approximately 1,000 and 600 cubic feet per second for a brief period, respectively. Based on a review of rainfall records, this event was a large flow for the west range of Schofield Barracks.

DU Sampling Results

A total of 75 surface water samples and six duplicate samples were collected from the five storms. All of the surface water sample measurements reported by the analytical laboratory show that uranium concentrations in the surface water are significantly below the 10 CFR 20 Appendix B effluent discharge limit of 3×10^{-7} microcurie per milliliter (μCi/mL) = 0.3 pCi/mL = 300 pCi/L. The greatest ^{238}U concentration reported was (25.0 ± 1.1) pCi/L (the weighted average of results of three analyses of the same sample). The ^{234}U : ^{238}U ratio for this same sample was 1.04 ± 0.15. Three other samples had ^{238}U concentrations between 1 pCi/L and 12 pCi/L and all other samples were less than 1 pCi/L. Twenty-seven samples were collected in upstream background locations within Hale'au'au and Waikele Streams. Background total uranium concentrations ranged from non-detect to 2.99 pCi/L, averaging 0.56 ± 1.5 pCi/L. None of the ^{234}U : ^{238}U ratios indicated the presence of DU in any sample.

2.3.4 Air Monitoring During Burning of Vegetation

A study was performed in July and August of 2007 to evaluate potential releases of DU during prescribed burns for vegetation removal at Schofield Barracks (Cabrera 2008c). A reference burn (background area) and test burn were performed to collect data for a DU hazard evaluation prior to performing a prescribed burn of the full range. The study included the collection and analysis of soil, vegetation, and air particulate samples before, during, and after the reference, test, and full scale burns.

Air filters were collected using Hi-Q portable high velocity air samplers and Whatman 41 paper filters. Surface soil samples were collected using a trowel to collect approximately 500 grams of solid material. Vegetation samples were collected by cutting and collecting vegetative material adjacent to soil sample locations (less than one square meter) to obtain a volume of approximately one liter of vegetation. The sampling design for collecting ash samples was to place vegetation in a foil tray during the burn and collect ash from the tray following the burn. However, activities of Army personnel during the prescribed burns and high winds potentially affecting the ash or the foil trays made this approach impractical. Therefore, ash samples consisted of surface scrapes that included a mixture of soil and ash.

All samples were sent to an offsite radiochemistry laboratory for analysis of uranium isotopes using alpha spectroscopy. Alpha spectroscopy combines chemical separation of uranium from other elements with spectrometric measurement of alpha particles to measure concentrations of individual uranium isotopes.

Visual observations, meteorological data, and the presence of ash on most of the filters supported that the air samplers were properly positioned to monitor airborne particulates generated during the reference, test, and prescribed range burns. The selection of the test burn area as impacted by DU was supported by project data. The uranium activity concentrations measured in soil, vegetation, and ash were higher than activity concentrations in the reference area, which was expected. The uranium activity concentrations in the test area solid samples demonstrated that DU was present in the test area before and after the test burn. The air filters collected during the test burn did not identify any increase in uranium activity concentration compared to the pre-burn air filters and no evidence of uranium depletion was found in the air filter results. These results confirm that there was no measurable hazard during burning activities.

Based on the results of the reference and test burns, a prescribed burn of the full range was performed. Air monitoring performed during the first day of the range burn detected low concentrations of uranium. No evidence of DU was found in any of the air filter results, and the maximum uranium activity concentration was approximately 0.36 percent of the air effluent limit for uranium from 10 CFR 20 Appendix B, namely, 9×10^{-14} µCi/mL.

No evidence of DU was found in air particulates generated during prescribed burns at Schofield Barracks based on evaluation of isotopic ratios. No significant inhalation dose from airborne uranium was identified based on results of air monitoring performed during the prescribed burns. The study report recommended no additional investigations of DU released during prescribed burns.

3.0 ERMP STRATEGY AND PLAN

In this section, the ERMP strategy and plans are presented. The overall goals of the program are presented (Section 3.1), followed by the presentation of the data quality objectives (DQOs) (Section 3.2). For each environmental medium, the rationale and basis for sampling is presented, including action criteria and associated procedures if the action criteria are exceeded (Section 3.3).

3.1 ERMP Goals and Rationale

The overall goals of the ERMP at SB are to provide:

- A historical and current perspective of contaminant levels in various media
- An indication of the magnitude and extent of any DU release or migration from past operations
- A timely indication of DU contaminant release and migration

Environmental monitoring activities are necessary at SB to ensure that DU within the RCA does not pose a threat to human health and the environment through inadvertent or unanticipated release or migration. These monitoring activities include the surveillance of all credible transport pathways; the selection of suitable surveillance locations; and the application of appropriate sampling methods, techniques, and analyses. To achieve this goal, the program has been designed to meet the applicable requirements of applicable Federal and State regulations, including NRC regulations and requirements.

Because the radioactive material is isolated within the RCA and institutional controls are in place to prevent and control access to the area, exposure is not likely to occur. However, migration of this material through groundwater, surface water, soil, stream bed sediments, air, and biota is possible. The SB ERMP was developed to provide direct surveillance of the most probable migration routes through periodic sampling and analysis of radioactive constituents. The following sections present the DQOs for this ERMP and discuss the rationale for the selection of the probable migration routes, sampling locations and frequencies, and action levels and associated steps to be taken if the action levels are exceeded.

3.2 Data Quality Objectives

The DQO process is a scientific data collection planning process designed to ensure that the type, quality, and quantity of data collected are appropriate for environmental decision-making. It consists of seven prescribed steps outlined in "Data Quality Objectives Process for Hazardous Waste Site Investigations" (U.S. Environmental Protection Agency [EPA] 2000).

DQOs define the purpose of the data collection effort, clarify what the data should represent to satisfy this purpose, and specify the performance requirements for the quality of information to be obtained from the data. These outputs then are used in the final step of the DQO process to develop a data collection design that meets all requirements and constraints.

The DQO process for this ERMP applies to the RCA at SB and consists of the following elements corresponding to steps in the DQO process:

- The primary objective for environmental sample collection at SB is to provide data of known and sufficient quality to determine if conditions have changed since the previous sampling events. The data will help define the nature and extent (horizontal and vertical) of DU contaminant migration if it occurs (DQO Step 1 - State the Problem).
- The environmental sampling and field measurements will provide analytical data sufficient to determine if DU contamination in the RCA is migrating to places outside the RCA. The data will be used to support the development and selection of appropriate corrective actions if required (DQO Step 2 - Identify the Decision).
- ERMP data from previous and current sampling events at SB, along with data from the scoping and characterization surveys and other related studies, will provide additional inputs to meet the objectives (DQO Step 3 - Identify Inputs to the Decision).
- The boundaries of the RCA are depicted in Plate Number 4. The Study area is defined as areas adjacent to and surrounding the RCA to determine potential migration from the RCA (DQO Step 4- Define the Study Boundaries).
- Uranium isotopic ratios observed at SB ERMP sampling locations will be evaluated to determine the absence or presence of DU and the extent of contamination migration, if any, at SB (DQO Step 5 - Develop a Decision Rule).
- The sample analysis and validation will be performed in general accordance with the procedures contained in the ERMP (DQO Step 6 - Specify Limits on Decision Errors).
- Soil, sediment, and surface water will be sampled quarterly to provide sufficient data concerning contaminant concentrations and potential migration. Sampling results will be used to determine if changes have occurred in contaminant trends or if sampling of additional media is appropriate. The results of trending analyses will be used to appropriately adjust sampling frequencies, in coordination with NRC (DQO Step 7 - Optimize the Design for Obtaining Data).

3.3 Radiation Monitoring Strategy and Plans

In this section, the rationale and plans for monitoring environmental media (i.e., groundwater, surface water, sediment, soil, air, and biota) are presented. Table 1 summarizes the ERMP, including planned monitoring activities by environmental medium and associated action criteria.

Table 1: ERMP Monitoring Plans and Associated Action Criteria

<table>
<tr><th>Medium</th><th>Plan</th><th>DU Action Criteria</th><th>Actions</th></tr>
<tr><td>Groundwater</td><td>Frequency: routine sampling not planned

Monitoring: Routine groundwater sampling is not planned.</td><td rowspan="4">1) Confirmed presence of DU outside the boundaries of the RCA as determined by the following:

• $^{238}U : ^{234}U$ activity ratio from alpha spectroscopy analysis equal to or greater than three.

2) Suspected presence of DU outside the boundaries of the RCA as determined by statistically based trending analysis indicative of:

• an increase in $^{238}U : ^{234}U$ activity ratio based on alpha spectroscopy analysis

• an increase in $^{238}U : ^{235}U$ mass ratio based on inductively coupled plasma-mass spectroscopy</td><td rowspan="4">• 1) Confirmed presence of DU outside RCA: If the $^{238}U : ^{234}U$ activity ratio exceeds three at any location in any media, the License RSO will notify the NRC within 30 calendar days of receipt of analytical sampling results. Additional confirmatory sampling will be performed as soon as practicable. Further actions may be defined based on the results of confirmatory sampling including modification of sampling frequency and/or increasing the number of sample locations. Such actions will be coordinated with the NRC.

• 2) Suspected presence of DU outside RCA: If trending analyses indicate an increase in $^{238}U : ^{234}U$ activity ratio and/or an increase in $^{238}U : ^{235}U$ mass ratio, the License RSO will conduct an independent review of the results. Based on the results of this review, the scope of the ERMP may be modified. Any proposed modifications will be coordinated with the NRC prior to implementation.</td></tr>
<tr><td>Surface Water</td><td>Frequency: quarterly

Monitoring: Surface water sampling will be performed quarterly in Hale'au'au, Mohiakea, and Waikoloa Gulches to address potential transport of DU from the RCA via storm water runoff.</td></tr>
<tr><td>Soil/Sediment</td><td>Frequency: quarterly

Monitoring: This plan includes quarterly soil sampling along roadway points of egress from the RCA to ensure human activities do not transport DU beyond the RCA.

Sediment sampling will be performed quarterly in Hale'au'au, Mohiakea, and Waikoloa Gulches to address potential transport of DU from the RCA via storm water runoff.</td></tr>
<tr><td>Air</td><td>Frequency: routine sampling not planned

Monitoring: Routine air sampling is not planned as part of this ERMP.</td></tr>
</table>

Background sampling will not be performed. DU is not naturally occurring. In addition, the collection of representative and defensible reference, background, or up-gradient samples can be challenging, especially in an active range situation where access to sites can be problematic. Consequently, project decisions will be based on the presence of DU as determined by uranium isotopic ratios, not by comparisons to background. Should DU be detected in any of the sampling, the presumption will be that the DU originated from the RCA.

Alpha spectroscopy minimum detectable concentrations will be determined for each of the three uranium isotopes, ^{234}U ,^{235}U, and ^{238}U. Inductively coupled plasma-mass spectroscopy (ICP-MS) will be used for those samples that require more precise isotope ratio determinations.

3.3.1 Groundwater

Groundwater will not be routinely collected as part of the ERMP. Supporting information is provided in Section 3.3.1.1.

3.3.1.1 Rationale for Exclusion of Routine Groundwater Sampling

The RESRAD Version 6.5 radioactivity modeling code developed by the U.S. Department of Energy was used to model the transport of site DU to the underlying aquifer. Depth to groundwater beneath the RCA is approximately 600 feet below ground surface (bgs) (HLA, 1996). The transport characteristics of uranium, depth to groundwater, and other site specific factors prevent the DU contamination at the site (which is only present in near-surface soils) from entering the aquifer beneath SB for thousands of years.

The modeling approach included the use of RESRAD default transport parameters and site-specific data evaluated over a 15,000 year modeling period. Results indicate that uranium does not reach the groundwater until sometime around 12,500 years. RESRAD predicted the maximum concentration of DU in the aquifer at 15,000 years to be 2×10^{-14} pCi/L, which is 16 orders of magnitude less than the 10 CFR 20 Appendix B effluent discharge limit of 300 pCi/L. The RESRAD output file is included at Appendix B to this Plan. Site-specific and model-sensitive parameters are presented below (all other parameters used were RESRAD defaults).

- Uranium isotopic activity concentrations:
  - ^{234}U = 1.23 pCi/g
  - ^{235}U = 0.09 pCi/g
  - ^{238}U = 6.60 pCi/g
- Depth to groundwater (unsaturated zone thickness) = 168 meters
- Annual precipitation = 1.11 meters
- Uranium K_d = 50 mL/g (RESRAD default)
- Contamination depth (thickness of contaminated zone) = 0.457 meters

- Area of contaminated zone = 10,000 square meters

Uranium Activity Concentrations and Physical Distribution

DU contamination was modeled based on data collected during site characterization and historical information. The total quantity of DU on the range was conservatively assumed to be 299 pounds, the mass of all DU that was shipped to Hawaii as part of the Davey Crockett weapons system. This is conservative because it assumes that all spotter round were fired at Schofield; it is known that a portion of these rounds were fired at PTA (Cabrera, 2008a). The 299 pounds of DU was assumed to be evenly distributed over an area of 10,000 square meters to a depth of 0.457 meters (18 inches) (the maximum depth DU has been identified at SB).

Depth to Groundwater

The depth from the bottom of the contaminated zone to the top of groundwater is one of the most sensitive transport parameters in this model. The time it takes the uranium to reach the aquifer is proportional to this parameter. Depth to the aquifer is reported to range from 550 to 650 feet at SB (HLA, 1996). The shallowest estimate of 168 meters (550 feet) was used in the model for the purpose of conservatism.

Annual Precipitation

Precipitation water penetrates the subsurface soil system and is added to the groundwater flow system, the process of deep percolation. It is this process that serves as the primary transport mechanism for near-surface DU to flow down towards, and ultimately into, the groundwater. The average annual precipitation at SB is reported as 43.75 inches (1.11 meters) and was entered into the model (USAEC, 2008).

Uranium Distribution Coefficient (K_d)

The distribution coefficient, K_d, is the ratio of the mass of solute species adsorbed or precipitated on the solids per unit of dry mass of the soil to the solute concentration in the liquids. The distribution coefficient represents the partition of the solute in the soil matrix and soil water, assuming that equilibrium conditions exist between the soil and solution phases. The transfer of radionuclides from the liquid to the solid phase or vice versa may be controlled by mechanisms such as adsorption and precipitation, depending on the radionuclides. The RESRAD model is very sensitive to this parameter because it dictates how much uranium is "available" for transport to groundwater through percolation.

Lower K_d values predict greater uranium mobility from soil into the groundwater, reducing the time it takes uranium to enter the aquifer. EPA has reported that the lowest observed K_d for uranium in neutral conditions to be 63 mL/g (USEPA, 2006). The RESRAD default value for uranium K_d is 50 mL/g. This value was used in the DU model and is considered reasonably conservative.

3.3.1.2 General Groundwater Information

Groundwater at SB is 550 to 650 feet bgs and is part of the groundwater body known as the Schofield High-level Water Body. It is called a "high-level" water body because the groundwater levels beneath Schofield Barracks are much higher than groundwater levels in the nearby coastal areas because of underground geologic structures which act as dams to groundwater flow. Most of the groundwater beneath Schofield Barracks originates as rainfall in the Koolau and Waianae mountain ranges to the east and west. This rainfall seeps into the ground in the mountain areas and moves through the subsurface eventually reaching Schofield Barracks. A small amount of water also seeps into the ground in the Schofield Barracks area and reaches the underlying groundwater. The groundwater beneath Schofield Barracks eventually flows into the coastal water bodies to the north and south over the groundwater dams.

The groundwater body underlying the Schofield Plateau is known as the Schofield High-level Water Body (Plate Number 5). The water table (potentiometric surface) elevation of the Schofield High-level Water Body is approximately 275 feet above mean sea level. This elevation is lower than the adjacent dike-impounded water bodies to the east (Koolau Mountain Range) and west (Waianae Mountain Range) and higher than the basal water bodies to the north (Waialua Basal Water Body) and south (Honolulu-Pearl Harbor Basal Water Body) that have elevations of less than 50 feet above mean sea level.

The northern and southern boundaries of the Schofield High-level Water Body (characterized as groundwater dams) have been inferred from water-level measurements in domestic and irrigation wells on either side of the groundwater dams and by geophysical surveys. The dams impede groundwater flow to the Honolulu-Pearl Harbor and Waialua Basal Water Bodies. However, the nature and locations of these water body boundaries are not precisely known.

The groundwater resources on Oahu are well developed, yielding more than 635 million gallons per day (mgd) from numerous hydrogeologic units and aquifer basins. Approximately 50 percent of the fresh water used in Hawaii, and about 99 percent of the drinking water, is from groundwater (Nichols et al. 1996).

Groundwater on Oahu occurs in basal aquifers, perched aquifers, and dike-impounded zones. The basal aquifer is a freshwater lens occupying porous and permeable volcanic rocks beneath the island. The freshwater lens is thickest near the center of the island and tapers off toward the edges of the island. Fresh water also occurs at higher elevations in perched aquifers and in dike-impounded zones, both of which are classified as "high-level" groundwater. Dike-impounded water is groundwater trapped behind vertical dikes. Perched aquifers are saturated permeable layers or fractured zones that occur above the basal lens and are separated from it by unsaturated deposits (USAG-HI 2004).

SB is in the Schofield groundwater area of the central Oahu groundwater flow system, the largest and most productive flow system on Oahu (Oki 1998). The central flow system is bounded on the north and south by coastal sedimentary deposits, known as caprock, because they overlie rocks that are more permeable and can confine the groundwater contained in those rocks within the coastal zone (USAG-HI 2004).

The Schofield hydrologic sub-area lies on the divide between the northern and southern parts of the central Oahu flow system. The northern portion includes the Mokuleia, Waialua, and Kawailoa hydrologic units, while the southern portion includes the Ewa, Pearl Harbor, Moanalua, Kalihi, Beretania, and Kaimuki hydrologic units.

The Schofield sub-area is bounded on the north and south by vertical low permeability features that reduce or prevent groundwater flow. These features might be dike intrusions or possibly depositional features (Oki 1998). Because the groundwater elevation inside the "dams" is higher than outside, the groundwater in the Schofield Plateau is called high-level groundwater. Rift zones associated with the Waianae and Koolau volcanoes contain clusters of vertical or nearly vertical dikes that bar groundwater flow. The eastern and western sides of the Schofield sub-area are bounded by dike zones of the Koolau and Waianae volcanoes, respectively.

Beneath the Schofield Plateau, groundwater occurs in the Schofield High-Level Groundwater Body, where depth to groundwater is approximately 600 feet or more, depending on the ground surface elevation. Additionally, groundwater occurs in the basal aquifer and dike-impounded groundwater system associated with the dike intrusions within the Waianae volcanics. Groundwater also occurs locally in perched aquifers above the High-Level Groundwater Body or the basal aquifer.

Recharge over most of the SB ranges between about 10 and 25 inches per year. Recharge is higher along the eastern slope of the Waianae Range and in the southeast margin of the reservation (Shade and Nichols 1996 as cited in USAG-HI 2004). Recharge near the southeast margin of the range is greater because of contributions from irrigation. Most of the recharge to the central sector (Wahiawa aquifer system) is from the Koolau Range (USAG-HI 2004).

Annual groundwater pumpage in the Schofield groundwater area (Wahiawa aquifer system) is estimated to be less than 10 mgd and has decreased since 1979, when total pumping was about 20.6 mgd (Oki 1998 as cited in USAG-HI 2004). While this is less than half the estimated sustainable yield of the aquifer, any consumptive use of groundwater in the Central Sector decreases the underflow to the adjacent Pearl Harbor Sector or North Sector.

The Schofield Barracks East Range occupies a portion of the Waipahu/Waiawa groundwater hydrologic unit in the Pearl Harbor hydrologic sector, just south of the hydrologic divide that separates it from the central hydrologic sector. Groundwater in the eastern part of East Range includes high-level volcanic dike-impounded groundwater that overlies and is probably connected to the basal aquifer hydraulically. This area is part of a 135-square-mile area in the Northwest Rift Zone of the Koolau Range, which is the most important and productive of the dike-impounded groundwater reservoirs on the island. The USGS has estimated that approximately 560 billion gallons of water are stored above sea level in this natural groundwater reservoir (Takasaki and Mink 1985).

Groundwater Quality

The Southern Oahu Basal Aquifer, which underlies SB and part of the East Range, was designated by the USEPA as a Sole Source Aquifer in 1987 under Section 1424(e) of the Safe Drinking Water Act (USEPA 2003b). A sole source aquifer supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer and represents a water supply source for which there is no alternative that could "physically, legally, and economically supply all those who depend on it for drinking water." Under the program, all federally funded projects in the area overlying a sole source aquifer are subject to review by USEPA to ensure that they do not endanger the water source.

The quality of groundwater in the Schofield groundwater area is generally good. However, the regional groundwater system has been affected by pesticides and fertilizers related to agricultural practices, and groundwater quality in the SB has been affected by contaminants from industrial activities. The two major groundwater contaminants at SB are chlorinated solvents (trichloroethylene, TCE) and carbon tetrachloride.

Groundwater quality in the dike-impounded groundwater system of the East Rage is generally excellent, with chloride concentrations lower than 20 milligrams/liter (mg/L). Dike-impounded groundwater is not known to be contaminated with organic chemicals within the central Oahu flow system (Oki 1998 as cited in USAG-HI 2004). As described above, high-level groundwater in portions of East Range is contaminated by TCE. The contamination is being addressed by treating the water pumped by wells at the wellhead.

No groundwater quality data are available for the South Range Acquisition Area. Several wells have been installed and are being monitored in the Kunia area, south of the South Range Acquisition Area, as part of a remedial investigation of the Del Monte Corporation Superfund Site. The primary contaminants of concern at this site are pesticides resulting from accidental spills. Monitoring wells in this area are also periodically sampled as part of the SB groundwater-monitoring program. Carbon tetrachloride, a known groundwater contaminant in the area, has not been detected in these wells. TCE, another known groundwater contaminant, has been detected in these wells, but at concentrations below the USEPA Region IX maximum contaminant level (MCL).

3.3.2 Surface Water

Surface water grab samples will be collected at three locations on a quarterly basis (four times a year) as part of the ERMP. Supporting information is provided in Section 3.3.2.1.

3.3.2.1 Rationale for and Scope of Surface Water Sampling

Once the DU has been deposited within the soil or surface water, it could be released and transported through the environment by several different processes. The DU may corrode at the ground surface due to oxidizing conditions such as sandy soils or low pH precipitation/ moisture and become soluble. Corrosion products (either particulates or solutes) may be incorporated into the surrounding soil. DU fragments deposited directly in surface water channels may oxidize, corrode, mobilize, and migrate with surface water flow. Physical movement of oxidized DU or small fragments along surface water drainage ways can occur through processes of erosion, flooding, and high-water conditions. Storm water can transport DU particulates and solutes laterally from the soil to the surface water system through erosion and overland flow processes. Dynamic conditions such as long periods of no precipitation that change a wetland from a reducing environment to an oxidizing environment or infiltration from heavy rainfall can remobilize and transport DU.

Thus, it is possible that storm water runoff could act as a transport mechanism for DU out of the RCA. In order to evaluate this potential pathway, surface water samples will be collected quarterly at three locations in Hale'au'au, Mohiakea, and Waikoloa Gulches, which are down gradient and receive runoff from the RCA (as shown on Plate Number 6). Sediment samples will also be collected at these locations as discussed in Section 3.3.4. It should be noted that the intermittent nature of some the surface water bodies at SB may sometimes preclude collection of surface water samples at all locations during every quarter. Reasonable efforts will be made to ensure samples are collected at each location every quarter if it is possible based on whether conditions.

If alpha spectroscopy results at any location indicate a ^{238}U : ^{234}U activity ratio exceeding three, IMCOM will notify the NRC within 30 calendar days of receipt of analytical sampling results. Additional sampling will be performed as soon as practicable. Further actions may be defined based on the results of confirmatory sampling including modification of sampling frequency and/or increasing the number of sample locations. Such actions will be coordinated with the NRC.

If trending analyses indicate an increase in ^{238}U : ^{234}U activity ratio based on alpha spectroscopy analyses and/or an increase in ^{238}U : ^{235}U mass ratio based on ICP-MS, the License RSO will conduct an independent review of the results. Based on the results of this review, the scope of the ERMP may be modified. Any proposed modifications will be coordinated with the NRC prior to implementation.

A study was performed in 2007 and 2008 during multiple storm events to evaluate the potential for DU transport in surface water. The Geotechnical and Structures Laboratory, Waterways Experiment Station, designed and implemented this storm water sampling program to investigate the potential for uranium military constituents to be transported off-site in surface water flow from the Live-Fire training ranges located in the western portions of Schofield Barracks (see Section 2.3.3). The study included the collection and analysis of 75 surface water samples over five separate storm events. Total uranium concentrations averaged 2.2 pCi/L with a maximum of 25 pCi/L. Isotopic uranium ratios of the samples did not indicate the presence of DU, indicating that the observed uranium is from natural deposits.

Information regarding the surface water characteristics and quality at and around SB are provided below for reference.

3.3.2.2 General Surface Water Information

Surface Water Characteristics

The average annual precipitation at SB is 43.75 inches. Monthly averages range from 1.63 to 3.78 inches during the dry season (April through October) and from 4.14 to 6.21 inches during the wet season. SB lies within an area in which the 100-year-average 24-hour rainfall is estimated to be about 16 inches.

SB lies near the drainage divide between the Kaukonahua watershed and the Waikele watershed. The principal surface water feature of the Kaukonahua watershed is the Wahiawa Reservoir (Lake Wilson), which lies just outside the eastern boundary of SB, east of Highway 99. The reservoir stores drainage from tributaries of the Kaukonahua Stream that originate in the Koolau Range. The reservoir receives small amounts of surface drainage from the eastern side of SB and is used for agricultural irrigation.

The main drainages at SB are the Waikoloa Gulch and the Waikele Stream. The Waikoloa Gulch (intermittent stream) drains the area just north of the cantonment and joins the Kaukonahua Stream below Wahiawa Reservoir. Two other streams that drain the north part of SB (Mohiakea Gulch is an intermittent stream and Haleanau Gulch is an intermittent stream but also drains a small amount of flow from a marsh area at the top of Mt. Kaala from October through April) are tributaries to the Kaukonahua Stream. Kaukonahua Stream drains northward through the area underlain by the Waialua aquifer system, joining the Poamoho Stream to form the Kiikii Stream, which discharges to Kaiaka Bay just east of Waialua. Streams in lower reaches of SB tend to be intermittent because runoff from small storms is absorbed in bedrock fractures and never reaches the plateau. Runoff from larger or more intense storms overwhelms the capacity of these fracture systems and continues to flow onto the plateau.

Waikele Stream, which originates in the Honouliuli Forest Preserve along the east slope of the Waianae Range south of SB, drains the south boundary of SB. It flows south along the west side of Wheeler Army Air Field (WAAF), across land overlying the Waipahu-Waiawa aquifer system, and eventually discharges to the West Loch of Pearl Harbor.

WAAF is a 2,085-acre installation bounded by Main Post, Wahiawa Reservoir, the Kamehameha Highway, and Waikele Stream. The mean annual precipitation measured at WAAF is 38 inches, most of which falls between November and April. Surface drainage from WAAF drains to Waikele Gulch. Runoff from the runway area is collected in a network of grated drains that drain to a 15-inchdiameter storm drain believed to discharge to Waikele Gulch (USGS 1996).

The South Range Acquisition Area is a 1,402-acre area that borders the southern boundary of the Main Port west of WAAF. It is drained by Waikele Stream and its tributaries and lies entirely within the portion of the watershed of Waikele Stream that is upstream of WAAF. The tributaries to Waikele Stream are ephemeral and generally dry except during short periods following heavy rainfall.

Surface Water Quality

SB is located in the Kaukonahua and Waikele watersheds. The State of Hawaii classifies these watersheds as second tier Category I under the Hawaii Unified Watershed Assessment. Based on the Hawaii Unified Watershed Assessment there are four watershed categories. Category I watersheds are those in need of restoration because they do not meet, or are close to not meeting, clean water and other natural resource goals. Category 1 watersheds are further divided to tier 1 and 2 watersheds. Tier 2 watersheds include those containing or drained by 303(d) impaired water bodies (HDOH 1998).

The classification of the Kaukonahua watershed was based largely on the fact that the coastal receiving water, Kaiaka Bay, is classified as an impaired water body based on pathogens, nutrients, ammonium, algal growth, and turbidity (HDOH 2004). Kaukonahua Stream is not identified as an impaired water body. HDOH has been developing total maximum daily loads (TMDLs) for Kaiaka Bay Watershed with completion expected in 2008 for North and South Fork Kaukonahua Stream, and with ongoing phased TMDL development in Kaukonahua receiving waters, including Wahiawa Reservoir, lower reaches of Kaukonahua Stream, Kiikii estuary, and Kaiaka Bay (Koch et al. 2007).

Waikele Stream is listed as an impaired water body based on nutrients and turbidity. TMDL development is in progress (HDOH 2004). The Waikele watershed drains to Pearl Harbor, which is also listed as an impaired water body based on nutrients, turbidity, suspended solids, and polychlorinated biphenols (PCBs). HDOH is in the process of developing TMDLs for listed water bodies in Pearl Harbor Watershed (HDOH 2007).

Water quality in the Wahiawa Reservoir has been affected by nutrients in the past. As mentioned above for SB, the State of Hawaii classifies the Kaukonahua and Waikele watersheds as second tier Category I, under the Hawaii Unified Watershed Assessment (HDOH 1998).

The Army has started an assessment of offsite potential for contaminants at SBMP under the Operational Range Assessment Program (ORAP). While still in the early stages of the assessment, preliminary results show no contamination of surface water by explosive residues, including DU. Future ORAP surface water assessments will include analysis for uranium.

3.3.3 Soil

Soil samples will be collected quarterly at three locations along roadway points of egress from the RCA to ensure human activities do not transport DU beyond the RCA. Plate Number 6 identifies the three soil sample collection locations.

3.3.3.1 Rationale for and Scope of Soil Sampling

Soil ingestion can be a significant environmental pathway with regard to dose estimates. It is possible, but unlikely, that human activities on the range in the RCA could act as a potential transport mechanism for DU. Soil samples will be collected quarterly at the locations identified on Plate Number 6.

If alpha spectroscopy results at any location indicate a ^{238}U : ^{234}U activity ratio exceeding three, IMCOM will notify the NRC within 30 calendar days of receipt of analytical sampling results. Additional sampling will be performed as soon as practicable. Further actions may be defined based on the results of confirmatory sampling including modification of sampling frequency and/or increasing the number of sample locations. Such actions will be coordinated with the NRC.

If trending analyses indicate an increase in ^{238}U : ^{234}U activity ratio based on alpha spectroscopy analyses and/or an increase in ^{238}U : ^{235}U mass ratio based on ICP-MS, the License RSO will conduct an independent review of the results. Based on the results of this review, the scope of the ERMP may be modified. Any proposed modifications will be coordinated with the NRC prior to implementation.

3.3.4 *Sediment*

Sediment sampling will be performed quarterly at three locations in gulches down gradient from the RCA. Plate Number 6 identifies the three sediment sample collection locations.

3.3.4.1 Rationale for and Scope of Sediment Sampling

Sediment can be contaminated by DU transported by surface water and water erosion flowing into ponds or streams. It is possible that storm water runoff could act as a transport mechanism for DU out of the RCA. Sediment samples will be collected quarterly at three locations in Hale'au'au, Mohiakea, and Waikoloa Gulches, which are down gradient and receive runoff from the RCA as shown on Plate Number 6.

If alpha spectroscopy results at any location indicate a ^{238}U : ^{234}U activity ratio exceeding three, IMCOM will notify the NRC within 30 calendar days of receipt of analytical sampling results. Additional sampling will be performed as soon as practicable. Further actions may be defined based on the results of confirmatory sampling including modification of sampling frequency and/or increasing the number of sample locations. Such actions will be coordinated with the NRC.

If trending analyses indicate an increase in ^{238}U : ^{234}U activity ratio based on alpha spectroscopy analyses and/or an increase in ^{238}U : ^{235}U mass ratio based on ICP-MS, the License RSO will conduct an independent review of the results. Based on the results of this review, the scope of the ERMP may be modified. Any proposed modifications will be coordinated with the NRC prior to implementation.

3.3.5 *Air*

Air samples will not be routinely collected as part of the ERMP. Supporting information is provided in Section 3.3.5.1. Samples will be collected and analyzed, however, when prescribed burns occur to remove vegetative cover on the range in accordance with the Radiation Safety Plan. The License RSO may apply to the NRC for relief from this requirement when sufficient data are accumulated that demonstrate DU is not transported in the air during range burns.

3.3.5.1 Rationale for Exclusion of Air Sampling

As discussed in Section 2.3.4, air sampling performed during prescribed burning in a DU-contaminated area and across larger portions of the RCA did not indicate the presence of DU.

M101 spotting rounds were not designed as hard target "penetrators" and were not fired into armored vehicles or targets; therefore, no significant quantities of aerosolized, highly transportable forms of DU were created by the original impact. Typically the DU round fragmented on impact. Since then, DU fragments may have undergone oxidation (depending on soil conditions), high-explosive impact from subsequent range firing, mechanical shearing and grinding by heavy tactical equipment, and prescribed or accidental range fires. DU particulates may have been created and transported by wind, explosive impact, or flame.

In order to produce particles with an activity median aerodynamic diameter (AMAD) less than 5 μm, M101 rounds must be physically acted upon, impacted or heated to temperatures over uranium's melting point of 700-1,000 degrees Celsius (Army Environmental Policy Institute (AEPI), 1995). The type of activities that could potentially produce DU particles in the 5-μm AMAD range are: 1) use of heavy equipment on former M101 ranges could, through mechanical grinding of M101 rounds; 2) kinetic impacts between munitions and M101 rounds; and 3) incidental range fires or prescribed burns by range personnel to control vegetation. Since the DOD has prohibited the firing of high-explosive munitions into the same areas as DU since 2004 (DOD, 2004) and will restrict access to the RCAs under the NRC license, any remaining transportable DU (AMAD < 5 μm) resulting from impacts or maneuver training is assumed to be no longer present in significant quantity. The most likely identified scenario involving the production of transportable forms of DU is the occurrence of brush fires in RCAs, whether prescribed or naturally occurring.

3.3.6 Biota

Since DU is poorly adsorbed, rapidly excreted, and does not bioaccumulate, samples will not be routinely collected of plants, vegetables, wild or farm meat, fish, or milk for DU analysis as part of the ERMP. However, in the event that sampling of other environmental media indicates significant evidence of a substantial release of DU from the RCA, the Army will include plant, animal, and aquatic creature tissue sampling in any subsequent investigations that are undertaken.

3.3.6.1 Rationale for Exclusion of Biota Sampling

DU spotting rounds fired into the RCAs during the 1960s may have been subject to artillery bombardment (until recently), maneuvers involving heavy tracked military vehicles, precipitation, and wind and water erosion. The original insoluble DU may have been oxidized into more soluble forms. DU may have been taken up from soil by plant roots, and airborne DU may have been deposited by precipitation or wind onto plant leaves and fruit. Wild animals may eat DU-containing food or drink DU-containing water. At some installations, farm animals such as cattle or sheep graze on military lands (though typically not in active ranges).

Human receptors include on or offpost recreational hunters or fishers, consumers of meat or milk from farm animals grazing onpost, and consumers of vegetables or fruit offpost that is contaminated by water or airborne DU.

Though these mechanisms for a complete exposure pathway seem to be in place, the actual potential for uranium uptake, transport through, and bioaccumulation in the human food chain is small to nonexistent. Uptake by plants is typically low (USEPA, 2006a) and restricted to adsorption the outer root membranes (ATSDR, 2011). No significant translocation of uranium from soil to aboveground parts of plants has been observed; uranium levels in higher trophic levels of aquatic organisms decline due to low assimilation efficiency; bioconcentration in fish is low and may represent water extraction or accumulation on gill surfaces (ATSDR, 2011). Since lower-level organisms tend to excrete both soluble and insoluble uranium species quickly, uranium is not effectively transported through the food chain and does not bioaccumulate (USEPA, 2006a). Army sampling of deer that were exposed to DU at Jefferson Proving Ground found no DU (SAIC, 2006).

4.0 PROJECT ORGANIZATION AND MANAGEMENT

4.1 Responsible Organizations

The key organizations supporting the environmental monitoring program include the NRC and the Department of the Army.

4.1.1 Nuclear Regulatory Commission

NRC's primary mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC also regulates these nuclear materials and facilities to promote the common defense and security. The NRC approves and oversees the implementation of IMCOM's source material license and will ensure that the terms and conditions of the license are being implemented, including implementation of the ERMP.

4.1.2 Department of the Army

For the purpose of the ERMP, the IMCOM Commander, IMCOM Radiation Safety Staff Officer (RSSO) (the License RSO), US Army Garrison (USAG) Hawaii commander, and the garrison RSO have specific responsibilities that are described in the USAG Hawaii Radiation Safety Plans.

4.2 Lines of Authority

In general, communication to the NRC should go through the garrison RSO to the IMCOM RSSO and then to the NRC. The POC for IMCOM RSSO and the garrison RSO is as follows:

IMCOM Radiation Safety Staff Officer
US Army Installation Management Command
ATTN: IMSO/301
Building 2261
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223

Installation Radiation Safety Officer
USAG-HI, Installation Safety Office
1554 Lyman Road (Bldg 3004)
Schofield Barracks, HI 96857

5.0 FIELD PROGRAM

This section details procedures associated with the field program . In particular, it describes protocols for sampling, sample handling and management, field measurements, equipment decontamination, and waste management.

5.1 Sampling Protocol

Procedures associated with planning and conducting sampling of the RCA are defined in this section. These procedures include pre-mobilization activities and environmental media sampling, field measurements, equipment decontamination, and waste management.

5.1.1 Pre-Mobilization Activities

The IMCOM RSSO will notify and coordinate with the garrison RSO prior to the sampling date to ensure that support will be onsite at the time of sampling. At this time, orders for supplies and instruments will be made. In addition, the arrangements with the analytical laboratory will be completed to support analysis of samples.

5.1.2 Groundwater Sample Collection

Groundwater sample collection and analysis is not planned as part of the ERMP. However, in case the ERMP scope is modified in the future to include groundwater sample collection, procedures for sample collection and analysis are included in this ERMP.

Standard operating procedures for groundwater sampling are enumerated (note that procedures will be modified, as appropriate, for sample collection from irrigation wells and municipal/ domestic wells):

1. An exposure rate measurement will be performed and recorded approximately one meter above the ground surface in the immediate vicinity of the wellhead to document pre-sampling conditions.

2. The purging of wells will be accomplished using a submersible pump. Upon opening each well, the well cover and wellhead will be inspected for damage, and organic vapors will be monitored using a photoionization detector (PID). The static water level then will be determined using a water level indicator probe. Immediately after the water level measurement, the pump intake will be installed approximately 1 foot below the top of the water surface. Each well will be purged at a rate no greater than the recharge rate of the aquifer. The water level should be monitored during purging to ensure that drawdown is not occurring. The field parameters of hydrogen ion concentration (pH), temperature, conductivity, and turbidity will be monitored and recorded during purging using a Horiba

U-10 Water Quality Meter or equivalent. Purging will be complete after the indicator parameters have stabilized within the following ranges over three consecutive readings:

- pH ± 0.2 pH units
- Temperature ± 1 degree Celsius
- Conductivity ± 10 percent

3. The sampler will don new nitrile rubber gloves or similar gloves.

4. Samples will be collected using a new hand bailer tied with new colorless twine for each sample. Care will be taken when lowering the bailer into the well to prevent unnecessary aeration or contamination of the sample.

5. A total volume of 1 U.S. gallon of water will be collected.

6. A portion of the first bailer full of water will be placed into a clean beaker or other suitable container, and an evaluation of temperature, pH, and conductivity will be conducted and recorded.

7. Sample information will be recorded.

8. The sample will not be filtered in the field.

9. If required by the laboratory, an appropriate quantity of hydrochloric acid will be added to the sample to ensure pH is less than or equal to 2. This can be accomplished by using sample containers provided by the lab that are pre-loaded with appropriate quantities of acid.

10. The sample will be wiped clean so that a label and security seal may be placed on it. The sample then will be placed into a sealed Ziploc bag prior to insertion into a cooler for shipment.

    Additional forms may be used to record additional well information (e.g., well depth, purging data).

11. An exposure rate measurement will be performed and recorded approximately one meter above the ground surface in the immediate vicinity of the wellhead to document post-sampling conditions.

5.1.3 Surface Water Sample Collection

Surface water samples will be collected at three locations in Hale'au'au, Mohiakea, and Waikoloa Gulches, which are down gradient and receive runoff from the RCA as shown on Plate Number 6.

Standard operating procedures for surface water sampling are enumerated:

1. An exposure rate measurement will be performed and recorded approximately one meter above the sample collection location to document pre-sampling conditions.

2. Samples will be collected in new sample containers using the grab method. Sample containers will be positioned pointing upstream and below the surface of the water.

3. A sample volume of 1 U.S. gallon of water will be collected.

4. Water samples will not be filtered in the field.

5. If required by the laboratory, an appropriate quantity of hydrochloric acid will be added to the sample to ensure pH is less than or equal to 2. This can be accomplished by using sample containers provided by the lab that are pre-loaded with appropriate quantities of acid.

6. The sample will be wiped clean so that a label and security seal may be placed on it. The sample then will be placed into a sealed Ziploc bag before being put into a cooler for shipment.

7. An exposure rate measurement will be performed and recorded approximately one meter above the sample collection location to document post-sampling conditions.

5.1.4 Soil/Sediment Sample Collection

Soil samples will be collected at three locations along roadway points of egress from the. Plate Number 6 identifies the three soil sample collection locations.

Sediment samples will be collected at three locations in Hale'au'au, Mohiakea, and Waikoloa Gulches, which are down gradient and receive runoff from the RCA as shown on Plate Number 6

Standard operating procedures for soil and sediment sampling are enumerated below:

1. An exposure rate measurement will be performed and recorded approximately one meter above the sample collection location to document pre-sampling conditions (if not performed during surface water sampling).

2. The sampler will don clean nitrile rubber or similar gloves.

3. Samples will be collected using a new or properly cleaned scoop, trowel, or other suitable tool. Samples will be placed in a glass sample jar.

4. Sediment samples will be collected only after the water sample has been collected (only if water sampling is identified as a pathway that requires sampling).

5. Although a sediment sample is usually considered a soil sample matrix, a certain amount of water may be in the sample. The sample should not be drained of water that is not collected as part of the sample.

6. The sample will be wiped clean so that a label and security seal may be placed on it. The sample will then be placed into a sealed Ziploc bag before being put into a cooler with ice.

7. An exposure rate measurement will be performed and recorded approximately one meter above the sample collection location to document post-sampling conditions.

5.2 Sample Handling and Management

Because samples collected are in support of NRC license commitments, chain of custody (COC) procedures will be followed. Samples will be secured from unauthorized access during the period of sampling. Prior to shipment of samples to the analytical laboratory, a properly completed COC Record will be placed in each shipping container. Survey personnel will maintain a copy of the COC Record for verification of sample transport. Water samples should reach the analytical laboratory no later than four days from the time of sampling. To ensure that this schedule is met and that the laboratory has time to filter and preserve the samples if necessary, water samples should be collected on the first day of the sampling trip and shipped the following day. It is not necessary to ship the water, sediments, and soils together.

Sample analysis of all environmental samples will be performed through the analytical laboratory. Samples will be managed and analyzed in accordance with the established protocols and procedures of the analytical laboratory.

5.2.1 Sample Containers

The analytical laboratory will provide sample containers and labels prior to the sampling event. Sample bags, labels, and coolers will be shipped to the following address:

Schofield Barracks Military Reservation
Installation Radiation Safety Officer
USAG-HI, Installation Safety Office
1554 Lyman Road (Bldg 3004)
Schofield Barracks, HI 96857

5.2.2 *Quality Control Samples*

Quality control (QC) samples will be collected to achieve data quality objectives. These samples include matrix spike/matrix spike duplicate (MS/MSD), field duplicate, and field replicate samples.

MS/MSD samples will be collected to evaluate the accuracy and precision of the analysis and the matrix effect of the sample on the analytical methodology. A MS/MSD sample will be collected for every 20 samples of similar matrix received at the laboratory (minimum of one MS/MSD per sampling event). MS/MSD samples do not release the laboratory from its own QC requirements for laboratory control samples (LCSs).

A field duplicate sample is a second sample collected at the same location as the original sample. Duplicate samples are collected simultaneously or in immediate succession, using identical recovery techniques, and are treated in an identical manner during storage, transportation, and analysis. The sample containers are assigned an identification number in the field so that they cannot be identified (blind duplicate) as duplicate samples by laboratory personnel performing the analysis. Specific locations are designated for collection of field duplicate samples prior to the beginning of sample collection. Field duplicates will be collected at a ratio of 1 per 10 investigative samples collected.

A field replicate sample, also called a split, is a single sample divided into two equal parts for analysis. The sample containers are assigned an identification number in the field so that they cannot be identified as replicate samples by laboratory personnel performing the analysis. Specific locations are designated for collection of field replicate samples prior to the beginning of sample collection. Replicate sample results are used to assess precision.

5.2.3 *Sample Identification*

All sample containers will have the following information listed on the label:

- Unique sample identification
- Date and time of sample collection
- Source of sample (including name, location, and sample type)
- Designation of MS/MSD
- Preservative used

- Analyses required
- Name of collector(s).

5.2.4 Sample Custody

Procedures to ensure the custody and integrity of the samples begin at the time of sampling and continue through transport, sample receipt, preparation, analysis and storage, data generation and reporting, and sample disposal. Records concerning the custody and condition of the samples are maintained in field and laboratory records.

Chain of custody records will be maintained maintain for all field and field QC samples. A sample is defined as being under a person's custody if any of the following conditions exist: (1) it is in his/her possession, (2) it is in his/her view, after being in his/her possession, (3) it was in his/her possession and he/she locked it up, or (4) it is in a designated secure area.

All sample containers will be sealed in a manner that will prevent or allow for detection of tampering if it occurs. Furthermore, each sample will be uniquely identified, labeled, and documented in the field at the time of collection.

After samples reach the laboratory, they will be checked against information reported on the COC forms for anomalies. The condition, temperature, and appropriate preservation of the samples will be checked and documented on the COC form. The occurrence of any anomalies in the received samples and decisions regarding the potentially affected samples will be documented in laboratory records.

The laboratory will confirm sample receipt and login information through the transmission of a letter of receipt (LOR) to the garrison RSO (or designee). Within 24 hours of sample receipt, the laboratory shall send a facsimile or e-mail a copy of the completed COC form, related login information, and a report specifying the condition of the samples upon receipt.

5.3 Field Measurements

Procedures associated with field measurements are described in this section. Related equipment operation and maintenance procedures are identified.

5.3.1 Field Parameters

Request for instrumentation to support the sampling program, including field measurements, will be made no later than 30 days prior to the scheduled departure date. Radiation detection instrumentation, sampling tools, and pH, temperature, and conductivity instruments either will be rented or obtained on SB. Specific field measurements for groundwater, surface water, and radiation doses are described in the following paragraphs.

5.3.1.1 Groundwater

When collecting the groundwater sample, the field parameters of pH, temperature, conductivity, and turbidity will be monitored and recorded during purging of groundwater wells using a Horiba U-10 Water Quality Meter or equivalent. Well purging will be complete after the indicator parameters have stabilized within the following ranges over three consecutive readings:

- pH = 0.2 pH units
- Temperature = 1° C
- Conductivity = 10 percent.

Measurements of static water level will be taken prior to purging and sampling and upon completion of sampling using an electronic water level indicator. The groundwater level will be measured to the nearest 0.01 ft and from a marked survey datum on the rim of the riser. The water level measurements will be recorded on the monitor well static water level form. Wells that are dry will be noted as such. Groundwater levels will be measured in all wells to be sampled in as short a period as practical. The electronic water level indicator will be decontaminated between each monitoring well measurement.

5.3.1.2 Surface Water

After collecting the surface water sample, the pH, temperature, and conductivity will be collected at the sample location with the Horiba U-10 Water Quality Meter or equivalent and recorded.

5.3.1.3 Gamma Radiation Measurements

Radiation exposure rate measurements will be taken at 1 m above the sample location and recorded. Measurements will be performed with a portable radiation survey instrument that is sensitive to gamma radiation, reads in units of exposure rate, and is appropriately calibrated. The instrument should be held 1 m above the sampling location.

Any comments and notations that may be necessary for interpretation of the results should be recorded.

5.3.2 Equipment Calibration and Quality Control

Upon receipt of instruments, appropriate instrument QC checks will be conducted to ensure proper operation prior to departure.

Radiation detection instrumentation will be checked for response against a radiation check source. This check source also should be shipped to the survey site for instrument verification onsite. The radiation check source used need not be a calibrated source because instrument response is the parameter being evaluated. The check will be performed daily or as needed to ensure accurate and precise readings.

Water quality instruments also should be verified using the manufacturer's procedures. These instruments will be calibrated daily per the manufacturer's guidelines. More frequent calibration may be necessary if field personnel suspect that the initial calibration may have been affected by external factors (e.g., temperature or humidity). Field measurements to be performed include water level measurement, pH, conductivity, temperature, and turbidity. All equipment to be used during the field sampling will be examined to certify that it is in operating condition. This examination will include checking the manufacturer's operating manual and instructions for each instrument to ensure that all maintenance requirements are being observed.

In the event that an internally calibrated field instrument fails to meet calibration/checkout procedures, a HOLD tag will be attached, the instrument will be returned to the supplier or manufacturer, and a backup instrument will be used in its place. Project personnel responsible for calibrating and operating field instruments will receive training in the proper use of each instrument. The satisfactory operating condition of equipment and instrumentation used onsite will be verified before each piece of equipment is shipped to SB.

5.3.3 Equipment Maintenance and Decontamination

Decontamination operations will be conducted to reduce the potential for cross-contamination from sampling equipment that will be reused. Bailers, twine, nitrile rubber gloves, and other such disposable items will not be reused but will be disposed of properly. All reusable field equipment will be decontaminated by using potable or DI water (transported to each sampling location) before sampling activities begin, between sampling activities, and after sampling activities are completed at each site. The use of DI water will be required in the decontamination process of sampling equipment that comes into direct contact with analytical samples.

Equipment decontamination for sampling activities will include rinsing the following equipment with DI water after sampling and measurements are completed at each sample location:

- Electronic water level indicators
- Probe for the water quality meter (Horiba Model U-1).

The scoops or trowels used for soil sampling will need to be decontaminated in the following manner:

- Potable water rinse
- Scrubbed in an Alconox® detergent and potable water bath
- Potable water rinse

- DI water rinse.

All rinse water will be collected in a purge water collection vessel for proper disposal. In addition, field personnel will prevent the equipment from coming into contact with potentially contaminating substances, such as tape, oil, engine exhaust, corroded surfaces, and dirt by wrapping tools or equipment with aluminum foil when necessary.

Decontamination operations will be conducted to reduce the potential for cross-contamination from sampling equipment and machinery.

5.4 Waste Management

Waste management (e.g., purged groundwater, equipment decontamination liquids, and disposable personal protective clothing) will be addressed on a site-by-site basis. Waste may be classified as non-investigative waste or investigation-derived waste (IDW). It is anticipated that waste generated during the sampling will be acceptable for disposal in standard sanitary dumpster. Determination of standard sanitary disposal acceptability will be based on analytical sample results and/or instrument scans of materials and equipment.

Non-investigative waste, such as litter and household garbage, will be collected on an as needed basis at each sample location in a clean and orderly manner. This waste will be containerized and transported to a SB-designated collection bin. Acceptable containers will be sealed boxes or plastic garbage bags.

IDW generated during groundwater sampling includes purged groundwater, equipment decontamination liquids, and disposable personal protective clothing. Purged groundwater and equipment decontamination liquids will be containerized in 55-gallon drums or other suitable container. Mixing of the fluids is permissible. The containers will be labeled and transported to a secure staging area designated by SB. In no instance will a drum containing IDW be left unattended at an unsecured location. Disposable personal protective equipment (PPE) will be placed in plastic bags and disposed of in a site dumpster. PPE will be scanned for radiological contamination prior to disposal.

After field activities are completed, a representative sample of the wastewater will be collected for analysis. The sample will be a composite composed of liquid from each container of liquid IDW. Based on the results of the analysis, an appropriate disposal option will be selected. If the water meets the discharge limits, it will be released to the ground surface and any associated sampling equipment will be disposed of or stored as radiologically clean. If water analyses indicate that levels exceed discharge limits, the water will be transported and disposed of offsite.

5.5 Record Keeping

Field records will be maintained to a sufficient level of detail to re-create all sampling and measurement activities. The requirements listed in this section apply to all measuring and sampling activities. Requirements specific to individual activities are listed in the section that addresses each activity. The information will be recorded with indelible ink in a permanently bound notebook with sequentially numbered pages. These records will be archived in an easily accessible form and made available to the U.S. Army upon request.

The following information will be recorded for all field activities: (1) location, (2) date and time, (3) identity of people performing the activity, and (4) weather conditions. The following information will be recorded for field measurements: (1) the numerical value and units of each measurement and (2) the identity of and calibration results for each field instrument.

The following additional information will be recorded for all sampling activities: (1) sample type and sampling method, (2) the identity of each sample and depth(s), where applicable, from which it was collected, (3) the amount of each sample, (4) sample description (e.g., color, odor, clarity), (5) identification of sampling devices, and (6) identification of conditions that might affect the representativeness of a sample (e.g., refueling operations, damaged casing).

The results of a sampling event completed in support of the ERMP will be documented and provided to IMCOM. The report will include, but not necessarily be limited to, planned and actual sampling events, analytical and field results, data quality assessment results, and completed forms. A draft and a final report on the sampling event will be prepared.

6.0 SAMPLE ANALYTICAL REQUIREMENTS

6.1 Objective

The analytical objective is to determine if DU residue from Davy Crockett spotter rounds has environmentally migrated from the RCAs within munitions impact areas on Army training ranges and whether the RCAs need to be enlarged.

6.2 Analytes of Concern

Natural and DU contain the uranium isotopes ^{234}U, ^{235}U, and ^{238}U. Therefore, all samples will be analyzed for ^{234}U, ^{235}U, and ^{238}U concentrations.

Isotopic uranium activity ratios and mass ratios will be used to determine the absence or presence of DU. The ^{234}U to ^{238}U activity ratio in natural uranium under secular equilibrium is 1; however, because of weathering and other geochemical and physical phenomena (e.g., alpha recoil) secular equilibrium can be disturbed (Ivanovich and Harmon, 1992; Florida Institute of Phosphate Research (FIPR) 1991; Fujikawa et al. 2011; Luo et al., undated; Wong et al., 1999). The ^{235}U to ^{238}U atom ratio is much less variable and is useful for determining the presence of DU in a given sample. Therefore, ICP-MS will be used to determine ^{235}U to ^{238}U atom ratio, when needed. See Section 6.5 for more information about when ICP-MS analysis will be performed.

For natural uranium, the $^{235}U/^{238}U$ atom ratio is 0.007253 based on the best estimates for the ^{235}U and ^{238}U values from a single terrestrial source (International Union of Pure and Applied Chemistry (IUPAC), 2011).

For DU expected from M101 spotter rounds, the $^{235}U/^{238}U$ atom ratio is 0.00203 (AEPI, 1995). The values in the AEPI report are mass fractions; they have been converted to atom fractions for easy comparison to the natural uranium value.

6.3 Analytical Laboratory Methods

Alpha spectroscopy, with appropriate preparation techniques for different environmental matrices, is the primary method chosen for this project to measure ^{238}U : ^{234}U activity ratios. The secondary method used to more precisely determine the isotopic uranium composition is ICP-MS.

The alpha spectroscopy and ICP-MS minimum detectable concentrations (MDCs) for the radioisotopes ^{234}U, ^{235}U, and ^{238}U are provided In Table 2 for each sample type.

For all samples, the entire sample should be processed as received. Unwanted material should be removed (e.g., vegetation, large rocks, and large chunks of metal). For solid samples, the entire remaining sample must be dried, ground to uniform particle size (recommend ball mill or grinder), and sieved through an ASTM U.S. Series Number 40 sieve (425-µm particle size or smaller) prior to subsampling for analysis. The subsample will proceed through the analytical procedure for total dissolution prior to extraction chromatography.

6.4 Laboratory Method Analytical Uncertainty

All reported alpha spectroscopy values will include the measurement uncertainty coverage factor of 2. Uncertainties should be propagated by the laboratory whenever possible and a detailed discussion should be available for review (National Environmental Laboratory Accreditation Conference (NELAC), 2003).

6.5 Evaluation of Laboratory Results

Figure 2 illustrates the decision process for evaluation of the analytical results. As an additional test, if no sample result for each sample type exceeds an action criteria, the sample with the highest ^{238}U result will be analyzed for the ^{235}U : ^{238}U ratio analysis by ICP-MS.

Table 2: Alpha Spectroscopy MDCs and ICP-MS Detection Sensitivities

Uranium Isotope	Sample Type and Activity Concentrations					
	Soil/Sediment MDC		Water MDC		Air MDC	
	Alpha Spectroscopy (pCi/g)	ICP-MS (mg/kg)	Alpha Spectroscopy (pCi/L)	ICP-MS (mg/L)	Alpha Spectroscopy (µCi/mL)	ICP-MS (mg/kg)
^{234}U	0.5	0.01	1	0.01	5×10^{-15}	0.01
^{235}U	0.5	0.01	1	0.01	6×10^{-15}	0.01
^{238}U	0.5	0.05	1	0.05	6×10^{-15}	0.05

6.6 Laboratory Quality Control

Table 3 presents the quality control that applies to volumetric samples (i.e., groundwater, surface water, soil, and sediment samples) analyzed for radiochemistry at low concentrations using the following analytical methods: Total Dissolution (Soils/Sediments), Extraction Chromatography, Alpha Spectroscopy.

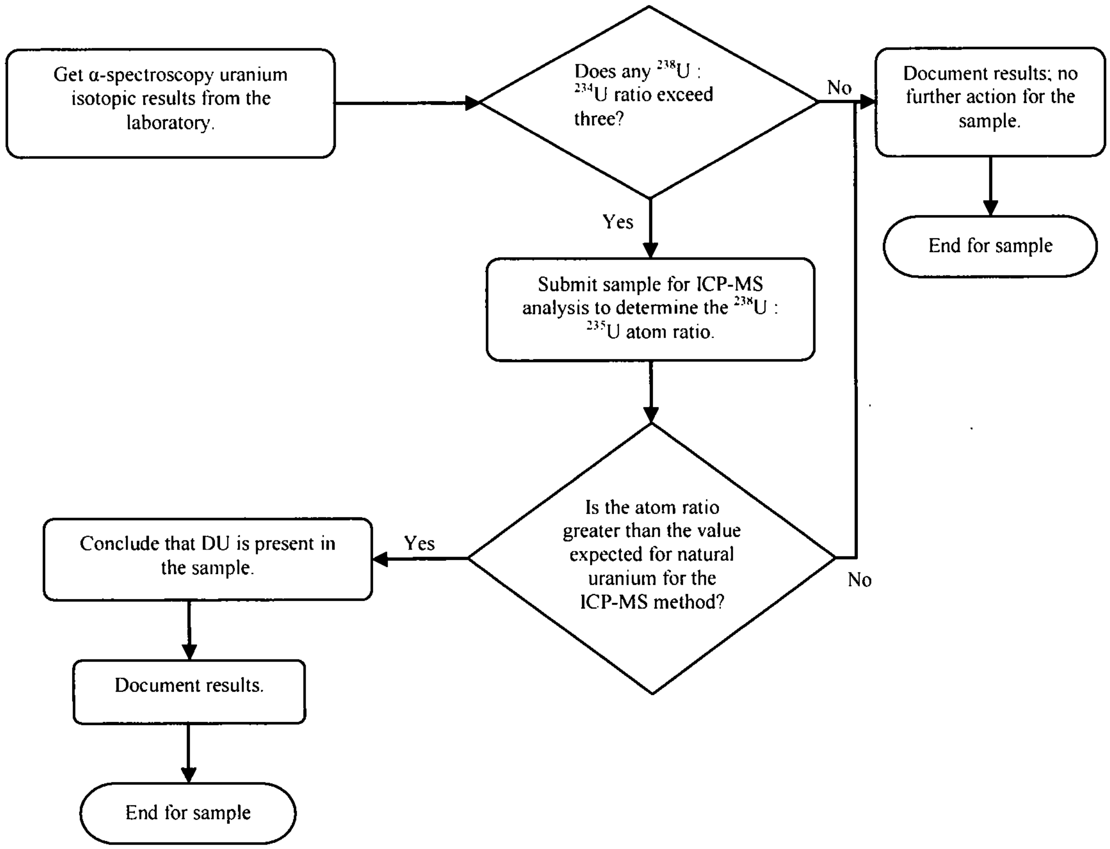

Figure 2: Sample Analytical Result Evaluation Decision Tree

Table 3: Laboratory Volumetric Quality Control Samples

QC Sample	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action by Analyst	Data Quality Indicator (DQI)	Measurement Performance Criteria
Instrument Energy Calibration	Weekly	Instrument Statistical established limits	Failure should preclude use of instruments for sample analysis. Depending on the degree of failure, samples may be re-prepared/ re-analyzed, or data qualified (hold times must also be considered). Contact client for discussion.	Instrument Calibration Verification (Performance Checks)	Instrument Statistical established limits
Instrument Counting Efficiency	Monthly	Instrument Statistical established limits	Failure should preclude use of instruments for sample analysis. Depending on the degree of failure, samples may be re-prepared/re-analyzed, or data qualified (hold times must also be considered). Contact client for discussion.	Instrument Calibration Verification (Performance Checks)	Instrument Statistical established limits
Instrument Reference Background	Monthly	Instrument Statistical established limits	Failure should preclude use of instruments for sample analysis. Depending on the degree of failure, samples may be re-prepared/re-analyzed, or data qualified (hold times must also be considered). Contact client for discussion.	Instrument Calibration Verification (Performance Checks)	Instrument Statistical established limits
Method blank	1 per batch or 20 samples	Less than the Minimum Detectable Concentration (MDC)	Qualify if analyte is not detected in samples. If detected, identify source of contamination before further analysis and qualify only if necessary.	Laboratory Accuracy/bias Representativeness	Less than the Minimum Detectable Concentration (MDC)
Tracer	Add tracers to all samples	Uranium-232 30 percent to 100 percent	Depending on the degree of failure, samples may be re-prepared/re-analyzed, or data qualified (hold times must also be considered). Contact client for discussion.	Accuracy/bias	Uranium-232 40 percent-100 percent

QC Sample	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action by Analyst	Data Quality Indicator (DQI)	Measurement Performance Criteria
Laboratory Control Sample (LCS)	1 per batch or 20 samples	Uranium-238 70 percent to 130 percent	If LCS is outside control limits, contact client. Depending on degree of failure (and hold time status), re-prepare/re-analyze affected batch of samples. Qualify only if necessary.	Accuracy/bias	Uranium-238 70 percent to 130 percent
Matrix Spike (MS)	1 per batch or 20 samples	Uranium-238 70 percent to 130 percent	If the recovery falls outside the designated range and the LCS for that analyte is in control, matrix-related problems will be noted and the data will be qualified.	Accuracy/bias Matrix effects	Uranium-238 70 percent to 130 percent
Matrix Spike Duplicate (MSD)	1 per batch or 20 samples	≤30 percent RPD Uranium-238 70 percent to 130 percent	If Dup is outside control and the LCS is in control, discuss with client for possible re-analysis or data qualification.	Precision	≤30 percent RPD. Uranium-238 70 percent to 130 percent

7.0 PROGRAMMATIC QUALITY ASSURANCE

This section describes ERMP assessment and oversight functions to ensure that planned program activities are implemented as described in the ERMP and that reports are provided to apprise management of the program status and any quality issues that arise during implementation. The programmatic QA processes described will ensure that the resultant data quality is adequate for its intended use and that appropriate responses are in place to address nonconformances and deviations from the project site-specific ERMP QA requirements.

The project teams should choose assessments that identify activities with the most influence on data quality and provide information about potential problems and mistakes. Due to the fact that fixed analytical laboratories adhere to quality system requirements dictated by accrediting bodies, sampling error is generally thought to contribute the majority of the measurement error associated with project data.

Therefore, all field data generation and sample collection operations should include a thorough onsite field sampling technical systems audits (TSA) at the start of field sampling activities so that effective corrective action measures can be implemented to mitigate the extent and impact of identified sampling nonconformances.

Deviations from the ERMP can also be identified by project personnel without the benefit of formal, scheduled assessments. This section also addresses those situations and describes the process by which the need for corrective action is documented, reported, and implemented and its effectiveness assessed.

After project-specific data requirements are determined, analytical laboratories are selected which can meet these requirements. When the project-specific data requirements identify procedures or criteria that a laboratory cannot meet, subcontract laboratories are acquired. The primary analytical laboratory is responsible for acquiring and oversight of contract laboratories. An SOP should be developed and implemented that describes procedures for acquiring and monitoring analytical contract laboratories to include at a minimum:

a. Development of a Contract Statement of Work (SOW)
b. Quality System Documentation review
c. Performance Evaluation Samples
d. Pre-contract award and monitoring site visits
e. Complete laboratory assessment and site visit
f. Use of Ad Hoc contracts for specific analyses.

7.1 Planned Audits and Assessments

This section of the ERMP also identifies the number, frequency, and types of planned assessment activities that should be performed for each project that makes up the overall program. Assessments should be conducted periodically throughout each project by entities internal and/or external to the project to ensure that usable data are generated.

Appropriately scheduled assessments allow management to implement corrective action measures in a timely manner, thereby minimizing the impact of nonconformance on achieving the overall program quality objectives. The project-specific quality objectives dictate the type, frequency, and extent of the assessments that should be performed.

All ERMP documents, Quality Assurance Manuals, pertinent SOPs, as well as QA Assessment SOPs, should be gathered by the QA personnel that will be performing each assessment. Checklists should be developed from these documents ensuring all pertinent quality aspects are audited and/or assessed. These checklists should then be attached to the audit or assessment reports.

7.1.1 Field Sampling Technical Systems Audits

Field Sampling TSA – A thorough onsite audit will be conducted, during which sampling design, equipment, instrumentation, supplies, personnel, training, sampling procedures, chain-of-custody, sample handling and tracking, data reporting, data handling and management, data tracking and control, and data verification procedures are examined for conformance with the ERMP.

The Garrison RSO, or designee, will perform at least one field sampling TSA. As there may only be a limited window for sampling, the TSA for each sampling media will be performed as early in the sampling effort as conceivably possible so that effective corrective action measures can be implemented to mitigate the extent and impact of any identified nonconformances.

7.1.2 Field Analytical Laboratory Technical Systems Audits

If there is a field analytical laboratory, the garrison RSO, or designee, in conjunction with the field sampling TSAs, will perform at least one field analytical TSA on that portion of the project as well.

7.1.3 Fixed Laboratory Technical Systems Audits

Fixed Laboratory TSA – A thorough audit of a fixed laboratory during which the facility, equipment, instrumentation, supplies, personnel, training, analytical methods/procedures, laboratory procedures, sample handling and tracking, data reporting, data handling and management, data tracking and control, and data verification procedures are checked for conformance with the ERMP.

Complete Fixed Laboratory TSAs are performed as a part of the analytical laboratory's accreditation/certification/registration process.

Method audits are a subset of Fixed Laboratory TSAs and consist of the auditor observing the analyst while he/she performs the analytical method on actual real-world samples to ensure the analytical laboratory SOPs are followed as required by this ERMP. These types of audits are also covered under the laboratory's Quality System requirements and are required to be performed annually. Method audits are not required for this program if the laboratory can demonstrate that a method audit for the specific analytical procedure used in support of each project conducted under the ERMP has been performed within the last year. If a method audit was not performed within the last year in support of a project, the respective laboratory QA Manager or designee will conduct a method audit for that analysis at least once during that project.

7.1.4 Data Validation Technical Systems Audit

Data Validation TSA – A thorough review of the complete Data Validation Report, including a review of the associated analytical data package deliverables (tabulated and raw data) to ensure that all required analytical data package deliverables and Data Validation Report components were provided and contain the specified information.

The Data Validation TSA also ensures that the data validation criteria specified in the ERMP were met, and the method- and laboratory-specific QC acceptance criteria specified in the ERMP were met and were appropriate for achieving the program measurement performance criteria. The Data Validation TSA also evaluates whether the project-specific measurement performance criteria and data validation criteria were appropriate for meeting the specified project goals and whether analytical measurement performance usability issues affected this achievement.

The License RSO, or designee, will perform Data Validation TSAs for data that receives third party data validation.

7.1.5 Laboratory Data Package Technical Systems Audit

Laboratory Data Package TSA – This is a type of Data Validation TSA that is limited to a review of the complete analytical data package deliverable generated by the field and/or fixed laboratory or organization to ensure that all required deliverables (tabulated and raw data) are provided and contain all the information required to reproduce all reported results. The Data Package TSA also ensures that the data verification procedures specified in the ERMP were used by the laboratory/organization producing the analytical data package deliverable. The Data Package TSA ensures that the method- and laboratory-specific QC acceptance criteria specified in the ERMP were met and were appropriate for achieving the program and project-specific measurement performance criteria.

The Analytical Laboratory Consultant, or designee, will perform Data Package TSAs for each data package generated by the analytical laboratory.

7.1.6 Management Systems Reviews

Management System Reviews – A review of an organization or organizational subset to determine if the management structure, policies, and procedures are sufficient to ensure that an effective quality system is in place to support the generation of usable program data.

The appropriate approval authority for this program reserves the right to conduct external Management Systems Reviews of any part of the study before the start of, during, or after completion of this program.

7.2 Corrective Actions

7.2.1 Corrective Actions for Sampling Activities

The mechanism for triggering a corrective action in the field will be QC checks, internal or external Field Sampling TSA findings, and/or any other informal means of identifying system nonconformances. Personnel performing sampling and in-field measurements will verbally notify the garrison RSO of any nonconformances and the resolution will be documented in the field logbook. The sampling personnel, or designee, will also provide written reports of the results of Field Sampling and Field Analytical TSAs to the garrison RSO and the IMCOM RSSO to ensure implementation of corrective actions and for inclusion in the final reports.

If appropriate, the garrison RSO will ensure that no additional work that is dependent on the nonconforming activity is performed until the corrective actions are completed. The field personnel will be responsible for ensuring that corrective actions are initiated and documented properly. Corrective action for field measurements may include:

- Repeating the measurement to check the error
- Checking for all proper adjustments for ambient conditions such as temperature
- Checking the batteries
- Recalibrating
- Checking the calibration
- Replacing the instrument or measurement devices

- Stopping work (if necessary)

7.2.2 Corrective Action during Laboratory Activities

The mechanism for triggering a corrective action in the laboratory will be QC checks, internal or external Fixed Laboratory TSA findings, and/or any other informal means of identifying system nonconformances. Corrective action decisions during chemical analyses for each project will be based on the potential for the situation to impact the quality of the data. Any issue that directly impacts project data quality objectives will be reported immediately to the Analytical Chemistry Laboratory Quality Assurance Manager and the garrison RSO. The garrison RSO, or designee, will provide written reports of the results of Fixed Laboratory TSAs to the appropriate Laboratory QA Manager and the IMCOM RSSO. When nonconformances are identified, the appropriate Laboratory QA Manager, or designee, will respond in writing with the corrective actions taken to address the nonconformances. The analytical laboratory will have a corrective action SOP that describes how corrective actions are implemented and documented within the analytical laboratory. Contract laboratories are required to adhere to corrective action procedures in accordance with their accreditation/certification standard and the contract SOW. Corrective actions may include:

- Re-analyzing the samples, if holding time criteria permits
- Resampling and analyzing
- Evaluating and amending sampling procedures
- Evaluating and amending analytical procedures
- Accepting data and acknowledging the level of uncertainty

7.2.3 Corrective Action during Data Validation

The mechanism for triggering a corrective action during data validation will be QC checks, internal or external Data Validation TSA findings, and/or any other informal means of identifying system nonconformances. The garrison RSO, or designee, will provide written reports of the results of Data Validation TSAs to the IMCOM Laboratory Consultant to ensure implementation of corrective actions and for inclusion in QA Reports to Management. When nonconformances are identified during the data validation, the Laboratory Consultant will respond in writing identifying the corrective actions taken to address the nonconformances.

7.2.4 Corrective Action during Data Package Review

The mechanism for triggering a corrective action during the data package review will be QC checks, internal or external Data Package TSA findings, and/or any other informal means of identifying system nonconformances. The Analytical Laboratory Consultant will provide written reports of the results of Data Package TSAs to the garrison RSO the appropriate supervisor of the analytical laboratory generating the data package to ensure implementation of corrective actions. When nonconformances are identified the appropriate supervisor of the analytical laboratory will respond in writing identifying the corrective actions taken to address the nonconformances.

The content and format of corrective action responses shall be tailored to suit the project quality objectives. In certain situations, a letter documenting specific procedural changes may be a sufficient corrective action response. Appropriate procedural changes can include, but are not limited to, additional staff training, revision of SOPs, and rescheduling of field and analytical activities to ensure holding times are met. Corrective actions that require immediate implementation to ensure that project quality objectives are met may require work to cease until those corrective actions are implemented and their effectiveness verified.

7.2.5 General Corrective Actions

Corrective actions shall also be initiated whenever project personnel identify field sampling and/or analytical problems that could potentially affect data quality and/or usability. Such incidents should be documented and resolved using the procedures and personnel for planned assessments described above.

7.3 Quality Assurance Management Reports

QA Management Reports ensure that management and stakeholders are updated on the project status and the results of all QA assessments. Efficient communication of project status and problems allows management to implement timely and effective corrective actions so that project quality objectives can be met.

The contents of QA Management Reports are discussed in the corrective action section above. Assessment checklists, requests for corrective actions letters, and copies of all corrective action response letters shall be included as attachments to the QA Management Reports.

All QA Management Reports will be included in the Final Project Report.

8.0 ENVIRONMENTAL RADIATION MONITORING REPORT

The License RSO will prepare a detailed Environmental Radiation Monitoring Report that includes recommendations when the sampling is completed for submittal to NRC. The report should contain an executive summary. The report body should present a discussion of the data collected, any deviation from the sampling plan, an interpretation of the data, conclusions and recommendations. Supporting documentation should be provided in various appendices.

Prior to any release of information regarding the Environmental Radiation Monitoring Plans or Environmental Radiation Reports, consideration should be given to the public engagement and risk communications. Potential outcomes of poor risk communication have many deleterious effects, including adverse mission outcomes.

Risk communication is a combination of information tools and communication processes that can help address the perceptions and outrage associated with a real or perceived risk. This combination of tools and processes helps demonstrate a greater respect for public perceptions, emotions, and information needs, and helps build the trust necessary to discuss issues productively and/or, when needed, deliver bad news.

Although good risk communication cannot guarantee mission success, poor communication efforts will surely derail it and adversely impact trust in Army medicine. The result will be an increased need for personnel, resources and time to repeatedly explain and in some cases, defend the Army's decisions associated with the issue.

An example report format is provided below.

- Executive Summary
    - Purpose
    - Summary
    - Conclusions
    - Recommendations

- Report Body
    - Introduction
        - Authority
        - Purpose
        - General – A brief summary of location, history, and environmental setting
    - Media Sections – Include a section for each media
        - Media Data Uncertainty, and Data Gaps

        - Media Results
        - Media Results Interpretation
        - Media Summary
        - Media Conclusions
        - Media Recommendations
    - Summary
    - Conclusions
    - Recommendations

- Appendices
    - References
    - Other supporting documentation as necessary
    - Figures

9.0 REFERENCES

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APPENDIX A

SCHOFIELD ERMP PLATES

APPENDIX A – SCHOFIELD ERMP PLATES

NAME

REPORT PLATES

Plate 1- Vicinity Map

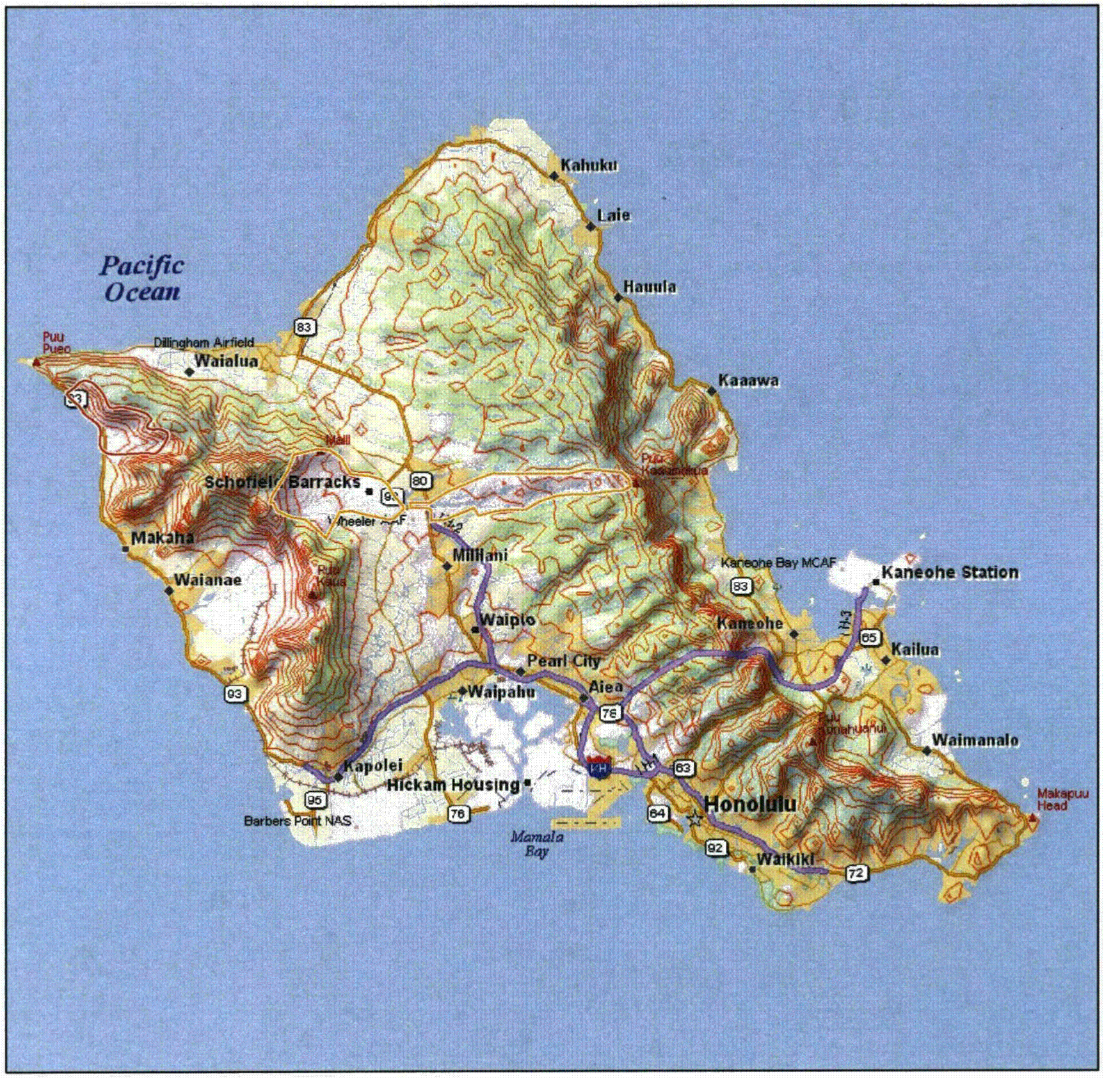
Plate 2- Schofield Barracks Oahu, Hawaii – 1950's, 1960's, and 1970's Ranges

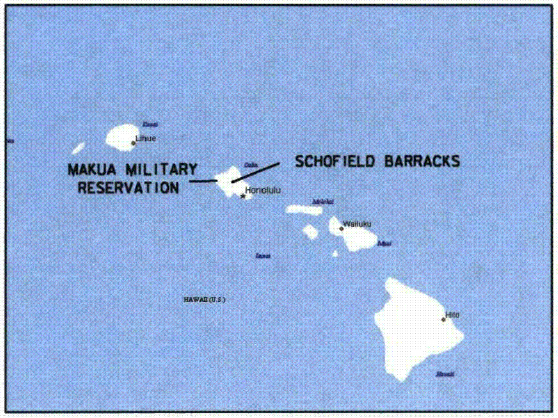
Plate 3- Possible Davy Crockett Ranges

Plate 4-Schofield Radiologically Controlled Area (RCA)

Plate 5- Regional Groundwater Systems

Plate 6- Soil and Sediment Sampling Locations





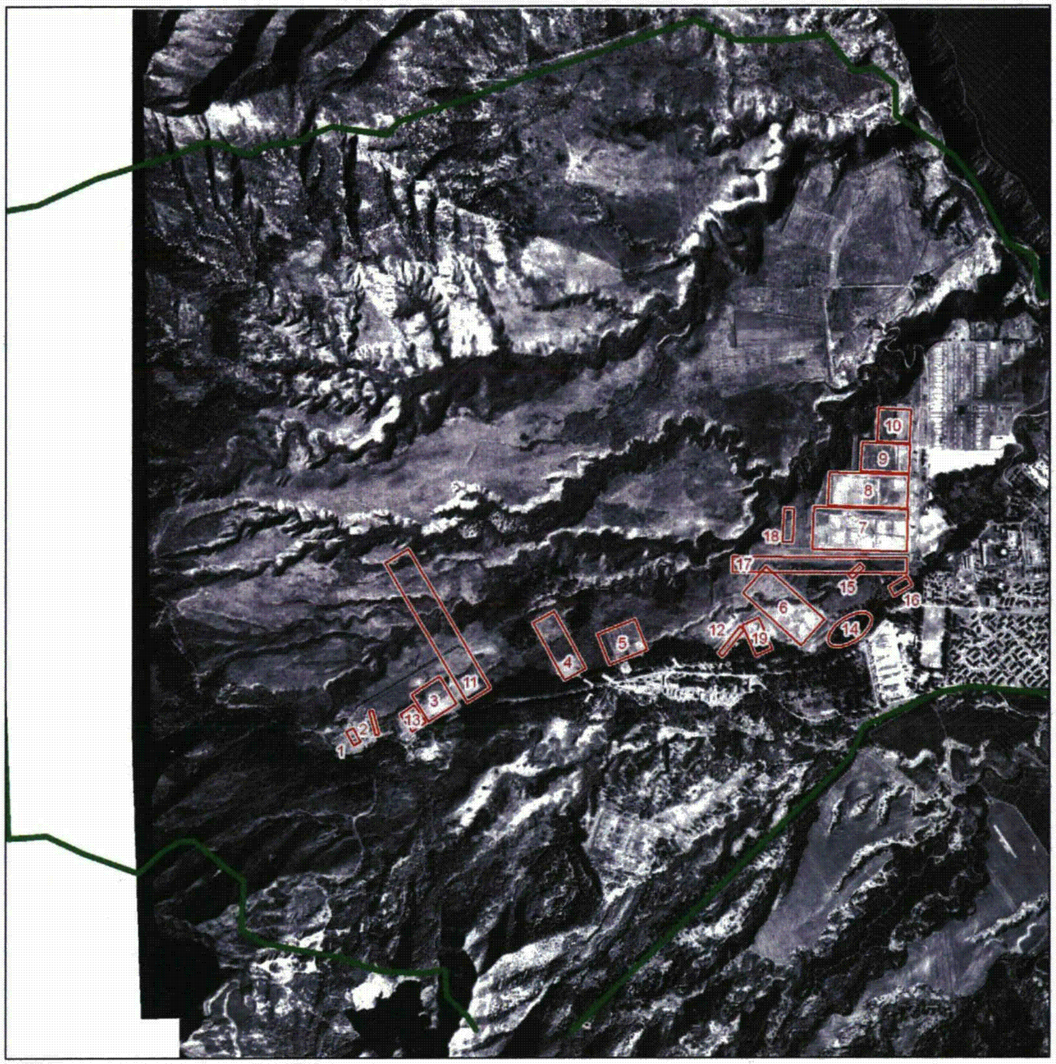
LEGEND

SCHOFIELD BARRACKS

MAKUA MILITARY RESERVATION

N

U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
SCHOFIELD BARRACKS AND MAKUA MILITARY RESERVATION ISLAND OF OAHU VICINITY MAP	
PROJ. DATE: ####DATE-TIME#### / DATE OF X: YEAR ####DESIGNFILESPECIFICATION####	PLATE NO. 1



KEY TO FEATURES:

FEATURE NUMBER	FEATURE DESCRIPTION
1	KR-1 HAND GRENADE, 3.5 INCH ROCKET LAUNCHER, M72 LAW, 40MM LAUNCHER M203 INERT ONLY AKA WA ROCKET LAUNCHER AND RIFLE GRENADES
2	KR-2 LIVE HAND GRENADE RANGE AKA WB HAND AND RIFLE GRENADE AND ROCKET LAUNCHER RANGE
3	KR-4 90 MM RECOILESS RIFLE, 106 MM RECOILESS RIFLE, M-72 LAW, .50 CALIBER MACHINE GUN (1973) AKA WC-2 CLOSE COMBAT RANGE
4	KR-6 SQUAD AND PLATOON IN THE ATTACK-LIVE FIRE AKA WE BAR TRANSITION
5	KR-7 SMALL ARMS NIGHT FIRING AND DAYLIGHT SHOTGUN FIRING AKA WF-1 AND WF-2 CARBINE TRANSITION RANGE
6	TR-1 M60 MACHINE GUN ZERO, FAMILIARIAZTION AND QUALIFICATION AKA WH-1 BAR TRANSITION AKA WH-3 TANK GUNNERY RANGE-MOVING TARGETS, SUB-CALIBER
7	CR-2 KNOWN DISTANCE RANGE FOR RIFLE AKA WJ M1 RIFLE, CARBINE AND BAR KNOWN DISTANCE RANGE
8	CR-3 TRAINFIRE RECORD RANGE AKA WK M1 RIFLE, CARBINE AND BAR KNOWN DISTANCE RANGE
9	CR-4 TRAINFIRE FIELD FIRING RANGE AKA WL M1 RIFLE, CARBINE AND BAR KNOWN DISTANCE RANGE
10	CR-5 25 METER TRAINFIRE ZERO RANGE AKA WM M1 RIFLE, CARBINE AND BAR KNOWN DISTANCE RANGE
11	KR-5 GENERAL PURPOSE WEAPONS FIRE AND DEMONSTRATION RANGE-SMALL ARMS AKA WD MACHINE GUN DEMONSTRATION AND FAMILIARIZATION RANGE
12	KR-8 SUB-CALIBER FIRING 90 MM RECOILESS RIFLE, 106 MM RECOILESS RIFLE AKA WG 500 INCH AND 1000 INCH GENERAL PURPOSE TANKS
13	WC-1 SUB MACHINE GUN RANGE
14	TR-3 FLAMETHROWER
15	TR-2 M60 MACHINE GUN ASSAULT FIRING AKA WI MORTAR FIELD TARGET FIRING RANGE
16	TR-5 TRAINFIRE TARGET DETECTION
17	CR-1 1000 YARD KNOWN DISTANCE RANGE
18	CR-2A 90MM RECOILESS RIFLE, 106 MM RECOILESS RIFLE
19	CR-1A M60 MACHINE GUN FIELD FIRING RANGE

LEGEND

PROPERTY LOCATION

FEATURE LOCATION

0 2,000 4,000 Feet

N

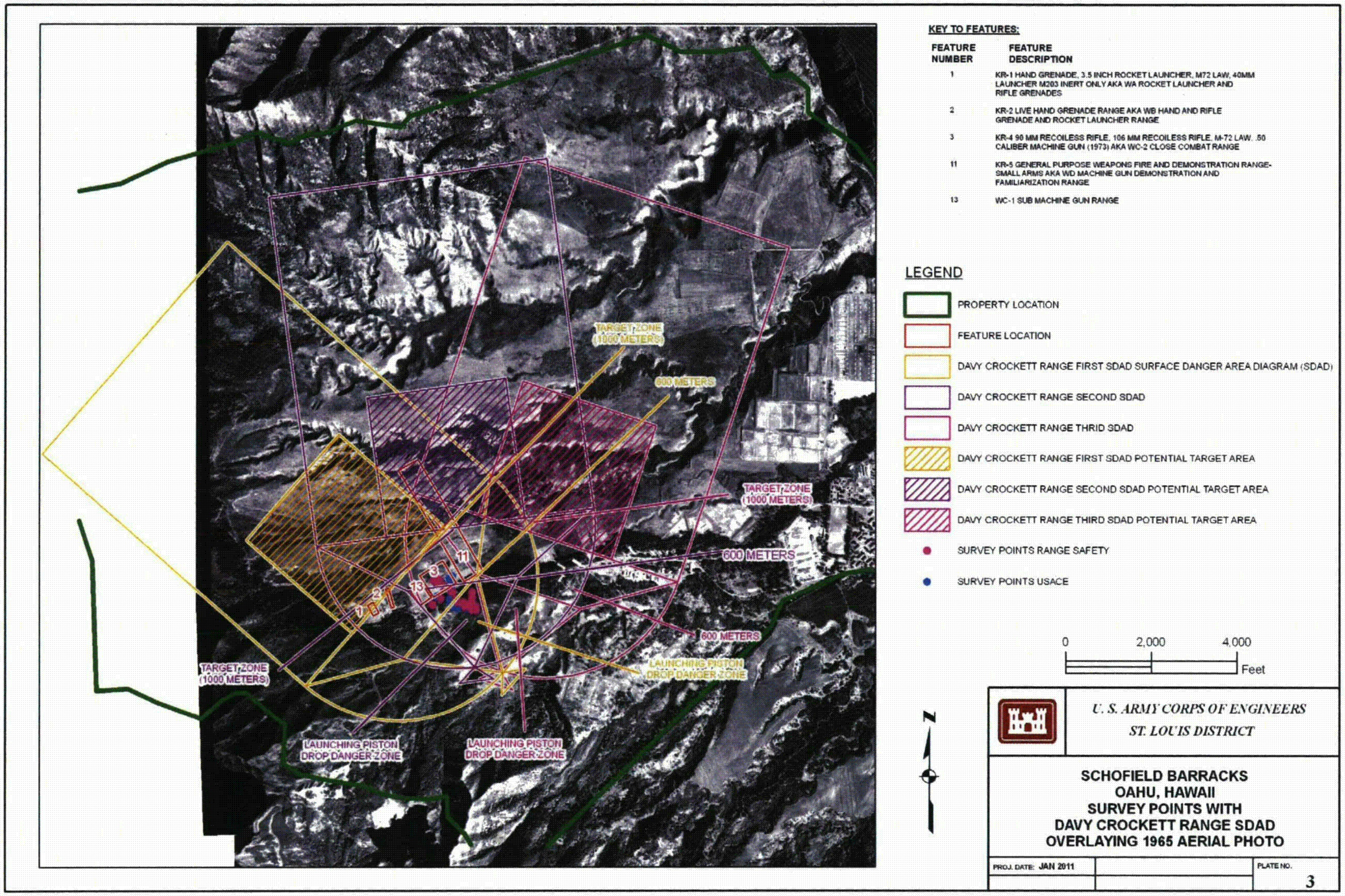
U. S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

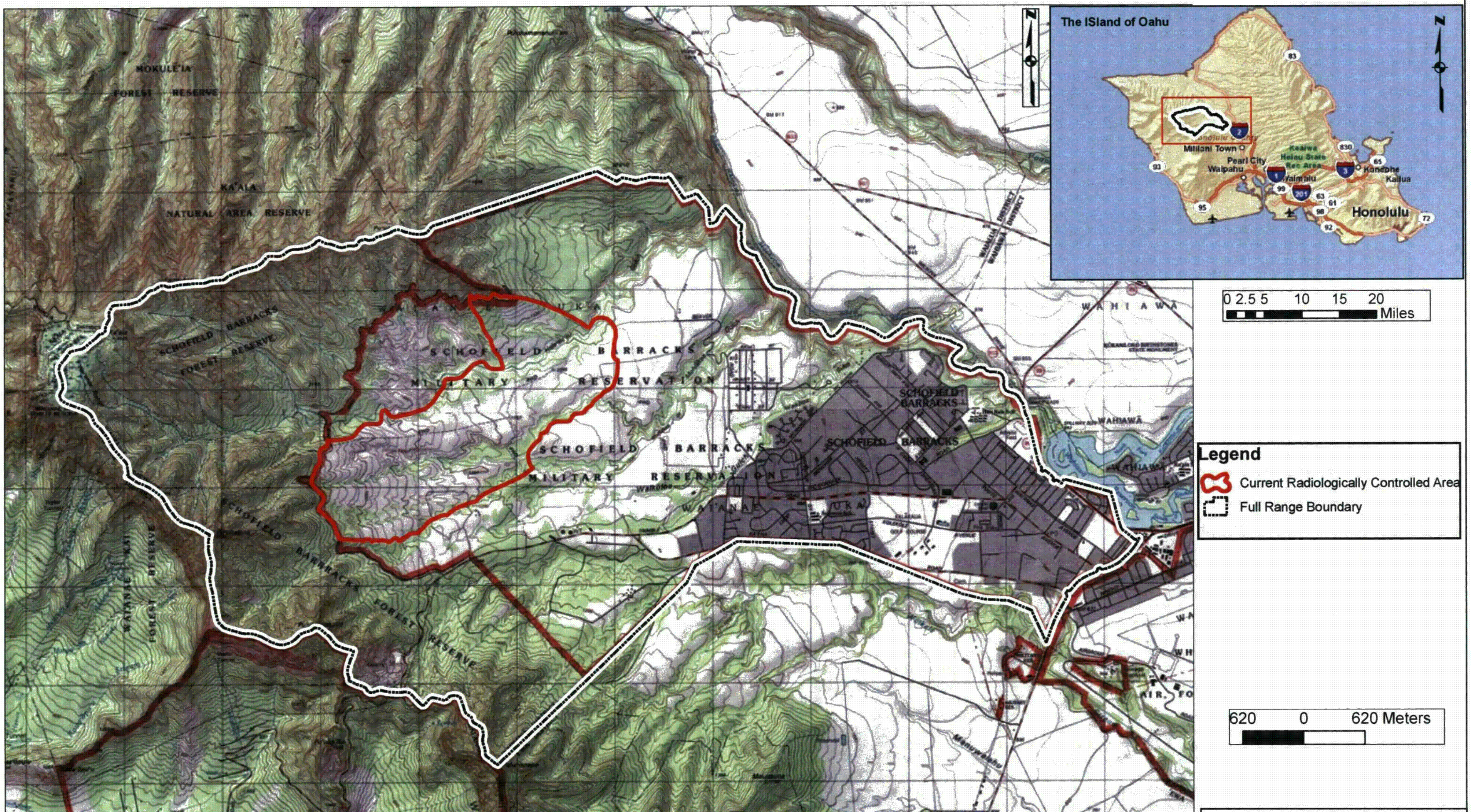
SCHOFIELD BARRACKS
OAHU, HAWAII

1950's, 1960's AND 1970"S RANGES SHOWN OVER 1965 AERIAL PHOTO

PROJ. DATE: JAN 2011

PLATE NO. 2

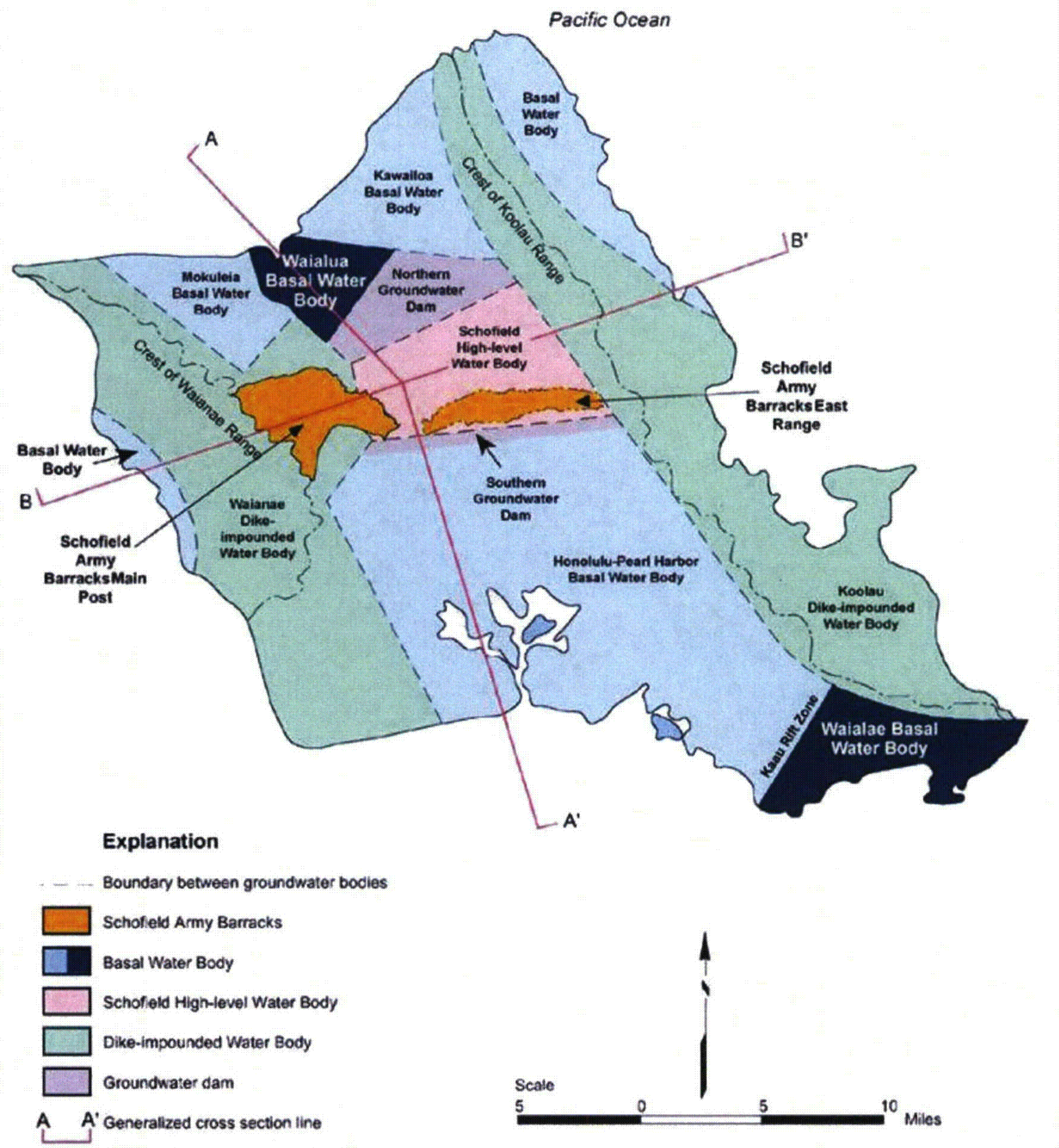

KEY TO FEATURES:
FEATURE NUMBER
FEATURE DESCRIPTION
1 KR-1 HAND GRENADE, 3.5 INCH ROCKET LAUNCHER, M72 LAW, 40MM LAUNCHER M203 INERT ONLY AKA WA ROCKET LAUNCHER AND RIFLE GRENADES
2 KR-2 LIVE HAND GRENADE RANGE AKA WB HAND AND RIFLE GRENADE AND ROCKET LAUNCHER RANGE
3 KR-4 90 MM RECOILESS RIFLE, 106 MM RECOILESS RIFLE, M-72 LAW, .50 CALIBER MACHINE GUN (1973) AKA WC-2 CLOSE COMBAT RANGE
11 KR-5 GENERAL PURPOSE WEAPONS FIRE AND DEMONSTRATION RANGE-SMALL ARMS AKA WD MACHINE GUN DEMONSTRATION AND FAMILIARIZATION RANGE
13 WC-1 SUB MACHINE GUN RANGE
LEGEND
PROPERTY LOCATION
FEATURE LOCATION
DAVY CROCKETT RANGE FIRST SDAD SURFACE DANGER AREA DIAGRAM (SDAD)
DAVY CROCKETT RANGE SECOND SDAD
DAVY CROCKETT RANGE THRID SDAD
DAVY CROCKETT RANGE FIRST SDAD POTENTIAL TARGET AREA
DAVY CROCKETT RANGE SECOND SDAD POTENTIAL TARGET AREA
DAVY CROCKETT RANGE THIRD SDAD POTENTIAL TARGET AREA
SURVEY POINTS RANGE SAFETY
SURVEY POINTS USACE
TARGET ZONE (1000 METERS)
600 METERS
TARGET ZONE (1000 METERS)
600 METERS
600 METERS
TARGET ZONE (1000 METERS)
LAUNCHING PISTON DROP DANGER ZONE
LAUNCHING PISTON DROP DANGER ZONE
LAUNCHING PISTON DROP DANGER ZONE
1
2
3
11
13
0
2,000
4,000
Feet
N
U. S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
SCHOFIELD BARRACKS
OAHU, HAWAII
SURVEY POINTS WITH
DAVY CROCKETT RANGE SDAD
OVERLAYING 1965 AERIAL PHOTO
PROJ. DATE: JAN 2011
PLATE NO.
3



SCHOFIELD TRAINING AREA AND RADIOLOGICALLY CONTROLLED AREA

SCHOFIELD AREA BRAVO
ISLAND OF OAHU

02/2012	Plate No. 4



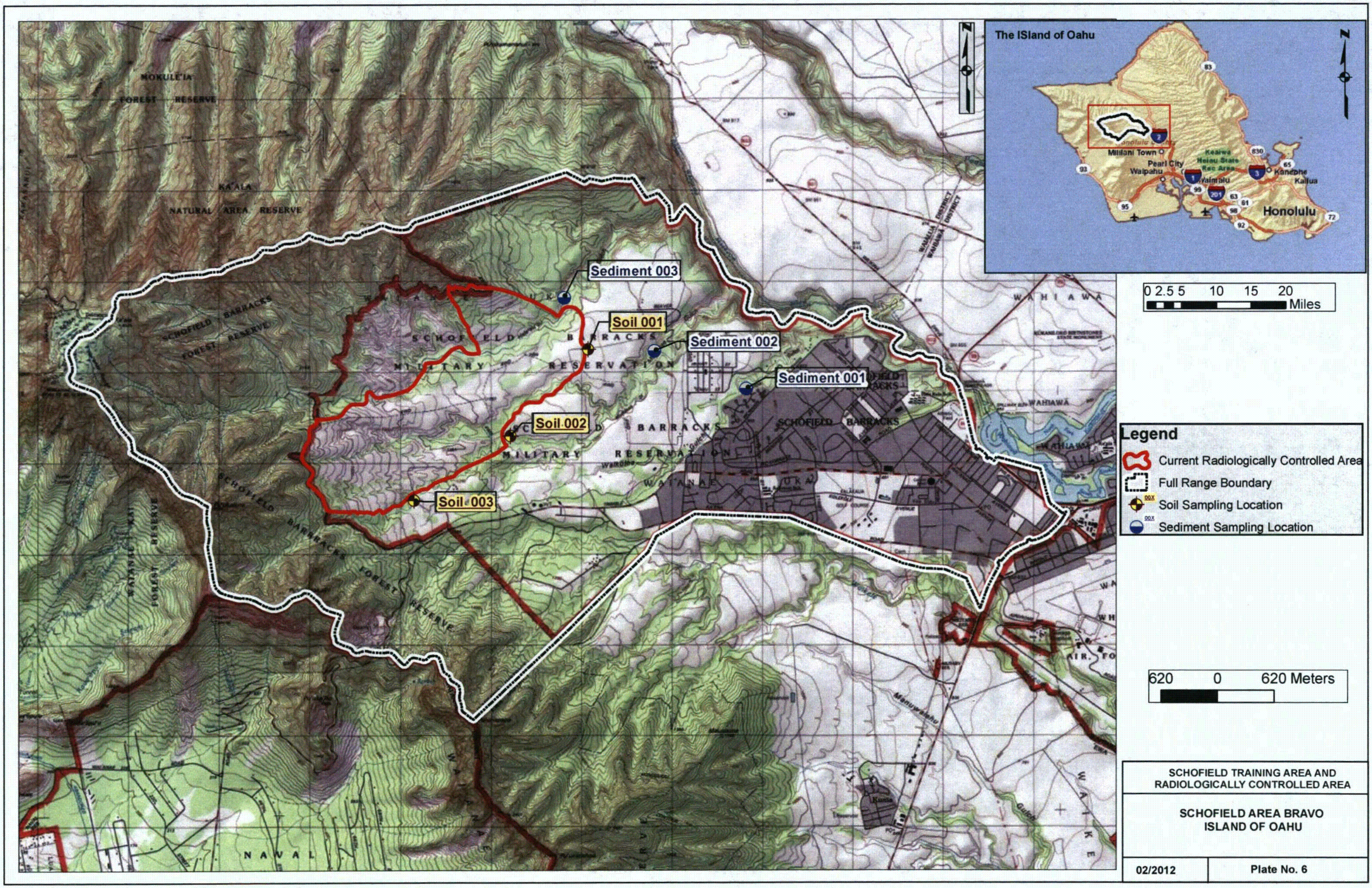
Source: Final Record of Decision (ROD) for OU 2, 1996
Cross sections are provided in the OU 2 ROD

Prepared for
U.S. Department of the Army
U.S. Army Garrison, Hawaii

Schofield Army Barracks
Island of Oahu, Hawaii

Plate No. 5

Regional Groundwater Systems of Oahu, Hawaii



SCHOFIELD TRAINING AREA AND RADIOLOGICALLY CONTROLLED AREA

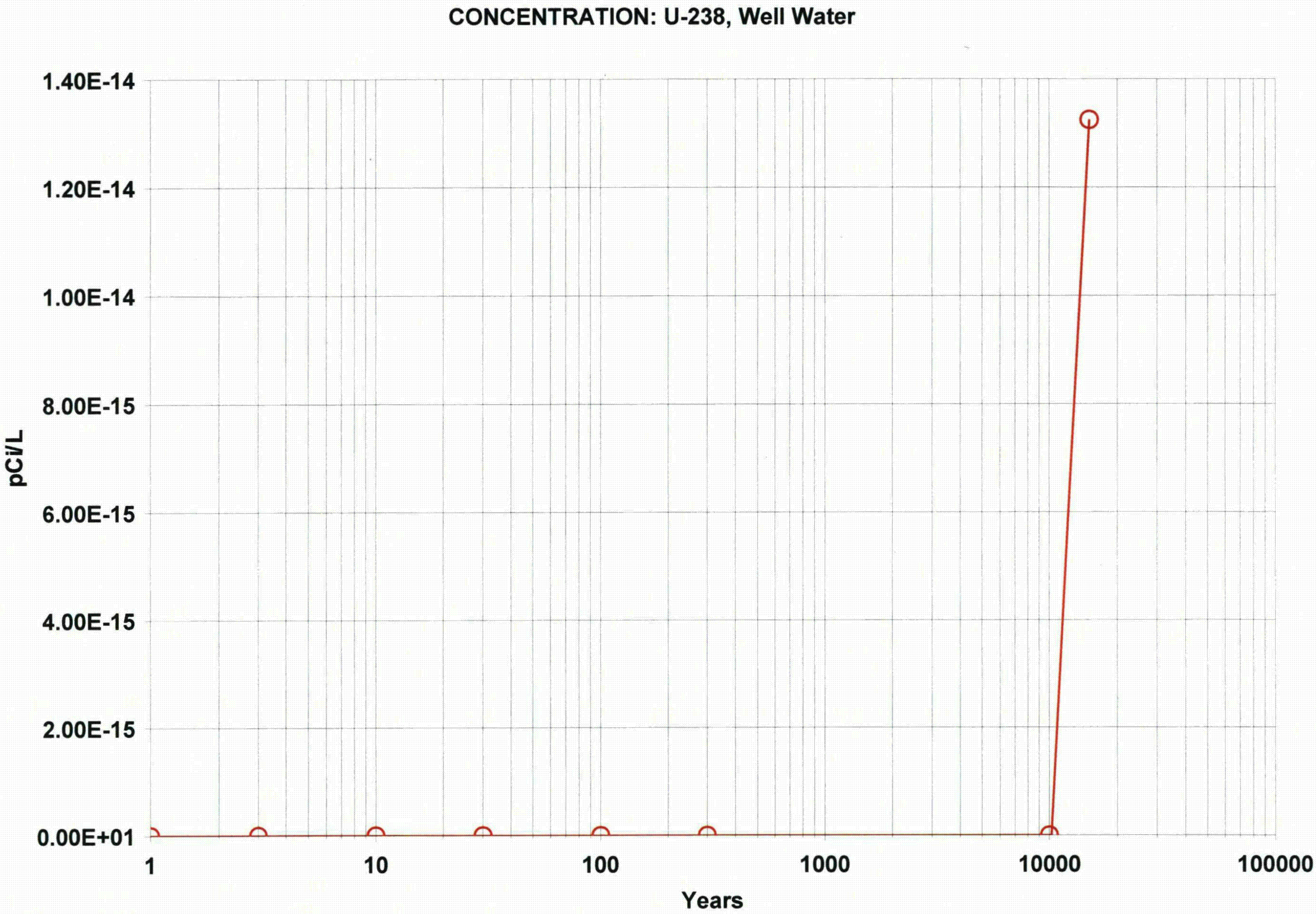
SCHOFIELD AREA BRAVO
ISLAND OF OAHU

02/2012	Plate No. 6

APPENDIX B

SCHOFIELD ERMP
RESRAD REPORTS

GRAPH OF ^{238}U CONCENTRATION



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RESRAD SUMMARY REPORT

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(6)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(7)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(8)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(9)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(10)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(11)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(12)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(13)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(14)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(15)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(16)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(17)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(18)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(19)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(20)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(21)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(22)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(23)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(24)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(25)
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(26)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(27)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(28)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(29)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(30)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(2)
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(3)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(4)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
B-1	U-234	1.320E-01	1.320E-01	DCF2(6)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(7)
B-1	U-238	1.180E-01	1.180E-01	DCF2(8)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(2)
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(3)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(4)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(5)
D-1	U-234	2.830E-04	2.830E-04	DCF3(6)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(7)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	U-238	2.550E-04	2.550E-04	DCF3(8)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)

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

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	4.572E-01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+04	1.000E+03	---	T(8)
R011	Times for calculations (yr)	1.500E+04	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	1.230E+00	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	9.000E-02	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	6.600E+00	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.110E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	1.680E+02	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.580E-02	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.580E-02	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.580E-02	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.924E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.580E-02	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.915E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.130E-02	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.322E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R017	Inhalation rate (m**3/yr)	not used	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	not used	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	not used	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	not used	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	not used	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	not used	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	not used	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	not used	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	not used	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

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

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10000.00 square meters	U-234	1.230E+00
Thickness:	0.46 meters	U-235	9.000E-02
Cover Depth:	0.00 meters	U-238	6.600E+00

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

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
TDOSE(t):	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.370E-22	3.887E-02
M(t):	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.948E-23	1.555E-03

Maximum TDOSE(t): 3.887E-02 mrem/yr at t = 1.500E+04 years

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+04 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+04 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.370E-22	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.370E-22	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.370E-22	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.370E-22	1.0000

*Sum of all water independent and dependent pathways.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.500E+04 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.500E+04 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	2.917E-02	0.7505	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.917E-02	0.7505
U-235	7.576E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.576E-16	0.0000
U-238	9.700E-03	0.2495	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.700E-03	0.2495
Total	3.887E-02	1.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.887E-02	1.0000

*Sum of all water independent and dependent pathways.

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.758E-16
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.428E-06
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.883E-03
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.883E-02
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.372E-02
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.718E-16
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.931E-15
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.189E-21	5.214E-15
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.189E-21	8.417E-15
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.400E-20
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.732E-16
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.198E-17
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.588E-07
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.026E-04
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.167E-03
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.470E-03

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

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	*6.247E+09	1.054E+03
U-235	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06	*2.161E+06
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	1.701E+04

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.500E+04 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	1.230E+00	1.500E+04	2.372E-02	1.054E+03	2.372E-02	1.054E+03
U-235	9.000E-02	1.500E+04	8.417E-15	*2.161E+06	8.417E-15	*2.161E+06
U-238	6.600E+00	1.500E+04	1.470E-03	1.701E+04	1.470E-03	1.701E+04

*At specific activity limit

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.392E-16
U-234	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.907E-17
U-234	∑DOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.183E-16
Th-230	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.987E-06
Th-230	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.048E-06
Th-230	∑DOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.035E-06
Ra-226	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.006E-03
Ra-226	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.997E-03
Ra-226	∑DOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.003E-03
Pb-210	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.316E-02
Pb-210	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.702E-03
Pb-210	∑DOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.087E-02
U-235	U-235	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.446E-17
Pa-231	U-235	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.638E-16
Ac-227	U-235	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.370E-22	4.693E-16
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.241E-20
U-238	U-238	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.803E-15
U-238	∑DOSE(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.803E-15

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

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.230E+00	1.211E+00	1.173E+00	1.050E+00	7.657E-01	2.534E-01	1.075E-02	0.000E+00	0.000E+00
U-234	U-238	9.999E-01	0.000E+00	1.842E-05	5.353E-05	1.598E-04	3.494E-04	3.854E-04	4.908E-05	0.000E+00	0.000E+00
U-234	∑S(j):		1.230E+00	1.211E+00	1.173E+00	1.050E+00	7.660E-01	2.537E-01	1.080E-02	0.000E+00	0.000E+00
Th-230	U-234	1.000E+00	0.000E+00	1.099E-05	3.244E-05	1.024E-04	2.644E-04	5.557E-04	6.910E-04	5.619E-04	5.029E-04
Th-230	U-238	9.999E-01	0.000E+00	8.333E-11	7.344E-10	7.584E-09	5.560E-08	3.159E-07	6.383E-07	5.419E-07	4.849E-07
Th-230	∑S(j):		0.000E+00	1.099E-05	3.244E-05	1.024E-04	2.645E-04	5.560E-04	6.916E-04	5.625E-04	5.033E-04
Ra-226	U-234	1.000E+00	0.000E+00	2.376E-09	2.100E-08	2.189E-07	1.647E-06	1.015E-05	2.346E-05	2.079E-05	1.861E-05
Ra-226	U-238	9.999E-01	0.000E+00	1.203E-14	3.178E-13	1.092E-11	2.381E-10	4.302E-09	1.977E-08	2.005E-08	1.794E-08
Ra-226	∑S(j):		0.000E+00	2.376E-09	2.100E-08	2.189E-07	1.647E-06	1.015E-05	2.348E-05	2.081E-05	1.862E-05
Pb-210	U-234	1.000E+00	0.000E+00	2.444E-11	6.384E-10	2.108E-08	4.145E-07	5.648E-06	1.805E-05	1.658E-05	1.484E-05
Pb-210	U-238	9.999E-01	0.000E+00	9.295E-17	7.286E-15	8.025E-13	4.725E-11	2.060E-09	1.466E-08	1.599E-08	1.431E-08
Pb-210	∑S(j):		0.000E+00	2.444E-11	6.384E-10	2.108E-08	4.145E-07	5.650E-06	1.806E-05	1.660E-05	1.485E-05
U-235	U-235	1.000E+00	9.000E-02	8.859E-02	8.583E-02	7.685E-02	5.603E-02	1.854E-02	7.873E-04	0.000E+00	0.000E+00
Pa-231	U-235	1.000E+00	0.000E+00	1.874E-06	5.448E-06	1.626E-05	3.555E-05	3.919E-05	4.981E-06	0.000E+00	0.000E+00
Ac-227	U-235	1.000E+00	0.000E+00	2.929E-08	2.464E-07	2.170E-06	1.048E-05	1.851E-05	2.696E-06	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	3.564E-04	3.508E-04	3.399E-04	3.043E-04	2.219E-04	7.343E-05	3.118E-06	0.000E+00	0.000E+00
U-238	U-238	9.999E-01	6.600E+00	6.496E+00	6.294E+00	5.635E+00	4.109E+00	1.360E+00	5.773E-02	0.000E+00	0.000E+00
U-238	∑S(j):		6.600E+00	6.497E+00	6.295E+00	5.636E+00	4.109E+00	1.360E+00	5.773E-02	0.000E+00	0.000E+00

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

RESCALC.EXE execution time = 0.52 seconds

RESRAD DETAILED REPORT

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Part II: Source Terms, Factors, and Parameters for Individual Pathways

Source Factors for Ingrowth and Decay
Radioactivity Factors Only
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	ID(j,t) = THF(j)*S1(j,t)/S1(i,0) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.991E-01	9.720E-01	9.584E-01
U-234	Th-230	1.000E+00	0.000E+00	9.002E-06	2.701E-05	9.001E-05	2.700E-04	8.997E-04	2.696E-03	8.486E-02	1.236E-01
U-234	Ra-226+D	1.000E+00	0.000E+00	1.950E-09	1.754E-08	1.947E-07	1.747E-06	1.921E-05	1.679E-04	6.618E-02	1.058E-01
U-234	Pb-210+D	1.000E+00	0.000E+00	2.004E-11	5.328E-10	1.870E-08	4.373E-07	1.068E-05	1.363E-04	6.592E-02	1.055E-01
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	2.116E-05	6.347E-05	2.116E-04	6.345E-04	2.114E-03	6.327E-03	1.907E-01	2.719E-01
U-235+D	Ac-227+D	1.000E+00	0.000E+00	3.332E-07	2.937E-06	3.037E-05	2.258E-04	1.477E-03	5.667E-03	1.902E-01	2.715E-01
U-238	U-238	5.400E-05	5.400E-05	5.400E-05	5.400E-05	5.400E-05	5.400E-05	5.400E-05	5.400E-05	5.400E-05	5.400E-05
U-238+D	U-238+D	9.999E-01	9.999E-01	9.999E-01	9.999E-01	9.999E-01	9.999E-01	9.999E-01	9.999E-01	9.999E-01	9.999E-01
U-238+D	U-234	9.999E-01	0.000E+00	2.835E-06	8.504E-06	2.835E-05	8.504E-05	2.834E-04	8.501E-04	2.795E-02	4.163E-02
U-238+D	Th-230	9.999E-01	0.000E+00	1.276E-11	1.148E-10	1.276E-09	1.148E-08	1.275E-07	1.147E-06	1.227E-03	2.707E-03
U-238+D	Ra-226+D	9.999E-01	0.000E+00	1.842E-15	4.973E-14	1.840E-12	4.958E-11	1.822E-09	4.813E-08	7.937E-04	2.015E-03
U-238+D	Pb-210+D	9.999E-01	0.000E+00	1.423E-17	1.138E-15	1.346E-13	9.704E-12	8.486E-10	3.570E-08	7.877E-04	2.005E-03

Source Factors for Ingrowth and Decay
Combined Radioactivity and Leaching Factors
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	SF(j,t) = THF(j)*S1(j,t)/S1(i,0) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	9.843E-01	9.537E-01	8.539E-01	6.225E-01	2.060E-01	8.740E-03	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	8.931E-06	2.637E-05	8.326E-05	2.150E-04	4.518E-04	5.618E-04	4.569E-04	4.088E-04
U-234	Ra-226+D	1.000E+00	0.000E+00	1.932E-09	1.707E-08	1.780E-07	1.339E-06	8.249E-06	1.908E-05	1.690E-05	1.513E-05
U-234	Pb-210+D	1.000E+00	0.000E+00	1.987E-11	5.190E-10	1.714E-08	3.370E-07	4.592E-06	1.467E-05	1.348E-05	1.206E-05
U-235+D	U-235+D	1.000E+00	1.000E+00	9.843E-01	9.537E-01	8.539E-01	6.226E-01	2.060E-01	8.747E-03	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	2.083E-05	6.054E-05	1.806E-04	3.951E-04	4.355E-04	5.535E-05	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	3.255E-07	2.737E-06	2.412E-05	1.165E-04	2.056E-04	2.996E-05	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	5.400E-05	5.315E-05	5.150E-05	4.611E-05	3.362E-05	1.113E-05	4.724E-07	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	9.999E-01	9.843E-01	9.537E-01	8.538E-01	6.225E-01	2.060E-01	8.747E-03	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	2.790E-06	8.111E-06	2.421E-05	5.294E-05	5.840E-05	7.436E-06	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	1.263E-11	1.113E-10	1.149E-09	8.424E-09	4.786E-08	9.671E-08	8.210E-08	7.347E-08
U-238+D	Ra-226+D	9.999E-01	0.000E+00	1.823E-15	4.816E-14	1.654E-12	3.608E-11	6.518E-10	2.996E-09	3.038E-09	2.718E-09
U-238+D	Pb-210+D	9.999E-01	0.000E+00	1.408E-17	1.104E-15	1.216E-13	7.159E-12	3.121E-10	2.221E-09	2.423E-09	2.168E-09

The effect of volatilization was also considered when computing the source factors for H-3 and C-14.

Parameters Used for Calculating Cover Depth and Contaminated Zone Thicknesses

Cover Erosion rate (vcv): 0.001000 m/yr
Contaminated Zone Erosion rate (vcz): 0.000000 m/yr
Water Table Drop rate (vwt): 0.001000 m/yr
Precipitation rate (Pr): 1.110000 m/yr
Cover Removal Time (Tc): 0.000E+00 yr
Overhead irrigation rate (Irr): 0.200 m/yr
Runoff coefficient (Cr): 0.200
Evapotranspiration coeff. (Ce): 0.500
Infiltration rate (In): 0.544 m/yr
Bulk soil density (rhob): 1.500 g/cm**3
Effective porosity (pe): 0.000

Radio-nuclide (i)	Distribution Coefficient Kd(i),cm**3/g	Leaching Ratio q(i)
Ac-227	2.000000E+01	1.065E-02
Pa-231	5.000000E+01	4.287E-03
Pb-210	1.000000E+02	2.148E-03
Ra-226	7.000000E+01	3.066E-03
Th-230	6.000000E+04	3.588E-06
U-234	5.000000E+01	4.287E-03
U-235	5.000000E+01	4.287E-03
U-238	5.000000E+01	4.287E-03

Time Dependence of Source Geometry

Time Dependence of Cover Depth [Cd(i,t)]

Nuclide	Cd(i,t) (meters)								
(i) t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Pa-231	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Pb-210	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Ra-226	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
Th-230	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-234	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-235	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-238	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Time Dependence of Contaminated Zone Thicknesses [T(i,t)]

Nuclide (i)	T(i,t) (meters) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01
Pa-231	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01
Pb-210	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01
Ra-226	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01
Th-230	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01
U-234	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01
U-235	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01
U-238	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01	4.5720E-01

Occupancy, Cover/Depth, and Area Factors for Ground Pathway

Occupancy Factor (FO1):	0.000
Area (A):	10000. sq. meters
Initial cover depth (Cd):	0.000 meters
Initial contaminated zone thickness (T):	0.457 meters

Time Dependence of Cover/Depth Factor [FCTR_COV_DEPTH(i,t)]

Nuclide (i)	FCTR_COV_DEPTH(i,t) (dimensionless) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
At-218	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-211	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-214	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Fr-223	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-234m	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-211	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-214	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-211	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-214	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-215	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-218	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-223	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Rn-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Rn-222	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Tl-207	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Tl-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Time Dependence of Area Factor [FCTR_AREA(i,t)]

Nuclide	FCTR_AREA(i,t) (dimensionless)								
(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
At-218	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-211	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-214	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Fr-223	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-234m	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-211	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-214	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-211	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-214	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-215	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-218	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-223	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Rn-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Rn-222	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Tl-207	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Tl-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Dose Conversion and Environmental Transport Factors for the Ground Pathway (p=1)

Nuclide (i)	DCF(i,1)*	ETFG(i,t) At Time in Years (dimensionless) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	4.951E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
At-218	5.847E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	3.606E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-211	2.559E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-214	9.808E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Fr-223	1.980E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	1.906E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-234	1.155E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-234m	8.967E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	2.447E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-211	3.064E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-214	1.341E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-210	5.231E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-211	4.764E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-214	5.138E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-215	1.016E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-218	5.642E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-223	6.034E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	3.176E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Rn-219	3.083E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Rn-222	2.354E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-227	5.212E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	1.209E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-231	3.643E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-234	2.410E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Tl-207	1.980E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Tl-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	4.017E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	7.211E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	1.031E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - Units are (mrem/yr)/(pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.

Dose/Source Ratios for External Radiation from the Ground (p=1)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,1,t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Inhalation Pathway, Excluding Radon (p=2)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,2,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Pathway Factors for the Inhalation Pathway (radon excluded)

Area (A):	1.0000E+04 m**2	Occupancy Factor (FO2):	4.5000E-01
Area Factor (FA2):	1.6930E-01	Annual Air Intake (F12):	8.4000E+03 m**3/yr
Cover Depth [Cd(0)]:	0.0000E+00 m	Mass Loading (ASR2):	1.0000E-04 g/m**3
Contaminated Zone Thickness [T(0)]:	4.5720E-01 m	FA2 * FO2 * F12 * ASR2:	6.3995E-02 g/yr

Nuclide (i)	Depth Factor [FD(i,2,t)] (dimensionless) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-235	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-238	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

Dose Conversion and Environmental Transport Factors for the Inhalation Pathway, Excluding Radon (p=2)

Parent (i)	Product (j)	DCF(j,2)*	ETF(j,2,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.320E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	3.260E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	8.594E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	2.320E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.230E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.280E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	6.724E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	1.180E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	1.180E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	1.320E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	3.260E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	8.594E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	2.320E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Parameters Used for Calculating Indoor and Outdoor Radon Flux

	*Floor Material	Cover Material	Contaminated Zone
Radon Diffusion Coefficient (m**2/s)	3.000E-07	2.000E-06	2.000E-06
Total Porosity	1.000E-01	4.000E-01	4.000E-01
Volumetric Water Content	3.000E-02	5.000E-02	3.229E-01
Bulk Density (g/cm**3)	2.400E+00	1.500E+00	1.500E+00
Rn-222 Emanation Coefficient	2.500E-01	2.500E-01	2.500E-01
Initial Thickness (m)	1.500E-01	0.000E+00	4.572E-01

Building Depth Below Ground Surface *(DMFL): -1.000E+00 (m)
Negative DMFL shows building depth adjusted (if necessary) for no penetration of contaminated zone. Actual values used *(DMFLACT), m:

t=	0.0000E+00	1.0000E+00	3.0000E+00	1.0000E+01	3.0000E+01	1.0000E+02	3.0000E+02	1.0000E+04	1.5000E+04
DMFLACT=	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Building indoor area factor *(FAI): 0.000E+00
FAI <= 0.0 shows calculated time-dependent value based on amount of wall area extending into the contaminated zone. Actual values used *(FAIACT):

t=	0.0000E+00	1.0000E+00	3.0000E+00	1.0000E+01	3.0000E+01	1.0000E+02	3.0000E+02	1.0000E+04	1.5000E+04
FAIACT =	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

* - Parameters are used only for indoor radon flux

Time Dependence of Outdoor Radon Flux [FLUXO(i,t)]

Nuclide	FLUXO(i,t) (pCi/m**2/s)								
(i) t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-238	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Time Dependence of Indoor Radon Flux [FLUXI(i,t)]

Nuclide	FLUXI(i,t) (pCi/m**2/s)								
(i) t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-238	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Parameters Used for Calculating Indoor and Outdoor Radon Concentration

Radon Vertical Dimension of Mixing (HMIX):	2.000E+00	(m)
Average Annual Wind Speed (WIND):	2.000E+00	(m/sec)
Building Room Height (HRM):	2.500E+00	(m)
Building Air Exchange Rate (REXG):	5.000E-01	(1/hr)

Time Dependence of Outdoor Radon Concentration [CRNO(i,t)]

Nuclide	CRNO(i,t) (pCi/m**3)								
(i) t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-238	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Time Dependence of Indoor Radon Concentration [HCONC(i,r)]

Nuclide	HCONC(i,t) (pCi/m**3)								
(i) t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-238	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Outdoor Working Levels of Radon [WLOTD(i,t)]

Nuclide (i)	WLOTD(i,t) (WL) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-238	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Indoor Working Levels of Radon [WLIND(i,t)]

Nuclide (i)	WLIND(i,t) (WL) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
U-238	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

Fraction of Time Spent Outdoors (FOTD): 2.500E-01
Fraction of Time Spent Indoors (FIND): 5.000E-01

Dose/Source Ratios for Radon Pathway (p=9)
Subpathway: Outdoor and Indoor Radon Flux
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,9,t) - DSRRNW(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Radon Pathway (p=9)
Subpathway: Indoor Radon from Water Usage
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSRRNW(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Dose/Source Ratios for Radon Pathway (p=9)
Subpathway: Indoor Radon from Water Usage
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSRRNW(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Transport Time Parameters for Unsaturated Zone Stratum No. 1

Stratum thickness [h(1)]:	168.000000 m
Bulk soil material density [rhob(1)]:	1.500000 g/cm**3
Effective porosity [peuz(1)]:	0.200000
Hydraulic conductivity [Khuz(1)]:	10.000000 m/yr
Total porosity [ptuz(1)]:	0.400000
Soil specific b parameter [buz(1)]:	5.300000
Saturation ratio [sruz(1)]:	0.807290

Radio- nuclide (i)	Distribution Coefficient Kduz(i,1), cm**3/g	Retardation Factor Rduz(i,1)	Transport Time Dtuz(i,1), yr
Ac-227	2.0000E+01	9.3903E+01	4.6822E+03
Pa-231	5.0000E+01	2.3326E+02	1.1631E+04
Pb-210	1.0000E+02	4.6552E+02	2.3212E+04
Ra-226	7.0000E+01	3.2616E+02	1.6263E+04
Th-230	6.0000E+04	2.7871E+05	1.3897E+07
U-234	5.0000E+01	2.3326E+02	1.1631E+04
U-235	5.0000E+01	2.3326E+02	1.1631E+04
U-238	5.0000E+01	2.3326E+02	1.1631E+04

Transport Time Parameters for Unsaturated Zone created by the Falling Water Table

Water table drop rate [vwt]:	0.001000 m/yr
Bulk soil material density [rhobaq]:	1.500000 g/cm**3
Effective porosity [peaq]:	0.200000
Hydraulic conductivity [Khaq]:	100.000000 m/yr
Total porosity [ptaq]:	0.400000
Soil specific b parameter [baq]:	5.300000
Saturation ratio [sruaq]:	0.681553

Radio- nuclide (i)	Distribution Coefficient Kdaq(i), cm**3/g	Retardation Factor Rduaq(i)	Minimum Transport Time Dtuaq(i), yr
Ac-227	2.0000E+01	1.1104E+02	1.3401E+02
Pa-231	5.0000E+01	2.7611E+02	8.6447E+02
Pb-210	1.0000E+02	5.5121E+02	3.7197E+03
Ra-226	7.0000E+01	3.8615E+02	1.7422E+03
Th-230	6.0000E+04	3.3013E+05	Infinite
U-234	5.0000E+01	2.7611E+02	8.6447E+02
U-235	5.0000E+01	2.7611E+02	8.6447E+02
U-238	5.0000E+01	2.7611E+02	8.6447E+02

Dilution Factor Parameters for Mass-Balance (MB) Model

Contaminated zone area (A):	10000.000000 m**2
Infiltration rate (In):	0.544000 m/yr
Evapotranspiration coefficient (Ce):	0.500000
Runoff coefficient (Cr):	0.200000
Precipitation rate (Pr):	1.110000 m/yr
Overhead irrigation rate (Irr):	0.200000 m/yr
Well pumping rate (Uw):	250.000000 m**3/yr
Dilution factor (fi, all i):	1.000000

Primary Parameters Used for Calculating Water/Soil
Concentration Ratios for Groundwater Pathway Segment

Model used: Mass-Balance (MB)
Bulk soil density in contaminated zone (rhob): 1.500 g/cm**3

Radio-nuclide (i)	Dilution Factor f(i)	Retardation Factor Rdcz(i)	Breakthrough Time Chain year	Breakthrough Time Single Nuclide Dt(i), yr	Rise Time dt(i), yr
Ac-227	1.000E+00	9.390E+01	4.816E+03	4.816E+03	0.000E+00
Pa-231	1.000E+00	2.333E+02	1.250E+04	1.250E+04	0.000E+00
Pb-210	1.000E+00	4.655E+02	1.250E+04	2.693E+04	0.000E+00
Ra-226	1.000E+00	3.262E+02	1.250E+04	1.801E+04	0.000E+00
Th-230	1.000E+00	2.787E+05	1.250E+04	Infinite	0.000E+00
U-234	1.000E+00	2.333E+02	1.250E+04	1.250E+04	0.000E+00
U-235	1.000E+00	2.333E+02	1.250E+04	1.250E+04	0.000E+00
U-238	1.000E+00	2.333E+02	1.250E+04	1.250E+04	0.000E+00

Water/Soil Concentration Ratios [WSR(j,1,t)] for Groundwater Pathway Segment

Parent (i)	Product (j)	Thread Fraction	WSR(j,1,t) At Time in Years (pCi/L)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.925E-15
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.689E-06
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.248E-03
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.075E-03
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.008E-15
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.461E-16
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.074E-21	6.960E-16
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.084E-19
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.008E-15
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.360E-17
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.681E-07
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.492E-04
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.144E-04

Water/Soil Concentration Ratios [WSR(j,2,t)] for Surface Water Pathway Segment

Watershed Area (Aw) = 1.0000E+06 m**2
Contaminated Zone Area (A) = 1.0000E+04 m**2
Dilution Factor (f') = 1.0000E-02
Soil Density (rhob) = 1.5000E+00 kg/m**3

Parent (i)	Product (j)	Thread Fraction	WSR(j,2,t) At Time in Years (pCi/L)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.925E-17
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.689E-08
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.248E-05
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.075E-05
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.008E-17
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.461E-18
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.074E-23	6.960E-18
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.084E-21
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.008E-17
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.360E-19
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.681E-09
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.492E-06
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.144E-06

Storage Times For Contaminated Foodstuffs

k	Food Item	STOR_T(k), days
1	non-leafy plants	14.
2	leafy plants	1.
3	milk	1.
4	meat	20.
5	fish	7.
6	crustacea	7.
7	well water	1.
8	surface water	1.
9	livestock fodder	45.

Storage Time Ingrowth and Decay Factors
Storage Time for k'th Foodstuff: t = STOR_T(k), days

Parent (i)	Product (j)	Thread Fraction	STOR_ID(i,j,t) = CONCE(i,j,t)/CONCE(i,i,0) t= 1.400E+01	1.000E+00	1.000E+00	2.000E+01	7.000E+00	7.000E+00	1.000E+00	1.000E+00	4.500E+01
Ac-227	Ac-227	1.000E+00	9.988E-01	9.999E-01	9.999E-01	9.983E-01	9.994E-01	9.994E-01	9.999E-01	9.999E-01	9.961E-01
Pa-231	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Pa-231	Ac-227	1.000E+00	1.219E-03	8.716E-05	8.716E-05	1.742E-03	6.099E-04	6.099E-04	8.716E-05	8.716E-05	3.915E-03
Pb-210	Pb-210	1.000E+00	9.988E-01	9.999E-01	9.999E-01	9.983E-01	9.994E-01	9.994E-01	9.999E-01	9.999E-01	9.962E-01
Ra-226	Ra-226	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01
Ra-226	Pb-210	1.000E+00	1.191E-03	8.510E-05	8.510E-05	1.701E-03	5.955E-04	5.955E-04	8.510E-05	8.510E-05	3.822E-03
Th-230	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
Th-230	Ra-226	1.000E+00	1.661E-05	1.186E-06	1.186E-06	2.372E-05	8.303E-06	8.303E-06	1.186E-06	1.186E-06	5.337E-05
Th-230	Pb-210	1.000E+00	9.888E-09	5.047E-11	5.047E-11	2.018E-08	2.472E-09	2.472E-09	5.047E-11	5.047E-11	1.021E-07
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	3.450E-07	2.465E-08	2.465E-08	4.929E-07	1.725E-07	1.725E-07	2.465E-08	2.465E-08	1.109E-06
U-234	Ra-226	1.000E+00	2.865E-12	1.462E-14	1.462E-14	5.846E-12	7.162E-13	7.162E-13	1.462E-14	1.462E-14	2.960E-11
U-234	Pb-210	1.000E+00	1.137E-15	4.146E-19	4.146E-19	3.315E-15	1.422E-16	1.422E-16	4.146E-19	4.146E-19	3.774E-14
U-235	U-235	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235	Pa-231	1.000E+00	8.110E-07	5.793E-08	5.793E-08	1.159E-06	4.055E-07	4.055E-07	5.793E-08	5.793E-08	2.607E-06
U-235	Ac-227	1.000E+00	4.946E-10	2.524E-12	2.524E-12	1.009E-09	1.237E-10	1.237E-10	2.524E-12	2.524E-12	5.105E-09
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238	U-238	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238	U-234	1.000E+00	1.087E-07	7.762E-09	7.762E-09	1.552E-07	5.433E-08	5.433E-08	7.762E-09	7.762E-09	3.493E-07
U-238	Th-230	1.000E+00	1.875E-14	9.565E-17	9.565E-17	3.826E-14	4.687E-15	4.687E-15	9.565E-17	9.565E-17	1.937E-13
U-238	Ra-226	1.000E+00	1.038E-19	3.782E-23	3.782E-23	3.025E-19	1.297E-20	1.297E-20	3.782E-23	3.782E-23	3.446E-18
U-238	Pb-210	1.000E+00	3.090E-23	8.045E-28	8.045E-28	1.287E-22	1.931E-24	1.931E-24	8.045E-28	8.045E-28	3.296E-21

CONCE(i,j,t)/CONCE(i,i,0) is the concentration ratio of Product(j) at time t to Parent(i) at start of storage time.

Storage Time Correction Factors
Drinking Water from Well and/or Surface
Harvest Time = t - 2.74E-03 yr; Consumption Time = t yr

Parent (i)	Product (j)	Thread Fraction	CFWW(j,t,1)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors
Irrigation Water for Nonleafy Plants from Well and/or Surface
Harvest Time = t - 4.11E-02 yr; Consumption Time = t - 3.83E-02 yr

Parent (i)	Product (j)	Thread Fraction	CFWW(j,t,2)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors
Irrigation Water for Leafy Plants from Well and/or Surface
Harvest Time = t - 5.48E-03 yr; Consumption Time = t - 2.74E-03 yr

Parent (i)	Product (j)	Thread Fraction	CFWW(j,t,3)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors
Irrigation Water for Livestock (Milk) Fodder from Well and/or Surface
Harvest Time = t - 1.29E-01 yr; Consumption Time = t - 1.26E-01 yr

Parent (i)	Product (j)	Thread Fraction	CFWW(j,t,5)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors
Irrigation Water for Livestock (Meat) Fodder from Well and/or Surface
Harvest Time = t - 1.81E-01 yr; Consumption Time = t - 1.78E-01 yr

Parent (i)	Product (j)	Thread Fraction	CFWW(j,t,7)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors
Livestock (Milk) Water from Well and/or Surface
Harvest Time = t - 5.48E-03 yr; Consumption Time = t - 2.74E-03 yr

Parent (i)	Product (j)	Thread Fraction	CFWW(j,t,4)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors
Livestock (Meat) Water from Well and/or Surface
Harvest Time = t - 5.75E-02 yr; Consumption Time = t - 5.48E-02 yr

Parent (i)	Product (j)	Thread Fraction	CFWW(j,t,6)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors for Nonleafy Plants
Harvest Time = t - 3.83E-02 yr; Consumption Time = t yr

Parent (i)	Product (j)	Thread Fraction	CF3(j,1,t)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.001E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.988E-01	9.997E-01
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.001E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors for Leafy Plants
Harvest Time = t - 2.74E-03 yr; Consumption Time = t yr

Parent (i)	Product (j)	Thread Fraction	CF3(j,2,t)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	1.000E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors for Livestock (Meat) Fodder
Harvest Time = t - 1.78E-01 yr; Consumption Time = t - 5.48E-02 yr

Parent (i)	Product (j)	Thread Fraction	CFLF(j,1,t)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.370E+00	1.106E+00	1.029E+00	1.008E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.009E+00	1.002E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01
U-234	Pb-210+D	1.000E+00	1.000E+00	2.808E+00	1.530E+00	1.158E+00	1.057E+00	1.024E+00	1.016E+00	1.015E+00	1.002E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.038E+00	1.011E+00	1.003E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	2.230E+00	1.364E+00	1.115E+00	1.049E+00	1.029E+00	1.025E+00	9.961E-01	9.992E-01
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.150E+00	1.044E+00	1.013E+00	1.004E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.797E+00	1.219E+00	1.060E+00	1.017E+00	1.003E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.016E+00	1.004E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01
U-238+D	Pb-210+D	9.999E-01	1.000E+00	3.415E+00	1.705E+00	1.208E+00	1.074E+00	1.028E+00	1.017E+00	1.015E+00	1.002E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors for Livestock (Milk) Fodder
Harvest Time = t - 1.26E-01 yr; Consumption Time = t - 2.74E-03 yr

Parent (i)	Product (j)	Thread Fraction	CFLF(j,2,t)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.348E+00	1.104E+00	1.029E+00	1.008E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.008E+00	1.002E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01
U-234	Pb-210+D	1.000E+00	1.000E+00	2.701E+00	1.521E+00	1.157E+00	1.057E+00	1.024E+00	1.016E+00	1.015E+00	1.002E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.035E+00	1.011E+00	1.003E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	2.157E+00	1.358E+00	1.114E+00	1.049E+00	1.029E+00	1.025E+00	9.961E-01	9.992E-01
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.141E+00	1.043E+00	1.012E+00	1.004E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.747E+00	1.214E+00	1.059E+00	1.017E+00	1.003E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.015E+00	1.004E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01
U-238+D	Pb-210+D	9.999E-01	1.000E+00	3.272E+00	1.693E+00	1.207E+00	1.073E+00	1.028E+00	1.017E+00	1.015E+00	1.002E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors for Meat
Harvest Time = t - 5.48E-02 yr; Consumption Time = t yr

Parent (i)	Product (j)	Thread Fraction	CF45(j,1,t)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.212E+00	1.067E+00	1.019E+00	1.005E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.004E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.297E+00	1.129E+00	1.045E+00	1.017E+00	1.007E+00	1.004E+00	1.004E+00	1.001E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.003E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	3.804E+01	1.445E+01	5.645E+00	3.115E+00	2.322E+00	2.154E+00	9.983E-01	1.340E+00
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.058E+00	1.019E+00	1.006E+00	1.002E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.432E+00	1.137E+00	1.039E+00	1.012E+00	1.002E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.008E+00	1.002E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.352E+00	1.161E+00	1.058E+00	1.021E+00	1.008E+00	1.005E+00	1.004E+00	1.001E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors for Milk
Harvest Time = t - 2.74E-03 yr; Consumption Time = t yr

Parent (i)	Product (j)	Thread Fraction	CF45(j,2,t)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.349E+00	1.115E+00	1.033E+00	1.009E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.037E+00	1.016E+00	1.006E+00	1.002E+00	1.001E+00	1.001E+00	1.001E+00	1.000E+00
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.249E+00	1.081E+00	1.024E+00	1.008E+00	1.002E+00	1.001E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.002E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.999E-01
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.003E+00	1.001E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.696E+00	1.232E+00	1.067E+00	1.020E+00	1.004E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.045E+00	1.020E+00	1.007E+00	1.003E+00	1.001E+00	1.001E+00	1.001E+00	1.000E+00

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Storage Time Correction Factors for Fish & Crustacea
Harvest Time = t - 1.92E-02 yr; Consumption Time = t yr

Parent (i)	Product (j)	Thread Fraction	CFF(j,1,t)# At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Th-230	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Ra-226+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-234	Pb-210+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.995E-01
U-235+D	U-235+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Pa-231	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-235+D	Ac-227+D	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.994E-01	9.997E-01
U-238	U-238	5.400E-05	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-238+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	U-234	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Th-230	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Ra-226+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00
U-238+D	Pb-210+D	9.999E-01	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.995E-01

#Correction factor = (concentration in media at consumption time)/(concentration at harvest time).

Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways
Root Uptake from Contaminated Soil (q=1)

Area Factor for Plant Foods [FA(3)] = 0.50

Nuclide	Depth Factor FD(i,1,t) (dimensionless)								
(i) t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01
Pa-231	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01
Pb-210	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01
Ra-226	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01
Th-230	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01
U-234	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01
U-235	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01
U-238	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01	5.0800E-01

Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways
Foliar Uptake from Contaminated Dust (q=2)

Area Factor for Plant Foods [FA(3)] = 0.50

Nuclide	Depth Factor FD(i,2,t) (dimensionless)								
(i) t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Pa-231	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Pb-210	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Ra-226	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Th-230	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-234	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-235	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-238	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways
Ditch Irrigation (q=3)

Area Factor for Plant Foods [FA(3)] = 0.50

Nuclide (i)	Depth Factor FD(i,3,t) (dimensionless) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
Ac-227	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Pa-231	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Pb-210	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Ra-226	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
Th-230	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-234	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-235	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00
U-238	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

Area and Depth Factors for Plant (p=3), Meat (p=4), and Milk (p=5) Pathways
Overhead Irrigation (q=4)

Area Factor for Plant Foods [FA(3)] = 0.50

The Depth Factor Value
FD(i,p,q,t) = 1.0000E+00
is applicable for all radionuclides(i) and times(t).

Area and Depth Factors for Meat (p=4) and Milk (p=5) Pathways
Transfer from Livestock Water (q=5) and Soil (q=6) Intake

Area Factor for Meat and Milk [FA(p),p=4,5] = 0.50

The livestock water subpathway (q=5) and livestock soil intake subpathway (q=6)
occur only for the meat (p=4) and milk (p=5) pathways.

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)
Subpathway: Root Uptake from Contaminated Soil (q=1)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,1,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)
Subpathway: Foliar Uptake from Contaminated Dust (q=2)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,2,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)
Subpathway: Ditch Irrigation (q=3)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,3,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Plant Food Pathway (p=3)
Subpathway: Overhead Irrigation (q=4)

Parent (i)	Product (j)	DCF(j,3)*	ETF(j,3,4,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)
Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,1,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)
Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,2,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)
Subpathway: Ditch Irrigation (q=3)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,3,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)
Subpathway: Overhead Irrigation (q=4)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,4,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Meat Pathway (p=4)
Subpathway: Livestock Water (q=5)

Parent (i)	Product (j)	DCF(j,4)*	ETF(j,4,5,t) * SF(j,t) At Time in Years (g/yr)								
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)
Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,1,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)
Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,2,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)
Subpathway: Ditch Irrigation (q=3)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,3,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)
Subpathway: Overhead Irrigation (q=4)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,4,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Milk Pathway (p=5)

Subpathway: Livestock Water (q=5)

Parent (i)	Product (j)	DCF(j,5)*	ETF(j,5,5,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Fish Pathway (p=6)

Parent (i)	Product (j)	DCF(j,6)*	ETF(j,6,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

Dose Conversion and Environmental Transport Factors for the Drinking Water Pathway (p=7)

Parent (i)	Product (j)	DCF(j,7)*	ETF(j,7,t) * SF(j,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.816E-13
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.431E-03
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.696E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.588E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.024E-12
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.785E-13
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.479E-19	3.550E-13
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.531E-17
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.024E-12
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.264E-14
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.897E-04
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.291E-01
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.604E-01

* - The dose conversion factor units are mrem/pCi.

Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)
Subpathway: Root Uptake from Contaminated Soil (q=1)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,3,1t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)
Subpathway: Foliar Uptake from Contaminated Dust (q=2)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,3,2t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)
Subpathway: Ditch Irrigation (q=3)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,3,3t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)
Subpathway: Overhead Irrigation (q=4)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,3,4t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Plant Foods (p=3)
Total for All Subpathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,3,t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)
Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,4,1t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)
Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,4,2t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Méat (p=4)
Subpathway: Ditch Irrigation (q=3)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,4,3t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)
Subpathway: Overhead Irrigation (q=4)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,4,4t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)
Subpathway: Livestock Water (q=5)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,4,5t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Meat (p=4)
Total for All Subpathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,4,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)
Subpathway: Fodder Root Uptake from Contaminated Soil (q=1)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,5,1t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)
Subpathway: Fodder Foliar Uptake from Contaminated Dust (q=2)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,5,2t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)
Subpathway: Ditch Irrigation (q=3)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,5,3t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)
Subpathway: Overhead Irrigation (q=4)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,5,4t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)

Subpathway: Livestock Water (q=5)

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,5,5t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from Ingestion of Milk (p=5)
Total for All Subpathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent	Product	Thread	DSR(j,5,t) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from the Ingestion of Fish (p=6)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,6,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose/Source Ratios for Internal Radiation from the Ingestion of Drinking Water (p=7)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,7,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.758E-16
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.428E-06
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.883E-03
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.883E-02
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.372E-02
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.718E-16
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.931E-15
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.189E-21	5.214E-15
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.189E-21	8.417E-15
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.400E-20
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.732E-16
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.198E-17
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.588E-07
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.026E-04
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.167E-03
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.470E-03

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

Plant/Air and Plant/Water Concentration Ratios

Mass loading [ASR(3)]: 1.000E-04 g/m**3
Area Factor for Mass Loading [FA(2)]: 1.693E-01

Nuclide (i)	FAR(i,3,2,1) m**3/g	FAR(i,3,2,2) m**3/g	FWR(i,3,3,1) L/g	FWR(i,3,3,2) L/g	FWR(i,3,4,1) L/g	FWR(i,3,4,2) L/g
Ac-227	5.4545E-02	2.6156E-01	2.8239E-07	4.1463E-07	3.4522E-04	1.6554E-03
Pa-231	5.4545E-02	2.6156E-01	1.1318E-06	1.6634E-06	3.4522E-04	1.6554E-03
Pb-210	5.4545E-02	2.6156E-01	1.1326E-06	1.6650E-06	3.4522E-04	1.6554E-03
Ra-226	5.4545E-02	2.6156E-01	4.5290E-06	6.6573E-06	3.4522E-04	1.6554E-03
Th-230	5.4545E-02	2.6156E-01	1.1422E-07	1.6531E-07	3.4522E-04	1.6554E-03
U-234	5.4545E-02	2.6156E-01	2.8296E-07	4.1584E-07	3.4522E-04	1.6554E-03
U-235	5.4545E-02	2.6156E-01	2.8296E-07	4.1584E-07	3.4522E-04	1.6554E-03
U-238	5.4545E-02	2.6156E-01	2.8296E-07	4.1584E-07	3.4522E-04	1.6554E-03

FAR(i,p,q,k) is the plant/air concentration ratio for airborne contaminated dust, and FWR(i,p,q,k) is the plant/water concentration ratio. See groundwater displays for water/soil concentration ratios.

Plant/Soil Concentration Ratios, FSR(i,3,q,k,t)

Root Uptake (q=1) and Foliar Dust Deposition (q=2)
Nonleafy (k=1) and/or Leafy (k=2) Vegetables

Nuclide(i) Parent	Product	FSR(i,3,1,k)	FSR(i,3,2,1)	FSR(i,3,2,2)
U-234	U-234	2.5000E-03	9.2345E-07	4.4282E-06
U-234	Th-230	1.0000E-03	9.2345E-07	4.4282E-06
U-234	Ra-226+D	4.0000E-02	9.2345E-07	4.4282E-06
U-234	Pb-210+D	1.0000E-02	9.2345E-07	4.4282E-06
U-235+D	U-235+D	2.5000E-03	9.2345E-07	4.4282E-06
U-235+D	Pa-231	1.0000E-02	9.2345E-07	4.4282E-06
U-235+D	Ac-227+D	2.5000E-03	9.2345E-07	4.4282E-06
U-238	U-238	2.5000E-03	9.2345E-07	4.4282E-06
U-238+D	U-238+D	2.5000E-03	9.2345E-07	4.4282E-06
U-238+D	U-234	2.5000E-03	9.2345E-07	4.4282E-06
U-238+D	Th-230	1.0000E-03	9.2345E-07	4.4282E-06
U-238+D	Ra-226+D	4.0000E-02	9.2345E-07	4.4282E-06
U-238+D	Pb-210+D	1.0000E-02	9.2345E-07	4.4282E-06

Plant/Soil Concentration Ratio, FSR(j,3,q,k,t)
Ditch Irrigation (q=3)

Parent (i)	Product (j)	Thread Fraction	FSR(j,3,3,k,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.450E-22
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.924E-13
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.282E-08
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.747E-09
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.686E-22
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.185E-22
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.031E-28	1.967E-22
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.071E-26
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.686E-22
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.367E-23
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.489E-14
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.034E-09
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.561E-10

Plant/Soil Concentration Ratio, FSR(j,3,q,k,t)
Overhead Irrigation (q=4) and Nonleafy Vegetables (k=1)

Parent (i)	Product (j)	Thread Fraction	FSR(j,3,4,1,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.649E-19
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.000E-09
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.502E-06
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.752E-06
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.937E-19
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.887E-19
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.705E-25	2.404E-19
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.746E-23
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.937E-19
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.888E-20
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.961E-10
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.551E-07
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.086E-07

Plant/Soil Concentration Ratio, FSR(j,3,q,k,t)
Overhead Irrigation (q=4) and Leafy Vegetables (k=2)

Parent (i)	Product (j)	Thread Fraction	FSR(j,3,4,2,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.186E-18
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.438E-08
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.200E-05
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.401E-06
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.325E-18
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.042E-19
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.778E-24	1.152E-18
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.795E-22
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.325E-18
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.384E-19
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.405E-10
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.436E-07
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.205E-07

Meat/Fodder, Milk/Fodder, Fodder/Air and Fodder/Water Concentration Ratios

FI(4,q): 68.0 kg/day	FI(5,q): 55.0 kg/day	q=1,2,3,4
FI(4,q): 50.0 L/day	FI(5,q): 160.0 L/day	q=5
FI(4,q): 0.5 kg/day	FI(5,q):	

Nuclide (i)	FQR(i,4) d/kg	FQR(i,5) d/kg	FAR(i,3,2,3) m**3/g	FWR(i,3,3,3) L/g	FWR(i,3,4,3) L/g
Ac-227	2.0000E-05	2.0000E-05	2.8659E-01	1.3313E-07	1.8139E-03
Pa-231	5.0000E-03	5.0000E-06	2.8659E-01	5.3301E-07	1.8139E-03
Pb-210	8.0000E-04	3.0000E-04	2.8659E-01	5.3315E-07	1.8139E-03
Ra-226	1.0000E-03	1.0000E-03	2.8659E-01	2.1324E-06	1.8139E-03
Th-230	1.0000E-04	5.0000E-06	2.8659E-01	5.4102E-08	1.8139E-03
U-234	3.4000E-04	6.0000E-04	2.8659E-01	1.3325E-07	1.8139E-03
U-235	3.4000E-04	6.0000E-04	2.8659E-01	1.3325E-07	1.8139E-03
U-238	3.4000E-04	6.0000E-04	2.8659E-01	1.3325E-07	1.8139E-03

FI(p,q) are the fodder (q=1,2,3,4), livestock water (q=5) and soil (q=6) intake rates; FQR(i,p) are the transfer coefficients from contaminated fodder of livestock water to meat (p=4) or milk (p=5). FAR(i,3,2,3) are the fodder/air concentration ratios, and FWR(i,3,3,3) and FWR(i,3,4,3) are the fodder/water concentration ratios for ditch and overhead irrigation, respectively.

Fodder/Soil Concentration Ratios, QSR(i,p,q,t), for Meat and Milk Pathways
Root Uptake (q=1) and Foliar Dust Deposition (q=2)

Nuclide(i) Parent	Product	QSR(i,p,1)	QSR(i,p,2)
U-234	U-234	2.5000E-03	4.8520E-06
U-234	Th-230	1.0000E-03	4.8520E-06
U-234	Ra-226+D	4.0000E-02	4.8520E-06
U-234	Pb-210+D	1.0000E-02	4.8520E-06
U-235+D	U-235+D	2.5000E-03	4.8520E-06
U-235+D	Pa-231	1.0000E-02	4.8520E-06
U-235+D	Ac-227+D	2.5000E-03	4.8520E-06
U-238	U-238	2.5000E-03	4.8520E-06
U-238+D	U-238+D	2.5000E-03	4.8520E-06
U-238+D	U-234	2.5000E-03	4.8520E-06
U-238+D	Th-230	1.0000E-03	4.8520E-06
U-238+D	Ra-226+D	4.0000E-02	4.8520E-06
U-238+D	Pb-210+D	1.0000E-02	4.8520E-06

Fodder/Soil Concentration Ratio, QSR(j,p,q,t),for Meat and Milk Pathways
Ditch Irrigation (q=3)

Parent (i)	Product (j)	Thread Fraction	QSR(j,p,3,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.572E-22
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.701E-13
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.545E-08
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.706E-09
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.684E-22
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.919E-22
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.425E-28	9.292E-23
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.449E-26
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.684E-22
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.117E-23
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.074E-14
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.578E-10
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.676E-10

Fodder/Soil Concentration Ratio, QSR(j,p,q,t),for Meat and Milk Pathways
Overhead Irrigation (q=4)

Parent (i)	Product (j)	Thread Fraction	QSR(j,p,4,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.501E-18
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.576E-08
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.315E-05
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.205E-06
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.653E-18
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.934E-19
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.941E-24	1.266E-18
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.973E-22
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.653E-18
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.521E-19
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.031E-09
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.148E-07
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.704E-07

Fodder/Soil Concentration Ratio, QSR(j,p,q,t),for Meat and Milk Pathways
Livestock Water (q=5)

Parent (i)	Product (j)	Thread Fraction	QSR(j,p,5,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.926E-18
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.689E-09
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.248E-06
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.075E-06
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.010E-18
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.466E-19
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.073E-24	6.966E-19
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.085E-22
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.010E-18
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.369E-20
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.681E-10
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.492E-07
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.144E-07

Meat/Soil Concentration Ratios, FSR(i,4,q,t)
Root Uptake (q=1) and Foliar Dust Deposition (q=2)

Nuclide(i) Parent	Product	FSR(i,4,1)	FSR(i,4,2)
U-234	U-234	2.9362E-05	1.1218E-07
U-234	Th-230	0.0000E+00	0.0000E+00
U-234	Ra-226+D	0.0000E+00	0.0000E+00
U-234	Pb-210+D	0.0000E+00	0.0000E+00
U-235+D	U-235+D	2.9362E-05	1.1218E-07
U-235+D	Pa-231	0.0000E+00	0.0000E+00
U-235+D	Ac-227+D	0.0000E+00	0.0000E+00
U-238	U-238	1.5856E-09	6.0576E-12
U-238+D	U-238+D	2.9361E-05	1.1217E-07
U-238+D	U-234	0.0000E+00	0.0000E+00
U-238+D	Th-230	0.0000E+00	0.0000E+00
U-238+D	Ra-226+D	0.0000E+00	0.0000E+00
U-238+D	Pb-210+D	0.0000E+00	0.0000E+00

Meat/Soil Concentration Ratio, FSR(j,4,q,t)
Ditch Irrigation (q=3)

Parent (i)	Product (j)	Thread Fraction	FSR(j,4,3,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.946E-24
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.197E-15
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.051E-09
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.498E-10
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.205E-24
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.925E-23
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.930E-31	1.274E-25
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.351E-28
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.204E-24
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.583E-25
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.090E-16
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.513E-11
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.284E-12

Meat/Soil Concentration Ratio, FSR(j,4,q,t)
Overhead Irrigation (q=4)

Parent (i)	Product (j)	Thread Fraction	FSR(j,4,4,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.095E-20
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.072E-10
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.939E-07
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.016E-07
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.446E-20
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.378E-19
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.629E-27	1.720E-21
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.561E-24
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.446E-20
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.516E-21
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.008E-12
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.540E-08
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.108E-08

Meat/Soil Concentration Ratio, FSR(j,4,q,t)
Livestock Water (q=5)

Parent (i)	Product (j)	Thread Fraction	FSR(j,4,5,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.275E-20
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.345E-11
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.624E-07
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.030E-07
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.417E-20
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.367E-19
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.073E-27	6.966E-22
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.845E-24
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.417E-20
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.423E-21
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.841E-12
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.246E-08
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.258E-08

Milk/Soil Concentration Ratios, FSR(i,5,q,t)
Root Uptake (q=1) and Foliar Dust Deposition (q=2)

Nuclide(i) Parent	Product	FSR(i,5,1)	FSR(i,5,2)
U-234	U-234	4.1910E-05	1.6012E-07
U-234	Th-230	0.0000E+00	0.0000E+00
U-234	Ra-226+D	0.0000E+00	0.0000E+00
U-234	Pb-210+D	0.0000E+00	0.0000E+00
U-235+D	U-235+D	4.1910E-05	1.6012E-07
U-235+D	Pa-231	0.0000E+00	0.0000E+00
U-235+D	Ac-227+D	0.0000E+00	0.0000E+00
U-238	U-238	2.2631E-09	8.6462E-12
U-238+D	U-238+D	4.1908E-05	1.6011E-07
U-238+D	U-234	0.0000E+00	0.0000E+00
U-238+D	Th-230	0.0000E+00	0.0000E+00
U-238+D	Ra-226+D	0.0000E+00	0.0000E+00
U-238+D	Pb-210+D	0.0000E+00	0.0000E+00

Milk/Soil Concentration Ratio, FSR(j,5,q,t)
Ditch Irrigation (q=3)

Parent (i)	Product (j)	Thread Fraction	FSR(j,5,3,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.481E-24
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.293E-16
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.500E-10
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.545E-11
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.849E-24
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.021E-26
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.563E-31	1.030E-25
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.778E-28
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.849E-24
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.684E-25
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.453E-18
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.268E-11
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.816E-12

Milk/Soil Concentration Ratio, FSR(j,5,q,t)
Overhead Irrigation (q=4)

Parent (i)	Product (j)	Thread Fraction	FSR(j,5,4,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.154E-19
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.334E-12
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.230E-07
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.521E-07
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.205E-19
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.730E-22
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.129E-27	1.390E-21
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.505E-24
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.204E-19
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.015E-21
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.834E-13
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.481E-08
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.427E-09

Milk/Soil Concentration Ratio, FSR(j,5,q,t)
Livestock Water (q=5)

Parent (i)	Product (j)	Thread Fraction	FSR(j,5,5,t) * SF(j,t) At Time in Years 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.848E-19
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.951E-12
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.160E-06
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.436E-07
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.928E-19
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.369E-22
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.437E-27	2.227E-21
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.041E-23
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.928E-19
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.027E-21
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.545E-13
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.187E-08
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.509E-08

Dose/Source Ratios for Soil Ingestion Pathway (p=8)
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,8,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	5.400E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	9.999E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	∑DSR(j)		0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

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

Dose Conversion and Environmental Transport Factors for the Soil Ingestion Pathway (p=8)

Parent (i)	Product (j)	DCF(j,8)*	ETF(j,8,t) At Time in Years (g/yr) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+04	1.500E+04
U-234	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	U-235+D	2.673E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Pa-231	1.060E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235+D	Ac-227+D	1.480E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	U-238	2.550E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-238+D	2.687E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	U-234	2.830E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Th-230	5.480E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Ra-226+D	1.321E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238+D	Pb-210+D	7.276E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* - The dose conversion factor units are mrem/pCi.

RESRAD CONCENTRATION REPORT

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Part IV: Concentration of Radionuclides

Concentration of radionuclides in different media

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	1.230E+00	1.230E+00	2.082E-05	0.000E+00	0.000E+00
U-235	9.000E-02	9.000E-02	1.524E-06	0.000E+00	0.000E+00
U-238	6.600E+00	6.600E+00	1.117E-04	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	1.563E+00	1.568E+00	1.568E+00	1.568E+00	2.454E-01	4.207E-01	0.000E+00	0.000E+00
U-235	0.000E+00	1.144E-01	1.147E-01	1.147E-01	1.147E-01	1.795E-02	3.079E-02	0.000E+00	0.000E+00
U-238	0.000E+00	8.388E+00	8.411E+00	8.414E+00	8.414E+00	1.317E+00	2.258E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.929E-08	2.929E-08	4.959E-13	0.000E+00	0.000E+00
Pa-231	1.874E-06	1.874E-06	3.173E-11	0.000E+00	0.000E+00
Pb-210	2.444E-11	2.444E-11	4.138E-16	0.000E+00	0.000E+00
Ra-226	2.376E-09	2.376E-09	4.023E-14	0.000E+00	0.000E+00
Th-230	1.099E-05	1.099E-05	1.860E-10	0.000E+00	0.000E+00
U-234	1.211E+00	1.211E+00	2.050E-05	0.000E+00	0.000E+00
U-235	8.859E-02	8.859E-02	1.500E-06	0.000E+00	0.000E+00
U-238	6.497E+00	6.497E+00	1.100E-04	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	4.567E-08	3.796E-08	5.663E-08	6.179E-08	1.291E-08	3.600E-10	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.255E-06	9.511E-06	8.152E-06	8.642E-06	7.225E-06	8.806E-09	0.000E+00	0.000E+00
Pb-210	0.000E+00	1.637E-10	1.274E-10	1.945E-10	2.246E-10	2.445E-11	7.617E-12	0.000E+00	0.000E+00
Ra-226	0.000E+00	4.478E-08	4.805E-08	3.299E-08	3.725E-08	3.320E-09	3.231E-09	0.000E+00	0.000E+00
Th-230	0.000E+00	5.909E-06	5.652E-06	6.354E-06	6.644E-06	6.818E-07	3.943E-08	0.000E+00	0.000E+00
U-234	0.000E+00	1.540E+00	1.543E+00	1.548E+00	1.547E+00	2.418E-01	4.143E-01	0.000E+00	0.000E+00
U-235	0.000E+00	1.127E-01	1.129E-01	1.133E-01	1.132E-01	1.769E-02	3.031E-02	0.000E+00	0.000E+00
U-238	0.000E+00	8.262E+00	8.280E+00	8.305E+00	8.299E+00	1.297E+00	2.223E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.464E-07	2.464E-07	4.171E-12	0.000E+00	0.000E+00
Pa-231	5.448E-06	5.448E-06	9.224E-11	0.000E+00	0.000E+00
Pb-210	6.384E-10	6.384E-10	1.081E-14	0.000E+00	0.000E+00
Ra-226	2.100E-08	2.100E-08	3.555E-13	0.000E+00	0.000E+00
Th-230	3.244E-05	3.244E-05	5.492E-10	0.000E+00	0.000E+00
U-234	1.173E+00	1.173E+00	1.986E-05	0.000E+00	0.000E+00
U-235	8.583E-02	8.583E-02	1.453E-06	0.000E+00	0.000E+00
U-238	6.295E+00	6.295E+00	1.066E-04	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	3.386E-07	3.158E-07	3.814E-07	3.930E-07	4.186E-08	2.893E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	2.743E-05	2.768E-05	2.642E-05	2.688E-05	2.239E-05	2.270E-08	0.000E+00	0.000E+00
Pb-210	0.000E+00	3.615E-09	3.273E-09	4.147E-09	4.350E-09	5.278E-10	1.700E-10	0.000E+00	0.000E+00
Ra-226	0.000E+00	4.163E-07	4.261E-07	3.792E-07	3.931E-07	3.595E-08	3.210E-08	0.000E+00	0.000E+00
Th-230	0.000E+00	1.682E-05	1.665E-05	1.734E-05	1.762E-05	1.827E-06	9.577E-08	0.000E+00	0.000E+00
U-234	0.000E+00	1.492E+00	1.495E+00	1.500E+00	1.499E+00	2.343E-01	4.014E-01	0.000E+00	0.000E+00
U-235	0.000E+00	1.092E-01	1.094E-01	1.097E-01	1.096E-01	1.714E-02	2.937E-02	0.000E+00	0.000E+00
U-238	0.000E+00	8.005E+00	8.022E+00	8.047E+00	8.041E+00	1.257E+00	2.154E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.170E-06	2.170E-06	3.674E-11	0.000E+00	0.000E+00
Pa-231	1.626E-05	1.626E-05	2.753E-10	0.000E+00	0.000E+00
Pb-210	2.108E-08	2.108E-08	3.569E-13	0.000E+00	0.000E+00
Ra-226	2.189E-07	2.189E-07	3.706E-12	0.000E+00	0.000E+00
Th-230	1.024E-04	1.024E-04	1.734E-09	0.000E+00	0.000E+00
U-234	1.050E+00	1.050E+00	1.778E-05	0.000E+00	0.000E+00
U-235	7.685E-02	7.685E-02	1.301E-06	0.000E+00	0.000E+00
U-238	5.636E+00	5.636E+00	9.541E-05	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	2.838E-06	2.772E-06	2.994E-06	3.019E-06	1.444E-07	2.502E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	8.242E-05	8.265E-05	8.168E-05	8.205E-05	6.825E-05	6.472E-08	0.000E+00	0.000E+00
Pb-210	0.000E+00	1.111E-07	1.075E-07	1.179E-07	1.196E-07	1.537E-08	5.163E-09	0.000E+00	0.000E+00
Ra-226	0.000E+00	4.417E-06	4.447E-06	4.302E-06	4.346E-06	4.010E-07	3.484E-07	0.000E+00	0.000E+00
Th-230	0.000E+00	5.240E-05	5.250E-05	5.315E-05	5.340E-05	5.560E-06	2.795E-07	0.000E+00	0.000E+00
U-234	0.000E+00	1.336E+00	1.339E+00	1.343E+00	1.342E+00	2.098E-01	3.594E-01	0.000E+00	0.000E+00
U-235	0.000E+00	9.773E-02	9.794E-02	9.825E-02	9.817E-02	1.535E-02	2.630E-02	0.000E+00	0.000E+00
U-238	0.000E+00	7.167E+00	7.182E+00	7.205E+00	7.199E+00	1.125E+00	1.928E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+01 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	1.048E-05	1.048E-05	1.774E-10	0.000E+00	0.000E+00
Pa-231	3.555E-05	3.555E-05	6.019E-10	0.000E+00	0.000E+00
Pb-210	4.145E-07	4.145E-07	7.018E-12	0.000E+00	0.000E+00
Ra-226	1.647E-06	1.647E-06	2.789E-11	0.000E+00	0.000E+00
Th-230	2.645E-04	2.645E-04	4.478E-09	0.000E+00	0.000E+00
U-234	7.660E-01	7.660E-01	1.297E-05	0.000E+00	0.000E+00
U-235	5.603E-02	5.603E-02	9.486E-07	0.000E+00	0.000E+00
U-238	4.109E+00	4.109E+00	6.956E-05	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+01 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	1.351E-05	1.337E-05	1.393E-05	1.395E-05	3.848E-07	1.202E-07	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.806E-04	1.808E-04	1.804E-04	1.806E-04	1.502E-04	1.397E-07	0.000E+00	0.000E+00
Pb-210	0.000E+00	2.137E-06	2.110E-06	2.195E-06	2.205E-06	2.892E-07	9.876E-08	0.000E+00	0.000E+00
Ra-226	0.000E+00	3.340E-05	3.348E-05	3.314E-05	3.324E-05	3.075E-06	2.652E-06	0.000E+00	0.000E+00
Th-230	0.000E+00	1.348E-04	1.356E-04	1.361E-04	1.363E-04	1.421E-05	7.051E-07	0.000E+00	0.000E+00
U-234	0.000E+00	9.742E-01	9.763E-01	9.793E-01	9.785E-01	1.530E-01	2.621E-01	0.000E+00	0.000E+00
U-235	0.000E+00	7.125E-02	7.141E-02	7.163E-02	7.157E-02	1.119E-02	1.917E-02	0.000E+00	0.000E+00
U-238	0.000E+00	5.225E+00	5.237E+00	5.253E+00	5.249E+00	8.206E-01	1.406E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio-Nuclide	Contaminat-ted Zone pCi/g	Surface Soil* pCi/g	Air Par-ticulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	1.851E-05	1.851E-05	3.133E-10	0.000E+00	0.000E+00
Pa-231	3.919E-05	3.919E-05	6.636E-10	0.000E+00	0.000E+00
Pb-210	5.650E-06	5.650E-06	9.566E-11	0.000E+00	0.000E+00
Ra-226	1.015E-05	1.015E-05	1.718E-10	0.000E+00	0.000E+00
Th-230	5.560E-04	5.560E-04	9.413E-09	0.000E+00	0.000E+00
U-234	2.537E-01	2.537E-01	4.296E-06	0.000E+00	0.000E+00
U-235	1.854E-02	1.854E-02	3.139E-07	0.000E+00	0.000E+00
U-238	1.360E+00	1.360E+00	2.302E-05	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	2.374E-05	2.360E-05	2.430E-05	2.429E-05	5.067E-07	2.118E-07	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.992E-04	1.993E-04	1.996E-04	1.995E-04	1.659E-04	1.532E-07	0.000E+00	0.000E+00
Pb-210	0.000E+00	2.890E-05	2.874E-05	2.932E-05	2.935E-05	3.879E-06	1.333E-06	0.000E+00	0.000E+00
Ra-226	0.000E+00	2.062E-04	2.063E-04	2.059E-04	2.060E-04	1.907E-05	1.640E-05	0.000E+00	0.000E+00
Th-230	0.000E+00	2.830E-04	2.849E-04	2.853E-04	2.854E-04	2.976E-05	1.471E-06	0.000E+00	0.000E+00
U-234	0.000E+00	3.227E-01	3.234E-01	3.244E-01	3.241E-01	5.067E-02	8.682E-02	0.000E+00	0.000E+00
U-235	0.000E+00	2.358E-02	2.363E-02	2.371E-02	2.369E-02	3.703E-03	6.345E-03	0.000E+00	0.000E+00
U-238	0.000E+00	1.729E+00	1.733E+00	1.739E+00	1.737E+00	2.716E-01	4.653E-01	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	2.696E-06	2.696E-06	4.565E-11	0.000E+00	0.000E+00
Pa-231	4.981E-06	4.981E-06	8.433E-11	0.000E+00	0.000E+00
Pb-210	1.806E-05	1.806E-05	3.058E-10	0.000E+00	0.000E+00
Ra-226	2.348E-05	2.348E-05	3.976E-10	0.000E+00	0.000E+00
Th-230	6.916E-04	6.916E-04	1.171E-08	0.000E+00	0.000E+00
U-234	1.080E-02	1.080E-02	1.828E-07	0.000E+00	0.000E+00
U-235	7.873E-04	7.873E-04	1.333E-08	0.000E+00	0.000E+00
U-238	5.773E-02	5.773E-02	9.774E-07	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	0.000E+00	3.455E-06	3.438E-06	3.531E-06	3.529E-06	6.847E-08	3.084E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	2.532E-05	2.533E-05	2.539E-05	2.537E-05	2.109E-05	1.945E-08	0.000E+00	0.000E+00
Pb-210	0.000E+00	9.222E-05	9.186E-05	9.328E-05	9.329E-05	1.235E-05	4.251E-06	0.000E+00	0.000E+00
Ra-226	0.000E+00	4.772E-04	4.773E-04	4.772E-04	4.773E-04	4.419E-05	3.799E-05	0.000E+00	0.000E+00
Th-230	0.000E+00	3.520E-04	3.544E-04	3.547E-04	3.547E-04	3.699E-05	1.827E-06	0.000E+00	0.000E+00
U-234	0.000E+00	1.373E-02	1.376E-02	1.381E-02	1.379E-02	2.157E-03	3.695E-03	0.000E+00	0.000E+00
U-235	0.000E+00	1.001E-03	1.003E-03	1.006E-03	1.006E-03	1.572E-04	2.694E-04	0.000E+00	0.000E+00
U-238	0.000E+00	7.342E-02	7.358E-02	7.381E-02	7.375E-02	1.153E-02	1.975E-02	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time. For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.000E+04 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	0.000E+00	0.000E+00	0.000E+00	9.670E-23	9.670E-25
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	1.660E-05	1.660E-05	2.810E-10	0.000E+00	0.000E+00
Ra-226	2.081E-05	2.081E-05	3.524E-10	0.000E+00	0.000E+00
Th-230	5.625E-04	5.625E-04	9.523E-09	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+04 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	9.668E-23	3.334E-23	1.601E-22	1.740E-22	1.742E-22	3.327E-25	5.010E-25	1.449E-23	9.660E-22
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	8.474E-05	8.442E-05	8.569E-05	8.569E-05	1.135E-05	3.906E-06	0.000E+00	0.000E+00
Ra-226	0.000E+00	4.229E-04	4.230E-04	4.230E-04	4.230E-04	3.917E-05	3.367E-05	0.000E+00	0.000E+00
Th-230	0.000E+00	2.863E-04	2.882E-04	2.885E-04	2.885E-04	3.009E-05	1.486E-06	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in environmental media
at t = 1.500E+04 years

Radio-Nuclide	Contaminated Zone pCi/g	Surface Soil* pCi/g	Air Particulate pCi/m**3	Well Water pCi/L	Surface Water pCi/L
Ac-227	0.000E+00	0.000E+00	0.000E+00	6.264E-17	6.264E-19
Pa-231	0.000E+00	0.000E+00	0.000E+00	4.915E-17	4.915E-19
Pb-210	1.485E-05	1.485E-05	2.515E-10	8.317E-03	8.317E-05
Ra-226	1.862E-05	1.862E-05	3.153E-10	1.188E-02	1.188E-04
Th-230	5.033E-04	5.033E-04	8.521E-09	1.444E-05	1.444E-07
U-234	0.000E+00	0.000E+00	0.000E+00	2.919E-15	2.919E-17
U-235	0.000E+00	0.000E+00	0.000E+00	1.807E-16	1.807E-18
U-238	0.000E+00	0.000E+00	0.000E+00	1.325E-14	1.325E-16

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.500E+04 years*

Radio-Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
Ac-227	6.264E-17	2.165E-17	1.037E-16	1.139E-16	1.138E-16	2.915E-19	3.256E-19	9.396E-18	6.262E-16
Pa-231	4.915E-17	1.704E-17	8.146E-17	8.944E-17	8.936E-17	4.271E-17	6.390E-20	4.917E-18	5.408E-17
Pb-210	8.317E-03	2.958E-03	1.386E-02	1.519E-02	1.519E-02	1.167E-03	6.523E-04	2.494E-02	8.330E-03
Ra-226	1.188E-02	4.533E-03	2.012E-02	2.195E-02	2.195E-02	2.096E-03	3.117E-03	5.940E-03	2.970E-02
Th-230	1.444E-05	2.611E-04	2.818E-04	2.843E-04	2.843E-04	2.717E-05	1.348E-06	1.444E-05	7.219E-05
U-234	2.919E-15	1.009E-15	4.834E-15	5.310E-15	5.306E-15	1.724E-16	4.554E-16	2.920E-16	1.752E-15
U-235	1.808E-16	6.249E-17	2.993E-16	3.288E-16	3.285E-16	1.068E-17	2.819E-17	1.808E-17	1.085E-16
U-238	1.326E-14	4.583E-15	2.195E-14	2.411E-14	2.409E-14	7.830E-16	2.068E-15	1.326E-15	7.955E-15

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.