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D. L. Johnson	X3-61	D. J. Watson	X3-79
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Approvals

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J. L. Westcott J L Westcott 6/8/07	J. L. Westcott J L Westcott 6/8/07	D. L. Moder 6/11/07
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Title Quality Assurance	Title ~~Environmental~~ Waste	Title ~~Project Engineer~~
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Page 1 of 6

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- ☐ Summary
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General Counsel	☒	S. B. Cherry	See Email attached	(Y) / N
Office of External Affairs	☒	D. J. Dunn	See Email attached	(Y) / N
DOE-RL	☒	E. B Dagan	See Email attached	(Y) / N
Other	☒	M. A. Williams	See Email attached	(Y) / N
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J. Comments

If Additional Comments, Please Attach Separate Sheet

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APPROVED FOR RELEASE OFFICIAL DOCUMENT WEB Date 6/11/07

A-6001-401 (REV 1)

Page 2 of 6

Westcott, Jeffrey L

From: Cherry, Stephen B
Sent: Monday, June 11, 2007 9:01 AM
To: Westcott, Jeffrey L
Subject: RE: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation

Jeff,

As per our discussion, I have reviewed the referenced document and approve it on behalf of the Office of Legal Services for public release.

Steve

From: Westcott, Jeffrey L
Sent: Monday, June 11, 2007 8:22 AM
To: Cherry, Stephen B
Subject: FW: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation
Importance: High

From: Westcott, Jeffrey L
Sent: Thursday, June 07, 2007 3:47 PM
To: Williams, Mark A; Dunn, Deborah J; Cherry, Stephen B; Dagan, Ellen B
Subject: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation
Importance: High

Please review for public release the document KBC-33964, KE Basin ERDF Compliance Calculation that is contained in the attached file. As we have discussed before, I need a short turnaround on this document, please provide you approval and comments, if you have any, by close of business 6/8/07. I request that you provide your approval to me by Email. Thanks

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Westcott, Jeffrey L

From: Dunn, Deborah J
Sent: Friday, June 08, 2007 9:23 AM
To: Westcott, Jeffrey L
Subject: RE: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation
Attachments: Calc summary6-7-07-DJD.doc

Dear Jeff,

This document has my approval for Information Clearance. You may use this message to confirm approval. I am attaching a version of the document containing my edits and providing comments below.

Deborah Jane Dunn
Fluor Hanford Communications
Information Clearance Reviewer for
Office of External Affairs

These are minor edits primarily addressing commas associated with prepositional phrases, arrangement for better clarity of subjects/verbs and descriptions pertaining to the subjects, consistency of format for dates in references, and noun/verb agreement. In one case, a registered trademark is attributed (page 34).

From: Westcott, Jeffrey L
Sent: Thursday, June 07, 2007 3:47 PM
To: Williams, Mark A; Dunn, Deborah J; Cherry, Stephen B; Dagan, Ellen B
Subject: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation
Importance: High

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Westcott, Jeffrey L

From: Dagan, Ellen B
Sent: Monday, June 11, 2007 7:22 AM
To: Westcott, Jeffrey L
Subject: FW: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation

Jeff,

Glenn Goldberg's email response is below. He's okay with public release

Ellen B. Dagan

From: Goldberg, Glenn I
Sent: Monday, June 11, 2007 6:54 AM
To: Dagan, Ellen B
Subject: RE: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation

If Mark looked at it, and you don't have any specific issues, then it is OK.

Glenn Goldberg
Security and Emergency Services
(509) 376-9552

From: Dagan, Ellen B
Sent: Friday, June 08, 2007 8:44 AM
To: Goldberg, Glenn I
Subject: FW: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation
Importance: High

Glenn,

Would you review the attached document for public release? Mark Williams has already reviewed it (see below email). If you would let me know today that would be great.

Thanks,

Ellen B. Dagan

From: Williams, Mark A
Sent: Friday, June 08, 2007 8:31 AM

Page 5 of 4

To: Westcott, Jeffrey L; Dunn, Deborah J; Cherry, Stephen B; Dagan, Ellen B
Subject: RE: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation

Jeff and All,

I have reviewed the attached document (KBC-33964) for Safeguards and Security interests and find it suitable for release to the public. Please use this message as my authorization for release.

Thanks,

Mark Williams
PHMC Classification Office
373-9010

From: Westcott, Jeffrey L
Sent: Thursday, June 07, 2007 3:47 PM
To: Williams, Mark A; Dunn, Deborah J; Cherry, Stephen B; Dagan, Ellen B
Subject: Review for Public Release- KBC-33964, KE Basin ERDF Compliance Calculation
Importance: High

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Sent: Friday, June 08, 2007 8:31 AM
To: Westcott, Jeffrey L; Dunn, Deborah J; Cherry, Stephen B; Dagan, Ellen B
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Revision 0

Determination of K East Basin Rubble and Pit Waste Form Compliance with ERDF Waste Acceptance Criteria to Support Evaluation of Sludge Removal Milestones

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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Determination of K East Basin Rubble and Pit Waste Form Compliance with ERDF Waste Acceptance Criteria to Support Evaluation of Sludge Removal Milestones

Document Type: RPT Program/Project: KBC

J. L. Westcott
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J. E. Sailer
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Date Published
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Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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TERMS

DEP	Dummy Elevator Pit
DEP-East	Dummy Elevator Pit East
DEP-West	Dummy Elevator Pit West
DOE	U.S. Department of Energy
ERDF	Environmental Restoration Disposal Facility
HIH	hose-in-hose
KE	K East
NLOP	North Load Out Pit
NRC	Nuclear Regulatory Commission
SCS	sludge containerization system
SLOP	South Load Out Pit
TRU	transuranic
TVP	Tech View Pit

1.0 INTRODUCTION

Fluor Hanford has performed inspections, measurements, and calculations to determine if sludge was removed from the K East (KE) Basin to the extent that the planned basin and pit waste forms (i.e., basin concrete rubble and grouted pits) meet the criteria for disposal at the Environmental Restoration Disposal Facility (ERDF). Removal of sludge to meet the completion criteria contained in letter FH-0701292, *Completion Criteria For K East Sludge And Fuel Transfer*, is the basis for determining completion of Performance Incentive 1b, Defense Nuclear Facilities Safety Board (DNFSB) commitment 120E, and Hanford Site Tri-Party Agreement (TPA) Milestone M-34-34. This report summarizes the calculation basis and methodology used to demonstrate that the planned waste forms will meet the criteria for disposal at the ERDF and documents the results of the measurements and calculations. Measurements used in the calculations are documented in Job Control System Work Package 1K-06-07228/O, *105KE – Perform Final Sludge Vacuuming Qualified Process.*

2.0 CALCULATION BASIS AND METHODOLOGY

The Nuclear Regulatory Commission (NRC) radioactive waste classification (10 CFR 61.55) waste acceptance limits are the basis for determining if planned basin and pit waste forms meet criteria for disposal at the ERDF. A waste with a NRC radioactive waste classification of C or less is acceptable for disposal and will contain less than 100 nanocuries per gram of transuranic (TRU), the threshold for classification of waste as TRU. The calculations described herein were used to determine if the basin and pit waste forms are NRC class C or less in accordance with 10 CFR 61.55. To determine the NRC waste classification for waste that includes mixtures of radionuclides listed in 10 CFR 61.55 Table 1, such as the KE Basin waste forms, the sum of fractions is calculated using the 10 CFR 61.55 Table 1 limits. The sum of fractions must be less than one for the waste to be class C or less and therefore be acceptable for disposal at the ERDF[1]. To determine the sum of fractions, the concentration of radioactivity in the waste is determined and then divided by the nuclide specific NRC limit shown in Table 1 of 10 CFR 61.55. The concentration of radioactivity in the waste form is determined by dividing the radioactive inventory by the mass or volume of the waste form, where appropriate.

The NRC radioactive waste classification calculation was performed for each of the planned pit monoliths (i.e., the North Load Out Pit [NLOP], South Load Out Pit [SLOP], Dummy Elevator Pit [DEP]-East and DEP-West); basin concrete rubble; and Tech View and Weasel Pits rubble as described in this document. The calculation methodology included development of KE Basin waste form physical parameters; determination of radionuclide inventories for sludge, contaminated concrete, and debris; development of a sludge apportionment strategy for pits that will receive concrete spoils and basin sludge residues for grouting; and development of spreadsheets and data inputs to calculate the NRC waste class. Each of these topics is described in the following sections.

---

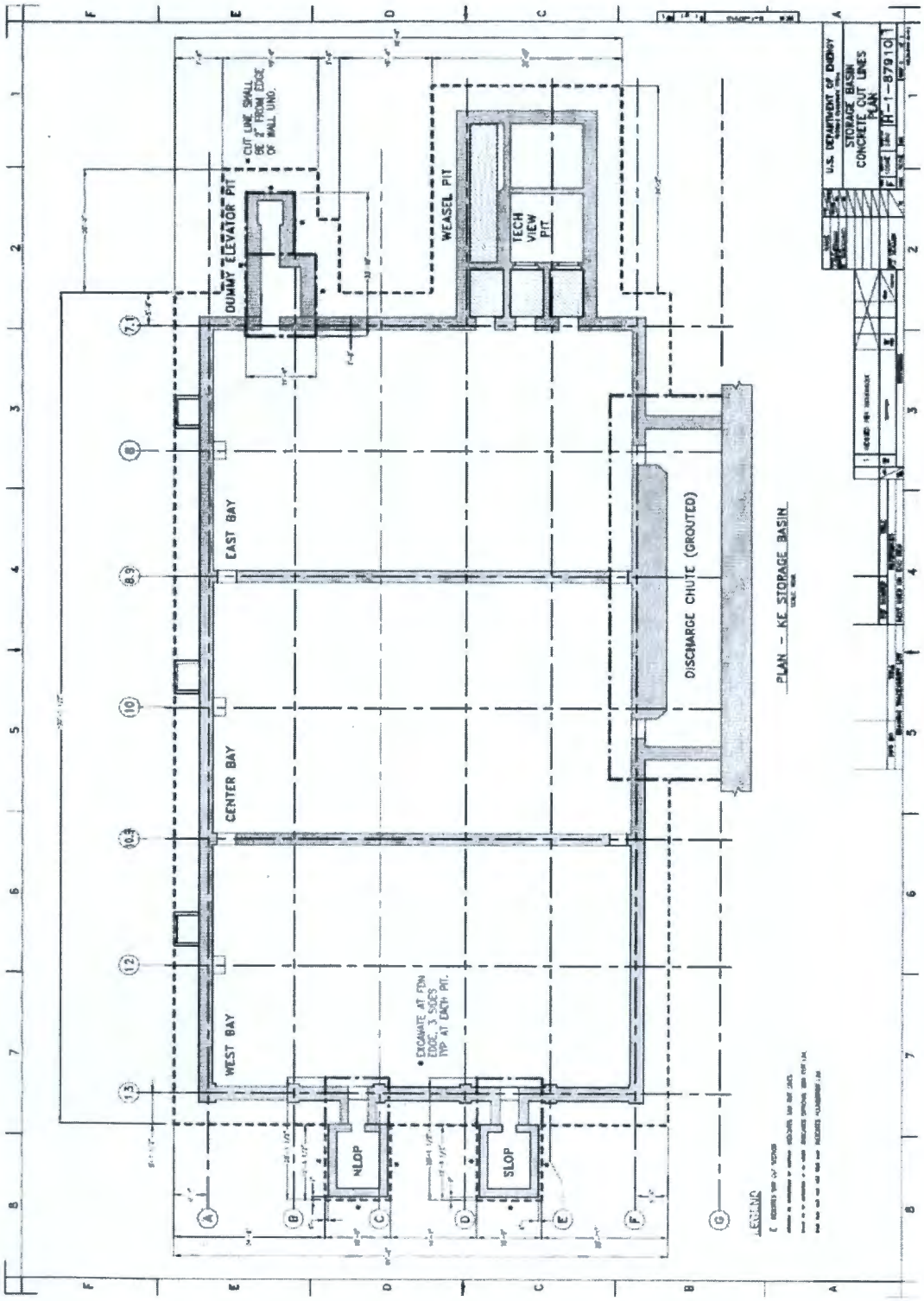
[1] The sum of the ERDF WAC Table 2 radionuclide fractions (BHI, 2003) establish the basis for evaluation of the waste form and are not considered a limit.

2.1 KE BASIN WASTE FORM PHYSICAL PARAMETERS

The KE Basin pit and rubble physical parameters, including concrete mass, pit volumes, concrete rubble volume, and wetted surface areas, were calculated based on facility drawings and plans to grout the NLOP, SLOP, and DEP and reduce to rubble the remaining basin and Tech View and Weasel pits concrete (KBC-33961, *KE Basin Final Disposition, Weights and Volumes*). These values were developed to support the NLOP, SLOP, and DEP removal as monoliths, where the DEP will be cut into two monoliths (See Figure 1). The rubble volume includes a swell volume factor to account for the expansion that occurs when the structure is broken into pieces.

KBC-33964 REV 0

Figure 1. Saw Cut Plan.



2.2 RADIONUCLIDE INVENTORY DETERMINATION

Determination of the radionuclide inventory for calculation of the NRC waste classification in the planned waste forms is based on the sum of the inventories in remaining sludge, contaminated concrete, and debris, where appropriate, and the KE Basin waste form physical parameters applied to each of the planned waste forms. The methodology for the development of each inventory is described in the following sections.

2.2.1 Sludge Inventory

The amount of sludge remaining on the basin and pit floors was determined using the qualified process, KBC-24721, *105 K East Qualified Process Demonstrating Endpoint Criteria*. Calculations of the radionuclide inventory from sludge remaining on the floor were performed in accordance with KBC-24414, *Sampling and Analysis Plan (SAP) for the 105-K East Basin Monoliths*. The calculations of remaining sludge include estimates for one sand filter backwash into the NLOP, sludge remaining in the sludge consolidation containers (SCS-CON-101 through 104) (hereafter referred to as tanks), sludge held up in debris, (see Section 2.2.3) and suspended sludge in the basin water.

The radioactive contribution from sludge is calculated independently for two types of sludge, residual sludge and redeposited sludge as identified in the *SAP for the 105-K East Basin Monoliths*. The residual and redeposited content is determined using visual inspection of floors and optical comparators, respectively, in accordance with the qualified process (KBC-24721). Data collected for residual and redeposited sludge is summarized in Appendix A.

Residual sludge is "sludge that remains on the basin or pit floors with the completion of final sludge removal pass" (KBC-24414). The total residual sludge is the sum of sludge, on the basin and pits floors after final vacuuming of the area, sludge held up in debris, and residues in tanks (SCS-CON-101 through 104).

Redeposited sludge is "sludge that has accumulated on the basin or pit floor after the final sludge removal pass." The sludge includes those quantities measured on the floor and in tanks and what may be suspended in the basin water" (KBC-24414). Redeposited sludge includes sludge that accumulated on the outside of the tanks located in the Tech View and Weasel pits and the inside of tank SCS-CO-103. Estimates of redeposited sludge in the Tech View and Weasel pits were developed based on comparisons with video of the Weasel pit prior to installation of the tanks and evaluations of redeposition in adjacent areas as described in the qualified process. Estimates of the sludge content suspended in water were developed based on analysis of basin water samples for turbidity. The calculation basis, methodology, and estimated equivalent volume are described in Appendix B.

2.2.2 Contaminated Concrete

The radioactive contribution from the KE Basin and pit concrete is calculated for both intact concrete surfaces and concrete surface removal spoils resulting from hydrolasing of the basin below water surfaces. For the purposes of this calculation, all basin below water wall and floor concrete surfaces will be hydrolased with spoils placed in the four pit monoliths. None of the pit below water surfaces will be hydrolased. Therefore, each pit calculation includes the below water radioactive inventory for the intact wetted concrete surface. One-half inch of basin below water concrete surface is removed during hydrolasing. Approximately 9.82 m^3 of floor spoils and 10.42 m^3 of wall spoils are anticipated to be generated during hydrolasing. The spoil volume to be created from hydrolasing the basin surfaces is calculated in Appendix C.

The calculation of radioactivity in below water concrete surfaces (i.e., intact and removed) was estimated based on available data and not performed in accordance with KBC-25121, *Sampling and Analysis Plan For Waste Containing K East Basin Below Water Concrete Surface*. The estimate of radioactivity described herein is bounding and was completed for the purpose of determining if the completion criteria were achieved. The calculation of radioactivity will be performed in accordance with KBC-25121 for the end point determination. For this evaluation, the concrete surface activity was calculated by multiplying the wall and floor area by the activity per unit area, where the floor concrete is considered to have four times the activity of wall concrete as described in Appendix C.

2.2.3 Debris

The sludge content of debris, including sludge remaining in tanks, was estimated based on the completion criteria (FH-0701292) developed for the KE Basin Performance Incentives 1.a and 1.b. The radioactivity inventory from sludge held up in debris is based on process knowledge and engineering estimates of the internal volumes of debris and amount and type of sludge that may reside in the debris. The estimated sludge volumes held up in debris is summarized in Table 1.

Pumps were assigned a factor of 0.05 or 5% due to the small amount of material observed on hose-in-hose (HIH) pumps that were opened. The average concentration of material through a HIH pump was observed to be ~4% according to Shift Operations Management and Field Work Supervisors supporting HIH. Based on a high average of 100 cubicles vacuumed per day of up to ¼ inch of sludge and 60 gallons per minute, the concentration of sludge through a sludge containerization system (SCS) pump is also bounded by the 5% Tri-Nuc housings and the HIH strainer were assigned a factor of one due to lack of observational or other evidence that the values provided are not the bounding scenario.

The radionuclide inventory included for sludge held up in internal spaces of debris was considered sufficient to bound the contribution from debris surface contamination. Therefore, the contribution of surface contamination from debris to the total radionuclide inventory was not calculated at this time. Appropriate calculations will be performed based on the final debris inventory and debris apportionment prior to grouting.

Table 1. Estimated Debris Sludge Holdup.

	Internal volume of Item (ft^3)	Quantity of Item	Internal volume Total (ft^3)	Internal volume Total (in^3)	Fraction of volume containing sludge	Estimated Sludge Hold Up (in^3)
SWS-P-701/702 pump type	0.312	6	1.872	3235.	0.05	161.7
SWS-P-701/702 pump housing	0.378	4	1.512	2613.	1	2613.
SCS-P-110 pump type	0.138	3	0.414	715.4	0.05	35.77
HIH-P-112 pump type	0.217	3	0.651	1125.	0.05	56.25
HIH-P-113 pump	0.179	1	0.179	309.3	0.05	15.47
SWS-P-101/201/301 pumps	0.4	3	1.2	2074.	0.05	103.7
Strainer	0.571	1	0.571	987	1	987
Total	1.624	--	6.399	11058	--	3973.

2.3 BASIN SLUDGE APPORTIONMENT TO PITS

Based on current remedial action plans, the basin floor and walls exclusive of pits will be hydrolased. Hydrolasing will produce a wet cake called spoil (i.e., concrete fines and gravel) that will contain the sludge inventory on the basin floor, which will be transferred to the pits for encapsulation by grouting. Therefore, the equivalent basin residual and redeposited sludge depths are an input to each of the pit monolith NRC class C calculations (Appendix D).

For calculation purposes, the spoils and residual and redeposited sludge on the basin floor are distributed between all four monoliths, based on maintaining similar NRC sum of fractions results. This is accomplished for sludge by first tabulating all of the sludge that will be in the basin, then calculating a depth that is equivalent to the sludge volume over the entire basin floor area. The spoils and sludge are then apportioned to the pits in consideration of the radioactivity already existing in the pit before the addition of spoils (i.e., intact concrete surface contamination of the pit floor and walls, residual and redeposited sludge in the pit).

Residual and redeposited sludge volumes for the KE Basin areas described above and an equivalent sludge depth covering the entire basin floor to be hydrolased are listed in Tables 2 and 3. The spoils apportionment between monoliths is shown in Table 4.

Table 2. Basin Residual Sludge Equivalent Depth. (2 pages)

Area	Sludge Volume (in^3)	Sludge Volume (m^3)
Basin-East Bay	11225	0.1840
Basin-Center Bay	4439	0.0728
Basin- West Bay	3417	0.0560
Subtotal	19082	0.3127

Table 1. Estimated Debris Sludge Holdup.

	Internal volume of Item (ft^3)	Quantity of Item	Internal volume Total (ft^3)	Internal volume Total (in^3)	Fraction of volume containing sludge	Estimated Sludge Hold Up (in^3)
Tri-Nuc pump UFV-260	0.312	6	1.872	3235.	0.05	161.7
Tri-Nuc pump housing UFV-260	0.378	4	1.512	2613.	1	2613.
Gould pump model 3887	0.138	3	0.414	715.4	0.05	35.77
Corcoran Pump 6000 series	0.217	3	0.651	1125.	0.05	56.25
Corcoran Pump 3000 series	0.179	1	0.179	309.3	0.05	15.47
Hazelton Pump Type SCB-H	0.4	3	1.2	2074.	0.05	103.7
Strainer	0.571	1	0.571	987	1	987
Total	1.624	--	6.399	11058	--	3973.

2.3 BASIN SLUDGE APPORTIONMENT TO PITS

Based on current remedial action plans, the basin floor and walls exclusive of pits will be hydrolased. Hydrolasing will produce a wet cake called spoil (i.e., concrete fines and gravel) that will contain the sludge inventory on the basin floor, which will be transferred to the pits for encapsulation by grouting. Therefore, the equivalent basin residual and redeposited sludge depths are an input to each of the pit monolith NRC class C calculations (Appendix D).

For calculation purposes, the spoils and residual and redeposited sludge on the basin floor are distributed between all four monoliths, based on maintaining similar NRC sum of fractions results. This is accomplished for sludge by first tabulating all of the sludge that will be in the basin, then calculating a depth that is equivalent to the sludge volume over the entire basin floor area. The spoils and sludge are then apportioned to the pits in consideration of the radioactivity already existing in the pit before the addition of spoils (i.e., intact concrete surface contamination of the pit floor and walls, residual and redeposited sludge in the pit).

Residual and redeposited sludge volumes for the KE Basin areas described above and an equivalent sludge depth covering the entire basin floor to be hydrolased are listed in Tables 2 and 3. The spoils apportionment between monoliths is shown in Table 4.

Table 2. Basin Residual Sludge Equivalent Depth. (2 pages)

Area	Sludge Volume (in^3)	Sludge Volume (m^3)
Basin-East Bay	11225	0.1840
Basin-Center Bay	4439	0.0728
Basin- West Bay	3417	0.0560
Subtotal	19082	0.3127

Table 2. Basin Residual Sludge Equivalent Depth. (2 pages)

Area	Sludge Volume (in^3)	Sludge Volume (m^3)
Debris sludge holdup (a)	3972.6	0.0651
--	--	--
Total	23053.6	0.378
Equivalent basin floor thickness (mils)	19.24	--

a The debris sludge content is included in the equivalent residual sludge depth in the basin.

Table 3. Basin Redeposited Sludge Equivalent Depth.

Area	Sludge Volume (in^3)	Sludge Volume (m^3)
Basin-East Bay	39210	0.6426
Basin-Center Bay	24561	0.4025
Basin- West Bay	17044	0.2793
Sludge in water	894	0.0147
Total	81709	1.3391
Equivalent basin floor thickness (mils)	68.18	--

Table 4. Apportionment of Spoil.

	Floor Spoil Volume (m^3)	Wall Spoil Volume (m^3)
NLOP	2.38	2.52
SLOP	3.31	3.51
DEP-East	1.47	1.56
DEP-West	2.66	2.82
Total	9.82	10.42

2.4 NRC CLASS C CALCULATION INPUTS

Spreadsheets were developed to calculate the radionuclide concentrations based on the mass and volume for each waste form and the calculated radionuclide inventory. The spreadsheets include unchanging calculations (e.g., intact concrete surface contamination is not a changeable input) based on fixed waste form and concentration parameters and calculations based on data input into the spreadsheets. Data inputs included residual and redeposited sludge volumes and floor and wall spoil apportionment. Data inputs were then used with data regarding unit

concentrations of radionuclides and the results of fixed calculations to develop the NRC waste classification. Inputs for each of the waste forms (i.e., pits and rubble) are summarized below. The inputs and calculation outputs for each waste form are provided in Appendix D.

2.4.1 NLOP Monolith

The total volume of sludge in the NLOP and an equivalent sludge depth over the pit floor prior to addition of apportioned spoils and basin area sludge are listed in Table 5. In addition to the residual and redeposited sludge, the estimated quantity of sludge from one sand filter backwash into the NLOP was added to account for the sludge held up in the sand filter which will be backwashed to the NLOP in the future. Continued operation the sand filter and backwashes to the NLOP will occur in the future and will be controlled (along with amount of hydrolase spoils) to preclude the NLOP monolith from exceeding waste acceptance criteria.

Table 5. NLOP Sludge Volumes and Equivalent Depths.

	Residual Sludge Volume (in^3)	**Residual Sludge Volume (m^3)**	**Redeposited Sludge Volume (in^3)**	**Redeposited Sludge Volume (m^3)**
Inspections	8011.5	0.1312	0	0
Sand Filter Backwash	--	--	3663	.0600
Total	8011.5	0.1312	3663	.0600
Equivalent Depth (mils)	642.4	--	293.7	--

The following values are calculation inputs in the NLOP NRC waste classification calculation spreadsheet:

- Residual and redeposited equivalent sludge depth in the NLOP (Table 5)
- Basin residual and redeposited equivalent sludge depth (Tables 2 and 3)
- Volume of hydrolase spoils to be placed in the pit monolith (Table 4).

2.4.2 SLOP Monolith

The total volume of sludge in the SLOP and an equivalent sludge depth over the pit floor prior to addition of apportioned spoils and basin area sludge, are listed in Table 6.

Table 6. SLOP Sludge Equivalent Depths.

	Residual Sludge Volume (in^3)	**Residual Sludge Volume (m^3)**	**Redeposited Sludge Volume (in^3)**	**Redeposited Sludge Volume (m^3)**
Inspections	346	0.0057	1994.3	0.0327
Equivalent Depth (mils)	27.7	--	159.9	--

The following values are input in the SLOP NRC waste classification calculation spreadsheet:

- Residual and redeposited equivalent sludge depth in the pit (Table 6)
- Basin residual and redeposited equivalent sludge depth (Tables 2 and 3)
- Volume of hydrolase spoils to be placed in the pit monolith (Table 4).

2.4.3 DEP-East Monolith

The total volume of sludge in the DEP-East and an equivalent sludge depth over the pit floor prior to addition of apportioned spoils and basin area sludge, are listed in Table 7.

Table 7. DEP-East Sludge Equivalent Depths.

	Residual Sludge Volume (in^3)	**Residual Sludge Volume (m^3)**	**Redeposited Sludge Volume (in^3)**	**Redeposited Sludge Volume (m^3)**
Inspections	48	0.0008	22	0.0004
Equivalent Depth (mils)	10.9	--	5.0	--

The following values are input in the DEP-East NRC waste classification calculation spreadsheet:

- Residual and redeposited equivalent sludge depth in the pit (Table 7)
- Basin residual and redeposited equivalent sludge depth (Tables 2 and 3)
- Volume of hydrolase spoils to be placed in the pit monolith (Table 4).

2.4.4 DEP-West Monolith

The total volume of sludge in the DEP-West and an equivalent sludge depth over the pit floor prior to addition of apportioned spoils and basin area sludge, are listed in Table 8.

Table 8. DEP-West Sludge Equivalent Depths.

	Residual Sludge Volume (in^3)	**Residual Sludge Volume (m^3)**	**Redeposited Sludge Volume (in^3)**	**Redeposited Sludge Volume (m^3)**
Inspections	348	0.0057	47.9	0.0008
Equivalent Depth (mils)	36.3	--	5.0	--

The following values are input in the DEP-West NRC waste classification calculation spreadsheet:

- Residual and redeposited equivalent sludge depth in the pit (Table 8)

- Basin residual and redeposited equivalent sludge depth (Tables 2 and 3)
- Volume of hydrolase spoils to be placed in the pit monolith (Table 4).

2.4.5 Basin Rubble

The KE Basin below water wall and floor surfaces will be hydrolased to reduce radiological contamination. Concrete surface removal spoils (i.e., concrete fines and gravel) will be transferred to the basin pits for grouting as previously discussed. Sludge remaining on the basin floor areas that are hydrolased is anticipated to be collected by the hydrolasing spoils recovery system and transferred to the pits along with the spoils. No debris is anticipated to remain.

Hydrolasing of the basin floor and walls will remove most of the concrete surface radioactivity. A decontamination factor of 130 was determined for the remaining concrete surfaces after hydrolasing during the hydrolase demonstration performed in the KE Basin in 2004, (KBC-26294, *Technology Demonstration Underwater Hydrolasing Phase 0, I, II Technical Report*). For purposes of this demonstration, a decontamination factor of 10 was used. Therefore, the remaining contamination on the basin below water concrete surface after hydrolasing is calculated by multiplying the basin below water (i.e., wetted) surface area by the wall and floor surface activity loadings that were determined during the hydrolase demonstration (Appendix C), then divide by the decontamination factor of 10. The concentration of radioactivity in the KE Basin rubble is calculated by dividing the calculated radioactive contamination of the KE below water surfaces by the mass and volume of rubble.

2.4.6 Tech View and Weasel Pits Rubble

The Tech View and Weasel pits contain four tanks and include intact contaminated wall and floor below water concrete surfaces. Sludge is held up inside and on the outside of these four tanks. For purposes of this calculation, the sludge will remain in the pits and tanks, although residual and redeposited sludge may be removed during basin deactivation through other means as described in the completion criteria (FH-0701292). For this calculation, the tanks will be crushed into rubble with the pit structure during basin demolition. The radioactive inventory of the pit concrete is calculated by applying the wall and floor surface activity loadings determined during the hydrolase demonstration as presented in Appendix C. The concrete inventory is calculated by multiplying the wall and floor areas by the activity loading per unit area. The concrete inventory is then summed with the radionuclide inventories for residual sludge (Table 9) and redeposited sludge (Table 10). The concentration is determined by dividing the radioactivity inventory by the rubble mass and volume. The radioactive inventory from surface contaminants on the tanks is considered to be bounded by the inventory from the remaining sludge in the tanks.

Table 9. Tech View and Weasel Pits Residual Sludge Equivalent Depth.

Area	Sludge Volume (in^3)	Sludge Volume (m^3)
Tech View/Weasel pits (inspection before tank installation)	565	0.0093
Tech View pit area	2449	0.0401
Inside tank SCS-CO -101	427.1	0.007
Inside tank SCS-CO -102	1220.3	0.02
Inside tank SCS-CO -103	1464.4	0.024
Inside tank SCS-CO -104	18304.7	0.300
Tank 103 connector line plug	553.4	0.00907
Total	24983.9	0.409

Table 10. Tech View and Weasel Pits Redeposited Sludge Equivalent Depth.

Area	Sludge Volume (in^3)	Sludge Volume (m^3)
Tech View and Weasel pits (on tank ledges) (a)	4850	0.0795
Tech View and Weasel pits (channel and under tanks)	40044	0.6563
Inside Tank SCS-CO-103	7138.8	0.117
Total	52033	0.8528

(a) Estimate Loscoe (2007). letter report

3.0 CALCULATION RESULTS AND CONCLUSIONS

The NRC waste classification for each monolith and concrete rubble were calculated as described in Section 2.0. In all cases, the pit monoliths and concrete rubble waste were found to have an NRC class C sum of fractions less than one and therefore are acceptable for disposal at the ERDF. The results are presented in Table 11. The calculation input and results are provided in Appendix D.

Conservatisms built into the calculation methodology provide confidence that the results support the classification and provide flexibility for the completion of the basin activities in preparation for pit grouting and basin removal. Conservatisms included are summarized in Table 12. Further, the radioactivity may be managed by the project to reduce the radioactive inventory of the pit monoliths, thus reducing the sum of fractions for disposal at the ERDF.

Table 11. NRC Waste Class Calculation.

Basin or Pit Waste	NRC Class C Sum of Fractions (unitless)
NLOP monolith	0.803
SLOP monolith	0.675
DEP- East monolith	0.659
DEP-West monolith	0.661
Basin rubble	0.008
Tech View and Weasel pit rubble	0.464

Table 12. Conservatisms in the NRC Waste Class Calculation.

The dose factor of 4:1 floor to wall was used for estimating floor concrete activity based on wall concrete activity (Appendix C) overestimates the factor by 2.5% where the calculated wall-to-floor dose rate factor is 3.9.
The calculation assumes 100% of sludge remaining on the basin floor is collected during hydrolasing transferring it to pits for grouting.
Sludge remaining in three tanks (SCS-CON-101, -102, and -104) is assumed to be 100% residual sludge while an unknown proportion could be considered redeposited sludge. The ratio of concentration equivalence as NRC class C sum of fractions is 1:6.7 residual sludge to redeposited sludge.
A decontamination factor of 130 was determined for the remaining concrete surfaces after hydrolasing during the hydrolase demonstration performed in the KE Basin in 2004, (KBC-26294, *Technology Demonstration Underwater Hydrolasing Phase 0, I, II Technical Report*). A decontamination factor of 10 was used for this calculation.

4.0 REFERENCES

10 CFR 61.55, Waste Classification, *Code of Federal Regulations*, as amended.

FH-0701292, 2007, "Contract No. DE-AC06-96RL13200- Completion Criteria for K East Basin Sludge and Fuel Transfer," (Letter from Cornelius M. Murphy, Fluor Hanford, Inc. to Keith A. Klein, U.S. Department of Energy, Richland Operations Office, May 17), Richland, Washington.

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KBC-25121, 2005, *Sampling and Analysis Plan For Waste Containing K East Basin Below Water Concrete Surfaces,* Rev. 0, Fluor Hanford, Richland, Washington.

KBC-24414, 2007, *Sampling and Analysis Plan for the 105-K East Basin Monoliths*, Rev. 2, Fluor Hanford, Richland, Washington.

KBC-24721, 2005, *105 K East Qualified Process Demonstrating Endpoint Criteria*, Rev. 0-A, Fluor Hanford, Inc. Richland, Washington.

KBC-26294, *Technology Demonstration Underwater Hydrolasing Phase 0, I, II Technical Report*, Rev.0, June 2005, Prepared by S.A. Robotics for Fluor Hanford Inc. Richland, Washington.

KBC-33961, *KE Basin Final Disposition, Weights and Volumes*, Rev. 0, Fluor Hanford, Inc. Richland, Washington.

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APPENDIX A

TABULATION OF INSPECTIONS AND ESTIMATES OF SLUDGE IN BASIN AND PITS

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APPENDIX A

TABULATION OF INSPECTIONS AND ESTIMATES OF SLUDGE IN BASIN AND PITS

The volume of sludge remaining in the KE Basin and pits was determined by viewing videos of the basin floor and pits and observing visual comparators. The volumes of sludge observed are tabulated in this appendix. In a few cases, areas were not accessible to view or comparators were affected by basin activities, making the measurement not useful. In these instances, alternate means were used as discussed herein.

Table A-1 tabulates the amount of residual sludge that was measured for each of the KE Basin bays. The table lists the video number with the measured volume of sludge observed for each of the three bays. The total volume of sludge is calculated by summing the measurements for each basin bay.

Table A-1. Tabulation of K East Basin Residual Sludge Visual Measurements. (2 Pages)

West Bay Video WB-VI-	Volume (in^3)	Center Bay Video CB-VI-	Volume (in^3)	East Bay Video EB-VI-	Volume (in^3)
1	96	1	60	1	120
2	126	2	189	2	116
3	0	3	0	3	36
4	0	4	0	4	N/A
5	0	5	0	5	0
6	0	6	0	6	0
7	0	7	0	7	0
8	0	8	0	8	459
9	0	9	0	9	288
10	0	10	0	10	0
11	0	11	0	11	504
12	0	12	0	12	0
13	72	13	0	13	0
14	0	14	0	14	57.6
15	0	15	0	15	108
16	108	16	0	16	0
17	330	17	0	17	0
18	816	18	0	18	0
19	150	19	0	19	76.5
20	72	20	0	20	0
21	186	21	0	21	N/A
22	60	22	0	22	1332

Table A-1. Tabulation of K East Basin Residual Sludge Visual Measurements. (2 Pages)

West Bay Video WB-VI-	Volume (in^3)	Center Bay Video CB-VI-	Volume (in^3)	East Bay Video EB-VI-	Volume (in^3)
23	0	23	222	23	3240
24	0	24	0	24	2004
25	45	25	0	25	N/A
26	0	26	744	26 and 26b	858
27	0	27	96	27	240
28	0	28	2520	28	78
29	198	29	108	29	66
30	90	30	500	30	65
31	0	--	--	31	120
32	612	--	--	32	72
33	72	--	--	33	66
34	0	--	--	34	9.4
35	228	--	--	35	0
36	0	--	--	36	24
37	48	--	--	37 and 37b	102
38	108	--	--	EB-RT-01	126
--	--	--	--	39	474
--	--	--	--	40	72
--	--	--	--	41	369
--	--	--	--	42	138
--	--	--	--	43	4.5
Total	3417		4439		11225

Table A-2 tabulates the volume of residual sludge that was measured for each of the KE Pits (i.e., the North Load Out Pit [NLOP], South Load Out Pit [SLOP], Dummy Elevator Pit [DEP] East [DEP-East] and DEP-West, Tech View Pit [TVP] and Weasel Pit [WP]). The table lists the video number and observed volume of sludge for each of the KE Pits. The total volume of sludge is calculated by summing the measurements for each pit.

Table A-2. Tabulation of K East Pits Residual Sludge Visual Measurements.

NLOP Video	Volume (in^3)	SLOP Video	Volume (in^3)	DEP-West Video	Volume (in^3)	DEP-East Video	Volume (in^3)	TVP and WP Video	Volume (in^3)
NLOP-VO-01	7201.5	SP-VI-01	346	DP-VI-01 DP-VI-02 DP-CI-01	348	DP-VI-01 DP-VI-02 DP-CI-01	48	5944	327
NP-VI-02	810							6612	238
								TV-VI-01	2449
Total	8011.5		346		348		48		3014

Tables A-3, A-4, and A-5 tabulate the amount of redeposited sludge that was measured for the KE Basin and each of the pits The tables list the video number, comparator number, measured sludge depth, and if applicable the observed volume of sludge. Except for the Tech View and Weasel pits, the amount of redeposited sludge is determined by viewing the visual comparators to identify a depth of sludge resting on it, this depth is redeposited sludge. Three visual comparators are placed in each bay of the KE Basin. One visual comparator is placed in each pit except the Tech View and Weasel pits, which have tanks in them that interfere with placing visual comparators there.

Table A-3 shows the redeposited sludge measured for each of the KE Basin bays. For the center and west basin bays, the average measured sludge depth is used to calculate the volume of sludge resident on the floor. Two of the three visual comparators had been compromised in the East bay by basin activities. So the single remaining visual comparator measurement and a measurement determined using two videos were used to determine the depth of redeposited sludge in the East bay floor. A comparison of the two videos was used to measure sludge redeposition, one recorded in December 2006 (after vacuuming in that area and prior to comparator placement) and the other video recorded in May 2007 of the same area in the East bay of the basin. These two measurements were averaged to calculate the redeposited sludge volume resident on the east bay basin floor.

Tables A-4 and A-5 show the redeposited sludge measured for each of the KE Basin pits. In general the sludge was measured by observing the visual comparators; the measurement is then applied to the whole pit floor area to calculate the redeposited sludge volume resident in the pit. The SLOP also adds to the quantity of redeposited sludge identified by the comparator redeposited sludge that was observed at the time the comparator was placed in the pit. The depth of redeposited sludge in the NLOP is set at zero based on observation of the comparator video. The NLOP visual comparator had been reset on May 30, 2007 after the pit had been vacuumed to remove sand filter backwash material covering it. The channel and pit walls could not be observed; however, based on the cleanliness of the floor and the fact that the channel had been sparged to move sludge into the pit the redeposited sludge in the NLOP is set to zero. It should be noted that the vacuuming of filter backwash material may have also removed some of the residual sludge from the NLOP, however the estimated quantity of residual sludge is maintained

for these calculations and thus represents an over-estimation of the actual NLOP sludge content. The visual comparators could not be placed in the channels of the Tech View and Weasel pits because of the sludge layer on the floor, so measurements of redeposited sludge were performed using videos of the channel not visual comparators. The floor in the Tech View and Weasel pits under the tanks were estimated as being one inch in depth.

Table A-3. Tabulation of K East Basin Redeposited Sludge Visual Measurements.

	Comparator	West Bay Video	Depth (mils)	Comparator	Center Bay Video	Depth (mils)	Comparator	East Bay Video	Depth (mils)
	# 1-16	WB-CI-03 and KE-CI-01	30	# 1-7	CB-CI-03A CB-CI-03B and KE-CI-01	50	# 1-8	EB-CI-02 and KE-CI-01	N/A
	# 1-19	WB-CI-01 and KE-CI-01	50	# 1-9	CB-CI-02 and KE-CI-01	30	# 1-10	EB-CI-02 and KE-CI-01	75
	# 1-21	WB-CI-02 and KE-CI-01	50	# 1-22	CB-CI-01	N/A	# 2-7	EB-CI-03 and KE-CI-01	N/A
				# 2-5	CB-CI-02 and KE-CI-01	100		EB-VI-38	125
				# 2-8	CB-CI-01	N/A			
Average Depth			43.33			60			100
Basin Area			2731.4 ft^2			2842.7 ft^2			2722.9 ft^2
Total (CI)			17043.9 in^3			24560.9 in^3			39209.8 in^3

N/A- not applicable

Table A-4. Tabulation of K East NLOP, SLOP, and DEP-West Redeposited Sludge Visual Measurements.

	Comparator	NLOP Video	Depth (mils)	Comparator	SLOP Video	Depth (mils)	Comparator	DEP-West Video	Depth (mils)
	2-6	NLOP-CI-01 and NLOP-CI-02	0	1-15	SP-CI-01 and KE-CI-01	50	1-18	DP-CI-01 and KE-CI-01[1]	5
Pit Area			86.6 ft^2			86.6 ft^2			66.58 ft^2
Volume			0.00 in^3			623.52 in^3			47.94 in^3
					SP-CI-01 SP-VI-02	1370.8 in^3			
Total Volume			0 in^3			1994.32 in^3			47.94 in^3

[1]Light dusting per video

Table A-5. Tabulation of K East DEP-East, Tech View (TVP) and Weasel Pits (WP) Redeposited Sludge Visual Measurements.

	Comparator	DEP-East Video	Depth (mils)	Comparator	TVP and WP Video	Depth (mils)
	1-18	DP-CI-01 and KE-CI-01[1]	5	2-02 and 2-03	WTVP-CI-01	0
Pit Area			30.5 ft^2			ft^2
Volume			21.96 in^3			N/A in^3
					none[2]	24336 in^3
					TV-VI-02	12288 in^3
					TV-VI-01	0 in^3
					EB-VI-41	3420 in^3
Total Volume			21.96 in^3			40044 in^3

N/A- not applicable
[1]Light dusting per video
[2]Estimated as 1 inch under tanks 103 and 104 (169 square feet)

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APPENDIX B

CALCULATION OF SLUDGE CONTENT IN BASIN WATER

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APPENDIX B

CALCULATION OF SLUDGE CONTENT IN BASIN WATER

The amount of sludge suspended in basin water at the time sludge removal completion has been achieved is calculated using the latest basin water sample analysis result, volume of water in the basin, and the relationship of the analysis result to concentration of sludge in water. The weekly "105KE Fuel Storage Basin Water Sample Analysis Report," dated May 22, 2007, reports the basin water turbidity to be 7.40 NTU. The analysis value is used to calculate the concentration of sludge in water per the equation taken from RPP-RPT-30093, *Efficacy of Filtration Processes to Obtain Water Clarity at K East Spent Nuclear Fuel Basin* that is presented below.

Concentration (mg/L) = 0.376*NTU + 0.541

The concentration is multiplied by the basin water volume to determine the sludge mass. The sludge mass is converted to a volume using the redeposited as settled sludge density of 1.03 grams per cubic centimeter. The results of these calculations are shown on the Table B-1.

Table B-1. Basin Water Turbidity and Redeposited Sludge Potential.

Date	Turbidity (NTU)	Solids (mg/L)	Solids (g/L)	Solids from Basin Water (g)	Redeposited Volume (cm^3)
5/22/07	7.4	3.32	3.32E-03	1.51E+04	1.47E+04

	g/cm3
Sludge density =	1.03

Redeposited Volume (in^3)
8.94E+02

Basin Water Volume

Gallons	Liters
1200000	4.54E+06

REFERENCE

RPP-RPT-30093, *Efficacy of Filtration Processes to Obtain Water Clarity at K East Spent Nuclear Fuel Basin*, Rev.0, CH2MHILL Hanford Group Inc., September 2006.

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APPENDIX C

K EAST BASIN BELOW WATER CONCRETE SURFACE RADIOACTIVE LOADING AND SPOIL VOLUME ESTIMATE

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APPENDIX C

K EAST BASIN BELOW WATER CONCRETE SURFACE RADIOACTIVE LOADING AND SPOIL VOLUME ESTIMATE

The radioactive inventory contribution to K East basin concrete rubble and monoliths from radionuclides that have migrated into concrete in contact with basin water is calculated based on analysis of wall surface samples, dose rates of under water concrete surfaces, and thickness of wall layer removed when the wall surface sample was collected. The radioactive inventory may exist in the rubble or in monoliths as intact concrete surface(s) (i.e., unhydrolased) or as concrete surface spoil that is removed via hydrolasing. The radioactive inventory calculation discussed herein does not include concrete surfaces after hydrolasing.

During a demonstration of the hydrolasing process on a section of the KE Basin wall, samples of the removed surface or spoil were collected and tested in accordance with SNF-18703, *Sampling and Analysis Plan for Waste Disposition of KE Basin Wall and Floor Removal Residue.* The test results were reported per Letter No. CH2M-0401504, "Final Report for the KE Basin Hydrolasing Filter Residue Samples Analytical Results" and data evaluated per Memorandum No. M4S20-JDA-04-012, "Assessment of Data Collected During the KE Basin Hydrolase Demonstration." These test results were used to calculate the concentration of radionuclide contaminants of concern (COC) in wall spoil as described in KBC-25121, *Sampling and Analysis Plan For Waste Containing K East Basin Below Water Concrete Surfaces* and presented in Table D-1 in the aforementioned document. The wall spoil concentrations (μCi/g) of Table D-1 are replicated in the first column of Table C-1 in this document. The concentration of wall spoil is based on the removal of one-half of an inch of concrete surface during the hydrolase demonstration. As discussed in KBC-25121, the radioactivity in the wall is expected to be the same for the floor, so the data collected from the demonstration performed on the wall is also applicable to the floor.

The concentration of radionuclides in basin and pit floor is greater than that in the basin or pit walls. This is demonstrated by measurements of beta/gamma dose rate on basin wall and floor that has been cleaned of sludge. A comparison of the wall-to-floor dose rate data shows that the floor is four times more contaminated with radionuclides than the wall. Therefore, the concentration of radionuclides in the floor is calculated to be four times the concentration in the wall, determined from analysis of a wall spoil sample. A comparison of the wall and floor dose rate data is provided in Attachment C-1. The floor spoil concentrations are presented in Table C-1.

The loading of radionuclide COC in intact wall surface is calculated based on the analysis results of the wall spoil sample collected during the hydrolase demonstration and the thickness of wall surface removed. This calculation to determine Environmental Restoration Disposal Facility (ERDF) compliance is based on one-half of an inch of all the basin concrete below water surface being removed, but none of the pit surfaces being removed by hydrolasing. The radionuclide loading of the wall and floor per square meter is listed on Table C-1 that are calculated using the spoil concentration to wall and floor loading conversion factors developed per Attachment C-2.

The radioactive inventory contributions to basin rubble and pit rubble or monoliths from radionuclides that have migrated into concrete that has been in contact with basin water are determined using the concentrations presented in Table C-1. The radioactive inventory contribution for intact concrete surfaces is determined by multiplying the wetted wall and floor surface area by the concentrations listed for each radionuclide in Table C-1 then summing the products. The radionuclide inventory contribution for hydrolase spoil is either the same as described for intact concrete or is determined by multiplying the wall and floor spoil mass (ignoring the sludge that may also be collected from the floor) by the concentrations listed for each radionuclide in Table C-1, then summing the wall and floor products.

Table C-1. Below Water Concrete Radioactivity Concentration and Loading. (2 pages)

Nuclide	Wall Spoil Concentration of Radioactivity (μCi/g)	Radioactivity per Unit Area of Wall (μCi/m^2)	Floor Spoil Concentration of Radioactivity (μCi/g)	Radioactivity per Unit Area of Floor (μCi/m^2)
H-3	1.27E-04	5.00E+00	5.09E-04	2.00E+01
C-14	6.54E-08	2.57E-03	2.62E-07	1.03E-02
Fe-55	1.37E-02	5.38E+02	5.48E-02	2.15E+03
Ni-59	1.06E-04	4.17E+00	4.24E-04	1.67E+01
Co-60	1.60E-02	6.27E+02	6.38E-02	2.51E+03
Ni-63	4.33E-03	1.70E+02	1.73E-02	6.81E+02
Se-79	2.45E-04	9.63E+00	9.80E-04	3.85E+01
Sr-90	1.97E+00	7.72E+04	7.86E+00	3.09E+05
Mo-93	1.75E-03	6.89E+01	7.01E-03	2.76E+02
Zr-93	1.15E-03	4.53E+01	4.61E-03	1.81E+02
Nb-94	3.54E-06	1.39E-01	1.42E-05	5.56E-01
Tc-99	8.27E-03	3.25E+02	3.31E-02	1.30E+03
Pd-107	2.69E-05	1.06E+00	1.08E-04	4.23E+00
Cd-113m	9.07E-03	3.56E+02	3.63E-02	1.43E+03
Sn-121m	5.91E-05	2.32E+00	2.37E-04	9.30E+00
Te-123	7.01E-01	2.75E+04	2.80E+00	1.10E+05
Sb-125	2.18E-01	8.58E+03	8.74E-01	3.43E+04
Sn-126	5.88E-05	2.31E+00	2.35E-04	9.24E+00
I-129	1.60E-05	6.29E-01	6.40E-05	2.52E+00
Cs-134	6.04E-03	2.38E+02	2.42E-02	9.50E+02
Cs-135	4.59E-03	1.81E+02	1.84E-02	7.22E+02
Cs-137	4.09E+01	1.61E+06	1.64E+02	6.43E+06
Pm-147	2.77E-03	1.09E+02	1.11E-02	4.36E+02
Sm-151	5.75E+00	2.26E+05	2.30E+01	9.03E+05
Eu-152	8.97E-04	3.53E+01	3.59E-03	1.41E+02
Eu-154	1.09E-01	4.27E+03	4.35E-01	1.71E+04
Eu-155	9.84E-02	3.87E+03	3.93E-01	1.55E+04

Table C-1. Below Water Concrete Radioactivity Concentration and Loading. (2 pages)

Nuclide	Wall Spoil Concentration of Radioactivity (μCi/g)	Radioactivity per Unit Area of Wall (μCi/m^2)	Floor Spoil Concentration of Radioactivity (μCi/g)	Radioactivity per Unit Area of Floor (μCi/m^2)
Th-232	1.61E-07	6.33E-03	6.45E-07	2.53E-02
Pa-231	1.78E-05	6.98E-01	7.10E-05	2.79E+00
U-232	3.83E-09	1.50E-04	1.53E-08	6.02E-04
U-233	2.30E-10	9.03E-06	9.19E-10	3.61E-05
U-234	6.84E-05	2.69E+00	2.73E-04	1.07E+01
U-235	2.20E-06	8.66E-02	8.82E-06	3.47E-01
U-236	7.12E-06	2.80E-01	2.85E-05	1.12E+00
Np-237	2.16E-05	8.49E-01	8.64E-05	3.40E+00
U-238	4.90E-05	1.93E+00	1.96E-04	7.71E+00
Pu-238	4.13E-03	1.62E+02	1.65E-02	6.49E+02
Pu-239	2.02E-02	7.93E+02	8.07E-02	3.17E+03
Pu-240	8.15E-03	3.20E+02	3.26E-02	1.28E+03
Pu-241	1.01E+00	3.99E+04	4.06E+00	1.59E+05
Am-241	4.89E-02	1.92E+03	1.96E-01	7.69E+03
Am-242m	2.00E-06	7.85E-02	7.99E-06	3.14E-01
Pu-242	2.99E-03	1.18E+02	1.20E-02	4.70E+02
Am-243	4.03E-07	1.58E-02	1.61E-06	6.34E-02
Cm-242	2.83E-02	1.11E+03	1.13E-01	4.45E+03
Cm-243	1.22E-03	4.79E+01	4.87E-03	1.92E+02
Cm-244	1.20E-02	4.70E+02	4.79E-02	1.88E+03

The volume of spoil produced from hydrolasing the basin below water floor and wall concrete surfaces is calculated in Attachment C-3. The calculation considers the concrete content of the spoil and does not attempt to estimate a volume that sludge would add to the spoil.

REFERENCES

KBC-25121, 2005, *Sampling and Analysis Plan For Waste Containing K East Basin Below Water Concrete Surfaces,* Rev. 0, Fluor Hanford, Richland, Washington.

Letter No. CH2M-0401504, "Final Report for the KE Basin Hydrolasing Filter Residue Samples Analytical Results," (Letter from Dr. R. S. Viswanath to R. M. Jochen, CH2M HILL Hanford Group, Inc., dated May 19, 2004), Richland, Washington.

Memorandum No. M4S20-JDA-04-012, 2004, "Assessment of Data Collected During the KE Basin Hydrolase Demonstration," (Memorandum from J. D. Ahlers, to G. B. Chronister, Fluor Hanford, Inc., August 19), Richland, Washington.

SNF-18703, 2003, *Sampling and Analysis Plan For Waste Disposition of KE Basins Wall and Floor Surface Removal Residue*, Rev. 1, Fluor Hanford, Inc., Richland, Washington.

ATTACHMENT C-1

COMPARISON OF BASIN WALL AND FLOOR DOSE RATE DATA

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ATTACHMENT C-1

COMPARISON OF BASIN WALL AND FLOOR DOSE RATE DATA

The radioactive content of wetted K East Basin concrete wall surface has been established via testing of samples of removed concrete surface. However, the K East Basin concrete floor has not been sampled and tested like the wall. The process of radioactivity migrating into the concrete is the same for both wall and floor, so the wall analysis data is applicable to the floor. However the magnitude of the migration may be different, as the floor has been is close contract with sludge. In order to adjust the wall radioactive data to the possible different magnitude of radioactivity in the floor versus wall, K East Basin Center Bay concrete surface wall and floor surface dose rate measurements are compared and an adjustment of the wall data for application to the floor is determined.

Radioactive dose rate measurements 30 centimeters (12 inches) from the wall and floor were collected in the K East Basin Center Bay after completion of bulk sludge removal as reported in Radiological Survey Report K060710. Surface contact dose rates were also recorded but are not being considered here because only the 30 centimeters (12 inches) dose rates are useful for dose rate-to-curie conversion measurements which is the characterization method described by KBC-25121, *Sampling and Analysis Plan For Waste Containing K East Basin Below Water Concrete Surface*. The measurements collected at 30 centimeters from the concrete surface are the best measurement to use for the purpose of converting dose rate-to-Cs-137 curie inventory as identified per Memorandum No. EA500-DSM-04-006, "Dose-to-Curie Method for Estimating K-East Basin Residual Contamination." The measurement location and dose rate measured 30 centimeters (12 inches) from the walls and floor and the calculated average are presented on Table C-2 for the wall and Table C-3 for the floor.

Table C-2. Wall Surface Measurements.

KE Fuel Cubical Location Number	Wall at 5' from Floor Dose Rates at 12" from Surface (mR/hr.)	Wall at 15' from Floor Dose Rates at 12" from Surface (mR/hr.)
4560	120	145
4536	140	130
4520	140	135
3801	20	15
3301	45	105
2320	160	108
2340	145	110
2360	150	105
2776	160	45
3776	120	110
Average	110.4	

Table C-3. Floor Dose Rate Measurements.

KE Fuel Cubical Location Number	Floor Dose Rates at 12" from Surface (mR/hr.)
4170	200
4145	700
4130	300
4110	300
3720	400
3740	500
3765	400
3370	500
3360	400
2965	500
2940	500
2920	400
3310	400
3321	600
2710	500
2730	400
2750	400
2570	300
Average	427.8

The beta/gamma dose rate measurements of basin concrete wall and floor surfaces are direct measurements of the quantity of radioactivity that has migrated into the concrete surface. Further, the dose rate-to-curie conversion developed for concrete surfaces measured under water (Memorandum No. EA500-DSM-04-006) is linear. Therefore, if the dose rate doubles then the radioactive inventory will also double. The ratio of the average floor-to-wall dose rate measurements is 3.9, which means that the radioactivity of the floor is 3.9 times that of the wall. For the purposes of estimating the radioactive content that has migrated into the floor, it will be calculated as 4 times the wall concentration which has been measured.

REFERENCE

KBC-25121, 2005, *Sampling and Analysis Plan For Waste Containing K East Basin Below Water Concrete Surfaces,* Rev. 0, Fluor Hanford, Richland, Washington.

Memorandum No. EA500-DSM-04-006, 2004, "Dose-to-Curie Method for Estimating K-East Basin Residual Contamination," (Memorandum from D. S. Mantooth to G. B. Chronister, FluorHanford, Inc., November 18). Richland, Washington.

Radiological Survey Report K060710, 2006, "Center Basin Wall Survey Locations and Data Table," Fluor Hanford, Inc., May 17, Richland, Washington.

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ATTACHMENT C-2

CALCULATION OF CONVERSION BETWEEN SPOIL WET CAKE AND WALL CONCENTRATION

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ATTACHMENT C-2

CALCULATION OF CONVERSION BETWEEN SPOIL WET CAKE AND WALL CONCENTRATION

The calculation is based on the following information:

1. The density of basin wall concrete is 150 pounds per cubic foot (lb/ft3).
2. The concrete surface removed equals the dry weight of the sample.
3. The average water content of spoil sample is 22.4% as reported in the analysis results per CH2M-0401504, "Final Report for the KE Basin Hydrolasing Filter Residue Samples Analytical Results."
4. One-half inch of basin concrete wall surface was removed during the demonstrations.
5. The concentration of radionuclide in basin floor to wall is 4 to 1.
6. The distribution of radionuclides for the floor is the same as that found for the walls through sampling.

Calculate wall loading per square foot from the concentration in spoil:

Wall loading-dry (lb/ft^2) = 0.5 inch x (1 ft/12 inch) x 150 lb/ft^3
= 6.25 lb-dry/ ft^2

Convert to wet cake from dry:

Wall loading-wet (lb/ft^2) = 6.25 lb-dry/ ft^2 x (1/[1-.224]) lb-wet/lb-dry
= 8.05 lb-wet/ ft^2 or 3.93 E+4 g-wet/m^2

Calculate Floor loading per square foot from the concentration in spoil:

Floor loading-wet (lb/ ft^2) = 4 x wall loading-wet (lb/ft^2)
= 4 x 8.05 lb-wet/ ft^2
= 32.2 lb-wet/ ft^2 or 1.57 E+5 g-wet/ m^2

Calculate wall or floor loading per square meter of concrete surface area using the concentrations listed in Table D-1 of KBC-25121, *Sampling and Analysis Plan For Waste Containing K East Basin Below Water Concrete Surfaces*:

Wall loading (μCi/ m^2) = concentration (μCi/g) x 3.93 E+4 g-wet/m^2

Floor loading (μCi/ m^2) = concentration (μCi/g) x 1.57 E+5 g-wet/m^2

REFERENCES

KBC-25121, 2005, *Sampling and Analysis Plan ForWaste Containing K East Basin Below Water Concrete Surfaces,* Rev. 0, Fluor Hanford, Richland, Washington.

Letter No. CH2M-0401504, "Final Report for the KE Basin Hydrolasing Filter Residue Samples Analytical Results," (Letter from Dr. R. S. Viswanath to R. M. Jochen, CH2M HILL Hanford Group, Inc., dated May 19, 2004), Richland, Washington.

ATTACHMENT C-3

CONCRETE SPOIL VOLUME ESTIMATE

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ATTACHMENT C-3

CONCRETE SPOIL VOLUME ESTIMATE

Basis:

1. One-half inch of concrete is removed via hydrolasing.
2. Wetted areas of the basin are

Floor	773.18	m^2		
Wall	820.6	m^2	8832.41	ft^2

3. 3.93e+4 g-wet/m^2 per Attachment C-2
4. Density of spoil of 2165 Kg/m^3 per Section 5.3 of KBC-25616.

	Volume (m^3)	Mass (Kg)
Basin Wall Spoil	9.82	21259
Basin Floor Spoil	10.42	22562

Vol = area x .5 inch (2.54 cm/ 1 in)(1 m/100 cm)

Mass = vol x 2165 kg/m^3

1 foot = .3048 m

REFERENCE

KBC-25616, *One-Time Request for Shipment 105-K East Basin Monoliths*, Draft November 28, 2005, Fluor Hanford, Richland, Washington.

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APPENDIX D

NRC CLASS C CALCULATION INPUTS AND RESULTS

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APPENDIX D

NRC CLASS C CALCULATION INPUTS AND RESULTS

The calculation of the NRC sum of fractions is presented in this appendix. First, the radioactive inventory is calculated by summing all of the radioactive components. Then the monolith and rubble waste volume and mass are used to calculate the concentration of radionuclides in the waste. The concentration is divided by the NRC class C limit to calculate a fraction, then all the fractions are summed. If the sum of fractions is less than one, then the waste is NRC class C or less and is acceptable for ERDF disposal. In accordance with the KBC-24414, *Sampling and Analysis Plan for the 105-K East Basin Monoliths* the calculations are performed for each monolith, NLOP, SLOP, DEP-East, and DEP-West and two areas to be reduced to rubble the basin and a combination of the Tech View and Weasel pits.

The calculations were performed using spreadsheets. Images of the spreadsheets are provided herein. The result for each of the calculations is provided in Figures D-1 through D-6. For the four pit monoliths, the NCR class C calculations are provided in Tables D-1 through D-4 and the concentration calculations are provided in Tables D-5 through D-8. For the basin and Tech View/Weasel pit rubble, the radioactive inventory, radioactive concentration, and NRC class C calculations are provided in Tables D-9 and D-10.

REFERENCE

KBC-24414, 2007, *Sampling and Analysis Plan for the 105-K East Basin Monoliths*, Rev. 2, Fluor Hanford, Richland, Washington.

Figure D-1. NLOP Calculation Results.

KE NLOP Monolith -
Waste Classification Calculation

USER INPUT VALUES:			
Pit residual sludge depth:	642.4	mils	Estimated avg.depth of **residual** sludge in pit.
Pit redeposited sludge depth:	293.7	mils	Estimated avg. depth of **redeposited** sludge in pit.
KE wall hydrolase spoils volume:	2.52	m^3	Estimated volume of KE wall spoils placed in pit (spoils volume equivalent to wall wetted area, 10.4 m^3 total)
KE floor hydrolase spoils volume:	2.38	m^3	Estimated volume of KE floor spoils placed in pit (spoils volume equivalent to floor wetted area w/o sludge, 9.8 m^3 total)
KE Basin residual sludge depth	19.2	mils	Estimated average depth of residual sludge on KE Basin main floor included with floor spoils.
KE Basin redeposited sludge depth:	68.2	mils	Estimated average depth of redeposited sludge KE Basin main floor included with floor spoils.
KE Sand Filter sand volume:	0	m^3	Estimated volume of sand transferred to pit (Maximum sand filter sand volume = 2.8 m^3).
KE Below water washed metal:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Below water unwashed or non-metal debris:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Activated metal content:			Estimated fraction of total KE activated metal
Fraction of KE total	0	%	placed in the monolith (expressed as a percent).
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	

TRU Activity of Monolith (nCi/g): **67.19** **OK!**

10 CFR 61.55 TRU Limit, This Monolith (nCi/g): **83.70**
10 CFR 61.55 Sum of TRU Fractions: **0.803**

NOTES:

TRU limit for monolith is based on the sum of fractions of the TRU nuclides plus Pu-241 and Cm-242 per Table 1 of 10CFR61.55.

Figure D-2. SLOP Calculation Results.

KE SLOP Monolith -
Waste Classification Calculation

USER INPUT VALUES:			
Pit residual sludge depth:	27.7	mils	Estimated avg.depth of **residual** sludge in pit.
Pit redeposited sludge depth:	159.9	mils	Estimated avg. depth of **redeposited** sludge in pit.
KE wall hydrolase spoils volume:	3.51	m^3	Estimated volume of KE wall spoils placed in pit (spoils volume equivalent to wall wetted area, 10.4 m^3 total)
KE floor hydrolase spoils volume:	3.31	m^3	Estimated volume of KE floor spoils placed in pit (spoils volume equivalent to floor wetted area w/o sludge, 9.8 m^3 total)
KE Basin residual sludge depth	19.2	mils	Estimated average depth of residual sludge on KE Basin main floor included with floor spoils.
KE Basin redeposited sludge depth:	68.2	mils	Estimated average depth of redeposited sludge KE Basin main floor included with floor spoils.
KE Sand Filter sand volume:	0	m^3	Estimated volume of sand transferred to pit (Maximum sand filter sand volume = 2.8 m^3).
KE Below water washed metal:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Below water unwashed or non-metal debris:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Activated metal content:			Estimated fraction of total KE activated metal placed in the monolith (expressed as a percent).
Fraction of KE total	0	%	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	

TRU Activity of Monolith (nCi/g): **55.27** **OK!**

10 CFR 61.55 TRU Limit, This Monolith (nCi/g): **81.94**
10 CFR 61.55 Sum of TRU Fractions: **0.675**

NOTES:

TRU limit for monolith is based on the sum of fractions of the TRU nuclides plus Pu-241 and Cm-242 per Table 1 of 10CFR61.55.

Figure D-3. DEP-East Calculation Results.

K East Dummy Elevator Pit - East (DEP-E) Monolith
Waste Classification Calculation

USER INPUT VALUES:			
Pit residual sludge depth:	10.9	mils	Estimated avg. depth of **residual** sludge in pit.
Pit redeposited sludge depth:	5	mils	Estimated avg. depth of **redeposited** sludge in pit.
KE wall hydrolase spoils volume:	1.56	m^3	Equivalent volume of KE wall spoils placed in pit (spoils volume equivalent to wall wetted area, 10.4 m^3 total)
KE floor hydrolase spoils volume:	1.47	m^3	Equivalent volume of KE floor spoils placed in pit (spoils volume equivalent to floor wetted area w/o sludge, 9.8 m^3 total)
KE Basin residual sludge depth	19.2	mils	Estimated average depth of residual sludge on KE Basin main floor included with floor spoils.
KE Basin redeposited sludge depth:	68.2	mils	Estimated average depth of redeposited sludge KE Basin main floor included with floor spoils.
KE Sand Filter sand volume:	0	m^3	Estimated volume of sand transferred to pit (Maximum sand filter sand volume = 2.8 m^3).
KE Below water washed metal:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Below water unwashed or non-metal debris:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Activated metal content:			Estimated fraction of total KE activated metal
Fraction of KE total	0	%	placed in the monolith (expressed as a percent).
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	

TRU Activity of Monolith (nCi/g): **54.0** **OK!**

10 CFR 61.55 TRU Limit, This Monolith (nCi/g): **81.9**
10 CFR 61.55 Sum of TRU Fractions: **0.659**

NOTES:

TRU limit for monolith is based on the sum of fractions of the TRU nuclides plus Pu-241 and Cm-242 per Table 1 of 10CFR61.55.

Figure D-4. DEP-West Calculation Results.

K East Dummy Elevator Pit - West (DEP-W) Monolith
Waste Classification Calculation

USER INPUT VALUES:			
Pit residual sludge depth:	36.3	mils	Estimated avg. depth of **residual** sludge in pit.
Pit redeposited sludge depth:	5	mils	Estimated avg. depth of **redeposited** sludge in pit.
KE wall hydrolase spoils volume:	2.82	m^3	Estimated volume of KE wall spoils placed in pit (spoils volume equivalent to wall wetted area, 10.4 m^3 total)
KE floor hydrolase spoils volume:	2.66	m^3	Estimated volume of KE floor spoils placed in pit (spoils volume equivalent to floor wetted area w/o sludge, 9.8 m^3 total)
KE Basin residual sludge depth	19.2	mils	Estimated average depth of residual sludge on KE Basin main floor included with floor spoils.
KE Basin redeposited sludge depth:	68.2	mils	Estimated average depth of redeposited sludge KE Basin main floor included with floor spoils.
KE Sand Filter sand volume:	0	m^3	Estimated volume of sand transferred to pit (Maximum sand filter sand volume = 2.8 m^3).
KE Below water washed metal:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Below water unwashed or non-metal debris:			
Total TRU activity	0	nCi/g	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	
KE Activated metal content:			Estimated fraction of total KE activated metal placed in the monolith (expressed as a percent).
Fraction of KE total	0	%	
Estimated volume	0	m^3	Not applicable to calculation
Estimated mass	0	kg	

TRU Activity of Monolith (nCi/g): 54.2 **OK!** Nearing TRU limit!

10 CFR 61.55 TRU Limit, This Monolith (nCi/g): 82.0
10 CFR 61.55 Sum of TRU Fractions: 0.661

NOTES:

TRU limit for monolith is based on the sum of fractions of the TRU nuclides plus Pu-241 and Cm-242 per Table 1 of 10CFR61.55.

Figure D-5. K East Basin Rubble Calculation Results.

KE Basin Rubble- NRC Classification Calculation

Calculation Results

NRC Class C sum of fractions:	7.50E-03	unitless
DOE TRU concentration	0.50	nCi/g

Basin Rubble Inputs

	Wall wetted surface area:		Floor wetted surface area:	
	8832.41	ft^2	8322.4	ft^2
	820.6	m^2	773.2	m^2
Deconed Equivalent area*	82.1	m^2	77.3	m^2

*area divided by decon factor of 10

Rubble:			
Volume:	=	63208	ft^3
		1790.1	m^3
Mass	=	5746.2	kips
		2608775	Kg

*A wall and floor decontamination factor of 10 is applied to the radioactive content of the wetted floor and concrete surfaces as they will all be hydrolased. The factor is based on the hydrolase demonstration performed in the KE basin report AG-TR-0401, *Decontamination Measurements for the K-Basin (East) Hydrolasing Demonstration Project.*

AT/TR-401, *Decontamination Measurements for the K-Basin (East) Hydrolasing Demonstration Project,* Rev. 0, January 2004, The Alpha Grout and Associates LLC, Broomfield, Colorado.

Note: All area, mass, and volume values are taken from KBC-33961, *KE Basin Final Disposition, Weights and Volumes,* Rev. 0, Fluor Hanford, Inc. Richland, Washington.

Figure D-6. Tech View/Weasel Pit Rubble Calculation Results.

Tech View/Weasel Pit Rubble - NRC Classification Calculation

Calculation Results

NRC Class C sum of fractions:	4.64E-01	unitless
DOE TRU concentration	36.48	nCi/g

Tech View/Weasel Pits Rubble Inputs

Wall wetted surface area:

2338.22 ft^2

217.2 m^2

Floor surface area: 51.18 m^2

Floor as equivalent wall area is 4 times the floor area

Floor as equivalent wall area: 204.72 m^2

Total concrete wetted surface as equivalent wall area: 421.9 m^2

Rubble:

Volume: total structure volume + metal volume = 16391. + 77.9 ft^3

= 16468.9 ft^3

466.4 m^3

Mass total structure mass + metal mass= 1490 + 38.16 kips (1000 lbs)

= 1528.16 kips

693785 Kg

1 m^3 = 35.31 ft^3

454 Kg = 1 kip

.3048 m = 1 ft

Note: All area, mass, and volume values are taken from KBC-33961, *KE Basin Final Disposition, Weights and Volumes*, Rev. 0, Fluor Hanford, Inc. Richland, Washington.

Table D-1. NLOP Calculation of NRC Class C Sum of Fractions.

Nuclide	Ci in Monolith	nCi/g	10CFR61 Table 1 limit (nCi/g)	Fraction of 10CFR61 Limit	Fraction of DOE Limit
Np237	1.91E-03	7.98E-03	100	7.98E-05	7.98E-05
Pu238	9.91E-01	4.15E+00	100	4.15E-02	4.15E-02
Pu239	4.62E+00	1.93E+01	100	1.93E-01	1.93E-01
Pu240	2.44E+00	1.02E+01	100	1.02E-01	1.02E-01
Pu241	1.09E+02	4.58E+02	3500	1.31E-01	
Am241	7.87E+00	3.29E+01	100	3.29E-01	3.29E-01
Am242m	3.07E-03	1.28E-02	100	1.28E-04	1.28E-04
Pu242	9.15E-02	3.83E-01	100	3.83E-03	3.83E-03
Am243	1.93E-03	8.08E-03	100	8.08E-05	8.08E-05
Cm242	8.57E-01	3.59E+00	20000	1.79E-04	
Cm243	3.69E-02	1.54E-01	100	1.54E-03	1.54E-03
			Sum	**8.03E-01**	**6.72E-01**

Table D-2. SLOP Calculation of NRC Class C Sum of Fractions.

Nuclide	Ci in Monolith	nCi/g	10CFR61 Table 1 limit (nCi/g)	Fraction of 10CFR61 Limit	Fraction of DOE Limit
Np237	1.78E-03	7.44E-03	100	7.44E-05	7.44E-05
Pu238	7.75E-01	3.24E+00	100	3.24E-02	3.24E-02
Pu239	3.81E+00	1.59E+01	100	1.59E-01	1.59E-01
Pu240	1.97E+00	8.22E+00	100	8.22E-02	8.22E-02
Pu241	1.02E+02	4.26E+02	3500	1.22E-01	
Am241	6.49E+00	2.71E+01	100	2.71E-01	2.71E-01
Am242m	2.40E-03	1.00E-02	100	1.00E-04	1.00E-04
Pu242	1.22E-01	5.09E-01	100	5.09E-03	5.09E-03
Am243	1.49E-03	6.24E-03	100	6.24E-05	6.24E-05
Cm242	1.14E+00	4.79E+00	20000	2.39E-04	
Cm243	4.93E-02	2.06E-01	100	2.06E-03	2.06E-03
			Sum	**6.75E-01**	**5.53E-01**

Table D-3. DEP-East Calculation of NRC Class C Sum of Fractions.

Nuclide	Ci in Monolith	nCi/g	10CFR61 Table 1 limit (nCi/g)	Fraction of 10CFR61 Limit	Fraction of DOE Limit
Np237	7.68E-04	7.31E-03	100	7.31E-05	7.31E-05
Pu238	3.32E-01	3.16E+00	100	3.16E-02	3.16E-02
Pu239	1.63E+00	1.55E+01	100	1.55E-01	1.55E-01
Pu240	8.40E-01	8.00E+00	100	8.00E-02	8.00E-02
Pu241	4.37E+01	4.16E+02	3500	1.19E-01	
Am241	2.79E+00	2.66E+01	100	2.66E-01	2.66E-01
Am242m	1.02E-03	9.71E-03	100	9.71E-05	9.71E-05
Pu242	5.32E-02	5.06E-01	100	5.06E-03	5.06E-03
Am243	6.33E-04	6.03E-03	100	6.03E-05	6.03E-05
Cm242	5.00E-01	4.77E+00	20000	2.38E-04	
Cm243	2.15E-02	2.05E-01	100	2.05E-03	2.05E-03
			Sum	**6.59E-01**	**5.40E-01**

Table D-4. DEP-West Calculation of NRC Class C Sum of Fractions.

Nuclide	Ci in Monolith	nCi/g	10CFR61 Table 1 limit (nCi/g)	Fraction of 10CFR61 Limit	Fraction of DOE Limit
Np237	1.41E-03	7.31E-03	100	7.31E-05	7.31E-05
Pu238	6.16E-01	3.19E+00	100	3.19E-02	3.19E-02
Pu239	3.01E+00	1.56E+01	100	1.56E-01	1.56E-01
Pu240	1.55E+00	8.04E+00	100	8.04E-02	8.04E-02
Pu241	8.04E+01	4.16E+02	3500	1.19E-01	
Am241	5.16E+00	2.67E+01	100	2.67E-01	2.67E-01
Am242m	1.89E-03	9.76E-03	100	9.76E-05	9.76E-05
Pu242	9.67E-02	5.00E-01	100	5.00E-03	5.00E-03
Am243	1.17E-03	6.07E-03	100	6.07E-05	6.07E-05
Cm242	9.10E-01	4.71E+00	20000	2.35E-04	
Cm243	3.92E-02	2.03E-01	100	2.03E-03	2.03E-03
			Sum	**6.61E-01**	**5.42E-01**

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Table D-5. NLOP Radioactive Inventory Calculation.

COC	Structural concrete				Waste Materials Added to Pit																						
Nuclide	Pit Floor Ci/m² note 1	Pit Floor Ci note 2	Pit Walls Ci/m² note 1	Pit Walls Ci note 3	SF Filter Sand µCi/g note 4	SF Filter Sand Ci	Pit Grout pCi/L note 5	Pit Grout Ci note 6	Pit Residual Floor Sludge Ci/m² note 7	Pit Residual Floor Sludge Ci note 8	Pit Redeposited Floor Sludge Ci/m² note 7a	Pit Redeposited Floor Sludge Ci note 8a	Basin Wall Spoils µCi/g note 9	Basin Wall Spoils Ci note 10	Basin Floor Spoils µCi/g note 11	Basin Floor Spoils Ci note 12	Residual Floor Sludge Ci/m² note 13	Residual Floor Sludge Ci note 14	Redeposited Floor Sludge Ci/m² note 15	Redeposited Floor Sludge Ci note 16	Below Water Washed Metal Ratios note 17	Below Water Washed Metal Ci	Below Water Unwashed or Non-metal Ratios note 17	Below Water Unwashed or Non-metal, Ci	Activated Metal in KE Total Ci note 18	Activated Mass in Pit Ci	Total Ci	Nuclide
H3	2.00E-05	1.61E-04	5.00E-06	3.68E-04	4.27E-02	0.00E+00	1.42E+06	6.30E-02	4.95E-01	6.50E-02	2.05E-01	1.71E-02	1.27E-04	6.93E-04	5.06E-04	2.62E-03	4.95E-01	4.53E-02	2.85E-01	9.27E-02	1.59E-02		1.26E-02	0.00E+00	1.02E-01	0.00E+00	3.07E-01	H3
C14	1.03E-08	8.28E-09	2.57E-09	1.89E-07	1.68E-05	0.00E+00			1.60E-02	2.10E-03	7.50E-03	4.90E-04	6.54E-08	3.37E-07	2.62E-07	1.33E-06	1.60E-02	1.47E-03	7.50E-03	2.44E-03					1.04E-02	0.00E+00	6.46E-03	C14
Fe55	2.15E-03	1.73E-02	5.38E-04	3.96E-02	1.01E-02	0.00E+00			3.75E-03	4.93E-04	4.53E-03	2.72E-04	1.37E-02	7.47E-02	5.48E-02	2.82E-01	3.75E-03	3.43E-04	4.53E-03	1.47E-03					1.20E-02	0.00E+00	4.17E-01	Fe55
Ni59	1.87E-05	1.34E-04	4.17E-06	3.07E-04	2.70E-03	0.00E+00			9.50E-04	1.23E-04	4.44E-04	2.87E-05	1.09E-04	5.78E-04	4.24E-04	2.19E-03	9.50E-04	8.70E-05	4.44E-04	1.44E-04					7.13E-03	0.00E+00	3.54E-03	Ni59
Co60	2.51E-03	2.02E-02	6.27E-04	4.61E-02	8.04E-02	0.00E+00	6.64E+02	4.06E-05	2.52E-01	3.79E-02	8.00E-02	4.90E-03	1.60E-02	8.73E-02	6.40E-02	3.30E-01	2.52E-01	2.58E-02	8.00E-02	2.60E-02	3.48E-01	0.00E+00	9.20E-03	0.00E+00	3.61E-01	0.00E+00	5.77E-01	Co60
Ni63	8.51E-04	6.48E-03	1.70E-04	1.25E-02	2.37E-03	0.00E+00			9.73E-02	1.29E-02	4.67E-02	2.90E-03	4.33E-03	2.36E-02	1.73E-02	8.92E-02	9.73E-02	8.91E-03	4.67E-02	1.52E-02	2.82E-03	0.00E+00	2.16E-03	0.00E+00	1.28E-01	0.00E+00	1.71E-01	Ni63
Se79	3.85E-05	3.10E-04	9.63E-05	7.09E-04	5.27E-05	0.00E+00			2.00E-05	2.60E-04	9.33E-04	5.60E-05	2.45E-04	1.34E-03	9.90E-04	5.05E-03	2.00E-03	1.83E-04	9.33E-04	3.03E-04						0.00E+00	8.21E-03	Se79
Sr90	3.09E-01	2.49E+00	7.72E-02	5.68E+00	4.04E-01	0.00E+00	5.57E+05	3.28E-02	2.40E+02	3.15E+01	2.89E+00	1.74E-01	1.97E+00	1.07E+01	7.88E+00	4.08E+01	2.40E+02	2.20E+01	2.89E+00	9.40E-01	5.50E+00	0.00E+00	5.40E+00	0.00E+00		0.00E+00	1.14E+02	Sr90
Mo93	2.76E-04	2.22E-03	6.89E-05	5.07E-03	4.14E-04	0.00E+00				0.00E+00			1.75E-03	9.55E-03	7.00E-05	3.91E-02		0.00E+00		0.00E+00						0.00E+00	5.29E-02	Mo93
Zr93	1.81E-04	1.46E-03	4.53E-05	3.33E-03	5.68E-04	0.00E+00			9.27E-03	1.22E-03	4.33E-03	2.60E-04	1.12E-03	6.08E-03	4.49E-03	2.30E-02	9.27E-03	8.49E-04	4.33E-03	1.41E-03						0.00E+00	3.78E-02	Zr93
Nb94	5.56E-07	4.48E-06	1.39E-07	1.02E-05	9.05E-07	0.00E+00				0.00E+00			3.64E-08	1.93E-05	1.42E-05	7.30E-05		0.00E+00		0.00E+00						0.00E+00	1.07E-04	Nb94
Tc99	1.30E-03	1.05E-02	3.25E-04	2.39E-02	6.86E-03	0.00E+00			1.34E-01	1.79E-02	3.12E-02	1.87E-03	8.27E-03	4.51E-02	3.31E-02	1.70E-01	1.34E-01	1.23E-02	3.12E-02	1.01E-02						0.00E+00	2.92E-01	Tc99
Pd107	4.23E-06	3.41E-05	1.06E-06	7.80E-05	6.83E-06	0.00E+00			3.78E-04	4.97E-05	1.78E-04	1.09E-05	2.89E-05	1.47E-04	1.08E-04	5.54E-04	3.78E-04	3.46E-05	1.78E-04	5.72E-05						0.00E+00	9.65E-04	Pd107
Cd113m	1.43E-03	1.15E-02	3.56E-04	2.62E-02	4.13E-03	0.00E+00			5.06E-02	6.65E-03	2.89E-02	1.74E-03	9.07E-03	4.95E-02	3.63E-02	1.87E-01	5.06E-02	4.83E-03	2.89E-02	9.40E-03						0.00E+00	2.97E-01	Cd113m
Sn121m	9.30E-06	7.49E-05	2.32E-06	1.71E-04	1.38E-05	0.00E+00			1.63E-03	2.14E-04	7.86E-04	4.72E-05	5.91E-05	3.22E-04	2.38E-04	1.22E-03	1.63E-03	1.49E-04	7.86E-04	2.56E-04					2.27E-02	0.00E+00	2.45E-03	Sn121m
Sb125	3.43E-02	2.76E-01	8.58E-03	6.31E-01	1.60E-01	0.00E+00	2.03E+04	1.19E-03	6.98E-02	9.17E-03	8.37E-02	5.03E-03	2.19E-01	1.19E+00	8.72E-01	4.49E+00	6.98E-02	6.35E-03	8.37E-02	2.72E-02	7.80E-02	0.00E+00	3.22E-03	0.00E+00		0.00E+00	8.64E+00	Sb125
Te125m	8.10E-03	6.52E-02	2.03E-03	1.49E-01		0.00E+00	4.76E+03	2.76E-04		0.00E+00				0.00E+00		0.00E+00		0.00E+00		0.00E+00						0.00E+00	2.15E-01	Te125m
Sn126	9.24E-06	7.44E-05	2.31E-06	1.70E-04	9.43E-05	0.00E+00			3.81E-03	4.74E-04	1.89E-03	1.01E-04	5.66E-05	3.21E-04	2.35E-04	1.21E-03	3.81E-03	3.31E-04	1.89E-03	5.50E-04						0.00E+00	3.21E-03	Sn126
I129	2.52E-06	2.03E-05	6.28E-07	4.63E-05	5.94E-06	0.00E+00				0.00E+00	6.90E-05	4.14E-06	1.60E-05	8.73E-05	6.40E-05	3.30E-04		0.00E+00	6.90E-05	2.24E-05						0.00E+00	5.10E-04	I129
Cs134	9.50E-04	7.65E-03	2.38E-04	1.75E-02	2.07E-01	0.00E+00	5.06E+02	2.95E-05	1.47E-02	1.93E-03	2.43E-02	1.48E-03	6.04E-03	3.30E-02	2.42E-02	1.24E-01	1.47E-02	1.35E-03	2.43E-02	7.90E-03						0.00E+00	1.95E-01	Cs134
Cs135	7.22E-04	5.81E-03	1.81E-04	1.33E-02	1.06E-04	0.00E+00			1.80E-03	2.36E-04	8.39E-04	5.04E-05	4.58E-03	2.50E-02	1.84E-02	9.46E-02	1.80E-03	1.65E-04	8.39E-04	2.73E-04						0.00E+00	1.40E-01	Cs135
Cs137	6.43E+00	5.18E+01	1.61E+00	1.18E+02	1.15E+01	0.00E+00	8.13E+06	3.58E-01	2.49E+02	3.22E+01	5.01E+00	3.01E-01	4.09E+01	2.23E+02	1.84E+02	8.43E+02	2.45E+02	2.24E+01	5.01E+00	9.95E+00	7.24E+00	0.00E+00	5.75E+00	0.00E+00		0.00E+00	1.29E+03	Cs137
Pm147	4.30E-04	3.51E-03	1.09E-04	8.02E-03	2.02E+00	0.00E+00			8.49E-01	1.12E-01	1.07E+00	6.43E-02	2.77E-03	1.51E-02	1.11E-02	5.71E-02	6.49E-01	7.77E-02	1.07E+00	3.48E-01	5.00E-02	0.00E+00	4.06E-02	0.00E+00		0.00E+00	6.80E-01	Pm147
Sm151	9.03E-01	7.27E+00	2.26E-01	1.66E+01	2.33E-01	0.00E+00			3.79E+00	4.98E-01	1.82E+00	1.09E-01	5.75E+00	3.14E+01	2.30E+01	1.19E+02	3.79E+00	3.47E-01	1.82E+00	5.92E-01	1.09E-01	0.00E+00	8.62E-02	0.00E+00		0.00E+00	1.75E+02	Sm151
Eu152	1.41E-04	1.14E-03	3.53E-05	2.60E-03	5.93E-04	0.00E+00	8.10E+03	4.74E-04	1.48E-02	1.98E-03	7.56E-03	4.56E-04	8.97E-04	4.89E-03	3.59E-03	1.85E-02	1.40E-02	1.35E-03	7.56E-03	2.47E-03	4.20E-04	0.00E+00	3.74E-04	0.00E+00		0.00E+00	3.38E-02	Eu152
Eu154	1.71E-02	1.38E-01	4.27E-03	3.14E-01	1.00E-01	0.00E+00	3.19E+03	1.86E-04	1.28E+00	1.66E-01	1.80E-01	1.08E-02	1.09E-01	5.95E-01	4.36E-01	2.25E+00	1.28E+00	1.17E-01	1.80E-01	5.85E-02	1.41E-01	0.00E+00	3.45E-02	0.00E+00		0.00E+00	3.65E+00	Eu154
Eu155	1.55E-02	1.25E-01	3.87E-03	2.85E-01	4.56E-02	0.00E+00	9.11E+03	5.33E-04	3.63E-01	4.77E-02	6.00E-02	3.60E-03	9.84E-02	5.37E-01	3.94E-01	2.03E+00	3.63E-01	3.32E-02	6.00E-02	1.95E-02	7.02E-02	0.00E+00	1.21E-02	0.00E+00		0.00E+00	3.08E+00	Eu155
Th232	2.53E-08	2.04E-07	6.33E-09	4.66E-07	7.57E-08	0.00E+00				0.00E+00			1.61E-07	8.78E-07	6.44E-07	3.32E-06		0.00E+00		0.00E+00						0.00E+00	4.87E-06	Th232
Pa231	2.79E-06	2.25E-05	6.98E-07	5.14E-05	1.22E-05	0.00E+00				0.00E+00			1.78E-05	9.71E-05	7.12E-05	3.67E-04		0.00E+00		0.00E+00						0.00E+00	5.38E-04	Pa231
U232	6.02E-10	4.85E-09	1.50E-10	1.10E-08	7.57E-07	0.00E+00				0.00E+00			3.83E-08	2.09E-06	1.53E-06	7.89E-06		0.00E+00		0.00E+00						0.00E+00	1.16E-07	U232
U233	3.81E-11	3.21E-10	9.03E-12	6.65E-10	2.74E-08	0.00E+00				0.00E+00			2.30E-10	1.25E-09	9.20E-10	4.74E-09		0.00E+00		0.00E+00						0.00E+00	6.96E-09	U233
U234	1.07E-05	8.61E-05	2.69E-06	1.98E-04	1.14E-01	0.00E+00	2.43E+02	1.42E-06	4.67E-02	6.13E-03	9.46E-03	5.68E-04	6.84E-05	3.73E-04	2.74E-04	1.41E-03	4.67E-02	4.20E-03	9.46E-03	3.08E-03	6.01E-04	0.00E+00	9.77E-04	0.00E+00		0.00E+00	1.61E-02	U234
U235	3.47E-07	2.79E-06	8.68E-08	6.37E-06	2.59E-04	0.00E+00	1.11E+02	8.49E-06	1.55E-03	2.04E-04	3.65E-04	2.18E-05	2.20E-06	1.20E-05	8.80E-06	4.53E-05	1.55E-03	1.42E-04	3.65E-04	1.19E-04	2.17E-05	0.00E+00	3.22E-05	0.00E+00		0.00E+00	5.59E-04	U235
U236	1.12E-06	9.02E-06	2.80E-07	2.06E-05	4.77E-04	0.00E+00			4.78E-03	6.28E-04	1.38E-02	8.29E-04	7.12E-05	3.90E-05	2.85E-05	1.47E-04	4.78E-03	4.38E-04	1.38E-02	4.49E-03	4.92E-04	0.00E+00	7.47E-04	0.00E+00		0.00E+00	6.80E-03	U236
Np237	3.40E-06	2.74E-05	8.49E-07	6.25E-05	1.40E-04	0.00E+00			4.56E-03	5.94E-04	6.19E-04	3.72E-05	2.16E-05	1.19E-04	8.64E-05	4.45E-04	4.56E-03	4.18E-04	6.19E-04	2.01E-04						0.00E+00	1.91E-03	Np237
U238	7.31E-06	6.21E-05	1.93E-06	1.42E-04	4.00E-03	0.00E+00	1.32E+02	1.06E-06	3.51E-02	4.61E-03	7.54E-03	4.53E-04	4.90E-05	2.67E-04	1.96E-04	1.01E-03	3.51E-02	3.21E-03	7.54E-03	2.45E-03						0.00E+00	1.22E-02	U238
Pu238	5.49E-04	5.22E-03	1.82E-04	1.19E-02	9.70E-02	0.00E+00	3.85E+03	2.25E-04	3.27E+00	4.30E-01	3.56E-01	2.14E-02	4.13E-03	2.25E-02	1.65E-02	8.51E-02	3.27E+00	2.99E-01	3.56E-01	1.16E-01	7.46E-02	0.00E+00	6.80E-02	0.00E+00		0.00E+00	9.91E-01	Pu238
Pu239	3.17E-03	2.58E-02	7.93E-04	5.84E-02	5.92E-01	0.00E+00	2.33E+04	1.35E-03	1.39E+01	1.83E+00	2.26E+00	1.42E-01	2.02E-02	1.10E-01	8.08E-02	4.16E-01	1.39E+01	1.27E+00	2.26E+00	7.88E-01	1.54E-01	0.00E+00	2.93E-01	0.00E+00		0.00E+00	4.82E+00	Pu239
Pu240	1.29E-03	1.03E-02	3.20E-04	2.39E-02	0.00E+00	0.00E+00			7.64E+00	1.00E+00	1.28E+00	7.69E-02	8.15E-03	4.45E-02	3.26E-02	1.68E-01	7.64E+00	7.00E-01	1.28E+00	4.10E-01	6.11E-02	0.00E+00	1.81E-01	0.00E+00		0.00E+00	2.44E+00	Pu240
Pu241	1.59E-01	1.28E+00	3.99E-02	2.94E+00	1.12E+01	0.00E+00			2.59E+02	3.40E+01	5.46E+01	3.20E+00	1.01E+00	5.51E+00	4.04E+00	2.08E+01	2.59E+02	2.37E+01	5.46E+01	1.78E+01	3.19E+00	0.00E+00	9.26E+00	0.00E+00		0.00E+00	1.00E+02	Pu241
Am241	7.66E-03	6.19E-02	1.92E-03	1.41E-01	6.17E-01	0.00E+00	2.18E+04	1.27E-03	2.39E+01	3.14E+02	2.73E+00	1.95E-01	4.89E-02	2.67E-01	1.96E-01	1.01E+00	2.39E+01	2.19E+00	2.73E+00	8.85E-01	6.90E-01	0.00E+00	4.77E-01	0.00E+00		0.00E+00	7.67E+00	Am241
Am242m	3.14E-07	2.53E-06	7.85E-08	5.78E-06	2.33E-05	0.00E+00			9.92E-03	1.30E-03	2.08E-03	1.24E-04	2.00E-06	1.09E-05	8.00E-06	4.12E-05	9.92E-03	9.02E-04	2.08E-03	6.70E-04						0.00E+00	3.07E-03	Am242m
Pu242	4.70E-04	3.78E-03	1.18E-04	8.66E-03	1.57E-05	0.00E+00			3.69E-03	4.65E-04	5.84E-04	3.57E-05	2.99E-03	1.63E-02	1.20E-02	6.15E-02	3.69E-03	3.38E-04	5.84E-04	1.93E-04						0.00E+00	9.15E-02	Pu242
Am243	6.34E-06	5.10E-05	1.58E-06	1.16E-04	5.70E-06	0.00E+00			6.30E-03	8.25E-04	1.33E-03	7.81E-05	4.03E-07	2.20E-06	1.61E-06	8.31E-06	6.30E-03	5.82E-04	1.30E-03	4.23E-04						0.00E+00	1.61E-03	Am243
Cm242	4.42E-03	3.56E-02	1.11E-03	8.17E-02	1.80E-02	0.00E+00			8.19E-03	1.06E-03	2.01E-07	1.21E-08	2.83E-02	1.54E-01	1.13E-01	5.83E-01	8.19E-03	7.50E-04	2.01E-07	6.54E-08						0.00E+00	8.57E-01	Cm242
Cm243	1.92E-04	1.55E-03	4.76E-05	3.53E-03	4.13E-02	0.00E+00				9.00E+00			1.22E-03	6.66E-03	4.86E-03	2.51E-02		0.00E+00		0.00E+00						0.00E+00	3.69E-02	Cm243
Cm244	1.86E-03	1.51E-02	4.70E-04	3.46E-02	1.60E-01	0.00E+00			5.29E-02	6.55E-03	1.25E-02	7.51E-04	1.20E-02	6.55E-02	4.80E-02	2.47E-01	5.29E-02	4.84E-03	1.25E-02	4.07E-03	8.69E-04	0.00E+00	1.28E-03	0.00E+00		0.00E+00	3.78E-01	Cm244
Total	7.91E+00	6.36E+01	1.98E+00	1.46E+02	2.77E+01	0.00E+00	9.20E+06	4.60E-01	6.00E+02	1.08E+02	7.40E+01	4.45E+00	5.03E+01	2.74E+02	2.01E+02	1.04E+03	5.00E+02	7.33E+01	7.40E+01	2.41E+01		0.00E+00		0.00E+00	6.43E-01	0.00E+00	1.73E+03	

Table D-6. SLOP Radioactive Inventory Calculation.

COC	Structural concrete				Waste Materials Added to Pit																							
Nuclide	Pit Floor Ci/m³ note 1	Pit Floor Ci note 2	Pit Walls Ci/m³ note 1	Pit Walls Ci note 3	SF Filter Sand µCi/g note 4	SF Filter Sand Ci	Pit Grout pCi/L note 5	Pit Grout Ci note 6	Pit Residual Floor Sludge Ci/m³ note 7	Pit Residual Floor Sludge Ci note 8	Pit Redeposited Floor Sludge Ci/m³ note 7a	Pit Redeposited Floor Sludge Ci note 8a	Basin Wall Spots µCi/g note 9	Basin Wall Spots Ci note 10	Basin Floor Spots µCi/g note 11	Basin Floor Spots Ci note 12	Residual Floor Sludge Ci/m³ note 13	Residual Floor Sludge Ci note 14	Redeposited Floor Sludge Ci/m³ note 15	Redeposited Floor Sludge Ci note 16	Below Water Washed Metal Ratios note 17	Below Water Washed Metal Ci	Below Water Unwashed or Non-metal Ratios note 17	Below Water Unwashed or Non-metal, Ci	Activated Metal in IEE Total Ci note 19	Activated Metal in Pit Ci	Total Ci	Nuclide
H3	2.90E-05	1.61E-04	5.00E-06	3.66E-04	4.27E-02	0.00E+00	1.42E+06	7.98E-02	4.95E-01	2.80E-03	2.85E-01	8.32E-03	1.27E-04	9.65E-04	5.08E-04	3.84E-03	4.95E-01	6.30E-02	2.85E-01	1.29E-01	1.58E-02	0.00E+00	1.26E-02	0.00E+00	1.02E-01	0.00E+00	2.89E-01	H3
C14	1.03E-08	5.29E-08	2.57E-09	1.89E-07	1.88E-08	0.00E+00			1.60E-02	9.08E-05	7.50E-03	2.45E-04	6.54E-06	4.97E-07	2.62E-07	1.67E-06	1.60E-02	2.04E-03	7.50E-03	3.39E-03					1.04E-02	0.00E+00	5.77E-03	C14
Fe55	2.15E-03	1.73E-02	5.38E-04	3.96E-02	1.01E-02	0.00E+00			3.75E-03	2.12E-05	4.53E-03	1.48E-04	1.37E-02	1.04E-01	5.48E-02	3.93E-01	3.75E-03	4.78E-04	4.53E-03	2.06E-03					1.20E-02	0.00E+00	5.56E-01	Fe55
Ni59	1.67E-05	1.34E-04	4.17E-06	3.07E-04	2.70E-03	0.00E+00			9.50E-04	5.38E-06	4.44E-04	1.45E-05	1.05E-04	8.08E-04	4.24E-04	3.04E-06	9.50E-04	1.21E-04	4.44E-04	2.01E-04					3.13E-03	0.00E+00	4.63E-03	Ni59
Co60	2.51E-03	2.02E-02	6.27E-04	4.81E-02	9.04E-02	0.00E+00	8.94E+02	3.90E-05	2.82E-01	1.60E-03	6.00E-02	2.62E-03	1.60E-02	1.22E-01	6.40E-02	4.59E-01	2.82E-01	3.59E-02	6.00E-02	3.02E-02	3.48E-01	0.00E+00	9.20E-03	0.00E+00	3.61E-01	0.00E+00	7.25E-01	Co60
Ni63	6.81E-04	5.44E-03	1.70E-04	1.25E-02	2.37E-03	0.00E+00			9.73E-02	5.51E-04	4.67E-02	1.53E-03	4.33E-03	3.29E-02	1.73E-02	1.24E-01	9.73E-02	1.24E-02	4.67E-02	2.11E-02	2.82E-03	0.00E+00	2.18E-03	0.00E+00	1.26E-01	0.00E+00	2.11E-01	Ni63
Se79	3.85E-03	3.10E-02	9.63E-06	7.09E-04	6.27E-05	0.00E+00			2.00E-03	1.13E-05	9.33E-04	3.05E-03	2.45E-04	1.86E-03	9.60E-04	7.02E-03	2.00E-03	2.55E-04	9.33E-04	4.22E-04						0.00E+00	1.05E-02	Se79
Sr90	3.09E-01	2.49E+00	7.72E-02	5.68E+00	4.04E-01	0.00E+00	5.57E+05	3.13E-02	2.40E+02	1.38E+00	2.89E+00	9.45E-02	1.97E+00	1.50E+01	7.88E+00	5.65E+01	2.40E+02	3.06E+01	2.89E+00	1.31E+00	5.50E+00	0.00E+00	5.40E+00	0.00E+00		0.00E+00	1.13E+02	Sr90
Mo93	2.76E-04	2.22E-03	6.89E-05	5.07E-03	4.14E-04	0.00E+00				8.08E+00			1.75E-03	1.33E-02	7.00E-03	5.02E-02		0.00E+00		0.00E+00						0.00E+00	7.08E-02	Mo93
Zr93	1.81E-04	1.46E-03	4.53E-05	3.33E-03	5.88E-04	0.00E+00			9.27E-03	5.23E-05	4.33E-03	1.42E-04	1.12E-03	8.47E-03	4.46E-03	3.20E-02	9.27E-03	1.18E-03	4.33E-03	1.96E-03						0.00E+00	4.86E-02	Zr93
Nb94	5.56E-07	4.48E-06	1.39E-07	1.02E-05	9.05E-07	0.00E+00				0.00E+00			3.54E-06	2.68E-05	1.42E-05	1.01E-04		0.00E+00		0.00E+00						0.00E+00	1.43E-04	Nb94
Tc99	1.30E-05	1.05E-02	3.25E-04	2.39E-02	6.86E-03	0.00E+00			1.34E-01	7.59E-04	3.12E-02	1.02E-03	8.27E-03	6.28E-02	3.31E-02	2.37E-01	1.34E-01	1.71E-02	3.12E-02	1.41E-02						0.00E+00	3.87E-01	Tc99
Pd107	4.23E-06	3.41E-05	1.06E-06	7.80E-05	6.83E-05	0.00E+00			3.78E-04	2.14E-06	1.76E-04	5.75E-06	2.69E-05	2.04E-04	1.08E-04	7.71E-04	3.78E-04	4.81E-05	1.76E-04	7.98E-05						0.00E+00	1.22E-03	Pd107
Cd113m	1.43E-03	1.15E-02	3.56E-04	2.62E-02	4.13E-03	0.00E+00			5.00E-02	2.87E-04	2.89E-02	9.43E-04	9.07E-03	6.89E-02	3.83E-02	2.69E-01	5.00E-02	6.44E-03	2.89E-02	1.31E-02						0.00E+00	3.67E-01	Cd113m
Sn121m	9.90E-06	7.98E-05	2.32E-06	1.71E-04	1.38E-05	0.00E+00			1.63E-03	9.23E-06	7.86E-04	2.57E-05	5.91E-05	4.46E-04	2.36E-04	1.59E-03	1.63E-03	2.06E-04	7.86E-04	3.56E-04					2.27E-02	0.00E+00	2.99E-03	Sn121m
Sb125	3.43E-02	2.76E-01	8.58E-03	6.31E-01	1.60E-01	0.00E+00	2.03E+04	1.14E-03	6.08E-02	3.93E-04	8.37E-02	2.74E-03	2.16E-01	1.66E+00	8.72E-01	6.25E+00	6.98E-02	8.80E-03	8.37E-02	3.79E-02	7.90E-02	0.00E+00	3.22E-03	0.00E+00		0.00E+00	8.86E+00	Sb125
Te125m	8.10E-03	6.52E-02	2.02E-03	1.49E-01	8.10E-03	0.00E+00	4.78E+03	2.68E-04		0.00E+00				0.00E+00		0.00E+00		0.00E+00		0.00E+00						0.00E+00	2.15E-01	Te125m
Sn126	9.24E-06	7.44E-05	2.31E-06	1.70E-04	8.43E-05	0.00E+00			3.61E-03	2.04E-06	1.69E-03	5.53E-05	5.88E-05	4.47E-04	2.35E-04	1.06E-03	3.61E-03	4.60E-04	1.69E-03	7.63E-04						0.00E+00	3.68E-03	Sn126
I129	2.52E-06	2.03E-05	6.29E-07	4.63E-05	5.98E-06	0.00E+00				0.00E+00	6.90E-05	2.26E-06	1.60E-05	1.22E-04	6.40E-05	4.69E-04		9.00E+00	6.90E-05	3.12E-05						0.00E+00	6.80E-04	I129
Cs134	9.50E-04	7.65E-03	2.38E-04	1.75E-02	2.07E-01	0.00E+00	5.08E+32	2.85E-05	1.47E-02	8.33E-05	2.43E-02	7.94E-04	6.04E-03	4.59E-02	2.42E-02	1.73E-01	1.47E-02	1.87E-03	2.43E-02	1.10E-02						0.00E+00	2.58E-01	Cs134
Cs135	7.22E-04	5.81E-03	1.81E-04	1.33E-02	1.09E-04	0.00E+00			1.80E-03	1.02E-06	8.39E-04	2.74E-06	4.59E-05	3.49E-02	1.84E-02	1.32E-01	1.80E-03	2.29E-04	8.39E-04	3.80E-04						0.00E+00	1.86E-01	Cs135
Cs137	8.43E+00	6.78E+01	1.61E+00	1.18E+02	1.15E+01	0.00E+00	6.13E+06	3.45E-01	2.45E+02	1.39E+00	4.01E+00	1.98E-01	4.09E+01	3.11E+02	1.64E+02	1.17E+03	2.45E+02	3.12E+01	4.01E+00	2.72E+00	7.24E+00	0.00E+00	5.75E+00	0.00E+00		0.00E+00	1.69E+03	Cs137
Pm147	4.39E-04	3.51E-03	1.09E-04	8.02E-03	2.02E+00	0.00E+00			8.49E-01	4.81E-03	1.07E+00	3.50E-02	2.77E-03	2.10E-02	1.11E-02	7.94E-02	8.49E-01	1.06E-01	1.07E+00	4.84E-01	5.00E-02	0.00E+00	4.04E-02	0.00E+00		0.00E+00	7.44E-01	Pm147
Sm151	9.03E-01	7.27E+00	2.20E-01	1.68E+01	2.33E-01	0.00E+00			3.79E-00	2.15E-02	1.82E+00	5.95E-02	5.75E+00	4.37E+01	2.30E+01	1.65E+02	3.79E+00	4.83E-01	1.82E+00	8.23E-01	1.09E-01	0.00E+00	8.62E-02	0.00E+00		0.00E+00	2.34E+02	Sm151
Eu152	1.41E-04	1.14E-03	3.53E-05	2.60E-03	5.93E-04	0.00E+00	6.10E+03	4.66E-04	1.40E-02	8.44E-05	7.59E-03	2.48E-04	8.97E-04	6.82E-03	3.59E-03	2.57E-02	1.49E-02	1.90E-03	7.59E-03	3.43E-03	4.20E-04	0.00E+00	3.74E-04	0.00E+00		0.00E+00	4.24E-02	Eu152
Eu154	1.71E-02	1.38E-01	4.27E-03	3.14E-01	1.00E-01	0.00E+00	3.19E+03	1.79E-04	1.28E-00	7.25E-03	1.80E-01	5.89E-03	1.09E-01	8.28E-01	4.36E-01	3.12E+00	1.28E+00	1.63E-01	1.80E-01	8.14E-02	1.41E-01	0.00E+00	3.45E-02	0.00E+00		0.00E+00	4.66E+00	Eu154
Eu155	1.55E-02	1.25E-01	3.87E-03	2.85E-01	4.55E-02	0.00E+00	8.11E+03	5.12E-04	3.63E-01	2.06E-03	6.00E-02	1.99E-03	9.84E-02	7.48E-01	3.94E-01	2.82E+00	3.63E-01	4.62E-02	6.00E-02	2.71E-02	7.02E-02	0.00E+00	1.21E-02	0.00E+00		0.00E+00	4.06E+00	Eu155
Th232	2.53E-08	2.04E-07	6.32E-09	4.60E-07	7.57E-06	0.00E+00				0.00E+00			1.61E-07	1.22E-06	6.44E-07	4.62E-06		0.00E+00		0.00E+00						0.00E+00	6.51E-06	Th232
Pa231	2.79E-06	2.20E-05	6.98E-07	5.14E-05	1.22E-05	0.00E+00				0.00E+00			1.78E-05	1.35E-04	7.12E-05	5.10E-04		0.00E+00		0.00E+00						0.00E+00	7.19E-04	Pa231
U232	6.02E-10	4.85E-09	1.50E-10	1.10E-08	7.57E-07	0.00E+00				0.00E+00			3.83E-09	2.91E-08	1.53E-08	1.10E-07		0.00E+00		0.00E+00						0.00E+00	1.55E-07	U232
U233	3.61E-11	2.91E-10	9.02E-12	6.60E-10	2.74E-08	0.00E+00				0.00E+00			2.30E-10	1.75E-09	9.20E-10	6.59E-09		0.00E+00		0.00E+00						0.00E+00	9.30E-09	U233
U234	1.07E-05	8.61E-05	2.66E-06	1.96E-04	1.14E-01	0.00E+00	2.43E+02	1.37E-05	4.67E-02	2.65E-04	9.46E-03	3.09E-04	6.84E-05	5.20E-04	2.74E-04	1.93E-03	4.67E-02	5.95E-03	9.46E-03	4.28E-03	6.01E-04	0.00E+00	5.77E-04	0.00E+00		0.00E+00	1.36E-02	U234
U235	3.47E-07	2.79E-06	8.66E-08	6.37E-06	2.59E-04	0.00E+00	1.11E+02	6.24E-06	1.55E-03	8.79E-06	3.05E-04	1.19E-05	2.20E-06	1.67E-05	8.80E-06	6.21E-05	1.55E-03	1.97E-04	3.05E-04	1.65E-04	2.17E-05	0.00E+00	3.22E-06	0.00E+00		0.00E+00	4.78E-04	U235
U236	1.12E-06	9.02E-06	2.80E-07	2.06E-05	4.77E-04	0.00E+00			4.79E-03	2.71E-05	1.38E-02	4.51E-04	7.12E-06	5.41E-05	2.85E-05	2.04E-04	4.78E-03	6.00E-04	1.38E-02	6.24E-03	4.92E-04	0.00E+00	7.47E-04	0.00E+00		0.00E+00	7.62E-03	U236
Np237	3.40E-06	2.74E-05	5.49E-07	6.25E-05	1.40E-04	0.00E+00			4.54E-03	2.58E-05	6.19E-04	2.02E-05	2.18E-05	1.64E-04	8.64E-05	6.19E-04	4.56E-03	5.81E-04	6.19E-04	2.80E-04						0.00E+00	1.78E-03	Np237
U238	7.71E-06	6.21E-05	1.93E-06	1.42E-04	4.00E-03	0.00E+00	1.82E+02	1.02E-05	3.51E-02	1.99E-04	7.54E-03	2.47E-04	4.90E-05	3.72E-04	1.96E-04	1.40E-03	3.51E-02	4.47E-03	7.54E-03	3.41E-03						0.00E+00	1.03E-02	U238
Pu238	6.49E-04	5.22E-03	1.62E-04	1.19E-02	9.70E-02	0.00E+00	3.85E+03	2.17E-04	3.27E-00	1.89E-02	3.56E-01	1.16E-02	4.13E-03	3.14E-02	1.65E-02	1.18E-01	3.27E-00	4.15E-01	3.56E-01	1.51E-01	7.46E-02	0.00E+00	6.90E-02	0.00E+00		0.00E+00	7.75E-01	Pu238
Pu239	3.17E-05	2.55E-02	7.93E-04	5.84E-02	5.92E-01	0.00E+00	2.33E+04	1.31E-03	1.39E+01	7.87E-02	2.35E+00	7.72E-02	2.02E-02	1.54E-01	8.08E-02	5.79E-01	1.39E+01	1.77E+00	2.35E+00	1.07E+00	1.54E-01	0.00E+00	2.93E-01	0.00E+00		0.00E+00	3.81E+00	Pu239
Pu240	1.26E-03	1.05E-02	3.23E-04	2.38E-02	3.00E+00	0.00E+00			7.64E+00	4.33E-02	1.28E+00	4.18E-02	8.15E-03	6.19E-02	3.26E-02	2.34E-01	7.64E+00	9.73E-01	1.28E+00	5.79E-01	8.11E-02	0.00E+00	1.81E-01	0.00E+00		0.00E+00	1.97E+00	Pu240
Pu241	1.59E-01	1.28E+00	3.99E-02	2.94E+00	1.12E+01	0.00E+00			2.59E+02	1.47E+00	5.46E+01	1.79E+00	1.01E+00	7.66E+00	4.04E+00	2.90E+01	2.59E+02	3.30E+01	5.46E+01	2.47E+01	3.19E+00	0.00E+00	6.26E+00	0.00E+00		0.00E+00	1.02E+02	Pu241
Am241	7.88E-03	6.19E-02	1.92E-03	1.41E-01	6.17E-01	0.00E+00	2.18E+04	1.23E-03	2.39E+01	1.35E-01	2.75E+00	8.94E-02	4.69E-02	3.72E-01	1.96E-01	1.40E+00	2.39E+01	3.04E+00	2.75E+00	1.24E+00	6.90E-01	0.00E+00	4.77E-01	0.00E+00		0.00E+00	6.49E+00	Am241
Am242m	3.14E-07	2.53E-06	7.85E-08	5.78E-06	2.33E-05	0.00E+00			9.92E-03	5.52E-05	2.09E-03	6.74E-05	2.00E-06	1.52E-05	8.00E-06	5.73E-05	9.92E-03	1.28E-03	2.06E-03	9.32E-04						0.00E+00	2.40E-03	Am242m
Pu242	4.72E-04	3.78E-03	1.18E-04	8.68E-03	1.57E-05	0.00E+00			3.99E-03	2.09E-05	5.94E-04	1.94E-05	2.69E-03	2.27E-02	1.20E-02	8.57E-02	3.69E-03	4.70E-04	5.94E-04	2.69E-04						0.00E+00	1.22E-01	Pu242
Am243	6.34E-08	5.10E-07	1.58E-08	1.16E-06	5.20E-06	0.00E+00			6.39E-03	3.60E-05	1.30E-03	4.29E-05	4.03E-07	3.00E-06	1.61E-06	1.18E-05	6.39E-03	8.10E-04	1.30E-03	5.86E-04						0.00E+00	1.49E-03	Am243
Cm242	4.45E-03	3.58E-02	1.11E-03	8.17E-02	1.80E-02	0.00E+00			8.19E-03	4.84E-05	2.01E-07	6.57E-09	2.83E-02	2.15E-01	1.13E-01	8.11E-01	8.19E-03	1.04E-03	2.01E-07	0.00E-08						0.00E+00	1.14E+00	Cm242
Cm243	1.96E-04	1.55E-03	4.79E-05	3.53E-03	4.13E-02	0.00E+00				0.00E+00			1.22E-03	9.27E-03	4.86E-03	3.58E-02		0.00E+00		0.00E+00						0.00E+00	4.93E-02	Cm243
Cm244	1.86E-03	1.51E-02	4.70E-04	3.46E-02	1.80E-01	0.00E+00			5.29E-02	3.00E-04	1.25E-02	4.09E-04	1.20E-02	9.12E-02	4.80E-02	3.44E-01	5.29E-02	6.74E-03	1.25E-02	5.83E-03	8.60E-04	0.00E+00	1.28E-03	0.00E+00		0.00E+00	4.98E-01	Cm244
Total	**7.61E+00**	**6.36E+01**	**1.55E+00**	**1.46E+02**	**2.77E+01**	**0.00E+00**	**8.20E+06**	**4.61E-01**	**5.00E+02**	**4.53E+00**	**7.40E+01**	**2.42E+00**	**5.03E+01**	**3.52E+02**	**2.01E+02**	**1.44E+03**	**8.00E+02**	**1.02E+02**	**7.40E+01**	**3.35E+01**		**0.00E+00**		**0.00E+00**	**6.43E-01**	**0.00E+00**	**2.17E+03**	

Table D-7. DEP-East Radioactive Inventory Calculation.

COC	Structural concrete				Waste Materials Added to Pit																							
Nuclide	Pit Floor Ci/m³ note 1	Pit Floor Ci note 2	Pit Walls Ci/m² note 1	Pit Walls Ci note 3	SF Filter Sand µCi/g note 4	SF Filter Sand Ci	Pit Grout µCi/L note 5	Pit Grout Ci note 6	Pit Residual Floor Sludge Ci/m² note 7	Pit Residual Floor Sludge Ci note 8	Pit Redeposited Floor Sludge Ci/m² note 7a	Pit Redeposited Floor Sludge Ci note 8a	Basin Wall Spoils µCi/g note 9	Basin Wall Spoils Ci note 10	Basin Floor Spoils µCi/g note 11	Basin Floor Spoils Ci note 12	Residual Floor Sludge Ci/m² note 13	Residual Floor Sludge Ci note 14	Redeposited Floor Sludge Ci/m³ note 15	Redeposited Floor Sludge Ci note 16	Below Water Washed Metal Ratios note 17	Below Water Washed Metal Ci	Below Water Unwashed or Non-metal Ratios note 17	Below Water Unwashed or Non-metal, Ci	Activated Metal in KE Total Ci note 18	Activated Metal in Pit Ci	Total Ci	Nuclide
H3	2.00E-05	5.69E-05	5.00E-08	1.41E-04	4.27E-02	0.00E+00	1.42E+06	2.05E-02	4.95E-01	3.89E-04	2.85E-01	1.02E-04	1.27E-04	4.29E-04	5.08E-04	1.62E-03	4.95E-01	2.30E-02	2.85E-01	5.73E-02	1.59E-02	0.00E+00	1.26E-02	0.00E+00	1.02E-01	0.00E+00	1.08E-01	H3
C14	1.03E-08	2.91E-08	2.57E-09	7.25E-08	1.98E-06	0.00E+00			1.60E-02	1.25E-05	7.50E-03	2.70E-06	6.54E-08	2.21E-07	2.62E-07	8.33E-07	1.60E-02	9.05E-04	7.50E-03	1.51E-03					1.04E-02	0.00E+00	2.43E-03	C14
Fe55	2.15E-03	6.08E-03	5.38E-04	1.52E-02	1.01E-02	0.00E+00			3.75E-03	2.94E-06	4.53E-03	1.63E-06	1.37E-02	4.63E-02	5.48E-02	1.74E-01	3.75E-03	2.12E-04	4.53E-03	9.10E-04					1.20E-02	0.00E+00	2.43E-01	Fe55
Ni59	1.67E-05	4.72E-05	4.17E-06	1.18E-04	2.70E-03	0.00E+00			9.50E-04	7.44E-07	4.44E-04	1.60E-07	1.06E-04	3.58E-04	4.24E-04	1.35E-03	9.50E-04	5.37E-06	4.44E-04	6.92E-05					7.13E-03	0.00E+00	2.02E-03	Ni59
Co60	2.51E-03	7.10E-03	6.27E-04	1.77E-02	9.04E-02	0.00E+00	6.94E+02	1.90E-05	2.82E-01	2.21E-04	8.00E-02	2.89E-05	1.60E-02	5.40E-02	6.40E-02	2.04E-01	2.82E-01	1.60E-02	8.00E-02	1.81E-02	3.48E-01	0.00E+00	9.20E-03	0.00E+00	3.61E-01	0.00E+00	3.15E-01	Co60
Ni63	6.81E-04	1.93E-03	1.70E-04	4.79E-03	2.37E-03	0.00E+00			9.73E-02	7.62E-05	4.67E-02	1.68E-05	4.33E-03	1.46E-02	1.73E-02	5.51E-02	9.73E-02	5.50E-03	4.67E-02	9.38E-03	2.82E-03	0.00E+00	2.15E-03	0.00E+00	1.28E-01	0.00E+00	9.14E-02	Ni63
Se79	3.85E-05	1.09E-04	9.63E-06	2.72E-04	6.27E-05	0.00E+00			2.00E-03	1.57E-06	9.33E-04	3.35E-07	2.45E-04	8.27E-04	9.80E-04	3.12E-03	2.00E-03	1.13E-04	9.33E-04	1.87E-04							4.63E-03	Se79
Sr90	3.09E-01	8.74E-01	7.72E-02	2.18E+00	4.04E-01	0.00E+00	5.57E+05	8.03E-03	2.40E+02	1.89E-01	2.89E+00	1.04E-03	1.97E+00	6.65E+00	7.88E+00	2.51E+01	2.40E+02	1.39E+01	2.89E+00	5.81E-01	5.50E+00	0.00E+00	5.40E+00	0.00E+00			4.91E+01	Sr90
Mo93	2.78E-04	7.81E-04	6.89E-06	1.94E-03	4.14E-04	0.00E+00			0.00E+00			0.00E+00	1.75E-03	5.91E-03	7.00E-03	2.23E-02		0.00E+00		0.00E+00							3.09E-02	Mo93
Zr93	1.81E-04	5.12E-04	4.53E-05	1.28E-03	5.68E-04	0.00E+00			9.27E-03	7.25E-06	4.33E-03	1.58E-06	1.12E-03	3.77E-03	4.48E-03	1.42E-02	9.27E-03	5.24E-04	4.33E-03	8.70E-04							2.12E-02	Zr93
Nb94	5.56E-07	1.57E-06	1.39E-07	3.92E-06	9.05E-07	0.00E+00				0.00E+00		0.00E+00	3.54E-06	1.20E-05	1.42E-05	4.51E-05		0.00E+00		0.00E+00							8.25E-05	Nb94
Tc99	1.30E-03	3.68E-03	3.25E-04	9.17E-03	6.86E-03	0.00E+00			1.34E-01	1.05E-04	3.12E-02	1.12E-05	8.27E-03	2.79E-02	3.31E-02	1.05E-01	1.34E-01	7.58E-03	3.12E-02	6.27E-03							1.60E-01	Tc99
Pd107	4.23E-06	1.20E-05	1.06E-06	2.99E-05	6.83E-06	0.00E+00			3.78E-04	2.95E-07	1.76E-04	6.33E-08	2.69E-05	9.09E-05	1.08E-04	3.42E-04	3.78E-04	2.14E-05	1.76E-04	3.54E-05							5.32E-04	Pd107
Cd113m	1.43E-03	4.05E-03	3.56E-04	1.00E-02	4.13E-03	0.00E+00			5.06E-02	3.95E-05	2.89E-02	1.04E-05	9.07E-03	2.96E-02	3.63E-02	1.15E-01	5.06E-02	2.80E-03	2.89E-02	5.81E-03							1.59E-01	Cd113m
Sn121m	9.30E-06	2.63E-05	2.32E-06	6.54E-05	1.38E-05	0.00E+00			1.63E-03	1.28E-06	7.86E-04	2.82E-07	5.91E-05	2.00E-04	2.36E-04	7.52E-04	1.63E-03	9.22E-05	7.86E-04	1.58E-04					2.27E-02	0.00E+00	1.30E-03	Sn121m
Sb125	3.43E-02	9.71E-02	8.58E-03	2.42E-01	1.60E-01	0.00E+00	2.03E+04	2.93E-04	6.98E-02	5.47E-05	8.37E-02	3.01E-05	2.18E-01	7.36E-01	8.72E-01	2.78E+00	6.98E-02	3.95E-03	8.37E-02	1.66E-02	7.60E-02	0.00E+00	3.22E-03	0.00E+00			3.87E+00	Sb125
Te125m	8.10E-03	2.29E-02	2.03E-03	5.72E-02		0.00E+00	4.75E+03	6.89E-05		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00							8.02E-02	Te125m
Sn126	9.24E-06	2.61E-05	2.31E-06	6.51E-05	9.43E-05	0.00E+00			3.61E-03	2.83E-06	1.69E-03	6.07E-07	5.88E-05	1.99E-04	2.35E-04	7.49E-04	3.61E-03	2.04E-04	1.69E-03	3.40E-04							1.59E-03	Sn126
I129	2.52E-06	7.13E-06	6.29E-07	1.77E-05	5.98E-06	0.00E+00				0.00E+00	6.90E-05	2.48E-08	1.80E-05	5.40E-05	6.40E-05	2.04E-04		0.00E+00	6.90E-05	1.39E-05							2.96E-04	I129
Cs134	9.50E-04	2.69E-03	2.38E-04	6.71E-03	2.07E-01	0.00E+00	5.06E+02	7.29E-06	1.47E-02	1.15E-05	2.43E-02	8.73E-06	6.04E-03	2.04E-02	2.42E-02	7.69E-02	1.47E-02	8.31E-04	2.43E-02	4.88E-03							1.12E-01	Cs134
Cs135	7.22E-04	2.04E-03	1.81E-04	5.10E-03	1.06E-04	0.00E+00			1.80E-03	1.41E-06	8.39E-04	3.02E-07	4.59E-03	1.55E-02	1.84E-02	5.84E-02	1.80E-03	1.02E-04	8.39E-04	1.09E-04							8.14E-02	Cs135
Cs137	5.43E+00	1.62E+01	1.61E+00	4.54E+01	1.15E+01	0.00E+00	5.13E+05	6.83E-02	2.45E+02	1.92E-01	6.01E+00	2.19E-03	4.09E+01	1.38E+02	1.64E+02	5.21E+02	2.45E+02	1.39E+01	6.01E+00	1.21E+00	7.24E+00	0.00E+00	5.75E+00	0.00E+00			7.38E+02	Cs137
Pm147	4.38E-04	1.23E-03	1.09E-04	3.07E-03	2.02E+00	0.00E+00			8.49E-01	6.65E-04	1.07E+00	3.86E-04	2.77E-03	9.36E-03	1.11E-02	3.53E-02	8.49E-01	4.80E-02	1.07E+00	2.15E-01	5.00E-02	0.00E+00	4.09E-02	0.00E+00			3.13E-01	Pm147
Sm151	9.03E-01	2.56E+00	2.26E-01	6.37E+00	2.33E-01	0.00E+00			3.79E+00	2.97E-03	1.82E+00	6.54E-04	5.75E+00	1.94E+01	2.30E+01	7.32E+01	3.79E+00	2.14E-01	1.82E+00	3.56E-01	1.09E-01	0.00E+00	8.62E-02	0.00E+00			1.02E+02	Sm151
Eu152	1.41E-04	3.99E-04	3.53E-05	9.95E-04	5.93E-04	0.00E+00	8.10E+03	1.17E-04	1.49E-02	1.17E-05	7.59E-03	2.73E-06	8.97E-04	3.03E-03	3.59E-03	1.14E-02	1.49E-02	8.43E-04	7.59E-03	1.52E-03	4.20E-04	0.00E+00	3.74E-04	0.00E+00			1.83E-02	Eu152
Eu154	1.71E-02	4.84E-02	4.27E-03	1.20E-01	1.00E-01	0.00E+00	3.19E+03	4.60E-05	1.28E+00	1.00E-03	1.80E-01	6.47E-05	1.09E-01	3.68E-01	4.36E-01	1.39E+00	1.29E+00	7.24E-02	1.80E-01	3.62E-02	1.41E-01	0.00E+00	3.45E-02	0.00E+00			2.03E+00	Eu154
Eu155	1.55E-02	4.39E-02	3.87E-03	1.09E-01	4.55E-02	0.00E+00	9.11E+03	1.31E-04	3.63E-01	2.84E-04	6.00E-02	2.16E-05	9.84E-02	3.32E-01	3.94E-01	1.25E+00	3.63E-01	2.05E-02	6.00E-02	1.21E-02	7.02E-02	0.00E+00	1.21E-02	0.00E+00			1.77E+00	Eu155
Th232	2.53E-08	7.15E-08	6.33E-09	1.70E-07	7.57E-08	0.00E+00				0.00E+00		0.00E+00	1.61E-07	5.44E-07	6.44E-07	2.06E-06		0.00E+00		0.00E+00							2.84E-06	Th232
Pa231	2.79E-08	7.90E-08	6.98E-07	1.97E-05	1.22E-05	0.00E+00				0.00E+00		0.00E+00	1.78E-05	6.01E-05	7.12E-05	2.27E-04		0.00E+00		0.00E+00							3.14E-04	Pa231
U232	6.62E-10	1.70E-09	1.50E-10	4.23E-09	7.57E-07	0.00E+00				0.00E+00		0.00E+00	3.83E-09	1.29E-08	1.53E-08	4.88E-08		0.00E+00		0.00E+00							6.76E-06	U232
U233	3.81E-11	1.02E-10	9.03E-12	2.56E-10	2.74E-08	0.00E+00				0.00E+00		0.00E+00	2.30E-10	7.77E-10	9.20E-10	2.93E-09		0.00E+00		0.00E+00							4.06E-09	U233
U234	1.07E-05	3.03E-05	2.69E-06	7.60E-05	1.14E-01	0.00E+00	2.43E+02	3.50E-06	4.67E-02	3.88E-05	9.46E-03	3.40E-06	6.84E-05	2.31E-04	2.74E-04	8.71E-04	4.67E-02	2.84E-03	9.46E-03	1.90E-03	6.01E-04	0.00E+00	9.77E-04	0.00E+00			5.79E-03	U234
U235	3.47E-07	9.82E-07	8.66E-08	2.44E-05	2.59E-04	0.00E+00	1.11E+02	1.60E-06	1.55E-03	1.21E-06	3.65E-04	1.31E-07	2.20E-06	7.43E-06	8.80E-06	2.80E-05	1.55E-03	8.77E-06	3.65E-04	7.33E-05	2.17E-05	0.00E+00	3.22E-05	0.00E+00			2.03E-04	U235
U236	1.12E-06	3.17E-06	2.80E-07	7.90E-06	4.77E-04	0.00E+00			4.78E-03	3.75E-06	1.38E-02	4.96E-09	7.12E-06	2.40E-05	2.85E-05	9.08E-05	4.78E-03	2.70E-04	1.38E-02	2.77E-03	4.92E-04	0.00E+00	7.47E-04	0.00E+00			3.18E-03	U236
Np237	3.40E-06	9.62E-06	8.49E-07	2.39E-05	1.40E-04	0.00E+00			4.56E-03	3.57E-06	8.19E-04	2.72E-07	2.16E-05	7.30E-05	8.64E-05	2.75E-04	4.56E-03	2.58E-04	8.19E-04	1.24E-04							7.66E-04	Np237
U238	7.71E-06	2.18E-05	1.93E-06	5.44E-05	4.06E-03	0.00E+00	1.82E+02	2.62E-06	3.51E-02	2.75E-05	7.54E-03	2.71E-06	4.90E-05	1.55E-04	1.96E-04	6.24E-04	3.51E-02	1.98E-03	7.54E-03	1.91E-03							4.40E-03	U238
Pu238	6.49E-04	1.84E-03	1.62E-04	4.57E-03	9.70E-02	0.00E+00	3.85E+03	5.56E-05	3.27E+00	2.56E-03	3.56E-01	1.28E-04	4.10E-03	1.39E-02	1.65E-02	5.29E-02	3.27E+00	1.82E-01	3.56E-01	7.15E-02	7.46E-02	0.00E+00	6.90E-02	0.00E+00			3.32E-01	Pu238
Pu239	3.17E-03	8.97E-03	7.93E-04	2.24E-02	5.92E-01	0.00E+00	2.33E+04	3.36E-04	1.39E+01	1.09E-02	2.36E+00	8.49E-04	2.02E-02	6.82E-02	8.09E-02	2.57E-01	1.39E+01	7.86E-01	2.36E+00	4.74E-01	1.54E-01	0.00E+00	2.93E-01	0.00E+00			1.63E+00	Pu239
Pu240	1.28E-03	3.62E-03	3.20E-04	9.02E-03	0.00E+00	0.00E+00			7.84E+00	5.99E-03	1.28E+00	4.60E-04	8.15E-03	2.75E-02	3.26E-02	1.04E-01	7.64E+00	4.52E-01	1.28E+00	2.57E-01	8.11E-02	0.00E+00	1.61E-01	0.00E+00			8.40E-01	Pu240
Pu241	1.59E-01	4.50E-01	3.99E-02	1.13E+00	1.12E+01	0.00E+00			2.59E+02	2.03E-01	5.48E+01	1.95E-02	1.01E+00	3.41E+00	4.04E+00	1.29E+01	2.59E+02	1.46E+01	5.48E+01	1.10E+01	3.19E+00	0.00E+00	6.25E+00	0.00E+00			4.37E+01	Pu241
Am241	7.89E-03	2.18E-02	1.92E-03	5.41E-02	6.17E-01	0.00E+00	2.16E+04	3.14E-04	2.39E+01	1.87E-02	2.75E+00	9.88E-04	4.89E-02	1.65E-01	1.96E-01	6.23E-01	2.39E+01	1.35E+00	2.75E+00	5.53E-01	6.90E-01	0.00E+00	4.77E-01	0.00E+00			2.76E+00	Am241
Am243m	3.14E-07	8.69E-07	7.85E-08	2.21E-06	2.33E-05	0.00E+00			9.92E-03	7.77E-06	2.06E-03	7.40E-07	2.00E-06	6.75E-06	8.00E-06	2.55E-05	9.92E-03	5.61E-04	2.06E-03	4.14E-04							1.02E-03	Am243m
Pu242	4.70E-04	1.33E-03	1.18E-04	3.33E-03	1.57E-05	0.00E+00			3.69E-03	2.89E-06	5.94E-04	2.13E-07	2.99E-03	1.01E-02	1.20E-02	3.81E-02	3.69E-03	2.09E-04	5.94E-04	1.19E-04							5.32E-02	Pu242
Am243	6.34E-06	1.79E-07	1.58E-08	4.46E-07	9.70E-06	0.00E+00			6.36E-03	4.98E-06	1.30E-03	4.67E-07	4.03E-07	1.36E-06	1.61E-06	5.13E-06	6.36E-03	3.60E-04	1.30E-03	2.81E-04							6.33E-04	Am243
Cm242	4.45E-03	1.26E-02	1.11E-03	3.13E-02	1.90E-02	0.00E+00			8.19E-03	6.42E-06	2.01E-07	7.22E-11	2.83E-02	9.56E-02	1.13E-01	3.60E-01	8.19E-03	4.63E-04	2.01E-07	4.04E-06							5.00E-01	Cm242
Cm243	1.92E-04	5.42E-04	4.79E-05	1.35E-03	4.13E-02	0.00E+00				0.00E+00		0.00E+00	1.22E-03	4.12E-03	4.86E-03	1.55E-02		0.00E+00		0.00E+00							2.15E-02	Cm243
Cm244	1.88E-03	5.32E-03	4.70E-04	1.33E-02	1.50E-01	0.00E+00			5.29E-02	4.14E-05	1.25E-02	4.49E-06	1.20E-02	4.05E-02	4.80E-02	1.53E-01	5.29E-02	2.99E-03	1.25E-02	2.51E-03	8.69E-04	0.00E+00	1.26E-03	0.00E+00			2.17E-01	Cm244
Total	7.81E+00	2.24E+01	1.98E+00	5.58E+01	2.77E+01	0.00E+00	8.20E+06	1.18E-01	8.00E+02	6.27E-01	7.40E+01	2.44E-02	3.03E+01	1.70E+02	2.01E+02	6.40E+02	8.00E+02	4.53E+01	7.40E+01	1.44E+01		0.00E+00		0.00E+00	6.43E-01	0.00E+00	9.49E+02	

Table D-8. DEP-West Radioactive Inventory Calculation.

COC	Structural concrete				Waste Materials Added to Pit																							
Nuclide	Pit Floor Ci/m³ note 1	Pit Floor Ci note 2	Pit Walls Ci/m³ note 1	Pit Walls Ci note 3	SF Filter Sand µCi/g note 4	SF Filter Sand Ci	Pit Grout pCi/L note 5	Pit Grout Ci note 6	Pit Residual Floor Sludge Ci/m³ note 7	Pit Residual Floor Sludge Ci note 8	Pit Redeposited Floor Sludge Ci/m³ note 7a	Pit Redeposited Floor Sludge Ci note 8a	Basin Wall Spoils µCi/g note 9	Basin Wall Spoils Ci note 10	Basin Floor Spoils µCi/g note 11	Basin Floor Spoils Ci note 12	Residual Floor Sludge Ci/m³ note 13	Residual Floor Sludge Ci note 14	Redeposited Floor Sludge Ci/m³ note 15	Redeposited Floor Sludge Ci note 16	Below Water Washed Metal Ratios note 17	Below Water Washed Metal Ci	Below Water Unwashed or Non-metal Ratios note 17	Below Water Unwashed or Non-metal, Ci	Activated Metal in KE Total Ci note 18	Activated Metal in Pit Ci	Total Ci	Nuclide
H3	2.00E-05	1.24E-04	5.00E-06	2.58E-04	4.27E-02	9.00E+00	1.42E+06	4.77E-02	4.95E-01	2.83E-03	2.85E-01	2.24E-04	1.27E-04	7.75E-04	5.08E-04	2.93E-03	4.95E-01	5.07E-02	2.85E-01	1.04E-01	1.59E-02	0.00E+00	1.26E-02	0.00E+00	1.02E-01	0.00E+00	2.09E-01	H3
C14	1.03E-06	6.39E-06	2.57E-09	1.33E-07	1.68E-06	0.00E+00			1.60E-02	9.13E-05	7.50E-03	5.90E-06	6.54E-06	3.99E-07	2.62E-07	1.51E-06	1.80E-02	1.84E-03	7.50E-03	2.73E-03					1.04E-02	0.00E+00	4.46E-03	C14
Fe55	2.15E-03	1.33E-02	5.38E-04	2.79E-02	1.01E-02	0.00E+00			3.75E-03	2.14E-06	4.53E-03	3.56E-06	1.37E-02	8.36E-02	5.48E-02	3.16E-01	3.75E-03	3.84E-04	4.53E-03	1.65E-03					1.20E-02	0.00E+00	4.42E-01	Fe55
Ni59	1.87E-05	1.03E-04	4.17E-06	2.15E-04	2.70E-03	0.00E+00			9.50E-04	5.42E-06	4.44E-04	3.49E-07	1.09E-04	6.47E-04	4.24E-04	2.44E-03	9.50E-04	9.72E-05	4.44E-04	1.61E-04					7.13E-03	0.00E+00	3.67E-03	Ni59
Co60	2.51E-03	1.56E-02	6.27E-04	3.24E-02	9.94E-02	0.00E+00	6.94E+02	2.33E-05	2.82E-01	1.61E-03	6.00E-02	6.28E-05	1.50E-02	9.77E-02	6.40E-02	3.69E-01	2.82E-01	2.89E-02	6.00E-02	2.91E-02	3.48E-01	0.00E+00	9.20E-03	0.00E+00	3.61E-01	0.00E+00	5.74E-01	Co60
Ni63	8.81E-04	4.22E-03	1.70E-04	8.77E-03	2.37E-03	0.00E+00			9.73E-02	5.55E-04	4.67E-02	3.67E-05	4.33E-03	2.84E-02	1.73E-02	9.97E-02	9.73E-02	9.95E-03	4.67E-02	1.70E-02	2.82E-03	0.00E+00	2.18E-03	0.00E+00	1.28E-01	0.00E+00	1.87E-01	Ni63
Se79	3.85E-05	2.38E-04	9.63E-06	4.97E-04	6.27E-05	0.00E+00			2.00E-03	1.14E-05	9.33E-04	7.33E-07	2.45E-04	1.50E-03	9.80E-04	5.64E-03	2.00E-03	2.05E-04	9.33E-04	3.39E-04							8.43E-03	Se79
Sr90	3.09E-01	1.91E+00	7.72E-02	3.98E+00	4.04E-01	0.00E+00	5.57E+05	1.87E-02	2.40E+02	1.37E+00	2.89E+00	2.27E-03	1.97E+00	1.20E+01	7.86E+00	4.84E+01	2.40E+02	2.45E+01	2.89E+00	1.05E+00	5.50E+00	0.00E+00	5.40E+00	0.00E+00			9.03E+01	Sr90
Mo93	2.76E-04	1.71E-03	5.89E-05	3.56E-03	4.14E-04	0.00E+00				0.00E+00		0.00E+00	1.75E-03	1.07E-02	7.00E-03	4.03E-02		0.00E+00		0.00E+00							5.63E-02	Mo93
Zr93	1.81E-04	1.12E-03	4.53E-05	2.34E-03	5.68E-04	0.00E+00			9.27E-03	5.29E-05	4.33E-03	3.40E-06	1.12E-03	6.81E-03	4.48E-03	2.57E-02	9.27E-03	9.49E-04	4.33E-03	1.57E-03							3.85E-02	Zr93
Nb94	5.56E-07	3.44E-06	1.39E-07	7.17E-06	9.05E-07	0.00E+00				0.00E+00		3.54E-08	2.16E-05	1.42E-05	9.15E-05			0.00E+00		0.00E+00							1.14E-04	Nb94
Tc99	1.30E-03	8.05E-03	3.25E-04	1.68E-02	6.86E-03	0.00E+00			1.34E-01	7.65E-04	3.12E-02	2.44E-05	6.27E-03	5.05E-02	3.31E-02	1.91E-01	1.34E-01	1.37E-02	3.12E-02	1.13E-02							2.92E-01	Tc99
Pd107	4.23E-06	2.62E-05	1.06E-06	5.47E-05	6.63E-06	0.00E+00			3.78E-04	2.18E-09	1.76E-04	1.39E-07	2.89E-05	1.64E-04	1.08E-04	6.20E-04	3.78E-04	3.87E-05	1.76E-04	6.40E-05							9.70E-04	Pd107
Cd113m	1.43E-03	8.85E-03	3.56E-04	1.84E-02	4.13E-03	0.00E+00			5.06E-02	2.89E-04	2.60E-02	2.27E-05	9.07E-03	5.54E-02	3.63E-02	2.09E-01	5.06E-02	5.18E-03	2.60E-02	1.06E-02							3.08E-01	Cd113m
Sn121m	9.30E-06	5.78E-05	2.32E-06	1.20E-04	1.38E-05	0.00E+00			1.63E-03	9.30E-08	7.86E-04	6.18E-07	5.91E-05	3.61E-04	2.36E-04	1.36E-03	1.63E-03	1.67E-04	7.86E-04	2.76E-04					2.27E-02	0.00E+00	2.36E-03	Sn121m
Sb125	3.43E-02	2.12E-01	8.58E-03	4.43E-01	1.60E-01	0.00E+00	2.03E+04	6.82E-04	6.98E-02	3.98E-04	8.37E-02	8.58E-05	2.18E-01	1.33E+00	8.72E-01	5.02E+00	6.98E-02	7.14E-03	8.37E-02	3.04E-02	7.60E-02	0.00E+00	3.22E-03	0.00E+00			7.05E+00	Sb125
Te125m	8.10E-03	5.01E-02	2.03E-03	1.05E-01		0.00E+00	4.78E+03	1.61E-04		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00		0.00E+00							1.55E-01	Te125m
Sn126	9.24E-06	5.72E-05	2.31E-06	1.19E-04	9.43E-06	0.00E+00			3.61E-03	2.06E-05	1.69E-03	1.33E-06	5.86E-05	3.56E-04	2.35E-04	1.35E-03	3.61E-03	3.69E-04	1.69E-03	5.14E-04							2.90E-03	Sn126
I129	2.52E-06	1.56E-05	6.29E-07	3.25E-05	5.98E-06	0.00E+00				0.00E+00	8.50E-05	5.42E-08	1.80E-05	9.77E-05	6.40E-05	3.59E-04		0.00E+00	6.90E-05	2.51E-05							5.39E-04	I129
Cs134	9.53E-04	5.89E-03	2.38E-04	1.23E-02	2.07E-01	0.00E+00	5.06E+02	1.70E-05	1.47E-02	8.30E-05	2.43E-02	1.91E-05	5.04E-03	3.69E-02	2.42E-02	1.39E-01	1.47E-02	1.50E-03	2.43E-02	8.83E-03							2.05E-01	Cs134
Cs135	7.22E-04	4.47E-03	1.81E-04	9.34E-03	1.06E-04	0.00E+00			1.80E-03	1.03E-05	8.39E-04	6.60E-07	4.59E-03	2.80E-02	1.84E-02	1.06E-01	1.80E-03	1.84E-04	8.39E-04	3.06E-04							1.48E-01	Cs135
Cs137	6.43E+00	3.98E+01	1.61E+00	8.31E+01	1.15E+01	0.00E+00	6.13E+06	2.06E-01	2.45E+02	1.49E+00	6.01E+00	4.72E-03	4.09E+01	2.50E+02	1.64E+02	9.42E+02	2.45E+02	2.51E+01	6.01E+00	2.18E+00	7.24E+00	0.00E+00	5.75E+00	0.00E+00			1.34E+03	Cs137
Pm147	4.38E-04	2.70E-03	1.09E-04	5.62E-03	2.02E+00	0.00E+00			8.49E-01	4.85E-03	1.07E+00	8.41E-04	2.77E-03	1.69E-02	1.11E-02	6.38E-02	8.49E-01	8.59E-02	1.07E+00	3.89E-01	5.00E-02	0.00E+00	4.08E-02	0.00E+00			5.71E-01	Pm147
Sm151	9.00E-01	5.59E+00	2.26E-01	1.17E+01	2.33E-01	0.00E+00			3.79E+00	2.16E-02	1.92E+00	1.43E-03	5.75E+00	3.51E+01	2.30E+01	1.32E+02	3.79E+00	3.88E-01	1.92E+00	6.92E-01	1.08E-01	0.00E+00	8.62E-02	0.00E+00			1.86E+02	Sm151
Eu152	1.41E-04	8.73E-04	3.53E-05	1.82E-03	5.93E-04	0.00E+00	6.10E+03	2.72E-04	1.49E-02	8.50E-05	7.59E-03	3.97E-06	8.97E-04	5.48E-03	3.59E-03	2.07E-02	1.49E-02	1.52E-03	7.59E-03	2.74E-03	4.20E-04	0.00E+00	3.74E-04	0.00E+00			3.35E-02	Eu152
Eu154	1.71E-02	1.06E-01	4.27E-03	2.20E-01	1.00E-01	0.00E+00	3.19E+03	1.07E-04	1.28E+00	7.31E-03	1.85E-01	1.42E-04	1.09E-01	6.65E-01	4.36E-01	2.51E+00	1.28E+00	1.31E-01	1.85E-01	6.54E-02	1.41E-01	0.00E+00	3.45E-02	0.00E+00			3.71E+00	Eu154
Eu155	1.55E-02	9.59E-02	3.87E-03	2.00E-01	4.55E-02	0.00E+00	9.11E+03	3.06E-04	3.63E-01	2.07E-03	9.00E-02	4.72E-06	9.84E-02	6.01E-01	3.94E-01	2.27E+00	3.63E-01	3.72E-02	9.00E-02	2.18E-02	7.02E-02	0.00E+00	1.21E-02	0.00E+00			3.22E+00	Eu155
Th232	2.53E-08	1.57E-07	6.33E-09	3.27E-07	7.57E-08	0.00E+00				0.00E+00		0.00E+00	1.61E-07	9.83E-07	6.44E-07	3.71E-06		0.00E+00		0.00E+00							5.17E-05	Th232
Pa231	2.79E-06	1.73E-05	6.98E-07	3.60E-05	1.22E-05	0.00E+00				0.00E+00		0.00E+00	1.78E-05	1.09E-04	7.12E-05	4.10E-04		0.00E+00		0.00E+00							5.72E-04	Pa231
U232	6.02E-10	3.73E-09	1.50E-10	7.74E-09	7.57E-07	0.00E+00				0.00E+00		0.00E+00	3.83E-09	2.34E-08	1.53E-08	8.82E-08		0.00E+00		0.00E+00							1.23E-07	U232
U233	3.61E-11	2.23E-10	9.03E-12	4.66E-10	2.74E-08	0.00E+00				0.00E+00		0.00E+00	2.30E-10	1.40E-09	9.20E-10	5.30E-09		0.00E+00		0.00E+00							7.39E-09	U233
U234	1.07E-05	6.62E-05	2.69E-06	1.39E-04	1.14E-01	0.00E+00	2.43E+02	8.17E-06	4.87E-02	2.67E-04	9.46E-03	7.44E-06	6.84E-05	4.18E-04	2.74E-04	1.58E-03	4.87E-02	4.78E-03	9.46E-03	3.44E-03	6.01E-04	0.00E+00	9.77E-04	0.00E+00			1.07E-02	U234
U235	3.47E-07	2.15E-06	8.69E-08	4.47E-06	2.58E-04	0.00E+00	1.11E+02	3.73E-06	1.55E-03	8.65E-06	3.65E-04	2.87E-07	2.20E-06	1.34E-05	8.80E-06	5.07E-05	1.55E-03	1.59E-04	3.65E-04	1.33E-04	2.17E-05	0.00E+00	3.22E-05	0.00E+00			3.75E-04	U235
U236	1.12E-06	6.90E-06	2.80E-07	1.44E-05	4.77E-04	0.00E+00			4.78E-03	2.73E-05	1.38E-02	1.08E-05	7.12E-06	4.35E-05	2.85E-05	1.64E-04	4.78E-03	4.89E-04	1.38E-02	5.02E-03	4.92E-04	0.00E+00	7.47E-04	0.00E+00			5.77E-03	U236
Np237	3.40E-06	2.10E-05	8.49E-07	4.36E-05	1.45E-04	0.00E+00			4.56E-03	2.60E-05	8.19E-04	4.67E-07	2.10E-05	1.32E-04	8.64E-05	4.99E-04	4.56E-03	4.67E-04	8.19E-04	2.23E-04							1.41E-03	Np237
U238	7.71E-06	4.77E-05	1.93E-06	9.99E-05	4.00E-03	0.00E+00	1.82E+02	6.12E-06	3.51E-02	2.00E-04	7.54E-03	5.93E-06	4.90E-05	2.99E-04	1.95E-04	1.13E-03	3.51E-02	3.59E-03	7.54E-03	2.74E-03							8.12E-03	U238
Pu238	6.49E-04	4.02E-03	1.62E-04	8.36E-03	9.73E-02	0.00E+00	3.85E+03	1.29E-04	3.27E+00	1.87E-02	3.56E-01	2.80E-04	4.13E-03	2.52E-02	1.65E-02	9.51E-02	3.27E+00	3.36E-01	3.56E-01	1.29E-01	7.46E-02	0.00E+00	6.90E-02	0.00E+00			6.16E-01	Pu238
Pu239	3.17E-03	1.96E-02	7.93E-04	4.09E-02	5.92E-01	0.00E+00	2.33E+04	7.83E-04	1.35E+01	7.93E-02	2.36E+00	1.86E-03	2.02E-02	1.23E-01	8.08E-02	4.65E-01	1.35E+01	1.42E+00	2.36E+00	8.58E-01	1.54E-01	0.00E+00	2.93E-01	0.00E+00			3.01E+00	Pu239
Pu240	1.28E-03	7.92E-03	3.20E-04	1.65E-02	0.00E+00	0.00E+00			7.64E+00	4.36E-02	1.28E+00	1.01E-03	8.15E-03	4.98E-02	3.26E-02	1.88E-01	7.64E+00	7.82E-01	1.28E+00	4.65E-01	8.11E-02	0.00E+00	1.61E-01	0.00E+00			1.65E+00	Pu240
Pu241	1.59E-01	9.84E-01	3.99E-02	2.09E+00	1.12E+01	0.00E+00			2.59E+02	1.48E+00	5.46E+01	4.29E-02	1.01E+00	6.17E+00	4.04E+00	2.33E+01	2.59E+02	2.65E+01	5.46E+01	1.98E+01	3.19E+00	0.00E+00	6.26E+00	0.00E+00			8.04E+01	Pu241
Am241	7.69E-03	4.78E-02	1.92E-03	9.91E-02	6.17E-01	0.00E+00	2.18E+04	7.33E-04	2.35E+01	1.30E-01	2.75E+00	2.16E-03	4.89E-02	2.99E-01	1.96E-01	1.13E+00	2.39E+01	2.45E+00	2.75E+00	1.00E+00	6.90E-01	0.00E+00	4.77E-01	0.00E+00			5.16E+00	Am241
Am242m	3.14E-07	1.94E-06	7.85E-08	4.05E-06	2.33E-05	0.00E+00			9.92E-03	5.69E-05	2.36E-03	1.62E-06	2.00E-06	1.22E-05	8.00E-06	4.81E-05	9.92E-03	1.02E-03	2.06E-03	7.49E-04							1.89E-03	Am242m
Pu242	4.70E-04	2.91E-03	1.18E-04	6.09E-03	1.57E-05	0.00E+00			3.69E-03	2.11E-05	5.34E-04	4.67E-07	2.99E-03	1.83E-02	1.20E-02	6.89E-02	3.69E-03	3.78E-04	5.94E-04	2.18E-04							9.67E-02	Pu242
Am243	6.34E-08	3.92E-07	1.58E-08	8.16E-07	5.70E-06	0.00E+00			6.38E-03	3.63E-05	1.30E-03	1.92E-06	4.03E-07	2.46E-06	1.51E-06	9.28E-06	6.36E-03	6.51E-04	1.30E-03	4.73E-04							1.17E-03	Am243
Cm242	4.45E-03	2.75E-02	1.11E-03	5.73E-02	1.80E-02	0.00E+00			8.19E-03	4.67E-05	2.01E-07	1.58E-10	2.83E-02	1.73E-01	1.13E-01	6.52E-01	8.19E-03	8.38E-04	2.01E-07	7.31E-08							9.10E-01	Cm242
Cm243	1.92E-04	1.19E-03	4.79E-05	2.47E-03	4.13E-02	0.00E+00				0.00E+00		0.00E+00	1.22E-03	7.45E-03	4.88E-03	2.81E-02		0.00E+00		0.00E+00							3.92E-02	Cm243
Cm244	1.88E-03	1.16E-02	4.70E-04	2.43E-02	1.60E-01	0.00E+00			5.29E-02	3.02E-04	1.25E-02	9.83E-06	1.20E-02	7.33E-02	4.90E-02	2.76E-01	5.29E-02	5.41E-03	1.25E-02	4.54E-03	8.59E-04	0.00E+00	1.26E-03	0.00E+00			3.98E-01	Cm244
Total	7.91E+00	4.88E+01	1.98E+00	1.02E+02	2.77E+01	0.00E+00	8.20E+06	2.76E-01	8.00E+02	4.57E+00	7.40E+01	5.82E-02	5.03E+01	3.07E+02	2.01E+02	1.16E+03	8.00E+02	8.18E+01	7.40E+01	2.59E+01	1.78E+01	0.00E+00	1.86E+01	0.00E+00	6.43E-01	0.00E+00	1.73E+03	

Table D-9. Basin Rubble Inventory and NRC Calculation.

Nuclide	Wall Spoil Concentration of Rad (Ci/g)	Wall Area Radioactive Loading (Ci/SM)	Floor Spoil Concentration of Rad (Ci/g)	Floor Area Radioactive Loading (Ci/SM)	Wall Surface Nuclide Inv. Contribution[4] (Ci)	Floor Surface Nuclide Inv. Contribution[5] (Ci)	Total Monolith Inventory (Ci)	Rad Inv. in waste (Ci/g)	Rad Inv. in waste (Ci/CM)	Table 1 (Ci/CM)	Table 1 (nCi/g)	Table 1 Ratio (unitless)	Table 2 Col. 3 (Ci/CM)	Table 2 Ratio (unitless)	WAC Table 2 (Ci/CM)	WAC Ratio (unitless)
H-3	1.27E-10	5.00E-06	5.09E-10	2.00E-05	4.11E-04	1.55E-03	1.96E-03	7.50E-13	1.09E-06						no limit	
C-14	6.54E-14	2.57E-09	2.62E-13	1.03E-08	2.11E-07	7.95E-07	1.01E-06	3.86E-16	5.62E-10	8		7.02E-11			5.1	1.10E-10
Fe-55	1.37E-08	5.38E-04	5.48E-08	2.15E-03	4.42E-02	1.66E-01	2.11E-01	8.07E-11	1.18E-04							
Ni-59	1.06E-10	4.17E-06	4.24E-10	1.67E-05	3.42E-04	1.29E-03	1.63E-03	6.26E-13	9.12E-07	Note 2					2.10E+02	4.34E-09
Co-60	1.60E-08	6.27E-04	6.38E-08	2.51E-03	5.15E-02	1.94E-01	2.45E-01	9.41E-11	1.37E-04						no limit	
Ni-63	4.33E-09	1.70E-04	1.73E-08	6.81E-04	1.40E-02	5.26E-02	6.66E-02	2.55E-11	3.72E-05				700	5.31E-08	7.00E+02	5.31E-08
Se-79	2.45E-10	9.63E-06	9.80E-10	3.85E-05	7.91E-04	2.98E-03	3.77E-03	1.44E-12	2.11E-06						2.80E+01	7.52E-08
Sr-90	1.97E-06	7.72E-02	7.86E-06	3.09E-01	6.34E+00	2.39E+01	3.02E+01	1.16E-08	1.69E-02				7000	2.41E-06	7.00E+03	2.41E-06
Mo-93	1.75E-09	6.89E-05	7.01E-09	2.76E-04	5.66E-03	2.13E-02	2.70E-02	1.03E-11	1.51E-05						5.00E+01	3.01E-07
Nb-93m					0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00							
Zr-93	1.15E-09	4.53E-05	4.61E-09	1.81E-04	3.72E-03	1.40E-02	1.77E-02	6.80E-12	9.91E-06						1.40E+02	7.08E-08
Nb-94	3.54E-12	1.39E-07	1.42E-11	5.56E-07	1.14E-05	4.30E-05	5.44E-05	2.09E-14	3.04E-08						1.20E-02	2.53E-06
Tc-99	8.27E-09	3.25E-04	3.31E-08	1.30E-03	2.67E-02	1.01E-01	1.27E-01	4.88E-11	7.11E-05	3		2.37E-05			1.30E+00	5.47E-05
Pd-107	2.69E-11	1.06E-06	1.08E-10	4.23E-06	8.68E-05	3.27E-04	4.14E-04	1.59E-13	2.31E-07						8.30E+02	2.78E-10
Cd-113m	9.07E-09	3.56E-04	3.63E-08	1.43E-03	2.93E-02	1.10E-01	1.39E-01	5.34E-11	7.79E-05							
Sn-121m	5.91E-11	2.32E-06	2.37E-10	9.30E-06	1.91E-04	7.19E-04	9.10E-04	3.49E-13	5.08E-07							
Te-123	7.01E-07	2.75E-02	2.80E-06	1.10E-01	2.26E+00	8.52E+00	1.08E+01	4.13E-09	6.02E-03							
Sb-125	2.18E-07	8.58E-03	8.74E-07	3.43E-02	7.05E-01	2.65E+00	3.36E+00	1.29E-09	1.88E-03							
Sn-126	5.88E-11	2.31E-06	2.35E-10	9.24E-06	1.90E-04	7.14E-04	9.04E-04	3.47E-13	5.05E-07						8.50E-03	5.94E-05
I-129	1.60E-11	6.29E-07	6.40E-11	2.52E-06	5.17E-05	1.95E-04	2.46E-04	9.44E-14	1.38E-07	0.08		1.72E-06			8.00E-02	1.72E-06
Cs-134	6.04E-09	2.38E-04	2.42E-08	9.50E-04	1.95E-02	7.35E-02	9.30E-02	3.56E-11	5.19E-05						no limit	
Cs-135	4.59E-09	1.81E-04	1.84E-08	7.22E-04	1.48E-02	5.58E-02	7.06E-02	2.71E-11	3.95E-05						8.80E+00	4.48E-06
Cs-137	4.09E-05	1.61E+00	1.64E-04	6.43E+00	1.32E+02	4.97E+02	6.29E+02	2.41E-07	3.51E-01				4600	7.64E-05	3.20E+01	1.10E-02
Pm-147	2.77E-09	1.09E-04	1.11E-08	4.36E-04	8.94E-03	3.37E-02	4.26E-02	1.63E-11	2.38E-05							
Sm-151	5.75E-06	2.26E-01	2.30E-05	9.03E-01	1.85E+01	6.98E+01	8.84E+01	3.39E-08	4.94E-02						5.30E+04	9.31E-07
Eu-152	8.97E-10	3.53E-05	3.59E-09	1.41E-04	2.90E-03	1.09E-02	1.38E-02	5.29E-12	7.71E-06						2.10E+07	3.67E-13
Eu-154	1.09E-07	4.27E-03	4.35E-07	1.71E-02	3.51E-01	1.32E+00	1.67E+00	6.41E-10	9.34E-04						no limit	
Eu-155	9.84E-08	3.87E-03	3.93E-07	1.55E-02	3.17E-01	1.20E+00	1.51E+00	5.80E-10	8.45E-04							
Th-232	1.61E-13	6.33E-09	6.45E-13	2.53E-08	5.20E-07	1.96E-06	2.48E-06	9.50E-16	1.38E-09						6.00E-03	2.31E-07
Pa-231	1.78E-11	6.98E-07	7.10E-11	2.79E-06	5.73E-05	2.16E-04	2.73E-04	1.05E-13	1.53E-07							
U-232	3.83E-15	1.50E-10	1.53E-14	6.02E-10	1.23E-08	4.65E-08	5.89E-08	2.26E-17	3.29E-11							
U-233	2.30E-16	9.03E-12	9.19E-16	3.61E-11	7.41E-10	2.79E-09	3.53E-09	1.35E-18	1.97E-12						7.40E-02	2.67E-11
U-234	6.84E-11	2.69E-06	2.73E-10	1.07E-05	2.21E-04	8.31E-04	1.05E-03	4.03E-13	5.87E-07						7.40E-02	7.94E-06
U-235	2.20E-12	8.66E-08	8.82E-12	3.47E-07	7.11E-06	2.68E-05	3.39E-05	1.30E-14	1.89E-08						2.70E-03	7.01E-06
U-236	7.12E-12	2.80E-07	2.85E-11	1.12E-06	2.30E-05	8.65E-05	1.09E-04	4.19E-14	6.11E-08							
Np-237	2.16E-11	8.49E-07	8.64E-11	3.40E-06	6.97E-05	2.63E-04	3.32E-04	1.27E-13	1.86E-07		100	1.27E-06			1.50E-03	1.24E-04
U-238	4.90E-11	1.93E-06	1.96E-10	7.71E-06	1.58E-04	5.96E-04	7.54E-04	2.89E-13	4.21E-07						1.20E-02	3.51E-05
Pu-238	4.13E-09	1.62E-04	1.65E-08	6.49E-04	1.33E-02	5.02E-02	6.35E-02	2.44E-11	3.55E-05		100	2.44E-04			1.50E+00	2.37E-05
Pu-239	2.02E-08	7.93E-04	8.07E-08	3.17E-03	6.51E-02	2.45E-01	3.10E-01	1.19E-10	1.73E-04		100	1.19E-03			2.90E-02	5.98E-03
Pu-240	8.15E-09	3.20E-04	3.26E-08	1.28E-03	2.63E-02	9.90E-02	1.25E-01	4.80E-11	7.00E-05		100	4.80E-04			2.90E-02	2.41E-03
Pu-241	1.01E-06	3.99E-02	4.06E-06	1.59E-01	3.27E+00	1.23E+01	1.56E+01	5.98E-09	8.71E-03		3500	1.71E-03			6.20E+00	1.41E-03
Am-241	4.89E-08	1.92E-03	1.96E-07	7.69E-03	1.58E-01	5.95E-01	7.53E-01	2.88E-10	4.20E-04		100	2.88E-03			5.00E-02	8.41E-03
					0.00E+00	0.00E+00	0.00E+00									
Am-242m	2.00E-12	7.85E-08	7.99E-12	3.14E-07	6.45E-06	2.43E-05	3.07E-05	1.18E-14	1.72E-08		100	1.18E-07				
Pu-242	2.99E-09	1.18E-04	1.20E-08	4.70E-04	9.65E-03	3.63E-02	4.60E-02	1.76E-11	2.57E-05		100	1.76E-04			1.10E-01	2.34E-04
Am-243	4.03E-13	1.58E-08	1.61E-12	6.34E-08	1.30E-06	4.90E-06	6.20E-06	2.38E-15	3.46E-09		100	2.38E-08			5.70E-02	6.07E-08
Cm-242	2.83E-08	1.11E-03	1.13E-07	4.45E-03	9.14E-02	3.44E-01	4.35E-01	1.67E-10	2.43E-04		20000	8.35E-06			2.00E+04	1.22E-08
Cm-243	1.22E-09	4.79E-05	4.87E-09	1.92E-04	3.93E-03	1.48E-02	1.87E-02	7.18E-12	1.05E-05		100	7.18E-05			8.50E+01	1.23E-07
Cm-244	1.20E-08	4.70E-04	4.79E-08	1.88E-03	3.86E-02	1.45E-01	1.84E-01	7.05E-11	1.03E-04		100	7.05E-04			4.00E+01	2.57E-06
									Sum of Fractions (Total)			7.50E-03		7.89E-05		2.97E-02

Table D-10. Tech View/Weasel Pits Rubble Inventory and NRC Calculation.

Nuclide	Debris Conc. (Ci/g)	Surface Area (Ci/SM)	Residual Sludge (Ci/CM)	Redeposited Sludge (Ci/CM)	Debris Nuclide Inv. Contribution (Ci)	Surface Area Nuclide Inv. Contribution (Ci)	Sludge Nuclide Inv. Contribution (Ci)	Total Monolith Inventory (Ci)	Estimated Rad Inv. in Monolith (Ci/g)	Estimated Rad Inv. in Monolith (Ci/CM)	NRC Table 1 (Ci/CM)	NRC Table 1 (nCi/g)	NRC Table 1 Ratio (unitless)	NRC Table 2 Col. 3 (Ci/CM)	NRC Table 2 Ratio (unitless)	ERDF WAC Table 2 (Ci/CM)	ERDF WAC Ratio (unitless)
H-3	3.19E-09	5.00E-06	7.03E-01	2.85E-01	0.00E+00	2.11E-03	5.31E-01	5.33E-01	7.88E-10	1.14E-03						no limit	
C-14		2.57E-09	1.84E-02	7.50E-03	0.00E+00	1.08E-06	1.39E-02	1.39E-02	2.01E-11	2.99E-05	8		3.74E-06			5.1	5.86E-06
Fe-55		5.38E-04	1.11E-02	4.53E-03	0.00E+00	2.27E-01	8.42E-03	2.36E-01	3.39E-10	5.05E-04							
Ni-59		4.17E-06	1.09E-03	4.44E-04	0.00E+00	1.76E-03	8.25E-04	2.59E-03	3.73E-12	5.54E-06	Note 2					2.10E+02	2.64E-08
Co-60	9.99E-08	6.27E-04	9.94E-01	8.00E-02	0.00E+00	2.65E-01	4.75E-01	7.40E-01	1.07E-09	1.59E-03						no limit	
Ni-63	5.855E-10	1.70E-04	1.15E-01	4.67E-02	0.00E+00	7.18E-02	8.68E-02	1.59E-01	2.29E-10	3.40E-04				700	4.86E-07	7.00E+02	4.86E-07
Se-79		9.63E-06	2.29E-03	9.33E-04	0.00E+00	4.06E-03	1.73E-03	5.80E-03	8.36E-12	1.24E-05						2.80E+01	4.44E-07
Sr-90	0.000001102	7.72E-02	3.02E+02	2.89E+00	0.00E+00	3.26E+01	1.26E+02	1.59E+02	2.29E-07	3.40E-01				7000	4.86E-05	7.00E+03	4.86E-05
Mo-93		6.88E-05			0.00E+00	2.91E-02	0.00E+00	2.91E-02	4.19E-11	6.23E-05						5.00E+01	1.25E-06
Nb-93m							0.00E+00	0.00E+00	0.00E+00	0.00E+00							
Zr-93		4.53E-05	1.06E-02	4.33E-03	0.00E+00	1.91E-02	8.05E-03	2.72E-02	3.92E-11	5.83E-05						1.40E+02	4.16E-07
Nb-94		1.39E-07			0.00E+00	5.87E-05	0.00E+00	5.87E-05	8.46E-14	1.28E-07						1.20E-02	1.05E-05
Tc-99		3.25E-04	1.34E-01	3.12E-02	0.00E+00	1.37E-01	8.14E-02	2.19E-01	3.15E-10	4.69E-04	3		1.56E-04			1.30E+00	3.60E-04
Pd-107		1.06E-06	4.34E-04	1.76E-04	0.00E+00	4.46E-04	3.28E-04	7.74E-04	1.12E-12	1.66E-06						8.30E+02	2.00E-09
Cd-113m		3.56E-04	7.03E-02	2.86E-02	0.00E+00	1.50E-01	5.34E-02	2.04E-01	2.94E-10	4.37E-04							
Sn-121m		2.32E-06	1.97E-03	7.86E-04	0.00E+00	9.81E-04	1.48E-03	2.46E-03	3.54E-12	5.27E-06							
Te-123		2.75E-02			0.00E+00	1.16E+01	0.00E+00	1.16E+01	1.68E-08	2.49E-02							
Sb-125	1.5225E-08	8.58E-03	2.05E-01	8.37E-02	0.00E+00	3.62E+00	1.55E-01	3.78E+00	5.44E-09	8.10E-03							
Sn-126		2.31E-06		1.69E-03	0.00E+00	9.75E-04	1.44E-03	2.42E-03	3.48E-12	5.18E-06						8.50E-03	6.09E-04
I-129		6.29E-07			0.00E+00	2.65E-04	0.00E+00	2.65E-04	3.83E-13	5.69E-07	0.08		7.12E-06			8.00E-02	7.12E-06
Cs-134		2.38E-04	5.95E-02	2.43E-02	0.00E+00	1.00E-01	4.51E-02	1.45E-01	2.10E-10	3.12E-04						no limit	
Cs-135		1.81E-04	2.06E-03	8.39E-04	0.00E+00	7.62E-02	1.56E-03	7.77E-02	1.12E-10	1.67E-04						8.80E+00	1.89E-05
Cs-137	0.000001145	1.61E+00	3.08E+02	6.01E+00	0.00E+00	6.78E+02	1.30E+02	8.09E+02	1.17E-06	1.73E+00				4600	3.77E-04	3.20E+01	5.42E-02
Pm-147	1.8005E-08	1.09E-04	2.83E+00	1.07E+00	0.00E+00	4.60E-02	1.99E+00	2.03E+00	2.93E-09	4.36E-03							
Sm-151	2.1805E-08	2.26E-01	4.46E+00	1.82E+00	0.00E+00	9.53E+01	3.38E+00	9.86E+01	1.42E-07	2.11E-01						5.30E+04	3.99E-06
Eu-152	8.41E-11	3.53E-05	1.87E-02	7.69E-03	0.00E+00	1.49E-02	1.41E-02	2.90E-02	4.18E-11	6.21E-05						2.10E+07	2.96E-12
Eu-154	2.8075E-08	4.27E-03	2.77E+00	1.80E-01	0.00E+00	1.80E+00	1.29E+00	3.09E+00	4.45E-09	6.62E-03						no limit	
Eu-155	1.4005E-08	3.87E-03	1.43E+00	6.00E-02	0.00E+00	1.63E+00	8.37E-01	2.27E+00	3.27E-09	4.86E-03							
Th-232		6.33E-09			0.00E+00	2.67E-06	0.00E+00	2.67E-06	3.85E-15	5.73E-09						6.00E-03	9.55E-07
Pa-231		6.98E-07			0.00E+00	2.94E-04	0.00E+00	2.94E-04	4.24E-13	6.31E-07							
U-232		1.50E-10			0.00E+00	6.35E-08	0.00E+00	6.35E-08	9.15E-17	1.36E-10							
U-233		9.03E-12			0.00E+00	3.81E-09	0.00E+00	3.81E-09	5.49E-18	8.16E-12						7.40E-02	1.10E-10
U-234	1.2035E-10	2.69E-06	4.66E-02	9.46E-03	0.00E+00	1.13E-03	2.71E-02	2.83E-02	4.08E-11	6.06E-05						7.40E-02	8.19E-04
U-235	1.2035E-11	8.66E-08	1.55E-03	3.65E-04	0.00E+00	3.65E-05	9.48E-04	9.84E-04	1.42E-12	2.11E-06						2.70E-03	7.81E-04
U-236		2.80E-07	2.75E-03	1.38E-02	0.00E+00	1.18E-04	1.29E-02	1.30E-02	1.88E-11	2.79E-05							
Np-237		8.49E-07	4.49E-03	6.19E-04	0.00E+00	3.58E-04	2.37E-03	2.72E-03	3.93E-12	5.84E-06		100	3.93E-05			1.50E-03	3.89E-03
U-238	9.86E-11	1.93E-06	3.51E-02	7.54E-03	0.00E+00	8.13E-04	2.08E-02	2.16E-02	3.11E-11	4.63E-05						1.20E-02	3.86E-03
Pu-238	1.4935E-08	1.62E-04	3.52E+00	3.56E-01	0.00E+00	6.85E-02	1.75E+00	1.81E+00	2.62E-09	3.89E-03		100	2.62E-02			1.50E+00	2.59E-03
Pu-239	3.0085E-08	7.93E-04	1.39E+01	2.35E+00	0.00E+00	3.35E-01	7.71E+00	8.04E+00	1.16E-08	1.72E-02		100	1.16E-01			2.90E-02	5.95E-01
Pu-240	1.824E-08	3.20E-04	7.65E+00	1.28E+00	0.00E+00	1.35E-01	4.22E+00	4.36E+00	6.28E-09	9.34E-03		100	6.28E-02			2.90E-02	3.22E-01
Pu-241	6.3045E-07	3.99E-02	4.11E+02	6.48E+01	0.00E+00	1.68E+01	2.15E+02	2.32E+02	3.34E-07	4.97E-01		3500	9.54E-02			6.20E+00	8.01E-02
Am-241	1.38185E-07	1.92E-03	1.92E+01	2.75E+00	0.00E+00	8.11E-01	1.02E+01	1.10E+01	1.59E-08	2.36E-02		100	1.59E-01			5.00E-02	4.72E-01
							0.00E+00										
Am-242m		7.85E-08	5.08E-03	2.06E-03	0.00E+00	3.31E-05	3.82E-03	3.85E-03	5.56E-12	8.27E-06		100	5.56E-05				
Pu-242		1.16E-04	3.69E-03	5.94E-04	0.00E+00	4.96E-02	2.02E-03	5.16E-02	7.44E-11	1.11E-04		100	7.44E-04			1.10E-01	1.01E-03
Am-243		1.58E-08	3.18E-03	1.30E-03	0.00E+00	6.68E-06	2.41E-03	2.42E-03	3.48E-12	5.18E-06		100	3.48E-05			5.70E-02	9.09E-05
Cm-242		1.11E-03	4.19E-03	2.01E-07	0.00E+00	4.70E-01	1.71E-03	4.71E-01	6.79E-10	1.01E-03		20000	3.40E-05			2.00E+04	5.05E-08
Cm-243		4.79E-05			0.00E+00	2.02E-02	0.00E+00	2.02E-02	2.91E-11	4.33E-05		100	2.91E-04			8.50E+01	5.10E-07
Cm-244	1.74E-10	4.70E-04	3.08E-02	1.25E-02	0.00E+00	1.98E-01	2.32E-02	2.22E-01	3.19E-10	4.75E-04		100	3.19E-03			4.00E+01	1.19E-05
								1.35E+03	1.944E-06	2.89E+00							
									Sum of Fractions (Total)				4.64E-01		4.26E-04		1.54E+00