

Appendix F

Engineering Design File for the Contaminated Soil Strategy

ENGINEERING DESIGN FILE

PROJECT FILE NO. 020991

ARA-01, ARA-12, and ARA-23 Contaminated Soil Removal Volume Estimate

Prepared for:
U.S. Department of Energy
Idaho Operations Office
Idaho Falls, Idaho

INEEL
Idaho National Engineering & Environmental Laboratory
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Form 412.14
10/05/99
Rev. 02

1. Project File No. 020991 2. Project/Task WAG-5 Remedial Design/Remedial Action - Phase II

3. Subtask Contaminated Soil Removal and Backfill of Three Identified Areas

4. Title: ARA-01, ARA-12, and ARA-23 Contaminated Soil Removal Volume Estimate

5. Summary: This EDF is to document the estimated quantities for the Remedial Design/Remedial Action of three contaminated soil sites based on the WAG 5, Operable Unit 5-12, Record of Decision (ROD). All three sites have soil contaminant concentration levels over human health and/or ecological risk. The contaminated soil will be removed and transported to the proposed INEEL CERCLA Disposal Facility (ICDF) or other onsite facility for permanent disposal.

Background Information

Site Description. The OU 5-12 remedial investigation and baseline risk assessment identified three sites where the contamination levels are in excess of the human health and/or ecological risk. The three sites are:

ARA-01 ARA-I Chemical Evaporation Pond
ARA-12 ARA-III Radioactive Waste Leach Pond,
ARA-23 Radiologically Contaminated Surface Soils and Subsurface Structures Associated with ARA-I and ARA-II

Remedial Action

Contaminated Soil. The remedial action is to excavate the contaminated soils and haul these soils to the INEEL CERCLA Disposal Facility (ICDF) or other onsite location. The goal is to excavate the contaminated soils while minimizing the soil volume sent to the IDCF. This is accomplished by excavating a thin layer followed by field screening/sampling to identify the contamination boundary for the next layer.

ARA-01: ARA-I Chemical Evaporation Pond:

This area is shown on drawing C-7. The site contains a large basalt outcropping that covers approximately 15% of the excavation area. The "first cut excavation" shall be 3 inches in depth or to basalt outcropping, whichever is the lesser depth.

ARA-12: ARA-III Radioactive Waste Leach Pond:

This area is shown on drawing C-8. The site contains many large rocks (2 to 3 feet in diameter) that will be removed and disposed with the contaminated soil. The "first cut excavation" shall be 3 inches in depth or to basalt outcropping, whichever is the lesser depth.

ARA-23: Hot Spots Inside the SL-1 Burial Ground:

This area is shown on drawing C-3. The source of radiological contamination may be from the surface soils or from highly contaminated material below the surface. The "first cut excavation" shall be 6 inches in depth.

ARA-23: Haul Road Leading to SL-1 Burial Ground:

This area is shown on drawing C-4. This contamination likely is a result of material falling off objects as they were dragged to the SL-1 Burial Ground. The "first cut excavation" shall be 6 inches in depth.

ARA-23: ARA-I Facility:

This area is shown on drawing C-5. The type of contamination found in this area is primarily Cs-137. There is asphalt covering approximately 10% of the area. This contamination is likely very low and may be below the remedial action goals. The "first cut excavation" shall be 6 inches in depth. This soil shall be stockpiled within the limits of the ARA-I area and possibly used as backfill material if it meets the remedial action goal.

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ARA-23: ARA-II Facility:

This area is shown on drawing C-5. There is asphalt covering approximately 50% of the area. The contamination under the asphalt may be high. The reactor foundation should be below excavation depth and shall remain in its original location. The "first cut excavation" shall be 6 inches in depth.

ARA-23: Soil Areas A and C:

These areas are shown on drawings C-4 and C-6. This area has been excavated approximately 3 inches during a 1999 treatability study and the contaminated soil was stockpiled. In both areas, the Subcontractor shall completely remove the contaminated soil stockpiles. In Area C, the Subcontractor will remove 3 inches and 6 inches over the haul road area. Area A shall be excluded from a "first cut excavation" however, "selective excavation" may be required.

ARA-23: All Other Areas:

This area is shown on drawings C-2 through C-6. The type of contamination found in this area is primarily Cs-137. This contamination likely is in the top 3 inches. Due to the size of this area, excavation activities will be limited to plots no larger than 10 acres.

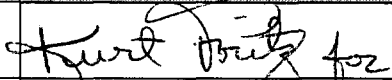


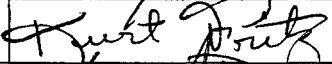

The "first cut excavation" of a plot shall be 3 inches in depth. A Rad Con Tech will perform field screening to determine the boundary of any further contamination that exceeds the Remedial Action Goal. Further excavation will follow in the identified hot spots until all contamination above the remedial action goals is removed.

Based on the excavation depths listed above, the initial excavation soil quantities are calculated. The subsequent excavations are based on limited field sampling data. Actual quantities will depend on the actual depth of contamination at each site. Both soil volumes are shown on page 3 of this EDF. Total estimated quantities are compared to the total estimated quantities shown in the WAG-5 ROD.

6. Distribution (complete package):

Distribution (summary package only):

7. Review (R) and Approval (A) Signatures: (Minimum reviews and approvals are listed. Additional reviews/approvals may be added as necessary.)

	R/A	Printed Name	Signature	Date
Author		Weck Liu		12/6/00
WAG 5 Project Manager	A	Frank Webber		11/30/00
Project Engineer	R	Doug Preussner		12/5/00
Technical Coordinator	R	Kurt Fritz		11/30/00
Project Engineer	R	Steve Davies		12/06/00

WAG 5 (OU 5-12) Contaminated Soil Volume Estimated Chart (Phase II)											
Site	Layer	Area (ft ²)	Projected	Initial Excavation			Subsequent Excavation		Total Estimated	ROD Estimated	Notes
				Area* (ft ²)	Dep. (In)	Volume (ft ³)	Volume (yd ³)	Volume (ft ³)			
ARA-01	1st Layer	32,142	32,157	3	8,039	298	24,118	893	32,157	64,310	
	Subtotal				8,039	298	24,118	893			
ARA-12	1st Layer	54,434	54,459	3	13,615	504	36,306	1,345	49,921	53,933	
	Subtotal				13,615	504	36,306	1,345			
ARA-23	Other areas	1,619,677	1,620,426	3	405,107	15,004	359,477	13,314	1,188,420	1,255,000	
	ARA-II	130,806	130,867	6	65,433	2,423	87,244	3,231			About 800 yd ³ asphalt
	ARA-I	103,333	103,381	3	25,845	957	25,845	957			
	Haul road	25,544	25,556	6	12,778	473	63,890	2,366			
	Area A & C stock pile	89,330	89,371	3	22,343	828	0	0			
	Asphalt Area	11,642	11,647	3	2,912	108	5,824	216			
	Spot Excavation***	16,454	16,462	3	4,115	152	4,115	152			
	Rocks on Surface	45,608	45,629	24	91,258	3,380					
	Inside SL-1	12,228	12,234	6	6,117	227	6,117	227			
	Subtotal				635,908	23,552	552,512	20,463			
* Scale conversion factor (State Plane to Project Plane): 1.0002313.											
** Subsequent excavations are estimates based on limited field sampling data.											
*** Spot excavations are small contaminated areas outside the large excavation boundaries.											
Total Volume ft ³					657,562		612,936		1,270,498	1,373,243	
Total Volume yd ³						24,354		22,701	47,055	50,861	93% of ROD