

Appendix E
Quality Level Evaluation

SAFETY CATEGORY DESIGNATION AND RECORD

Safety Category Evaluation Performed By: John H. Nicklas Date: June 26, 2001

Facility/Structure/System/Component: TAN V-Tanks Hazard Category: Low

IDENTIFICATION OF ITEM	SAFETY CATEGORY DESIGNATION	TECHNICAL JUSTIFICATION
1. Office space with utilities	CG	Does not fall into any other category.
2. Hydraulic excavator	LSC	Accident scenario includes only standard industrial hazard.
2.1 Shoring -- all components	LSC	Accident scenario includes only standard industrial hazard.
2.2 Trench Boxes	LSC	Accident scenario includes only standard industrial hazard.
3. Soil sampling equipment	CG	Does not fall into any other category.
4. High Integrity Containers (HIC)	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
4.1 HIC for tank V-9	LSC	Fissile material is insufficient to cause a criticality.
4.2 HIC shielding	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
4.3 HIC tarp	CG	Does not fall into any other category.
4.4 HIC dewatering pump	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
4.5 Filtering equipment	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
5. Concrete barriers for shielding	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6. Pumping system for sludge and liquid waste removal -- all components containing waste	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6.1 Pumping system for sludge and liquid waste removal from Tank V-9 -- all components containing waste	LSC	Fissile material is insufficient to cause a criticality.
6.2 Pumping system for sludge and liquid waste removal -- all other components (mechanical and electrical)	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6.3 Heavy walled hoses	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.

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6.4 Sleeves or double hoses on joints and hoses	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6.5 Man way cover for cables and hoses	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6.6 Air/water sparger, sludge lance, and vibrator	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6.7 Remote camera and lights	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6.8 Remote monitoring system (process)	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
6.9 Bartlett Super Sleever	CG	Does not fall into any other category.
7. Crane	LSC	Accident scenario includes only standard industrial hazard.
7.1 Hoisting and lifting equipment -- all load bearing components	LSC	Accident scenario includes only standard industrial hazard.
7.2 Hoisting and lifting equipment -- all non-load bearing components	LSC	Accident scenario includes only standard industrial hazard.
7.3 Tank lifting lugs	LSC	Accident scenario includes only standard industrial hazard.
8. Drum storage and decontamination pad, including geotextile liner.	CG	Does not fall into any other category.
8.1 HIC storage and drum filling pad	CG	Does not fall into any other category.
9. Generators	CG	Does not fall into any other category.
10. Radiological Control Information Management System (RCIMS)	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
10.1 Personnel monitoring station	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
11. Drainage control berms and measures	CG	Does not fall into any other category.
11.1 Culvert pipe	CG	Does not fall into any other category.
11.2 Drainpipes and rain gutters	CG	Does not fall into any other category.
12. Fencing with lockable gates	CG	Does not fall into any other category.
13. Roadway with geotextile fabric	CG	Does not fall into any other category.

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14. Combustible gas meter	LSC	The safety analysis has determined that there is no safety significant equipment for this project.
15. HEPA ventilation system	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
16. Cement or grout	CG	Does not fall into any other category.
17. Oxygen survey meter	LSC	The safety analysis has determined that there is no safety significant equipment for this project.
18. DOT 55-gallon waste drums	LSC	This presumes that a Type B container would not be required and is classified as a QL-2 by PLN120, Revision 4. However, the safety analysis has determined that there is no safety significant equipment for this project.
19. DOT 55-gallon waste drums for tank V-9	LSC	This presumes that a Type B container would not be required and is classified as a QL-2 by PLN120, Revision 4. However, the safety analysis has determined that there is no safety significant equipment for this project.
20. Sludge drum filling system	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
20.1 Sludge drum filling system for tank V-9	LSC	Fissile material is insufficient to cause a criticality.
21. PPE	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
22. Utility locators (water, electric)	CG	Does not fall into any other category.
23. Soil bags	CG	Does not fall into any other category.
23.1 Bag lifting frame	LSC	Accident scenario includes only standard industrial hazard.
24. Foam Sealant for piping	LSC	Is not estimated to result in acute worker fatality or serious injury; however, is considered in the safety analysis.
25. Drill for pipes	LSC	Waste characterization shows there are no ignitables.
26. Saw for pipes	LSC	Waste characterization shows there are no ignitables.
27. Geotextile liner for excavation site	CG	Does not fall into any other category.
28. Heavy equipment for backfilling	CG	Does not fall into any other category.
29. Tank V-3 overflow prevention equipment	LSC	Is not estimated to result in acute worker fatality or serious injury;

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		however, is considered in the safety analysis.
30. Communication system	CG	Does not fall into any other category.
31. Excavation Barriers	CG	Does not fall into any other category.
32. DOT Shipping casks	SC (3)	This presumes that a Type B container is required and is classified as a QL-1 by PLN120, Revision 4.

Note: Identify and record safety category in accordance with MCP-540, and obtain appropriate approvals. Completed and approved form becomes a part of the safety basis documentation.

<hr/> Safety Analysis Supervisor Concurrence Printed/Typed Name	<hr/> Safety Analysis Supervisor Concurrence Signature	<hr/> Date
<hr/> Facility/Program/Project Approval Printed/Typed Name	<hr/> Facility/Program/Project Approval Signature	<hr/> Date

- SC = Safety Class
- SS = Safety Significant
- LSC = Low Safety Consequence
- CG = Consumer Grade

Appendix F
Remedial Action Cost Estimate

Appendix F

Remedial Action Cost Estimate

The cost estimate for the Waste Area Group (WAG) 1 Operable Unit (OU) 1-10 Group 2 Remedial Design/Remedial Action Work Plan (RD/RA WP) is presented in Table F-1. This is the cost estimate for the V-Tanks remedial action, as described in Section 6 of the Group 2 RD/RA WP. The estimated costs are provided at a summary level and include only the costs associated with the remedial design and remedial action for the V-Tanks (Sites TSF-09 and TSF-18).

The costs in Table F-1 include both direct and indirect costs. Direct costs are estimated for labor, equipment, construction, and operation activities to design and implement the selected remedy for the V-Tanks remedial action. Indirect costs are estimated for activities to support the remedial design and remedial action activities, such as project management, construction management, and project support. Although the estimated costs are projected to be within +15% and -10%, the estimated costs are based on specific assumptions related to the identified scope of work. These assumptions are identified in Section F-2.

The estimate for the V-Tanks remedial design and remedial action is based on specific scope and planned activities. Actual costs through June 2001 have been included in the estimate. The general scope description and general assumptions are provided in Section F-1. Specific cost estimate assumptions are provided in Section F-2. Detailed cost estimates can be found in the Idaho National Engineering and Environmental Laboratory (INEEL) WAG 1 Detailed Work Plan (DWP) for Fiscal Year (FY) 2001 and FY 2002 to 2004. Cost estimates contained in the DWP are more detailed, based on the more-detailed scope, assumptions, and schedule activities described in the DWP.

The estimate for V-Tanks operations and maintenance is based on scope and assumptions contained in the FY 2001 update of the INEEL WAG 1 Life Cycle Baseline. The general scope and assumptions for operations and maintenance are provided in Section F-3.

F-1. GENERAL DESCRIPTION OF V-TANKS REMEDIAL ACTION

The following sections provide brief descriptions of the scope elements for the V-Tanks remedial action. The overall scope is subdivided into the following elements:

- Remedial action management and oversight
- Remedial action preparations
- Tank contents removal and processing
- Sludge interim storage, transport, and disposal
- Tanks and ancillary piping/equipment removal
- Tanks and ancillary piping/equipment processing and disposal
- Remaining contaminated soil removal.

F-1.1 Remedial Action Management and Oversight

Remedial action management and oversight includes project management and support required for planning, executing, and monitoring the remedial design and remedial action activities.

Table F-1. Summary level cost estimate for OU 1-10 Group 2 V-Tanks.

	Subtotals	Totals
Federal Facility Agreement and Consent Order (FFA/CO) Management and Oversight		\$1,708,722
WAG 1 Project Management and Support	\$1,708,722	
Remedial Design		\$1,877,095
Group 2 RD/RA WP and Supporting Documents	\$1,877,095	
Post-Record of Decision Sampling		\$705,985
Tank V-9 Sampling	\$705,985	
Remedial Action		\$21,364,386
Remedial Action Management and Oversight	\$956,790	
Remedial Action Preparations	\$4,823,356	
Mobilization and Site Preparations	1,863,885	
Test Area North (TAN)-607 Preparations for Sludge Interim Storage	315,552	
Equipment and Material Procurement	1,580,959	
Mockup and Dry-Run Testing	764,831	
Readiness Assessment and Prefinal Inspection	298,129	
Tank Contents Removal and Processing	\$3,795,015	
Tank V-1, V-2, and V-3 Contents Removal	1,678,580	
Tank V-9 Contents Removal	635,281	
Liquid Processing and Transport to INEEL CERCLA Disposal Facility (ICDF)	975,603	
Sludge Drumming and Placement into Interim Storage	505,551	
Sludge Interim Storage, Transport, and Disposal	\$7,540,670	
Sludge Interim Storage at TAN-607	792,041	
Sludge Transport to Treatment and Disposal Facility	4,929,737	

Table F-1. (continued).

	Subtotals	Totals
Sludge Off-Site Treatment and Disposal	1,818,892	
Tanks and Ancillary Piping/Equipment (TAP/E) Removal	\$2,307,057	
TAP/E Removal Preparations	574,676	
Excavation and TAP/E Removal	1,138,979	
Prefinal Inspection and Report	83,884	
Contaminated Soil Transport and Disposal at ICDF	137,028	
Backfill Excavation with Clean Soil	295,490	
Site Restoration and Demobilization	77,000	
TAP/E Processing and Disposal	\$1,777,275	
TAP/E Processing and Packaging	539,496	
TAP/E Transport and Off-Site Disposal	1,237,779	
Remaining Contaminated Soil Removal	\$164,223	
Operations and Maintenance		\$1,382,250
Institutional Controls	\$338,000	
Site Maintenance and 5 Year Reviews	\$994,250	
Total Estimated Cost for V-Tanks Remedial Design and Remedial Action and Operations and Maintenance		\$27,038,438

F-1.2 Remedial Action Preparations

Remedial action preparations include all activities that must be completed before the actual remedial action is started. Pre-mobilization documentation will be submitted and personnel training will be completed. Materials and equipment will be procured and delivered to the site. Work control documentation will be prepared for site preparation activities.

Mobilization to the site and site preparations will be completed. Site preparations will include:

- Constructing a temporary transport road from the tank site to the adjacent temporary processing and storage areas
- Constructing the processing area for sludge dewatering and containerizing (drumming), and liquid treatment and solidification
- Constructing the temporary storage area for sludge, liquid, soil, and tanks/equipment/piping
- Establishing an onsite office
- Establishing site access controls.

Preparations will be made in TAN-607 for sludge interim storage. Preparations will include procuring secondary containment for the sludge drums, procuring and installing concrete shielding, procuring and installing video inspection equipment, and providing measures for heat and fire protection.

A mockup of the tank contents removal equipment will be assembled and tested off-Site in Idaho Falls, Idaho. Work control documentation will be prepared for tank contents-removal activities. The tank contents-removal equipment will be reassembled onsite and dry run testing will be performed.

A readiness assessment will be performed to ensure all requirements have been met, documentation is in place, personnel are properly trained, and equipment is operational for starting the tank contents removal. An Agency prefinal inspection will be performed to ensure that all documentation is in place and all requirements have been met for performing the remedial action.

F-1.3 Tank Contents Removal and Processing

Tank contents removal will be conducted in four stages. The first stage will be to remove and filter approximately 5,000 gal of supernate (liquid) from Tank V-3. The liquid will be passed through a filter train, placed in liquid high integrity containers (HICs), and transferred to the processing area.

The second stage will be to remove sludge from the bottom of Tanks V-1, V-2, and V-3. The sludge will be pumped into sludge dewatering HICs and de-watered. Liquid removed from the sludge will be returned to the tanks. Sludge HICs will be transferred to the processing area.

The third stage will be to remove the remaining liquid from Tanks V-1, V-2, and V-3. Liquid will be pumped from the tanks, passed through a filter train, placed in liquid HICs, and transferred to the processing area.

The fourth stage will be to remove sludge and liquid from Tank V-9. Sludge and liquid will be pumped into sludge dewatering HICs and dewatered. Liquid from the sludge will be passed through a filter train, placed in a liquid HIC, and transferred to the processing area. Sludge HICs will be transferred to the processing area. In the processing area, liquid will be sampled, passed through a treatment train (if necessary), and solidified in the liquid HICs. Solidified liquid will be transported to the ICDF for interim storage at the Staging and Storage Annex (SSA) and final disposal at the ICDF. Sludge will be sampled, further dewatered (if necessary), and placed in 55-gal drums. The 55-gal sludge drums will be placed into the sludge interim storage area in TAN-607.

F-1.4 Sludge Interim Storage, Transport, and Disposal

Work control documentation will be prepared for operating and maintaining the sludge interim storage area. Routine maintenance will be performed on the storage area and associated radiation monitoring equipment and video inspection equipment. Weekly inspections will be performed and documented.

Sludge drums will be packaged and transported to the off-Site treatment and disposal facility. One drum of sludge per week will be removed from interim storage, loaded into a Type B transport cask, and shipped to the off-Site treatment and disposal facility. The treatment and disposal facility will treat the sludge and dispose of residuals.

F-1.5 Tanks and Ancillary Piping/Equipment Removal

- Work control documentation will be prepared for excavation and removal of the tanks and ancillary piping/equipment. A readiness assessment will be performed to ensure readiness to begin this work.
- The sand filter and contents will be removed.
- Piping between Tanks V-1, V-2, and V-3, and Buildings TAN-616 and TAN-615 will be excavated and removed.
- Trench shielding will be installed around three sides of Tanks V-1, V-2, and V-3. The tanks will be excavated and removed, one at a time, from the north to the south.
- Piping between Tank V-9 and Building TAN-616 will be excavated and removed. Tank V-9 will be excavated and removed.
- The TAN-1704 valve box and piping running north from the valve box will be excavated and removed. (The cost of this work is not included in the V-Tanks cost estimate. This work is being covered by the INEEL Voluntary Consent Order [VCO] program.)
- All excavated tanks and ancillary piping/equipment will be transferred to the storage area for processing, sizing, and packaging. Excavated soil will be placed in soil bags and transported to the INEEL SSA for interim storage and then transferred to the ICDF for disposal.
- All soil in all areas of the excavation and in the area of contamination adjacent to the excavation will be sampled to determine the extent of the contaminated soil remaining.
- An Agency prefinal inspection will be performed to confirm that the remedial action has been satisfactorily performed for tank contents and tanks and ancillary piping/equipment removal.

- Geo-textile fabric will be placed on all excavated areas and the excavation will be backfilled with clean soil.

F-1.6 Tanks and Ancillary Piping/Equipment Processing and Disposal

- The sand filter will be processed, packaged, and transported to an off-Site facility for disposal
- Piping will be sized, processed, packaged, and transported to an off-Site facility for disposal
- Tanks will be processed and packaged in shrink-wrap material, and then transported to an off-Site facility for disposal
- Secondary waste, resulting from the remedial action activities, will be packaged and transported to an off-Site facility for treatment and/or disposal.

F-1.7 Remaining Contaminated Soil Removal

- The remaining contaminated soil at the V-Tanks site will be excavated and transported to the ICDF for disposal.
- The excavation will be backfilled with clean soil and the entire site will be restored. Institutional control signage will be placed at the site.
- An Agency final inspection will be performed to confirm that all remedial action has been satisfactorily performed at the V-Tanks site. A final inspection report will be prepared and submitted to the Agencies documenting the results of the final inspection.

F-2. COST ESTIMATE ASSUMPTIONS

The cost estimate presented in Table F-1 is based on the following assumptions. These assumptions have been divided into the categories of key assumptions, general assumptions, and task-specific assumptions.

F-2.1 Key Assumptions

- Tank V-9 is assumed to not pose a criticality concern, which will be confirmed with the results of Tank V-9 sampling and the subsequent criticality evaluation.
- The V-Tanks are assumed to have never leaked. All soil contamination at the site is assumed to be due to surface spills.

F-2.2 General Assumptions

- The cost estimate is based on the remedial design approach presented in this Group 2 V-Tanks RD/RA WP.
- The Group 2 V-Tanks RD/RA WP will become final in November 2001.

- An “Explanation of Significant Differences” addressing the design approach for sludge/liquid separation and liquid filtration/treatment will be prepared and issued by November 2001.
- A change in design approach to separate liquid and sludge was made during the early stages of the design to reduce the volume of V-Tank contents requiring interim storage on-Site and treatment and disposal off-Site at the planned treatment and disposal facility, Allied Technology Group (ATG). The change in design approach provides significant cost savings by reducing the volume of tank contents waste that must be sent to ATG for treatment and disposal. The cost estimate includes approximately \$3 million for liquid/sludge separation that has not been fully negotiated and formally added to the V-Tanks RD/RA subcontractor’s scope.
- Sufficient funding is available to support the schedule and planned performance of the work.
- Sufficient facility-supplied resources (Radiological Engineering, Industrial Hygiene, radiological control technician, etc.) will be available at TAN to support the V-Tanks remedial action work.
- A current labor issue (a grievance filed in February 2001 by the PACE Union) will not affect the current plan for all work to be performed by the RD/RA subcontractor.
- No significant decontamination and dismantlement (D&D) activities for Building TAN-616, requiring interface and coordination with the V-Tanks remedial action, will occur during FYs 2002 and 2003.
- VCO program funding and documentation will be in place to support the removal of the VCO TAN-1704 valve box and piping concurrent with the removal of Tank V-9.
- Work involving tank contents (liquid and sludge) has been planned to be performed in non-freezing weather conditions. The design of the contents removal system and equipment does not include provisions for freeze protection.
- Results from Tank V-9 sampling will be available and a criticality analysis will be performed in a timely manner and will not pose a constraint on the schedule for Tank V-9 contents removal.
- Although a contingency plan is included in the Group 2 V-Tanks RD/RA WP for continued increase of the liquid level in Tank V-3, the contingency plan will not be required and is not currently addressed in this cost estimate.
- The estimate of volumes for the V-Tanks is 2,000 gal of sludge and 10,000 gal of liquid is accurate.
- The planned treatment and disposal facility for V-Tanks sludge, ATG, will be operational and available to accept waste in the spring of 2002. ATG will accept the V-Tank sludge at a rate that will require interim storage of sludge at the INEEL for no more than 2 years.
- V-Tank sludge will be placed into interim storage in the TAN-607 warm shop pending shipment for off-Site treatment and disposal. Modifications and preparations of the TAN-607 warm shop will be completed, and the interim storage area will be ready to accept sludge by April 30, 2002.
- Approximately 2,000 yd³ of contaminated soil will be excavated to remove the V-Tanks and ancillary piping/equipment.

- Approximately 1,000 additional yards of contaminated soil at the V-Tanks site will be excavated in FY 2004 to complete the remedial action for the V-Tanks site (TSF-09 and TSF-18).
- The ICDF will be operational in July 2003 for disposal of V-Tank waste streams that meet the ICDF's Waste Acceptance Criteria (WAC). The SSA, associated with the ICDF, is currently open and available for receipt and interim storage of V-Tank waste streams that meet the SSA's WAC.
- The cost for interim storage and final disposal at the SSA and ICDF is covered by the WAG 3 project. There will be no cost to WAG 1 for interim storage and final disposal at the SSA and ICDF.
- Work control measures for all work described in this work package will be implemented through STD-101, "Integrated Work Control Process," rather than through Conduct of Operations and MCP-3562, "Hazard Identification, Analysis, and Control of Operational Activities."
- Separate STD-101 work controls will be prepared for site preparations, tank contents removal, and tanks and ancillary piping/equipment removal. Work control for site preparations will be less rigorous than that required for the two remedial action tasks.
- A Level 1 Readiness Assessment will be required in accordance with MCP-2783, "Startup and Restart of Nuclear Facilities," prior to the start of tank contents removal. A higher-level readiness assessment will not be required. The startup authority will be the TAN Site Area Director. An independent Department of Energy Idaho Operations Office review will not be required. The readiness assessment will be performed after site preparations are complete and the on-Site removal system dry run/system operational testing has been performed.
- A Management Self-Assessment (MSA) will be required prior to the start of Tank V-9 contents removal. The startup authority will be the TAN Site Area Director. The MSA will be in addition to the Level 1 Readiness Assessment and will be used to verify removal system and equipment setup and readiness for the Tank V-9 contents removal.
- A MSA will be required prior to the start of contaminated soil excavations and tanks and ancillary piping/equipment removal. The startup authority will be the TAN Site Area Director.

F-2.3 Assumptions for TAN-607 Warm Shop Preparations for V-Tanks Sludge Storage

- The TAN-607 facility will not require structural modifications.
- Concrete shielding blocks (2 × 2 × 6-ft concrete blocks) configured to a height of 6 ft meet the shielding requirements as identified in the INEEL *Radiological Control Manual* and provide protection in accordance with as low as reasonably achievable (ALARA) goals.
- Electronic surveillance equipment is available "off the shelf."
- Any electronic surveillance equipment conveyance system would be a "specialty item" and will require engineering.
- The floor loading will be suitable for installation of shielding blocks.

- Drum containment pallets will be provided and utilized for secondary containment of sludge containers and can be moved/transported on-Site with a forklift capable of lifting 4 drums/pallet.
- Radiological monitoring equipment will be available and maintained by the facility tenant manager.
- Facility configuration will be in compliance with the TAN Operations Safety Analysis Report.
- Any portion of the work scope that falls under Davis-Bacon provisions will be performed by INEEL force account construction craft.
- An assessment, to determine that the TAN-607 preparations are complete and ready for receipt of V-Tanks sludge, will be performed as part of the readiness assessment for start of V-Tank contents removal.

F-2.4 Assumptions for Tanks V-1, V-2, V-3 and V-9 Contents Removal

- Existing tank contents sample data are representative of the physical properties of the sludge and the contamination to be encountered in all media.
- Tank sludge has not hardened to a cement-like form. The sludge can be suspended in water by mechanical action or low intensity shear forces.
- Liquid/sludge separation will occur during tank contents removal using a sludge dewatering HIC.
- Liquid will be filtered and treated during tank contents removal and placed in HICs.

F-2.5 Assumptions for Tank Contents Waste Processing and Disposal

- Tank sludge will be further dewatered and containerized (drummed) at the tank contents processing area.
- Tank sludge drums will be transferred to and placed in the sludge interim storage area in TAN-607.
- Liquid will be further treated and then solidified in HICs at the tank contents processing area
- Only one batch process of liquid treatment will be required for liquid to be able to meet land disposal restrictions and the SSA's WAC.
- Solidified liquid will be transported and off-loaded into interim storage at the SSA.

F-2.6 Assumptions for Soil Excavation and TAP/E Removal

- Tanks are constructed of 1/4-in. thick stainless steel and the structural integrity is intact.
- Piping to be removed is stainless steel and the structural integrity is intact.

- No groundwater will be encountered during tank, piping, or contaminated soil excavation.
- Equipment with fixed contamination (Model D-5 Caterpillar, track hoe, and front-end loader) will be available from the D&D program as Government Furnished Equipment for use by the RD/RA subcontractor for performing excavation work.
- The tops of Tanks V-1, V-2, and V-3 are approximately 10 ft below ground surface. The depth of the excavation to the bottom of the tanks is approximately 20 ft below ground surface.
- The top of Tank V-9 is approximately 7 ft below ground surface. The depth of the excavation to the bottom of the tank is approximately 14 ft below ground surface.
- Excavated contaminated soil will be placed in bins and shipped to Envirocare for disposal. (A change is currently being planned to transport the contaminated soil to the SSA for interim storage and final disposal at the ICDF.)

F-2.7 Assumptions for V-Tanks Sludge Interim Storage, Treatment, and Disposal

- The off-Site Treatment, Storage, and Disposal Facility (TSDF) will be accepting waste for treatment in late FY 2002
- Criticality concerns and other similar issues will not prevent the performance of the identified scope
- A total of 100 drums will be generated and placed in interim storage
- One drum/week will be shipped off-Site for treatment and disposal
- Shipment cycle time will be 2 weeks per cask
- The TSDF will be responsible for cask loading/unloading at their job site
- Treatment and disposal at the off-Site TSDF will be performed under a fixed price contract
- Current estimated cost for treatment and disposal is based on price quotes from ATG to WAG 5 for similar waste (ARA-16 sludge)
- Transportation and TSDF companies are “pre-qualified” on the INEEL Vendor List
- TAN-607 will be in existence and in an “operable” condition with existing services (i.e., electrical, water, sewer, life safety, heating, ventilating, and air conditioning) during sludge interim storage duration
- Sludge drums will provide leak-tight storage for 2 years and include vents
- Shipping casks will be available and on-Site for use
- The TAN-607 overhead crane will be available and maintained in an operational readiness condition

- Casks will be loaded with a mobile crane
- The mobile crane and necessary fixtures will be available, provided and maintained by WESTON
- Container surveillance will be performed by a remote and mechanized video inspection system
- Configuration as conceived and planned for interim storage will meet all operational requirements.

F-2.8 Assumptions for V-Tanks Site Contaminated Soil Remedial Action

- Shoring installed during the V-Tank removal will have to be removed.
- The extent of contaminated soil removal will be determined based on sampling performed during V-Tank removal.
- 1,000 yd³ of contaminated soil will be removed and will be disposed of at the ICDF.
- The ICDF will be open in July 2003. INEEL operations (PACE) crafts will perform contaminated soil removal and clean soil backfill.

F-3. OPERATIONS AND MAINTENANCE

The cost estimate presented in Table F-1 for V-Tanks operations and maintenance has been extracted from the OU 1-10 cost estimate contained in the FY 2001 update of the INEEL WAG 1 Life Cycle Baseline. In this estimate, operations and maintenance are assumed to be required for 97 years (from 2001 to 2098).

The cost for V-Tank operations and maintenance was determined by dividing the total operations and maintenance cost for OU 1-10 into the four primary remedial action sites. The four sites are the V-Tanks, the PM-2A Tanks, the radiologically contaminated soil sites, and the Burn Pit sites.

The scope of the operations and maintenance for the V-Tanks includes the following:

- Inspection and maintenance of institutional controls
- General site inspection and maintenance
- Five-year reviews.

F-4. REFERENCES

INEEL, 1994, *Safety Analysis Report for Test Area North Operations at the Idaho National Engineering Laboratory*, Idaho National Engineering and Environmental Laboratory, INEL-94/0163, September 1996.

MCP-2783, March 2000, "Startup and Restart of Nuclear Facilities," Rev. 3, Operations.

MCP-3562, April 2001, "Hazard Identification, Analysis, and Control of Operations Activities," Rev. 3, Operations.

STD-101, September 2001, "Integrated Work Control Process," Rev. 12, Operations.