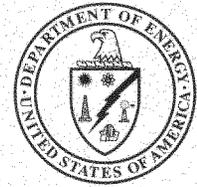


DOE/ID-10770
Revision 2
April 2003



U.S. Department of Energy
Idaho Operations Office

Waste Management Plan for the INTEC Operable Unit 3-13 Tank Farm Interim Action, Phase I



Idaho National Engineering and Environmental Laboratory

Waste Management Plan for the INTEC Operable Unit 3-13 Tank Farm Interim Action, Phase I

April 2003

**Prepared for the
U.S. Department of Energy
Idaho Operations Office**

ABSTRACT

This Waste Management Plan describes waste management and minimization activities for the Operable Unit 3-13 Tank Farm Interim Action, Phase I, to be performed at the Idaho National Engineering and Environmental Laboratory. The waste management activities described in this plan support the selected interim action presented in the *Final Record of Decision for Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13* (DOE-ID 1999). This plan identifies the waste streams that will be generated during implementation of the interim action during Phase I and details plans for waste minimization, management, and disposition.

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ACRONYMS

AOC	area of contamination
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFA	Central Facilities Area
CSA	CERCLA Storage Area
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
ICDF	INEEL CERCLA Disposal Facility
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IWTS	Integrated Waste Tracking System
MCP	management control procedure
OU	operable unit
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RRWAC	reusable property, recyclable materials, and waste acceptance criteria
SSA	Staging and Storage Annex
TFIA	Tank Farm Interim Action
WAG	waste area group
WMP	Waste Management Plan

Waste Management Plan for the INTEC Operable Unit 3-13 Tank Farm Interim Action, Phase I

1. INTRODUCTION

This Waste Management Plan (WMP) describes the management of all wastes generated during the Operable Unit (OU) 3-13 Tank Farm Interim Action (TFIA) at the Idaho National Engineering and Environmental Laboratory (INEEL) Idaho Nuclear Technology and Engineering Center (INTEC), Waste Area Group (WAG) 3. This interim remedial action is being performed to implement the remedies identified in the Final Record of Decision (ROD) for OU 3-13 (DOE-ID 1999). The actions are being performed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 USC § 9601 et seq.), as implemented by the *Federal Facilities Agreement and Consent Order* (DOE-ID 1991).

This WMP identifies the types and, where possible, the volumes of wastes that will be generated during the interim action. This plan provides identification of each of the waste streams, describes waste minimization actions, and provides the requirements for waste transportation and ultimate disposal.

The remediation activities covered under Phase I for the tank farm will occur in two locations within the area of contamination (AOC) described in the ROD: (1) outside of the tank farm fence and inside the INTEC fence and (2) outside of the INTEC fence. This WMP addresses waste generated from each of these locations.

2. SITE BACKGROUND AND FACILITY DESCRIPTION

The INEEL is a government facility managed by the United States Department of Energy (DOE) located 51.5 km (32 mi) west of Idaho Falls, Idaho. It occupies 2,305 km² (890 mi²) of the northeastern portion of the Eastern Snake River Plain. The INTEC is located in the south-central portion of the INEEL as shown in Figure 2-1.

The INTEC began operating in 1952. The primary missions were reprocessing uranium for defense purposes and researching and storing spent nuclear fuel. Irradiated defense nuclear fuels were reprocessed to recover unused uranium. In 1992, the reprocessing mission was phased out. The current INTEC mission is receiving and temporarily storing spent nuclear fuel and radioactive wastes for future disposition.

The INTEC tank farm consists of 20 underground tanks ranging in volume from 69,644 to 1,135,500 L (18,400 to 300,000 gal). The tops of the tanks are located approximately 3.1 m (10 ft) below ground surface, with the bases located to depths of up to approximately 15.2 m (50 ft) below ground surface.

The tank farm soils area (shown in Figure 2-2, along with areas to be disturbed during the TFIA) previously consisted of sites in OUs 3-06, 3-07, 3-08, 3-11, and 3-13. The sites are located in the area of the tank farm (Sites CPP-16, -20, -24, -25, -26, -28, -30, -31, -32, and -79) and adjacent to the Process Equipment Waste Evaporator Building (Sites CPP-15, -27, -33, and -58) and are now consolidated into Site CPP-96. These sites consist of soil contamination that resulted from spills and pipeline leaks of radioactive liquids from plant liquid transfer operations. Distributed throughout the tank farm soils outside of the previously identified release sites are low concentrations of contaminants at varying locations and depths. New Site CPP-96 is a consolidation of all the previously identified tank farm soil sites and the intervening interstitial soils within the Site CPP-96 boundary. No evidence has been found to indicate that any of the tanks have leaked; however, contaminants found in the interstitial soils are likely the result of accidental releases and leaks from process piping valve boxes or sumps and cross-contamination from operations and maintenance excavations. Limited site investigations have been conducted at the tank farm sites because many of the spill areas are in operational and highly radioactive areas.

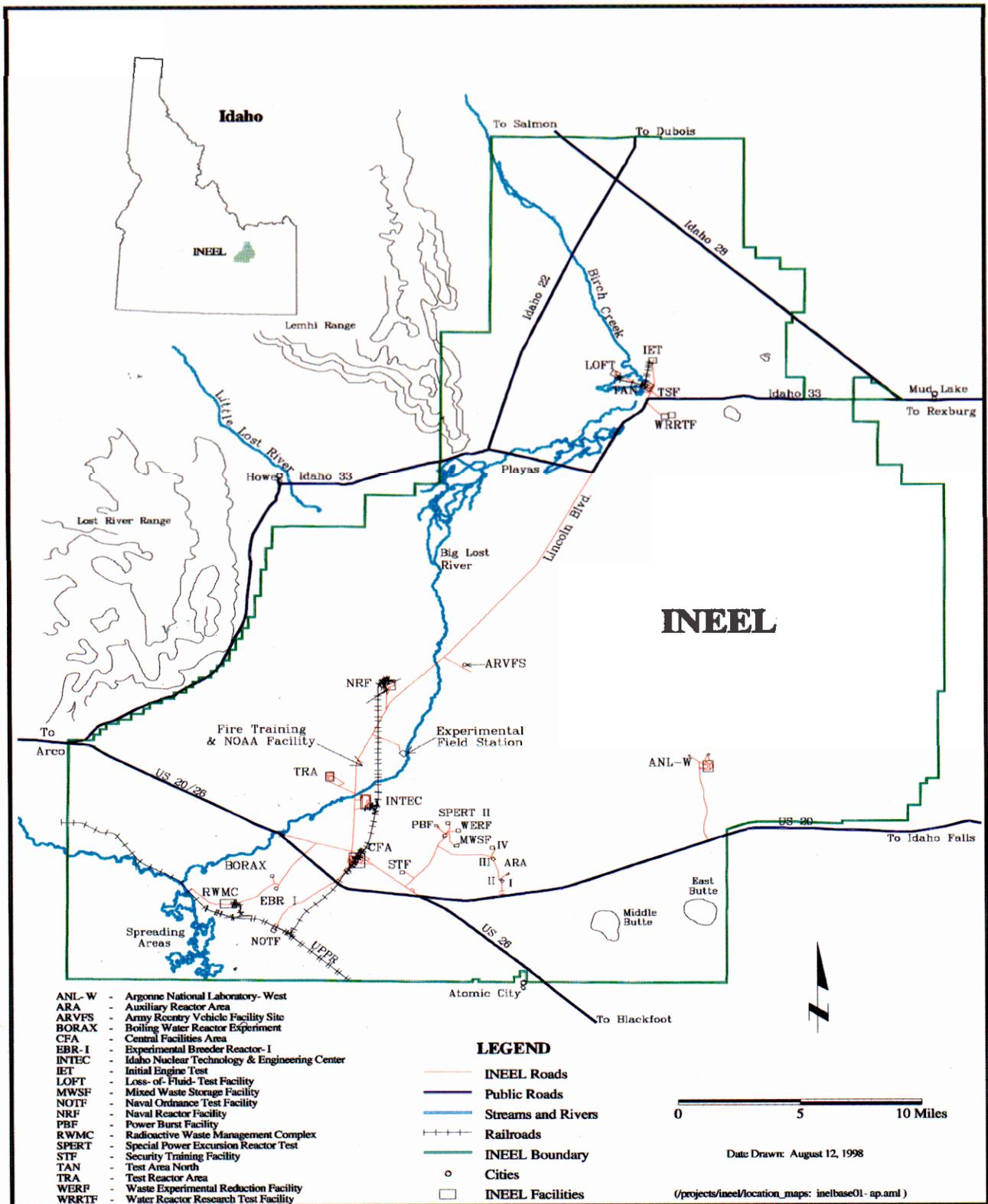


Figure 2-1. INEEL location map.

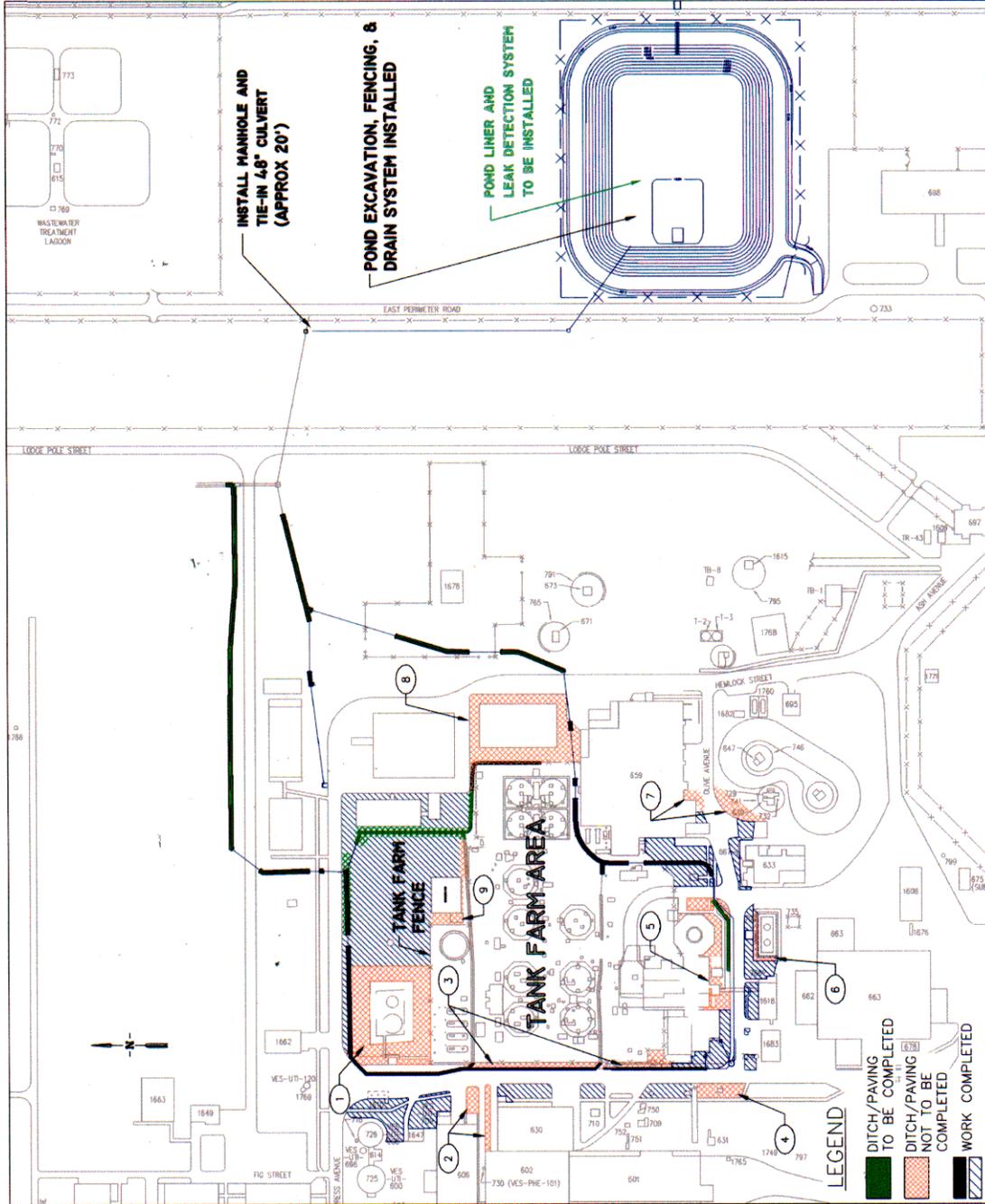


Figure 2-2. Locations of TFIA areas to be disturbed, including upgraded ditches, lift station, stormwater drainage system upgrades, new culverts, and evaporation pond.

3. WASTE GENERATION

The following sections discuss the types of waste anticipated to be generated during implementation of Phase I of the TFIA and associated waste disposal options.

3.1 Remediation Sites

The principal threats at the tank farm soil release sites are external exposure to radiation and potential leaching and transport of contaminants to the perched water or the Snake River Plain Aquifer. A complete discussion of the nature and extent of contamination of the tank farm soils can be found in Section 5 of the ROD (1999).

Per the ROD, the remedial action objectives will be accomplished by implementing activities to meet the following specific interim action goals:

- Restrict access to control exposure to workers and prevent exposure to the public from soils at the tank farm until implementation of the final remedy under OU 3-14
- Accommodate a 1-in-25-year, 24-hour storm event with surface water run-on diversion channels
- Minimize precipitation infiltration by grading and surface-sealing the tank farm soils sufficient to divert 80% of the average annual precipitation falling on the tank farm soils area
- Improve exterior building drainage to direct water away from the contaminated areas.

Existing stormwater drainage ditches will be concrete-lined to divert runoff from the tank farm to the evaporation pond. The evaporation pond has been excavated and will be lined for this Phase I scope.

The Phase I interim action activities being implemented for the tank farm soils will take place in two different areas within the AOC: (1) outside of the tank farm fence and inside the INTEC fence and (2) outside of the INTEC fence.

3.2 Waste Identification

The CERCLA remediation wastes anticipated to be generated from the various activities associated with the OU 3-13 TFIA are summarized in Table 3-1. This table describes the various waste streams, identifies waste types, and provides an estimated volume for each waste type, where possible. Based on available process knowledge and analytical data, the following waste types could be generated during the interim action: (1) low-level; (2) industrial waste, i.e., petroleum-contaminated material, such as soil, sand, gravel, or other earthen material, and mercury-free batteries, cafeteria waste, paper, sweepings, and office waste; (3) Resources Conservation and Recovery Act (RCRA) hazardous, or (4) mixed hazardous and low-level radioactive waste.

Table 3-1. Possible waste generation for OU 3-13 TFIA.

Waste Description	Potential Waste Type	Estimated Volume
Outside of the INTEC Fence		
Contaminated soil	Low-level	< 8.0 yd ³
Hydraulic fluid spills	Industrial or low-level	0.27 yd ³
Administrative (paper products, office waste, work gloves)	Industrial	0.11 yd ³
Monitoring waste (radiological swipes, Masslinn)	Low-level or industrial	< 0.1 yd ³
Inside the INTEC Fence, Outside of the Tank Farm Fence		
Asphalt/concrete/rip rap	Industrial or low-level	100 yd ³
Metal culvert (galvanized steel)	Industrial, recyclable, or low-level	320 linear ft
Contaminated soil	Low-level, hazardous, or mixed	< 8.0 yd ³
Hydraulic fluid spills	Industrial or low-level	0.27 yd ³
Administrative (paper products, office waste, work gloves)	Industrial	0.11 yd ³
Radiologically contaminated equipment that cannot be decontaminated	Low-level	< 1.0 yd ³
Decontamination fluids	Low-level, hazardous, or mixed	0.27 yd ³
Decontamination solids (cloths, tarps, brushes, etc.)	Low-level, hazardous, or mixed	< 1.0 yd ³
Personal protective equipment (gloves, boots, shoe covers, coveralls)	Low-level	< 1.0 yd ³
Monitoring waste (radiological swipes, Masslinn)	Low-level industrial, hazardous, or mixed	< 0.1 yd ³
Inside the Tank Farm Fence		
Personal protective equipment (gloves, boots, shoe covers, coveralls)	Low-level or mixed	5.0 yd ³
Radiologically contaminated equipment that cannot be decontaminated	Low-level	< 1.0 yd ³
Decontamination fluids	Low-level or mixed	0.27 yd ³
Decontamination solids (cloths, tarps, brushes, etc.)	Low-level or mixed	< 1.0 yd ³
Monitoring waste (radiological swipes, Masslinn)	Low-level, mixed, or industrial	< 0.1 yd ³
Hydraulic fluid spills	Low-level, mixed, or industrial	0.27 yd ³
Contaminated soil	Low-level or mixed	< 8.0 yd ³

4. WASTE MANAGEMENT

Waste resulting from the TFIA that may require disposal may include personal protective equipment (PPE), soil, asphalt, concrete, rip rap, metal culvert, and decontamination wastes. This waste will be disposed of in accordance with the final ROD for OU 3-13, this WMP, the *Idaho National Engineering and Environmental Laboratory Waste Acceptance Criteria* (DOE-ID 2002a), the *Waste Management Plan for the Staging and Storage Annex (SSA)* (DOE-ID 2002b), and appropriate regulations.

4.1 Characterization

Waste generated during the TFIA will be identified in accordance with applicable (RCRA) regulations (40 CFR 261; 262.11); Management Control Procedure (MCP)-3472, "Identification and Characterization of Environmentally Regulated Waste," and the screening methods outlined in ACMM-3994, "In Situ Gamma-Radiation Measurement of Soils," (INEEL 2000) found in Appendix K of the Remedial Design/Remedial Action Work Plan for Group 1, Tank Farm Interim Action. As outlined in Section 3, preliminary classifications have been made of anticipated waste types based on process knowledge regarding the source(s) of the expected waste. Subsequent to generation, any or all of the waste may be reclassified. Prior to ultimate disposal, waste may be further characterized to ensure compliance with the INEEL CERCLA Disposal Facility (ICDF) Waste Acceptance Criteria. Appropriate and required documentation of waste characterization will be completed.

4.2 Waste Minimization and Segregation

Waste minimization for this project will be accomplished through design and planning to ensure efficient operations that will not generate unnecessary waste. As part of the prejob briefing, emphasis will be placed on waste reduction philosophies and techniques, and personnel will be encouraged to continuously attempt to improve methods for minimizing waste generation. Practices to be instituted to support waste minimization include, but are not limited to, the following:

- Restricting material (especially hazardous material) entering radiological buffer areas to those needed for work performance
- Substituting recyclable or incinerable items for disposable items
- Reusing items when practical
- Segregating contaminated from uncontaminated waste
- Segregating reusable items such as PPE and tools.

4.3 Onsite Management and Disposition

Wastes from the interim action activities that exceed the stated remediation clean-up goals as specified in the ROD will be managed as CERCLA remediation-derived wastes. The wastes will be temporarily managed within the WAG 3 AOC under the substantive requirements of Idaho Administrative Procedures Act 16.01.05.008 (40 CFR 264.553, "Temporary Units," and 40 CFR 264.554 "Staging Piles"). By managing the wastes in the AOC, placement, as specified by the RCRA, will not be triggered. The wastes will be managed in temporary units and remediation waste staging piles until the ICDF is available to receive them or in the CERCLA storage area within the WAG 3 AOC, the Staging

and Storage Annex (SSA), which is located directly north of building CPP-1681. The final disposition of these wastes will be in the ICDF, if the wastes meet the ICDF WAC.

As discussed in Section 3, the anticipated wastes include soil, debris, PPE, and decontamination wastes. Details of the management and disposition of the anticipated waste streams are provided in the following sections.

4.3.1 Activities Outside the INTEC Fence

These actions include lining the evaporation pond and an overflow ditch exiting the evaporation pond. These actions will occur in previously undisturbed areas. Potential waste from this area includes industrial and low-level.

These actions include grading and lining new and existing stormwater collection ditches; installing a manhole, endwalls and headwalls; replacing culverts; and installing asphalt in identified areas. Soil from excavations, including all sediments to be removed from existing culverts, and any other part of the existing drainage system, will be placed into staging piles so that when used for backfill, it can be placed back into the excavation in reverse sequence of removal. Photographs of the excavation and staging piles may be used to augment the operating record and aid in using the soil for backfill. Any material that cannot be used for grading or backfill will be set aside in a waste pile. Screening with a portable gamma spectroscopy unit will be performed on any waste piles to determine if the material meets the remediation goals. Clean excess soil will be used for other projects at the INTEC. Clean excess soil will be staged in the northeast portion of INTEC. Potential waste from this area includes industrial, low-level, hazardous, and mixed.

4.3.1.1 Industrial Waste. This waste stream would consist of monitoring waste, such as clean radiological swipes and Masslinn or petroleum-contaminated material, administrative waste such as paper products, noncontaminated clothing, lunch wastes, etc. Industrial waste is shipped to the INEEL Landfill Complex at the Central Facilities Area (CFA) for disposal. Requirements for disposal, such as no free liquids and clear packaging, must be met. Landfill acceptance criteria are defined in the reusable property, recyclable materials, and waste acceptance criteria (RRWAC). This waste will be nonhazardous and nonradioactive and will be tracked through the company Integrated Waste Tracking System (IWTS).

4.3.1.2 Low-Level Waste. Low-level waste is not expected to be generated outside of the INTEC fence. Screening with a portable gamma spectroscopy unit will occur prior to any excavations in this area. If remediation goals are exceeded, contaminated soil will be stockpiled or containerized as necessary or required and stored in Group 3 SSA for later disposal. Contaminated monitoring wastes would also be placed in this waste stream. This waste type is tracked through IWTS.

Because this project involves soil disturbance at INTEC, there is a possibility of encountering contaminated soil. Radiological control technicians (RCTs), who will notify workers of any radiological conditions above background, will monitor activities. Working in radiologically contaminated soil will generate contaminated PPE (for example, gloves, boots, shoe covers, coveralls) and possibly contaminated equipment. If equipment can be decontaminated, both solid and liquid decontamination wastes (for example, cloths, tarps, brushes, water) could be generated. If it is determined that the area was contaminated from a release of RCRA-type waste, the primary and decontamination waste will be classified as hazardous or mixed. All contaminated waste will be stockpiled or containerized, as necessary or required, and stored in Group 3 SSA for later disposal in the ICDF. Stockpiled waste will be placed on plastic liners or tarps and covered with the same material. Decontamination liquids will be placed in drums and stored in overpacks. Contaminated monitoring wastes will be placed in this waste stream. As mentioned above, asphalt, concrete, and metal culvert will be staged in waste piles. Excess soil not used

as backfill will also be staged in piles for use elsewhere in WAG 3. Waste piles determined to exceed remediation goals will be disposed in the ICDF. This waste will be tracked in IWTS.

4.3.2 New Waste Streams

Any new waste streams encountered during the TFIA must be identified and characterized. New waste streams identified will be considered CERCLA remediation wastes unless discovered or proven otherwise. Any new waste streams will be evaluated to determine if the waste stream is from a new or previously identified CERCLA site or another source. At the time of generation, a hazardous waste determination will be completed, documented, and approved. Storage, additional characterization, treatment, and final disposition of the waste will be based on the hazardous waste determination, the Final ROD (DOE-ID 1999), the SSA waste management plan (DOE-ID 2002b), and appropriate regulations.

4.4 Packaging

Packaging of all waste materials generated will be in compliance with the RRWAC; the U.S. Department of Transportation regulations (49 CFR 171, 49 CFR 173, 49 CFR 177, and 49 CFR 178), and RCRA regulations found in 40 CFR 264 Subpart I. Packaging and Transportation personnel will be consulted prior to generation of any waste to identify specific types of containers to be used for the anticipated wastes. Typical containers used are 55-gal steel UN1A1 and UN1A2 drums and wooden or metal boxes. Any drummed liquids will be placed inside overpack drums.

4.5 Labeling

All waste containers will be labeled appropriately. Industrial waste will be labeled as such. All CERCLA remediation waste will be labeled with a "CERCLA Waste" label that includes an accumulation start date, waste description, applicable waste codes, and the generator's name. Each container will have a barcode label generated from the IWTS database. All container labels will be placed where they are clearly visible during storage and shipment. Drums will be labeled on top and on one side. Boxes will be labeled on two opposing sides of the container. Radiation labels will be completed and placed on each container by a radiological control technician as required by the INEEL Radiological Control Manual (INEEL 1996). During shipment, other information must be included on containers such as applicable Department of Transportation labels, manifest number, gross weight, and shipper's complete name and address.

4.6 Storage, Inspection, and Recordkeeping

All containers of CERCLA remediation waste generated from the TFIA project will be stored in the CERCLA storage area known as the SSA until the ICDF is constructed and operational or in a CERCLA storage area (CSA) in the vicinity of the TFIA project. All containers will be inventoried on an activity sheet. Information to be recorded will include the IWTS barcode assigned to the container, type of container, type of waste inside the container (including potential codes), and the volume of waste inside the container. An evaluation will be performed as each container is logged in to ensure that incompatible wastes will be segregated. The SSA and CSA will be inspected weekly by the operator for leaks, spills, aisle space, compatibility of the waste with its container, segregation requirements, appropriate labels, appropriate signs posted, etc. Weekly inspection sheets will be kept in the storage area logbook along with the activity sheets. The SSA will have a sign-in logbook for any visitors. The operator must escort those visitors without appropriate or required training. All information generated from the storage and inspection of waste in the SSA and CSA is considered a quality record and must be kept on file indefinitely after closure.

4.7 Transportation

CERCLA remediation waste generated as a result of OU 3-13 TFIA activities will be transported in accordance with requirements identified in the RRWAC, appropriate DOT regulations, and RCRA regulations. Waste Generator Services and Packaging and Transportation personnel will be responsible for shipping all CERCLA remediation waste. Industrial waste transported to the INEEL Landfill Complex will be transported by personnel who have obtained an INEEL Form 134, "INEEL Landfill User's Permit." Waste Generator Services or the INEEL waste handlers can provide assistance in transporting industrial waste.

5. REFERENCES

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- 40 CFR 264.554, 1988, "Staging Rights," *Code of Federal Regulations*, Office of the Federal Register, November 1988
- 40 CFR 261, "Identification and Listing of Hazardous Wastes," *Code of Federal Regulations*, Office of the Federal Register, current issue.
- 40 CFR 262.11, 1995, "Hazardous Waste Determination," *Code of Federal Regulations*, Office of the Federal Register, May 1995
- 40 CFR 264, "Use and Management of Containers," *Code of Federal Regulations*, Office of the Federal Register, Subpart I, current issue.
- 42 USC § 9601 et seq., December 11, 1980, "Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA/Superfund)", United States Code.
- 49 CFR 171, "General Information, Regulations, and Definitions," *Code of Federal Regulations*, Office of the Federal Register, current issue.
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- 49 CFR 177, "Carriage by Public Highway," *Code of Federal Regulations*, Office of the Federal Register, current issue.
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