ENVIRONMENTAL ASSESSMENT
FOR THE
WIDENING TRENCH 36 OF THE
218-E-12B LOW-LEVEL BURIAL GROUND,
HANFORD SITE, RICHLAND, WASHINGTON

U.S. DEPARTMENT OF ENERGY
RICHLAND, WASHINGTON

FEBRUARY 1999

Table of Contents

PREFACE

This environmental assessment was prepared to assess potential environmental impacts associated with the proposed action to widen and operate unused Trench 36 in the 218-E-12B Low-Level Burial Ground for disposal of low-level waste. Information contained herein will be used by the Manager, U.S. Department of Energy, Richland Operations Office, to determine if the Proposed Action is a major federal action significantly affecting the quality of the human environment. If the Proposed Action is determined to be major and significant, an environmental impact statement will be prepared. If the Proposed Action is determined not to be major and significant, a Finding of No Significant Impact will be issued and the action may proceed. Criteria used to evaluate significance can be found in Title 40, Code of Federal Regulations 1508.27.

This environmental assessment was prepared in compliance with the *National Environmental Policy Act of 1969*, as amended, the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of *National Environmental Policy Act* (Title 40, Code of Federal Regulations 1500-1508), and the U.S. Department of Energy Implementing Procedures for *National Environmental Policy Act* (Title 10, Code of Federal Regulations 1021). The following is a description of each section of this environmental assessment.

1.0 Purpose and Need for Action. This section provides a brief statement concerning the problem or opportunity the U.S. Department of Energy is addressing with the Proposed Action. Background information is provided.

2.0 Description of the Proposed Action. This section provides a description of the Proposed Action with sufficient detail to identify potential environmental impacts.

3.0 Alternatives to the Proposed Action. This section describes reasonable alternative actions to the Proposed Action, which addresses the Purpose and Need. A No Action Alternative, as required by Title 10, Code of Federal Regulations 1021, also is described.

4.0 Affected Environment. This section provides a brief description of the locale in which the Proposed Action would take place.

5.0 Environmental Impacts. This section describes the range of environmental impacts, beneficial and adverse, of the Proposed Action. Impacts of alternatives briefly are discussed.

6.0 Permits and Regulatory Requirements. This section provides a brief description of permits and regulatory requirements for the Proposed Action.

7.0 Organizations Consulted. This section lists any outside groups, agencies, or individuals contacted as part of the

environmental assessment preparation and/or review.

8.0 References. This section provides a list of documents used to contribute information or data in preparation of this environmental assessment.

Appendices. Additional information necessary to support an understanding of the Proposed Action, alternatives, and potential impacts is provided.

Table of Contents

APPENDICES

FIGURES

TABLE

GLOSSARY

ALARA	as low as reasonably achievable
CFR	*Code of Federal Regulations*
CWC	Central Waste Complex
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
EA	environmental assessment
EDE	effective dose equivalent
EIS	environmental impact statement
ESA	*Endangered Species Act of 1973*
FONSI	finding of no significant impact
FY	fiscal year
HCRC	Hanford Cultural Resources Review
HCRL	Hanford Cultural Resources Laboratory
HSRCM	Hanford Site Radiological Control Manual
LLBG	low-level burial grounds
LLW	low-level waste
MW	mixed waste
NEPA	*National Environmental Policy Act of 1969*
PA	performance assessment
RCRA	*Resource Conservation and Recovery Act of 1976*
rem	roentgen equivalent man
TRU	transuranic
WAC	*Washington Administrative Code*
WHC	Westinghouse Hanford Company

DEFINITION OF TERMS

Low-Level Waste (LLW) is waste that contains radioactivity and is not classified as high-level waste, transuranic (TRU) waste, or spent nuclear fuel or byproduct material as defined in U.S. Department of Energy Order 5820.2A, "Radioactive Waste Management." Test specimens of fissionable material irradiated for research and development

only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of TRU is less than 100 nanocuries per gram.

LLW is further classified according to radionuclide concentration into Category 1, Category 3, and Greater Than Category 3. This classification system is similar to the U.S. Nuclear Regulatory Commission waste classification system found in Title 10, Code of Federal Regulations (CFR) 61, "Licensing Requirements for Land Disposal of Radioactive Waste." This categorization is adapted to fit isotopic and volume characteristics of Hanford Site waste. The higher the category number, the greater the activity and long-lived radionuclide concentration, which results in stricter requirements for stabilization and disposal.

Mixed Waste (MW) is waste containing both radioactive components and dangerous waste as defined in *Washington Administrative Code* (WAC) 173-303, "Dangerous Waste Regulations," requiring treatment, storage, and/or disposal in accordance with the *Resource Conservation and Recovery Act* (RCRA) *of 1976* regulations.

TRU waste, without regard to source or form, is waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries per gram at the time of assay.

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.305	meters	meters	3.28	feet
yards	0.914	meters	meters	1.09	yards
miles	1.61	kilometers	kilometers	0.62	miles
Area			**Area**		
square feet	0.092	square meters	square meters	10.76	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
square feet	2.296×10^{-5}	acres	acres	4.36×10^{4}	square feet
acres	0.404	hectares	hectares	2.47	acres
Volume			**Volume**		
cubic feet	0.028	cubic meters	cubic meters	35.31	cubic feet

cubic yards	0.76	cubic meters	cubic meters	1.31	cubic yards
gallons	3.79	liters	liters	0.26	gallons
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit

After: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

1.0 PURPOSE AND NEED FOR ACTION

The following sections describe the purpose and need, and provide background information concerning this environmental assessment (EA).

1.1 PURPOSE AND NEED

The U.S. Department of Energy, Richland Operations Office (DOE-RL) needs cost-effective waste disposal capacity to accommodate bulk category 1 low-level waste (LLW) and to facilitate segregation of LLW.

1.2 BACKGROUND

Since the start of the defense materials production mission in 1943, the Hanford Site (Figure 1) has disposed of or stored more than 600,000 cubic meters (21.2 million cubic feet) of solid radioactive waste (WHC-SD-WM-TI-730). Disposal of radioactive waste in burial grounds started in 1944. Before 1970, all solid waste on the Hanford Site, regardless of radionuclide content or hazardous constituents, was placed in trenches and covered with soil.

From 1970 to 1987, TRU waste was segregated from LLW in the Low-Level Burial Grounds (LLBG). In August 1987, the dangerous components of radioactive waste became regulated under WAC Chapter 173-303, "Dangerous Waste Regulations," and the hazardous components of radioactive waste regulated under RCRA. Since this date, mixed waste (MW) has been placed in storage at the Central Waste Complex (CWC) in the 200 West Area. TRU and MW are not considered in this EA.

LLW is disposed in the active LLBG, which are located in the 200 East and 200 West Areas (Figures 2 and 3). Examples of waste disposed in the LLBG are process waste, laboratory waste, construction debris, containerized waste, and bulk waste. Typical containers used for disposal of LLW are metal drums from 3.8 liters (1 gallon) to 416.4 liters (108 gallons) in size, and boxes made of wood, concrete, metal, and fiber-reinforced plastic. Current bulk (uncontainerized) waste forms disposed in V-type LLW trenches typically consist of vegetation (e.g., tumbleweeds), wood scraps, soil, and other types of waste as stated in the *Low-Level Burial Grounds Disposal Plan* (HNF-SD-WM-ES-355). In addition, large items are received periodically at the LLBG. These items include tanker trucks, cover blocks, cranes, and failed equipment, which also are disposed of as bulk waste.

Because the existing V-type LLW trenches were designed before 1976 and analyzed in ERDA-1538, the V-type trenches are insufficient for current disposal operations of bulk waste. The V-type trenches are narrow at the bottom and are generally less than about 5 meters (16 feet) deep. Current procedures require 2.44 meters (8 feet) of clean fill dirt over all waste disposed in the LLBG. The LLBG area can be more efficiently utilized by digging trenches as wide as possible. Given trenches of equivalent depth, the wider trenches would allow more waste to be placed per square

feet of surface area. This not only saves on trench construction costs, but also decreases closure cover size and cost for a given volume of waste.

Operations in the LLBG include receipt of LLW from DOE approved generators. The vehicle carrying the LLW, such as a standard semi-trailer truck, flatbed truck, dump truck, or other conveyance, is positioned within or beside the receiving trench. The LLW is dumped directly or unloaded using forklifts, a crane, and/or an alternate approved method. Disposal documentation is completed, and the trench is backfilled to cover the LLW. Trench stabilization will occur before final closure.

The LLBG consist of the following: >

200 West Area	**200 East Area**
•218-W-3A	• 218-E-10
•218-W-3AE	•218-E-12B.
•218-W-4B	
•218-W-4C	
•218-W-5	
•218-W-6.	

The existing trench designated to receive only bulk LLW is being filled rapidly. LLW could be disposed in presently configured trenches; however, this would result in both higher short-term (stabilization) and long-term (final closure cover) expense. Any efforts taken to increase the waste capacity per unit surface area for the trenches receiving this waste type will reduce closure costs (HNF-SD-WM-ES-355).

LLW generated onsite or by offsite generators is disposed in the 200 East and 200 West areas of the Hanford Site. An assessment is made by Operations to verify that generators have the appropriate procedures, systems, and operational capabilities to meet the LLBG waste acceptance criteria (HNF-EP-0063). The generators compile a waste profile sheet for a waste stream proposed for disposal..

Because of uncertainty associated with forecasting, emerging needs, and actual generation of waste, it is necessary to maintain a certain level of cushion to have the capacity to support all waste types. The latest available information for expected volumes of LLW bulk waste indicates that the baseline bulk LLW volumes forecasted for onsite and offsite (Table 1) would result in essentially filling the current bulk LLW Trench 42 by the end of fiscal year (FY) 1999. If the maximum projected volume of LLW were added, Trench 42 probably would be filled around midyear. In addition, acceptance of bulk shipments per year, which were not identified in the forecast, is required. These annual unforecasted volumes typically ranged from about 142 to 1,133 cubic meters (5,000 to 40,000 cubic feet). Therefore, to ensure that sufficient capacity is available to support generator requests, Trench 36 would need to be widened in FY 1999.

In 1975, Hanford Site burial ground activities were evaluated in the *Final Environmental Impact Statement on Waste Management Operations, Hanford Reservation* (ERDA-1538). In May 1997, DOE issued the *Final Waste Management Programmatic Environmental Impact Statement* (WM-PEIS) (DOE/EIS-0200) examining the DOE complex-wide management of current and anticipated volumes of various waste, including LLW. DOE has begun preparation for a Hanford Site Solid (radioactive and hazardous) Waste Program EIS (HSW-EIS) that examines the management of various waste volumes subject to the alternatives evaluated in the WM-PEIS, including, but not limited to, the disposal of LLW and closure of LLBG. The Record of Decision for the WM-PEIS for LLW is being prepared. This environmental assessment is an interim action to, and would not prejudice any alternatives or decisions that would be made in the HSW-EIS. Final closure and any monitoring issues of trenches in the LLBG would be addressed in future environmental documentation.

Figure 1. Hanford Site.

Figure 2. 200 East Area Low-Level Burial Grounds.

Figure 3. 200 West Area Low-Level Burial Grounds (DOE/RL-88-21).

Table 1. Bulk Low-Level Waste Projections[1].

Low-level waste source	Low-level waste volume		Remaining capacity for bulk low-level waste in Trench 42	
	cubic meters	cubic feet	cubic meters	cubic feet
Unforcasted FY 1999			1,410	49,800
BNA (Rocketdyne)[2]	708	25,000	702	24,800
FY 1999 forecast baseline				
General Atomics	280	9,900	422	14,900
Unforecasted FY 1999				
MISC[3] ONSITE	283	10,000	139	4,900
FY 1999 baseline forecast ONSITE[4]	1,246	44,000	-1,107	-39,100
FY 1999 forecast maximum				
General Atomics	28	1,000	-1,135	-40,100
FY 1999 forecast				
UC Davis (LEHR)	1,498	52,900	-2,633	-93,000
TOTAL	2,797	98,800		

BNA= Boeing North America.

FY= fiscal year.

LEHR= Laboratory for Energy Related Health Research.

MISC= miscellaneous.

1 Solid Waste Integrated Forecast Technical Report (SWIFT: HNF-EP-0918).

2 Not in FY 1999 forecast; however, contracted with DOE-RL through work order.

3 Estimated for contaminated tumbleweeds and from contamination control activities.

4 FY 1999 baseline forecast for large packaged items (at least 4 feet by 4 feet by 8 feet in size).

2.0 DESCRIPTION OF THE PROPOSED ACTION

The following sections describe the proposed action, and provide additional environmental information concerning the proposed action.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The proposed action would widen Trench 36 within the 218-E-12B Low-Level Burial Ground (Figure 4) for disposal of LLW. The base of this trench (Figure 5) would be widened on the east side from approximately 1.5 meters (5 feet) to 9.1 meters (30 feet) with the same slope (1.5:1) along the entire 275 meter (900 foot) length of the trench. Existing bulk LLW disposal capacity in Trench 36 would increase almost six times from approximately 1,050 cubic meters (37,200 cubic feet) to 6,320 cubic meters (223,000 cubic feet). Bulldozers using standard construction practices would move soil to the east side of the length of the current trench configuration to be used as backfill during operations. Backfilling operations would cover the bulk LLW with a minimum of 2.4 meters (8 feet) of soil. The proposed action would begin in FY 1999.

The bulk LLW would be unloaded into the disposal trench by dumping off the back end of a dump truck, or by use of a forklift, crane, or other approved method. Typical LLW operations on the Hanford Site would not change as a result of the proposed action. Widening Trench 36 would provide for more cost-effective land use and would increase the capacity of the LLBG, without an increase to the footprint of the LLBG. The cost of widening Trench 36 would be approximately $29,000 based on excavation costs of $2.73 per cubic meter ($2.10 per cubic yard) (HNF-SD-WM-ES-355).

2.2 ENVIRONMENTAL INFORMATION

A Biological Resources Review (Appendix A) and a Cultural Resources Review (Appendix B) have been prepared for the proposed action.

Figure 4. 218-E-12B Low-Level Burial Ground.

Figure 5. V-Type Trench: Proposed Trench 36 Widening.

3.0 ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the proposed action are discussed in the following sections.

3.1 NO ACTION ALTERNATIVE

The No Action alternative would involve the continued disposal of bulk LLW in existing trench space. Trench 42 would be used until full (by the end of FY 1999). Existing trenches designated for other waste types might be used for bulk LLW disposal. Additional V-type trenches might have to be added to the existing LLBG. This would result in less efficient use of trench space at a higher cost for eventual disposal of Category 1 LLW.

3.2 OTHER ALTERNATIVES

Other alternatives to the proposed action are described in the following sections.

3.2.1 Alternative to Widen Trench 14 in the 218-E-10 Burial Ground

This alternative would extend and widen existing partially filled Trench 14 in the 218-E-10 Burial Ground (Figure 2) for disposal of bulk LLW. However, because this trench is partially filled, this trench would provide less volume than the Proposed Action.

3.2.2 Alternative to Widen Trench 37 in the 218-W-4C Burial Ground

This alternative would widen the existing and unused Trench 37 in the 218-W-4C Burial Ground (Figure 3). Because Trench 37 is not as long and is more shallow than Trench 36, this alternative would not provide equivalent capacity for bulk LLW disposal.

3.2.3 Alternative to Dig New Trench

An alternative to dig a new trench to the size of the proposed action was considered. However, at a cost of about $2.73 per cubic meter ($2.10 per cubic yard) to excavate soil and dig a trench in an existing LLBG of similar size to the Proposed Action, the new trench would cost approximately $60,000, more than twice the cost for the Proposed Action.

Alternative for Offsite Disposal

An alternative for offsite disposal was considered. If this alternative was taken, the excavation might be similar to the proposed action. However, this alternative would not take advantage of the using the existing LLBG and related infrastructure owned and operated by DOE. Thus, the cost for disposal of bulk LLW may be more expensive. In addition, there would be increased transportation risk of sending Hanford LLW offsite.

4.0 AFFECTED ENVIRONMENT

The following sections provide a discussion of the existing environment to be affected by the proposed action and alternatives.

4.1 GENERAL HANFORD SITE ENVIRONMENT

The Hanford Site is about 1,450 square kilometers (560 square miles) located in southeastern Washington State, in a semiarid region with rolling topography. Two topographical features dominate the landscape: Rattlesnake Mountain located on the southwest boundary and Gable Mountain located on the northern portion. The Columbia River flows through the northern part and forms part of the eastern boundary of the Hanford Site. Areas adjacent to the Hanford Site primarily are agricultural lands. The 200 East Area and 200 West Area have been heavily used as waste processing and waste management areas.

The Hanford Site has a mild climate with 15 to 18 centimeters (6 to 7 inches) of annual precipitation, with most of the precipitation taking place during the winter months. Temperature ranges of daily maximum temperatures vary from normal maxima of 2°C (36°F) in early January to 35°C (95°F) in late July. Monthly average wind speeds are lowest during the winter months, averaging 10 to 11 kilometers per hour (6 to 7 miles per hour), and highest during the summer, averaging 14 to 16 kilometers per hour (8 to 10 miles per hour) (PNNL-6415). Tornadoes are extremely rare in the region surrounding the Hanford Site.

During 1997, the Hanford Site air emissions remained below all established limits set for regulated air pollutants (PNNL-11495). Atmospheric dispersion conditions of the area vary between summer and winter months. The summer months generally have good air mixing characteristics. If the prevailing winds from the northwest are light, less favorable dispersion conditions might occur. Occasional periods of poor dispersion conditions occur during the winter months.

The vegetation on the Hanford Site is a shrub-steppe community of sagebrush and rabbitbrush with an understory consisting primarily of cheatgrass and Sandberg's bluegrass. The typical insects, small birds, mammals, and reptiles common to the Hanford Site can be found in the 200 Area plateau (PNNL-6415). Relatively undisturbed areas of the mature shrub-steppe vegetation are high-quality habitat for many plants and animals and have been designated as "priority habitat" by Washington State.

Most mammal species known to inhabit the Hanford Site are small, nocturnal creatures, primarily pocket mice and jackrabbits. Large mammals found on the Hanford Site are deer and elk, although the elk exist almost entirely on the Fitzner Eberhardt Arid Lands Ecology Reserve. Coyotes and raptors are the primary predators. Several species of small birds nest in the steppe vegetation. Semiannual peaks in avian variety and abundance occur during migration seasons. Additional information concerning the Hanford Site can be found in PNNL-6415.

DOE and its contractors dominate the local employment picture with almost one-quarter of the total nonagricultural jobs in Benton and Franklin counties. Ninety-three percent of Hanford Site personnel reside in the Benton and Franklin county areas. Therefore, work activities on the Hanford Site play an important role in the socioeconomics of the Tri-Cities (Richland, Pasco, and Kennewick) and other parts of Benton and Franklin counties (PNNL-6415). Other counties are less affected by changes in Hanford Site employment.

4.2 SPECIFIC SITE ENVIRONMENT

The proposed widening of Trench 36 would occur in a previously disturbed area within the 218-E-12B Burial Ground (Figure 5). This trench is approximately 11 kilometers (7 miles) southwest from the Columbia River. The 200 East Area is not located in a 100-year or 500-year floodplain, nor is it located within a wetlands area (PNNL-6415). The elevations for the 200 Areas average about 218 meters (715 feet) above mean sea level. The 200 East Area does not contain any prime farmland, state or national parks, forests, conservation areas, or other areas of recreational, scenic, or aesthetic concern. The City of Richland (population approximately 32,000), located about 40 kilometers (25 miles) from the 200 Areas in Benton County, adjoins the southernmost portion of the Hanford Site boundary and is the nearest population center.

4.2.1 Soils and Subsurface

The soil in the 200 Areas is predominately a sand and gravel mixture. All areas within the proposed action have been disturbed previously and scraped clean of any vegetation. The geologic strata under the surface layer, in descending order, are Holocene eolian deposits, Hanford formation, Ringold Formation, and the Columbia River Basalt Group. The eolian sands are fine- to coarse-grained, and relatively quartz- and feldspar-rich. Deposits of the Hanford formation underlie the eolian deposits. Hanford formation strata generally are dominated by deposits typical of the gravel-dominated facies consisting of uncemented granule to cobble gravels and minor coarse-grained sand. This is underlain by the top of the Ringold Formation. Basalt flows of the Columbia River Basalt Group and intercalated sediments of the Ellensburg Formation

underlie the Ringold Formation. The region is categorized as one of low to moderate seismicity (PNNL-6415).

4.2.2 Hydrology

The water table in the 200 Areas is approximately 73 meters (240 feet) to 88 meters (290 feet) below the surface (PNNL-6415). No groundwater contamination plumes have been detected originating from the LLBG.

4.2.3 Air Resources

The Hanford Site operates under WAC 173-400-040, *General Standards for Maximum Emissions* established by the Washington State Department of Ecology, which is designed to protect existing ambient air quality. In addition to the temporary fugitive dust discharged to the air during widening of Trench 36, there would be occasional air pollutants at the site from tractors excavating dirt and forklifts moving waste within the burial ground.

4.2.4 Plants and Animals

The 218-E-12B burial ground has been previously disturbed and is presently dominated by cheatgrass, Sandberg's bluegrass, assorted weedy species, and some crested wheatgrass, as related in Biological Review #99-200-008 (Appendix A). No plant or animal species protected under the *Endangered Species Act of 1973* (ESA), on the federal list of "Endangered and Threatened Wildlife and Plants" (50 CFR 17), or on Washington State list of threatened or endangered species were found in the area of the proposed action.

4.2.5 Cultural Resources

A Hanford Cultural Resources Review #99-200-008 (Appendix B) was conducted for the proposed action. The review concluded that, "It is the finding of the Hanford Cultural Resources Laboratory (HCRL) staff that there are no known historic properties within the proposed project area."

5.0 ENVIRONMENTAL IMPACTS

The following sections describe impacts from the proposed action.

5.1 CONSTRUCTION PHASE IMPACTS

Impacts from the construction phase activities are described in the following sections.

5.1.1 Soil or Subsurface Disturbance and the Consequences

All soil disturbances would occur on previously disturbed soil within the 218-E-12B Burial Ground. All soil and subsurface activities would be temporary. Therefore, the anticipated impacts to the environment are not expected to be consequential.

5.1.2 Liquid Discharges to the Groundwater or Surface Waters and the Consequences

Trench widening activities would include sprinkling clean water for dust control. However, because the water table is more than 73 meters (240 feet) below the surface, these activities would have little affect on groundwater or surface waters.

5.1.3 Gaseous, Particulate, or Thermal Discharges to the Air and the Consequences

Small quantities of gaseous, particulate, or thermal discharges would occur from typical construction activities. Sources would include trucks, tractors, and construction equipment. Dust would be controlled by watering down, or other dust suppression methods. No substantial increases in overall emissions are envisioned from the proposed action.

5.1.4 Radionuclide Releases or Direct Radiation Exposure and the Consequences

Because the proposed action would take place in a previously unused area, no contamination is expected. Therefore, no radionuclide releases or direct radiation exposure during trench widening activities would occur.

5.1.5 Nonhazardous Solid Waste Generated and the Consequences

It is not expected that any nonhazardous solid waste would be generated.

5.1.6 Hazardous or Dangerous Waste Generated and the Consequences

It is not expected that any hazardous solid waste would be generated.

5.1.7 Hazardous Substances Present and the Consequences

No hazardous substances would be present or expected to be present.

5.1.8 Disturbance to Previously Undeveloped Areas and the Consequences

All areas within the proposed action are on previously disturbed areas.

5.1.9 Consumption or Commitment of Nonrenewable Resources

Consumption of nonrenewable resources (e.g., petroleum products, diesel fuel, etc.) would occur. The amount of consumption would be minimal and managed through acceptable procedures.

5.1.10 Effects on Federal or State Listed, Proposed or Candidate, Threatened or Endangered Species

The Biological Review (#99-200-008) (Appendix A) concludes "...no plant and animal species protected under the ESA, candidates for such protection, or species listed by the Washington State government as threatened or endangered were observed in the vicinity of the proposed site." However, the report observed that since portions of the 218-E-12B burial ground currently have vegetation cover and it is highly likely that some migratory birds will nest in the area. The report recommended that if removal of the existing vegetation is required for burial ground operations, such removal only occur prior to April 15, 1999 (i.e. when the birds are not actively nesting).

5.1.11 Effects on Cultural Resources

A Hanford Cultural Resources Review, HCRC #99-200-008 (Appendix B) was conducted for the preferred alternative. The review concluded: "It is the finding of the HCRL staff that there are no known cultural resources or historic properties within the proposed project area." Therefore, no adverse impacts under the *National Historic Preservation Act of 1966* are expected.

5.1.12 Effects on any Floodplain or Wetland

The construction would not occur in a 100- or 500-year floodplain, nor within any area designated as a wetland.

5.1.13 Effects on any Wild and Scenic River, State or Federal Wildlife Refuge, or Specially Designated Area

The proposed action is outside any Wild and Scenic River corridor, state or federal wildlife refuge, or specially-designated area.

5.1.14 Reasonably Foreseeable Accidents Considered and the Effects

The reasonably-foreseeable accidents under the construction phase of the proposed action for widening Trench 36 would be typical construction accidents. Nonradiological risks to workers from occupational illness or injury are based on statistics for DOE and DOE contractor experience (DOE 1996). The average 'total recordable case rate' for the years 1990-1994 was 4.1 per 200,000 worker hours. Using the standard assumption for DOE and contractors of 1,830 hours per year for a full-time equivalent (FTE) worker and DOE's total recordable cases in 1995, 0.06% were fatalities and 45% were lost workday cases. There has been one lost workday case in LLBG over the last 2 years. All construction personnel would follow approved safety procedures for the trench-widening activities. Public health and safety would not be affected because the area is closed to the general public. Typical construction hazards would exist; however, the risk of severe accidents would be small.

5.2 OPERATION PHASE IMPACTS

Impacts from the operation phase activities are described in the following sections. No change in typical LLBG operations is expected from the proposed action.

5.2.1 Soil or Subsurface Disturbance and the Consequences

Because Trench 36 is an unused trench, the associated soil is free of pre-existing radioactive material. Any work in Trench 36 would be performed with administrative controls in place. Soil movement activities during backfilling would be temporary, and the likelihood of contamination small. Therefore, it is anticipated that impacts to the environment would not be consequential.

5.2.2 Liquid Discharges to the Groundwater or Surface Waters and the Consequences

Soil moving during backfilling operations would be accompanied by water sprinkling for dust control. Since only 15 to 18 centimeters (6 to 7 inches) of precipitation occurs annually on the Hanford Site, no run-off is expected because approximately 96 percent of the water is lost through evapotranspiration (PNNL-6415). Moreover, the water table is more than 73 meters (240 feet) below the surface, so liquid discharges are expected to be small and have little effect on groundwater or surface waters.

5.2.3 Gaseous, Particulate, or Thermal Discharges to the Air and the Consequences

Small gaseous, particulate, or thermal discharges from trucks, forklifts, and other equipment would be generated during routine operations. No substantial increases in overall emissions are envisioned from the proposed action.

5.2.4 Radionuclide Releases or Direct Radiation Exposure and the Consequences

Any work in the LLBG would be performed in compliance with as low as reasonably achievable (ALARA) principles, applicable federal and state regulations, and DOE Orders and guidelines. The LLBG are monitored routinely for radiation levels; and radiation work permits would specify the radiological condition and any LLBG entry requirements. Personnel would be required to have appropriate training, wear appropriate personal protective equipment, adhere to ALARA principles, and follow established administrative controls. Only minor radionuclide contamination releases, if any, are expected.

The potential radiation received by personnel during the proposed action would be typical of exposure in other LLBG, and would be administratively controlled below DOE limits established in 10 CFR 835, "Occupational Radiation Protection" and the "Hanford Site Radiological Control Manual" (HSRCM 1994). Those limits require that individual radiation exposure be controlled below an annual effective dose equivalent (EDE) of 5 rem per year. The average individual dose for LLBG workers is about 35 mrem per year. This dose is from direct exposure, as there has not been an inhalation or skin contamination reported in LLBG over the last 2 years. Operations and waste inventories in 218-E-12B Burial Ground would not change because of the proposed action.

5.2.5 Nonhazardous Solid Waste Generated and the Consequences

It is not expected that any nonhazardous solid waste would be generated.

5.2.6 Hazardous or Dangerous Waste Generated and the Consequences

No hazardous or dangerous waste is expected to be generated.

5.2.7 Hazardous Substances Present and the Consequences

No hazardous substances are expected to be present.

5.2.8 Any Disturbance to Previously Undeveloped Areas and the Consequences

All operations would occur within previously disturbed areas.

5.2.9 Consumption or Commitment of Nonrenewable Resources

Consumption of nonrenewable resources (e.g., petroleum products, diesel fuel, etc.) would occur for short periods. The amount of consumption would be minimal, and managed according to approved procedures.

5.2.10 Effects on Federal or State Listed, Proposed or Candidate, Threatened or Endangered Species

No federal or state-listed, proposed, candidate, threatened, or endangered species are expected to be affected.

5.2.11 Effects on Cultural Resources

There would be no effects on cultural resources.

5.2.12 Effects on any Floodplain or Wetland

The proposed action is outside any floodplains or wetlands.

5.2.13 Effects on any Wild and Scenic River, State or Federal Wildlife Refuge, or Specially Designated Area

The proposed action is outside any Wild and Scenic River corridor, state or federal wildlife refuge, or specially-designated area.

5.2.14 Reasonably Foreseeable Accidents Considered and the Effects

A reasonably foreseeable accident considered during operation would be a dispersal of contamination from breach of a waste bulk soil container [21 cubic meters (27 cubic yards)] (abnormal operation with stable meteorology), as analyzed in the "Solid Waste Burial Grounds Interim Safety Analysis" (HNF-SD-WM-SARR-028) Appendix 6F, Section 5.3. For this scenario, a waste bulk soil container is one typical dump truck load of bulk waste. It is postulated that a single container of waste bulk soil is spilled because of an operator error that results in an unplanned dumping or a vehicle accident that breaches the container. The contents of a breached container are assumed to be ejected from the container with sufficient force to create an amount of fugitive dust comparable to the amount released from dumping the contents of a container down the trench working face. A plume would originate from the point of the release, which is presumed to occur on or adjacent to a facility road or transfer pad. Some additional fugitive dust would be created in the process of spill cleanup; this release is assumed to be comparable in magnitude to the release resulting from spreading one container of bulk waste soil in the disposal trench. Because waste handling would not occur at windspeeds of greater than 24 kilometers per hour (15 miles per hour), the contribution of wind suspension to the release is considered to be negligible. The consequences of this accident would still be well below radiological risk comparison guidelines (HNF-SD-WM-SARR-028).

The respective maximum onsite worker and offsite dose consequences for this accident scenario are 9.40×10^{-6} rem EDE and 4.95×10^{-9} rem EDE, respectively. This would result in 3.76×10^{-10} latent cancer fatalities (LCF) to the maximum onsite worker and 2.48×10^{-13} LCF to the offsite population. At a medium probability with a low consequence level, the onsite risk acceptance is low and would not be exceeded.

Hazards common to earth-moving and crane-operating projects would exist. Operations in Trench 36 would be typical of waste handling in the LLBG and would be conducted in conformance with recognized safety codes, regulations, and approved procedures. Administrative controls would reduce the chance of accidents.

Nonradiological risks to workers from occupational illness or injury are based on statistics for DOE and DOE contractor experience (DOE 1996). The average ‘total recordable case rate’ for the years 1990-1994 was 4.1 per 200,000 worker hours. Using the standard assumption for DOE and contractors of 1,830 hours per year for a full-time equivalent (FTE) worker and DOE's total recordable cases in 1995; 0.06% were fatalities and 45% were lost workday cases. There has been one lost workday case reported in LLBG over the last 2 years. Because the average LLBG worker would not spend a full FTE actually working in the

trenches of LLBG, it is expected that there would be less fatalities and lost workday cases.

5.3 SOCIOECONOMIC IMPACTS

The proposed action would use existing operating and construction personnel at Hanford Site, therefore, the proposed action would have no socioeconomic impacts.

5.4 ENVIRONMENTAL JUSTICE IMPACTS

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", requires that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or socioeconomic effects of their programs and activities on minority and low-income populations. Minority populations and low income populations are present near the Hanford Site (PNNL-6415). The analysis of the impacts in this EA indicates that there would be minimal impacts to both the offsite population and potential workforce by implementing the proposed action. The offsite health impacts from the proposed action analyzed in this EA are expected to be minimal. Therefore, it is not expected that there would be any high and disproportionately adverse impacts to any minority or low-income portion of the community.

5.5 CUMULATIVE IMPACTS.

In analyzing the impacts of the proposed action, increased dust particulate releases to the atmosphere and watering down of soil would occur temporarily during the widening and operations of Trench 36. Waste generation is expected to be minimal. The Proposed Action is sited within the footprint of the 218-E-12B LLBG, and would better utilize the existing area already designated for waste management. The total LLW projected for disposal from the Proposed Action is the same total that would be disposed of for the No Action.

Because the proposed action would involve only existing operations and construction personnel, no change is expected in the overall workforce on the Hanford Site or within Benton and Franklin counties. Operating in the 218-E-12B Burial Ground would not change because of the proposed action. There would be no adverse socioeconomic impacts or any high and disproportionately adverse impacts to any minority or low-income portion of the community. Since there are no foreseeable impacts from this Proposed Action, there would be no substantial addition to Hanford Site cumulative impacts.

5.6 IMPACTS FROM ALTERNATIVES

Alternatives and the No Action Alternative are discussed in the following sections.

5.6.1 Impacts of the No Action Alternative

The No Action Alternative would involve continuing operations of the existing LLBG and handling the disposal of bulk LLW as trench space is available. This would result in increased waste disposal costs from inefficient use of existing trench space for waste types other than what the trenches are designed to handle. Additional narrow V-type trenches might have to be added to the existing LLBG. In addition, the adjacent area immediately east of Trench 36 within 218-E-12B LLBG would be unused as a disposal area because there is not sufficient width to dig a future trench.

5.6.2 Impacts of Alternatives

The implementation of any of the onsite or offsite alternatives likely would cause dust releases unless dust abatement procedures were used.

For the most part, the impacts of the alternative to extend and widen Trench 14 in the 218-E-10 Burial Ground would be similar to those from widening Trench 36. Since this alternative would involve expanding a partially filled trench, there is a higher potential of contamination and exposure to involved workers. In addition, expanding this trench would provide less volume and would result in higher disposal costs due to inefficient use of existing LLBG space compared to the Proposed Action.

The impacts of the alternative to widen Trench 37 in the 218-W-4C Burial Ground would be similar to those for widening Trench 36. However, Trench 37 is on a slight slope, with portions only about 2.44 meters (8 feet) deep at one end. Since current procedures require 2.44 meters (8 feet) of clean fill dirt over all waste disposed in the LLBG, widening this trench for disposal of bulk waste at its current depth would result in a portion of the trench being filled with clean dirt. In addition, widening Trench 37 would not provide equivalent capacity as the Proposed Action.

The alternative to dig a new bulk LLW trench would cost about $60,000, approximately $31,000 more than the Proposed Action; however, the environmental impacts would be similar.

The alternative of offsite disposal would require greater costs for packaging, transportation, and disposal, as well as greater transportation hazards and vehicle exhaust releases.

6.0 PERMITS AND REGULATORY REQUIREMENTS

It is the policy of DOE to carry out its operations in compliance with all federal, state, and local laws and regulations; Presidential Executive Orders; DOE Orders; and DOE-RL Directives. The proposed action would follow pollution prevention requirements under *Executive Order 12856: Federal Compliance with Right-To-Know Laws and Pollution Prevention Requirements*. Environmental regulatory authority over the Hanford Site is vested in federal and state agencies.

7.0 ORGANIZATIONS CONSULTED

Before approval of this EA, a draft version was sent for a 30 day review to the following:

- Nez Perce Tribe
- Confederated Tribes of the Umatilla Indian Reservation
- Yakama Indian Nation
- Wanapum People
- U.S. Fish and Wildlife Service
- Washington State Departments of Ecology and Fish & Wildlife
- Benton County
- Franklin County
- Hanford Education Action League
- Heart of America
- Physicians for Social Responsibility

and made available in the DOE reading room (Washington State University Tri-Cities), Richland Public Library, and placed on the Hanford Site Homepage (http://www.hanford.gov/#ea).

No comments were received.

8.0 REFERENCES

10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste".

10 CFR 835, DOE "Occupational Radiation Protection".

10 CFR 1021, DOE "National Environmental Policy Act Implementing Procedures".

40 CFR 1500-1508, Council on Environmental Quality "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act".

50 CFR 17, "Endangered and Threatened Wildlife and Plants".

DOE, 1996, *DOE Performance Indicators for Environment, Safety and Health. Report Period Ending March 1996*, Office of Environment, Safety and Health, U.S. Department of Energy, Washington, D.C.

DOE/EIS-0113, *Final Environmental Impact Statement Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes*, December 1987, U.S. Department of Energy, Richland, Washington

DOE/PEIS-0200, *Final Waste Management Programmatic Environmental Impact Statement*, May 1997, U.S. Department of Energy, Washington, D.C.

DOE Order 5820.2A, *Radioactive Waste Management*, September 1988, U.S. Department of Energy, Washington, D.C.

DOE/RL-88-21, *Hanford Facility Dangerous Waste Part A Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Endangered Species Act of 1973, 16 U.S.C. 1531 et seq.

ERDA-1538, *Final Environmental Impact Statement on Waste Management Operations, Hanford Reservation*, December 1975, U.S. Energy Research & Development Administration, Washington, D.C.

HNF-EP-0063, *Hanford Site Solid Waste Acceptance Criteria*, Rev. 5, June 1998, Westinghouse Hanford Company, Richland, Washington.

HNF-EP-0918, *Solid Waste Integrated Forecast (SWIFT) Technical Review*, Fluor Daniel Hanford, Inc., Richland, Washington.

HNF-SD-WM-ES-355, *Low-Level Burial Grounds Disposal Plan*, Rev. 1, May 1997, Waste Management Federal Services of Hanford, Inc., Richland, Washington.

HNF-SD-WM-RPT-288, *Waste Management Project Technical Baseline Description*, Rev. 0, August 1997, Waste Management Federal Services of Hanford, Inc., Richland, Washington.

HNF-SD-WM-SARR-028, *Solid Waste Burial Grounds Interim Safety Analysis*, Rev. 3, September 1997, Waste Management Federal Services of Hanford, Inc., Richland, Washington.

HSRCM-1, *Hanford Site Radiological Control Manual*, Fluor Daniel Hanford, Inc., Richland, Washington.

Migratory Bird Treaty Act, 16 U.S.C. 1431 - 1543, et seq.

National Environmental Policy Act of 1969, 42 U.S.C. 4321 et seq.

National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq.

PNNL-11495, *Hanford Site Environmental Report for Calendar Year 1997*, September 1998, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-6415, *Hanford Site National Environmental Policy Act (NEPA) Characterization*, Rev. 10, August 1998, Pacific Northwest National Laboratory, Richland, Washington.

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et seq.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

WAC 173-400-040, "General Standards for Maximum Emissions," *Washington Administrative Code*, as amended

WHC-SD-WM-TI-730, *Performance Assessment for the Disposal of Low-Level Waste in the 200 East Area Burial Grounds*, Rev. 0, August 1996, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A
BIOLOGICAL REVIEW

Biological Review for Widening Trench 36 21B-12B Burial Ground

Biological Review for Widening Trench 36 21B-12B Burial Ground, page 2

Biological Review for Widening Trench 36 21B-12B Burial Ground, page 3

APPENDIX B
CULTURAL RESOURCES REVIEW

Cultural Resources Review for Widening Trench 36 21B-12B Burial Ground

FINDING OF NO SIGNIFICANT IMPACT

WIDENING TRENCH 36 OF THE 218-E-12B LOW-LEVEL BURIAL GROUND
HANFORD SITE, RICHLAND, WASHINGTON

U.S. DEPARTMENT OF ENERGY
February 1999

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-1276, for widening unused Trench 36 in the 218-E-12B Low-Level Burial Ground, Hanford Site, Richland, Washington. DOE has determined that the proposed action is not a major federal action significantly affecting the quality of the human environment, within the meaning of the *National Environmental Policy Act of 1969* (NEPA). Therefore, the preparation of an Environmental Impact Statement (EIS) is not required.

ADDRESSES AND FURTHER INFORMATION:

A single copy of the EA and further information about the proposed action is available from:

H. E. Bilson, Director
Waste Programs Division
U.S. Department of Energy
Richland Operations Office
P. O. Box 550 S7-41
Richland, Washington 99352
(509) 376-1366

For further information regarding the DOE NEPA Process, contact:

Carol M. Borgstrom, Director
Office of NEPA Oversight
U.S. Department of Energyv 1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 586-4600 or (800) 472-2756

PURPOSE AND NEED: The U.S. Department of Energy (DOE) needs cost-effective waste disposal capacity to accommodate bulk category 1 Low-Level Waste (LLW), and to facilitate segregation of LLW.

BACKGROUND: LLW is disposed in active Low-Level Burial Grounds (LLBG), which are located in the 200 East and 200 West Areas. Examples of waste disposed in the LLBG are process waste, laboratory waste, construction debris, containerized waste, and bulk waste. Typical containers used for disposal of LLW are metal drums from 3.8 liters (1 gallon) to 416.4 liters (108 gallons) in size, and boxes made of wood, concrete, metal, and fiber-reinforced plastic. Current bulk (uncontainerized) waste forms disposed in V-type LLW trenches typically consist of vegetation (e.g., tumbleweeds), wood scraps, soil, and other types of waste as stated in the *Low-Level Burial Grounds Disposal Plan*. In addition, large items are received periodically at the LLBG. These items include tanker trucks, cover blocks, cranes, and failed equipment, which also are disposed of as bulk waste.

Because the existing V-type LLW trenches were designed before 1976 and analyzed in ERDA-1538, the V-type trenches are insufficient for current disposal operations of bulk waste. The V-type trenches are narrow at the bottom and are generally less than about 5 meters (16 feet) deep. Current procedures require 2.44 meters (8 feet) of clean fill dirt over all waste disposed in the LLBG. The LLBG area can be more efficiently utilized by digging trenches as wide as possible. Given trenches of equivalent depth, the wider trenches would allow more waste to be placed per square feet of surface area. This not only saves on trench construction costs, but also decreases closure cover size and cost for a given volume of waste.

Typical operations in the LLBG include receipt of LLW from DOE approved generators. The vehicle carrying the LLW, such as a standard semi-trailer truck, flatbed truck, dump truck, or other conveyance, is

positioned within or beside the receiving trench. The LLW is dumped directly or unloaded using forklifts, a crane, and/or an alternate approved method. Disposal documentation is completed, and the trench is backfilled to cover the LLW. Trench stabilization will occur before final closure.

The existing trench designated to receive only bulk LLW is being filled rapidly. LLW could be disposed in presently configured trenches; however, this would result in both higher short-term (stabilization) and long-term (final closure cover) expense. Any efforts taken to increase the waste capacity per unit surface area for the trenches receiving this waste type will reduce closure costs.

LLW generated onsite or by offsite generators is disposed in the 200 East and 200 West areas of the Hanford Site. An assessment is made by Operations to verify that generators have the appropriate procedures, systems, and operational capabilities to meet the LLBG waste acceptance criteria. The generators compile a waste profile sheet for a waste stream proposed for disposal.

Because of uncertainty associated with forecasting, emerging needs, and actual generation of waste, it is necessary to maintain a certain level of cushion to have the capacity to support all waste types. The latest available information for expected volumes of LLW bulk waste indicates that the baseline bulk LLW volumes forecasted for onsite and offsite would result in essentially filling the current bulk LLW Trench 42 by the end of fiscal year (FY) 1999. If the maximum projected volume of LLW were added, Trench 42 probably would be filled around midyear. In addition, acceptance of bulk shipments per year, which were not identified in the forecast, is required. These annual unforecasted volumes typically ranged from about 142 to 1,133 cubic meters (5,000 to 40,000 cubic feet). Therefore, to ensure that sufficient capacity is available to support generator requests, Trench 36 would need to be widened in FY 1999.

In 1975, Hanford Site burial ground activities were evaluated in the *Final Environmental Impact Statement on Waste Management Operations, Hanford Reservation*. In May 1997, DOE issued the *Final Waste Management Programmatic Environmental Impact Statement* (WM-PEIS) examining the DOE complex-wide management of current and anticipated volumes of various waste, including LLW. DOE has begun preparation for a Hanford Site Solid (radioactive and hazardous) Waste Program EIS (HSW-EIS) that examines the management of various waste volumes subject to the alternatives evaluated in the WM-PEIS, including, but not limited to, the disposal of LLW and closure of LLBG. The Record of Decision for the WM-PEIS for LLW is being prepared. This environmental assessment is an interim action to, and would not prejudice any alternatives or decisions that would be made in the HSW-EIS. Final closure and any monitoring issues of trenches in the LLBG would be addressed in future environmental documentation.

PROPOSED ACTION: The proposed action would widen Trench 36 within the 218-E-12B Low-Level Burial Ground for disposal of LLW. The base of this trench would be widened on the east side from approximately 1.5 meters (5 feet) to 9.1 meters (30 feet) with the same slope (1.5:1) along the entire 275 meter (900 foot) length of the trench. Existing bulk LLW disposal capacity in Trench 36 would increase almost six times from approximately 1,050 cubic meters (37,200 cubic feet) to 6,320 cubic meters (223,000 cubic feet). Bulldozers using standard construction practices would move soil to the east side of the length of the current trench configuration to be used as backfill during operations. Backfilling operations would cover the bulk LLW with a minimum of 2.4 meters (8 feet) of soil. The proposed action would begin in FY 1999.

The bulk LLW would be unloaded into the disposal trench by dumping off the back end of a dump truck, or by use of a forklift, crane, or other approved method. Typical LLW operations on the Hanford Site would not change as a result of the proposed action. Widening Trench 36 would provide for more cost-effective land use and would increase the capacity of the LLBG, without an increase to the footprint of the LLBG. The cost of widening Trench 36 would be approximately $29,000 based on excavation costs of $2.73 per cubic meter ($2.10 per cubic yard).

ALTERNATIVES CONSIDERED: No-Action: In the No Action alternative, DOE would continue to dispose of bulk LLW in existing trench space. Trench 42 would be used until full (by the end of FY 1999). Existing trenches designated for other waste types might be used for bulk LLW disposal. Additional V-type trenches might have to be added to the existing LLBG. This would result in less efficient use of trench space at a higher cost for eventual disposal of Category 1 LLW.

Alternative to Widen Trench 14 in the 218-E-10 Burial Ground: This alternative would extend and widen existing partially filled Trench 14 in the 218-E-10 Burial Ground for disposal of bulk LLW. However, because this trench is partially filled, this trench would provide less volume than the Proposed Action.

Alternative to Widen Trench 37 in the 218-W-4C Burial Ground: This alternative would widen the existing and unused Trench 37 in the 218-W-4C Burial Ground. Because Trench 37 is not as long and is more shallow than Trench 36, this alternative would not provide equivalent capacity for bulk LLW disposal.

Alternative to Dig a New Trench: An alternative to dig a new trench to the size of the proposed action was considered. However, at a cost of about $2.73 per cubic meter ($2.10 per cubic yard) to excavate soil and dig a trench in an existing LLBG of similar size to the Proposed Action, the new trench would cost approximately $60,000, more than twice the cost for the Proposed Action.

Alternative for OffSite Disposal: An alternative for offsite disposal was considered. If this alternative was taken, the excavation might be similar to the proposed action. However, this alternative would not take advantage of the using the existing LLBG and related infrastructure owned and operated by DOE. Thus, the cost for disposal of bulk LLW may be more expensive. In addition, there would be increased transportation risk of sending Hanford LLW offsite.

ENVIRONMENTAL IMPACTS: All soil disturbances would occur on previously disturbed soil within the 218-E-12B Burial Ground. Because Trench 36 is an unused trench, the associated soils are free of pre-existing radioactive or hazardous material. Soil movement during backfilling activities would be accompanied by watering down, or other dust suppression methods. Small gaseous, particulate, or thermal discharges from trucks, fork lifts, and other equipment would be generated during routine operations. No hazardous or dangerous waste is expected to be present or generated. Therefore, it is anticipated that impacts to the environment would not be consequential.

It is expected that there would be no adverse effects on cultural resources from the proposed action. In addition, no Federal or State-listed, proposed, candidate, threatened, or endangered species are expected to be affected.

Safety Impacts: No significant impacts are expected. Construction and operations will conform to recognized safety codes and regulations to ensure a safe working environment. Because the proposed action would take place in a clean area, no contamination, radionuclide releases, or direct radiation exposure during trench widening activities would occur. The potential radiation received by workers during the operations of the proposed action would be typical of exposure in other LLBG, and be administratively controlled below DOE limits of an annual effective dose equivalent (EDE) of 5 rem per year.

The reasonably-foreseeable accidents under the construction phase of the proposed action for widening Trench 36 would be typical construction accidents. All construction personnel would follow approved safety procedures for the trench-widening activities. Public health and safety would not be affected because the area is closed to the general public. Typical construction hazards would exist, however the risk of severe accidents would be small.

A reasonably foreseeable accident considered during operation would be a dispersal of contamination from breach of a waste bulk soil container [21 cubic meters (27 cubic yards)] (abnormal operation with stable meteorology), as analyzed in the "Solid Waste Burial Grounds Interim Safety Analysis." For this scenario, a waste bulk soil container is one typical dump truck load of bulk waste. It is postulated that a single container of waste bulk soil is spilled because of an operator error that results in an unplanned dumping or a vehicle accident that breaches the container. The contents of a breached container are assumed to be ejected from the container with sufficient force to create an amount of fugitive dust comparable to the amount released from dumping the contents of a container down the trench working face. A plume would originate from the point of the release, which is presumed to occur on or adjacent to a facility road or transfer pad. Some additional fugitive dust would be created in the process of spill cleanup; this release is assumed to be comparable in magnitude to the release resulting from spreading one container of bulk waste soil in the disposal trench. Because waste handling would not occur at windspeeds of greater than 24 kilometers per hour (15 miles per hour), the contribution of wind suspension to the release is considered to be negligible. The consequences of this accident would still be well below radiological risk comparison guidelines.

The respective maximum onsite worker and offsite dose consequences for this accident scenario are 9.40×10^{-6} rem EDE and 4.95×10^{-9} rem EDE, respectively. This would result in 3.76×10^{-10} latent cancer fatalities (LCF) to the maximum onsite worker and 2.48×10^{-13} LCF to the offsite population. At a medium probability with a low consequence level, the onsite risk acceptance is low and would not be exceeded.

Hazards common to earth-moving and crane-operating projects would exist. Operations in Trench 36 would be typical of waste handling in the LLBG and would be conducted in conformance with recognized safety codes, regulations, and approved procedures. Administrative controls would reduce the chance of accidents.

Nonradiological risks to workers from occupational illness or injury are based on statistics for DOE and DOE contractor experience. The average ‘total recordable case rate’ for the years 1990-1994 was 4.1 per 200,000 worker hours. Using the standard assumption for DOE and contractors of 1,830 hours per year for a full-time equivalent (FTE) worker and DOE's total recordable cases in 1995; 0.06% were fatalities and 45% were lost workday cases. There has been one lost workday case reported in LLBG over the last 2 years. Because the average LLBG worker would not spend a full FTE actually working in the trenches of LLBG, it is expected that there would be less fatalities and lost workday cases.

Socioeconomic Impacts: Existing Hanford Site construction and operations personnel would be used during construction and operations, therefore no socioeconomic impacts are expected from the proposed action.

Environmental Justice: Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs and activities on minority and low-income populations. Minority and low income population groups are present near the Hanford Site. The analysis of the impacts in this EA indicates that there will be minimal impacts to both the offsite population and potential workforce by implementing the proposed action, because the proposed action will occur predominately on the Hanford Site and the offsite environmental impacts from the proposed action in this EA are expected to be minimal. Therefore, it is not expected that there will be any disproportionate impacts to any minority or low-income portion of the community.

Determination