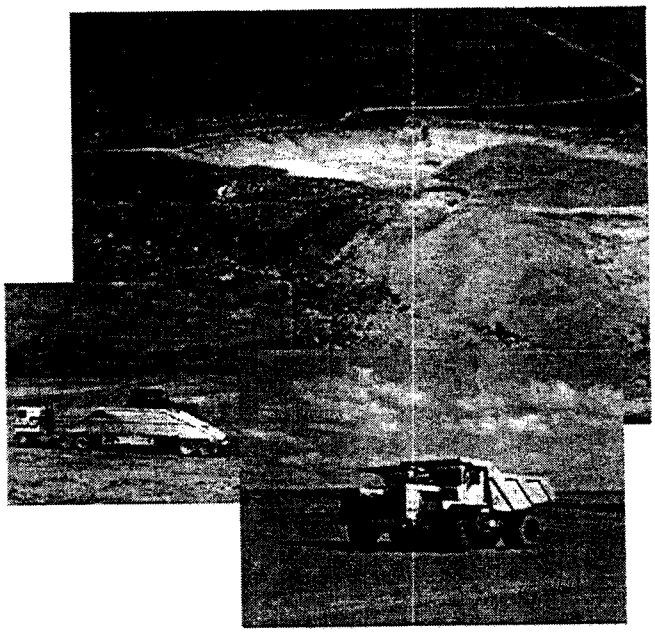
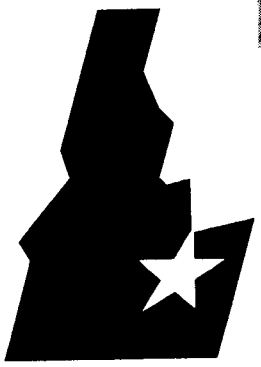
DOE/EA-1083
May 1997

# Environmental Assessment and Plan for

# New Silt/Clay Source Development and Use at the Idaho National Engineering and Environmental Laboratory





**Idaho National Engineering Laboratory**

*U.S. Department of Energy • Idaho Operations Office*

# U. S. DEPARTMENT OF ENERGY
# FINDING OF NO SIGNIFICANT IMPACT FOR A NEW SILT/CLAY SOURCE DEVELOPMENT AND USE AT THE IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY

**Agency:** U. S. Department of Energy (DOE)

**Action:** Draft Finding of No Significant Impact

**SUMMARY:** The DOE-Idaho Operations Office (DOE-ID) has prepared an environmental assessment (EA) to analyze the environmental impacts of closing its current silt/clay source and opening as many as three new sources with volumes sufficient to support potential Idaho National Engineering and Environmental Laboratory (INEEL) projects through 2005. The current source, Spreading Area B [southwest of the Radioactive Waste Management Complex (RWMC)], is the sole INEEL silt/clay source. Of the estimated 717,700 cubic yards of silt/clay (Corps 1994) available in Spreading Area B, about 300,000 cubic yards remain and, at the present rate of mining, will be depleted in late 1997. A 1996 survey estimated that the INEEL needs 2,300,000 cubic yards of silt/clay material over the next ten years (see Section 1, p. 1, of the EA). The silt/clay would be used for, but not be limited to a) the construction of soil caps for contaminated sites, research sites, and landfills, b) the replacement of radioactively contaminated soil with topsoil for revegetation, and backfill and, c) the sealing of sewage lagoons.

The EA examined the potential environmental impacts of the proposed action and evaluated reasonable alternatives, including the no action alternative in accordance with the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508). Based on the analysis in the EA, the impacts of this action, including opening any one of the on-site borrow sites and the one off-site location, will not have a significant effect on the human environment within the meaning of NEPA and 40 CFR Parts 1508.18 and 1508.27.

**Selected Action:** The selected action includes opening one to three new borrow sources concurrently or individually to meet INEEL silt/clay needs through 2005. The following on-site locations could provide this material: Ryegrass Flats, 5.5 miles east of the Central Facility Area (CFA); Spreading Area A, 9.0 miles southwest of CFA; and WRRTF, 25 miles north of CFA (see Figure 1 in the Environmental Assessment). While any of the three sites could meet the entire silt/clay needs of the INEEL, it is likely a combination of sites would be used to meet INEEL's needs because of lower cost and transportation efficiencies. Most projects are likely to use material from pits located within a 10-mile radius . The action is described in detail in Section 2.1.1 of the EA.

**Schedule:** Closure activities for Spreading Area B would occur during the late Spring of 1997 and will occur regardless of the alternative chosen in this EA. Depending on the needs of INEEL Projects, silt/clay sources or sites may be opened beginning in the Spring of 1997, and continue through 2005 as described in Sections 2.1.1 and 2.1.2 of the EA.

**SUMMARY OF IMPACTS:** The following is a summary of the impacts evaluated in the EA at the referenced pages and presented in relation to the significance criteria described in 40 CFR 1508.27.

*1) **Beneficial and adverse impacts*** [40 CFR 1508.27 (b)(1)]:

- There are no significant adverse impacts associated with: Construction and operation activities Section 4.1.1, p. 17. Revegetation at each location will occur at the end of the construction year and at the end of the life of the pit Section 2.1.3, p. 9. Standard mitigation Section 2.1.4, p. 10 will be used to reduce impacts from air emissions Section 4.1.1.1, p. 17, soil disturbance Section 4.1.1.2, p. 18, water resources Section 4.1.1.3, p. 18, ecological resources Section 4.1.1.4, p. 18, cultural resources Section 4.1.1.5, p. 20, visual resources Section 4.1.1.6, p. 20, socioeconomics Section 4.1.1.7, p. 20, transportation Section 4.1.1.8, p. 20, and noise levels Section 41.1.9, p. 20.

*2) **Public health and safety*** [40 CFR 1508.27 (b)(2)]:

- There will be no public or worker exposure to radiation as a result of this project.
- Short-term elevated levels of fugitive dust and exhaust emissions will be controlled by mitigative measures (Section 4.1.1.1, p. 17).
- Accidents resulting in fatalities or injuries are potential risks during transportation of gravel or silt/clay on-site or off-site during construction and operation activities. Based on total miles driven, it is estimated that less than one fatal accident would occur. Injuries are expected to be less than four persons for haul trucks and less than three persons for belly dumps. Spills of gravel or silt/clay on or along one of the highways will be mitigated under the Job Safety Analysis Plan for that project (Section 4.1.1.8, p. 20).

*3) **Unique characteristics of the geographical area*** [40 CFR 1508.27 (b)(3)]:

- Activities associated with opening and operating silt/clay sources will disturb an estimated 240 acres over a 10-year period. A maximum of 24 acres (Section 2.1.1) would be mined each year with rehabilitation of these disturbed acres occurring at the end of each construction season in October or November (Section 4.1.1.2, p. 18).
- There are no jurisdictional wetlands, streams or rivers, or permanent bodies of water on any of the on-site alternative locations. However, Spreading Area A experiences periodic flooding during years of high run-off and is therefore designated "Waters of the U.S." As a result it will require a Clean Water Act Section 404 Permit to discharge dredged and fill material if discharge were to occur (Section 4.1.1.3, p. 18).
- By the nature of the activity, the extraction of silt/clay from any of the on-site alternatives would alter the immediate contour of the ground surface. Some individual plants or animals would be affected by the removal of silt/clay. Some members of less mobile species, such as lizards, snakes, and some small mammals would be displaced during surface clearing operations. Other more mobile species would move away from the disturbance (Section 4.1.1.4, p. 18).

- No long-term impacts to visual resources on or near the INEEL would occur from construction and operation of these on-site silt/clay sources. Short-term stock piles and fugitive dust plumes may be visible from time to time. (Section 4.1.1.6, p. 20).

*4) **Degree to which effects on the quality of the human environment are likely to become highly controversial*** [40 CFR 1508.27 (b)(4)]:

- The project will result in no significant adverse effects on the quality of the human environment based on accepted methods of evaluation.

*5) **Uncertain or unknown risks to the human environment*** [40 CFR 1508.27 (b)(5)]:

- No unique, uncertain, or unknown risks or effects to the human environment will result from the operational or cumulative impacts associated with the project.

*6) **Precedent for future actions*** [40 CFR 1508.27 (b)(6)]:

- The opening of silt/clay sources does not set a precedent for future actions or automatically trigger the opening of similar pits.
- Further environmental evaluations (Environmental Checklist, Environmental Assessment) would be required for any new aggregate sources such as gravel, cinder, sand, or silt and clay other than those described in this analysis.

*7) **Cumulatively significant impacts*** [40 CFR 1508.27 (b)(7)]:

- There are no significant cumulative impacts associated with the project (Section 4.1.2, p. 21).

*8) **Effect on cultural or historical resources*** [40 CFR 1508.27 (b)(8)]:

- No cultural resources are anticipated to be impacted (p. 20). However, DOE will complete consultation as required under Section 106 of the National Historic Preservation Act before commencement of any activities associated with the selected action (Section 4.1.1.5, p. 20 and Section 6, p. 29).

- Cultural resource surveys completed within 40-acre plots at each on-site alternative location have revealed no significant resources in areas where excavation is scheduled to begin. However, potentially significant archaeological sites were identified in the vicinity of the 40-acre plots and along access corridors. Therefore, additional archaeological investigations would be required before any expansion beyond the 40-acre plots or before any road upgrades (Section 4.1.1.5, p. 20).

*9) **Effects on threatened or endangered species or critical habitat*** [40 CFR 1508.27 (b)(9)]:

- No threatened or endangered species or critical habitat will be affected by the action (Section 4.1.1.4, p. 18 and Section 6, p. 29).

*10) Violation of Federal, State, or Local law* [40 CFR 1508.27 (b)(10)]:

- The project will not violate any federal, state, or local law (Section 5, p. 27).

**DETERMINATION:** Based on analysis presented in the attached EA, I have determined that this project does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, preparation of an environmental impact statement is not required and I am issuing this finding of no significant impact.

**INFORMATION:** Copies of the EA and the Department of Energy's Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement, DOE/EIS-0203-F, April 1995 (FEIS) are available from: Brad Bugger, Office of Communications, MS-1214, Idaho Operations Office, U. S. Department of Energy, 850 Energy Drive, Idaho Falls, Idaho, 83403-3189, or by calling (208) 526-0833 or the toll-free INEEL citizen inquiry line (800) 708-2680.

For further information on DOE's NEPA process contact: Roger Twitchell, NEPA Compliance Officer, MS-1216, U. S. Department of Energy, 850 Energy Drive, Idaho Falls, Idaho, 83403-3189, (208) 526-0776.

Issued at Idaho Falls, Idaho on this 11th day of May, 1997.

J. M. Wilcynski
Manager, Idaho Operations Office

DOE/EA-1083

# Draft Environmental Assessment and Plan for

# New Silt/Clay Source Development and Use at the Idaho National Engineering and Environmental Laboratory

Published May 1997

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

# HELPFUL INFORMATION FOR THE GENERAL READER

## Scientific Notation

Scientific notation is used to express numbers that are very small or very large. A very small number will be expressed with a negative exponent, such as $1.3 \times 10^{-6}$. To convert this number to the more commonly used form, the decimal point must be moved left by the number of places equal to the exponent, in this case 6. The number thus becomes 0.0000013. For large numbers, those with a positive exponent, the decimal point is moved to the right by the number of places equal to the exponent. The number 1,300,000 can be written as $1.3 \times 10^{6}$. English units are used in this document with conversion to metric units provided below. Occasionally, metric is used if it is the common usage.

## Units

| | | | |
|---|---|---|---|
| ac. | acre(s) | mo. | month(s) |
| cm | centimeter(s) | sec. | second(s) |
| ft. | foot (feet) | T | Tons |
| $ft.^2$ | square foot (feet) | yd | yard(s) |
| hr. | hour | $yd^2$ | square yard(s) |
| in. | inch(es) | $yd^3$ | cubic yard(s) |
| mi. | mile(s) | yr. | year(s) |
| $mi.^2$ | square mile(s) | $\mu m$ | micrometer |

## Conversions

Metric to English

| To Convert | Multiply By | To Obtain |
|---|---|---|
| cm/sec. | $1.031861 \times 10^{6}$ | ft/yr |
| cm/sec. | $3.281 \times 10^{-2}$ | ft/sec. |
| cubic meters | 1.308 | cubic yards |
| hectares | 2.471 | acres |
| kilometers | $6.214 \times 10^{-1}$ | miles |
| meters | 3.28084 | feet |
| meters | 1.093613 | yards |
| square kilometer | $3.861 \times 10^{-1}$ | square mi. |
| square meters | 1.196 | square yards |
| tons (metric) | $1.1013 \times 10^{0}$ | tons (short) |

English to Metric

| To Convert | Multiply By | To Obtain |
|---|---|---|
| ft/yr | $9.69123 \times 10^{-7}$ | cm/sec. |
| ft/sec. | $3.048 \times 10^{1}$ | cm/sec. |
| cubic yards | $7.646 \times 10^{-1}$ | cubic meters |
| acres | $4.047 \times 10^{-1}$ | hectares |
| miles | 1.609334 | kilometers |
| feet | $3.048 \times 10^{-1}$ | meters |
| yards | $9.144 \times 10^{-1}$ | meters |
| square mi. | 2.590 | square kilometer |
| square yards | $8.361 \times 10^{-1}$ | square meters |
| tons (short) | $9.08 \times 10^{-1}$ | tons (metric) |

# CONTENTS

## Figures



## Tables

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| CFA | Central Facility Area |
| CFR | Code of Federal Regulations |
| DOE | U. S. Department of Energy |
| EA | Environmental Assessment |
| FWS | U. S. Fish and Wildlife Service |
| IDAPA | Idaho Administrative Procedures Act |
| INEEL | Idaho National Engineering and Environmental Laboratory |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Policy Act |
| PBF | Power Burst Facility |
| PM-10 | Particulate Matter less than 10 μm in diameter |
| PSD | Prevention of Significant Deterioration |
| RWMC | Radioactive Waste Management Complex |
| SHPO | State Historic Preservation Office |
| T&E | Threatened and Endangered |
| TSP | Total Suspended Particulates |
| WRRTF | Water Reactor Research Test Facility |

# Environmental Assessment and Plan for New Silt/Clay Source Development and Use at the Idaho National Engineering and Environmental Laboratory

## 1. PURPOSE AND NEED

The U. S. Department of Energy (DOE) proposes to close its current silt/clay source and open as many as three new sources with volumes sufficient to support potential Idaho National Engineering and Environmental Laboratory (INEEL) projects through 2005. The current source, Spreading Area B [southwest of the Radioactive Waste Management Complex (RWMC)], is the sole INEEL silt/clay source. Of the estimated 717,700 cubic yards of silt/clay (Corps 1994) available in Spreading Area B, about 300,000 cubic yards remain and, at the present rate of mining, will be depleted in late 1997. A 1996 survey estimates that the INEEL needs 2,300,000 cubic yards of silt/clay material over the next ten years (Webber 1996). To account for compaction, reject material not suitable for construction, and other uncertainties associated with construction activities this volume is multiplied by 200% to 4,600,000 cubic yards.

The silt/clay would be used for, but not be limited to a) the construction of soil caps for contaminated sites, research sites, and landfills, b) the replacement of radioactively contaminated soil with **topsoil**[a] for revegetation, and backfill and, c) the sealing of sewage lagoons and other projects as shown in Table 1.

The objective of this **environmental assessment** (EA) is to evaluate the expected environmental impacts from the proposed opening and operation of new silt/clay sources for the INEEL.

This document was prepared in accordance with the requirements of the **National Environmental Policy Act** (NEPA) of 1969 (Public Law 91-190), as amended, **Council on Environmental Quality** NEPA Regulations [40 Code of Federal Regulation (CFR) Parts 1500-1508], DOE NEPA Implementing Procedures (10 CFR Part 1021), and DOE Order 451.1. This EA will serve as the basis for issuance of a **Finding of No Significant Impact** or lead to a determination that an **Environmental Impact Statement** is required for the proposed action.

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[a] Words highlighted in **bold** are defined in Appendix A, "Glossary".

## Table 1. Potential Project Use of Silt/Clay Material at the INEEL.

| Projects |
|---|
| • Special Power Excursion Reactor Test No. IV (SPERT) (Power Burst Facility) |
| • Decontamination and Dismantlement (D&D) soil covers for miscellaneous projects (Idaho Chemical Processing Plant [ICPP]) |
| • INEL sewer upgrade (near CFA) |
| • INEL radioactively contaminated soils repository (ICPP) |
| • D&D CFA-601 and 603 |
| • North and east ditch at Argonne National Laboratory - West |
| • Subsurface Disposal Area cap (RWMC) |
| • Warm waste pond capping (Navel Reactors Facility [NRF]) |
| • Transuranic pits and trenches (RWMC) |
| • Remote-handled low-level waste disposal vaults (RWMC) |
| • Pit 9 (RWMC) |
| • Maintenance (RWMC) |
| • Boiling Water Reactor Experiment (BORAX) 08 ditch (RWMC) |
| • Warm waste pond (Test Reactor Area) |
| • Operations and Subsurface Disposal Area engineered barriers (RWMC) |
| • Capping and filling trenches at Test Area North |
| • TRA Sewer Lagoon |

Source: Webber 1996.

# 2. DESCRIPTION OF ALTERNATIVES

The number of potential borrow source sites was initially identified and narrowed using surficial geology maps and proximity to infrastructure such as road, substation, and power line locations. Locations where **surficial** geology suggested suitable soils and soil depth and minimal interference with INEEL **infrastructure** were considered. **On-site** (on the INEEL) locations identified are Ryegrass Flats, Spreading Area A, Water Reactor Research Test Facility (WRRTF), Well Site 14, and the Power Burst Facility (PBF). **Off-site** (off the INEEL) locations identified include Lidy Hot Springs and Circular Butte Landfill (Figure 1).

These potential silt/clay sources were evaluated based on meeting or exceeding three selection criteria (Table 2). According to Smith et al. (1994) and Tullis (1995), soils from all on-site and off-site alternatives except Well Site 14 could meet the basic **permeability** criteria if soil additives were applied and compaction and moisture levels controlled. Well Site 14 field analysis indicated a soil profile composed of sands and silty fine sands with unacceptably high permeability; therefore, this site was dropped from consideration. The **bentonite** clay from the Lidy Hot Springs mine would also require treatment to meet the soil permeability criteria.

**Table 2. Silt/Clay Source Site Selection Criteria**

| Criteria | Description |
|---|---|
| Silt and Clay Permeability | $\leq 1.0 \times 10^{-7}$ cm/sec. |
| Silt and Clay Volume | 4.6 million cubic yards |
| Accessibility | May through November |

Source: Smith et al. 1994.

Preliminary soil drilling analyses indicate that all on-site alternatives except the PBF site meet the volume criteria of 4,600,000 cubic yards (Smith et al. 1994). The PBF site was dropped from consideration because it does not have sufficient in-place volumes of silt/clay material and was too close to power lines. The Jefferson County Circular Butte Landfill was not included in the proposed action because the amount of silt/clay available at any given time is less than the required in-place volumes. However, "Circular Butte" could provide smaller volumes of silt/clay for small projects at nearby facilities (e.g., Test Area North, WRRTF). Therefore, the landfill is included in the Off-Site Alternative (see below). All alternatives sites are accessible during the construction period of May through November; however, Spreading Area A could be inaccessible during the spring because of flooding.

Based on these criteria, three on-site locations (Ryegrass Flats, Spreading Area A, and WRRTF) and one off-site location (Lidy Hot Springs) were selected as proposed silt/clay sources for all INEEL site needs. This environmental assessment evaluates three alternatives: Alternative 1 (Proposed) - a combination of on-site locations -- Ryegrass Flats, Spreading Area A, and WRRTF; Alternative 2 (Off-Site) -- Lidy Hot Springs; and Alternative 3 (No Action) -- Spreading Area B. The Circular Butte site is located adjacent to the INEEL, near Mud Lake, and therefore is bounded by the analysis for the Lidy Hot Springs (Off-Site Alternative) and similar to the WRRTF on-site location. In addition, Alternative 1 encompasses the scenario of developing any one, two, or all three of the on-site locations to meet INEEL project needs through 2005.

**Figure 1. Location of Proposed, Alternative, and Dismissed Silt/Clay Borrow Sources with a 10-mile Radius Denoting Potential Service Areas Around On-Site Alternatives.**

## 2.1 Alternative 1 (Proposed): On-Site Locations - Ryegrass Flats, Spreading Area A and WRRTF

The proposed alternative would open one, two or three new borrow sources concurrently or individually to meet INEEL silt/clay needs through 2005. This would include taking all of the silt/clay from one or two locations rather than opening all three sites either concurrently or individually. The following on-site locations could provide this material: Ryegrass Flats, 5.5 miles east of the Central Facility Area (CFA) (Figure 2); Spreading Area A, 9.0 miles southwest of CFA (Figure 3); and WRRTF, 25 miles north of CFA (Figure 4). While any of the three proposed sites could meet the entire silt/clay needs of the INEEL (Table 3), it is likely a combination of sites would be used to meet the needs because of costs and transportation efficiencies. Most projects are likely to use material from pits within a 10-mile radius (Figure 1).

### 2.1.1 Construction

Construction includes the development of an access road built according to **best management practices** (EPA 1992). This would require upgrading about 1.0 mile of an existing two-track road to each on-site location along with developing areas for equipment storage and stockpiles that would require an estimated 7 to 10 acres at each location. Each access road would require clearing and **grubbing** of soil and vegetation to a maximum width of 60 ft. The actual driving surface of the road would require gravel to a width of about 30 ft. by 1 ft. in depth. Stockpiled topsoil would be placed on a 4:1 slope and extend 10 ft. from the edge of the gravel. Culverts would be placed every 500 ft. and all disturbed areas reseeded in accordance with guidelines described in Anderson and Shumar, 1989.

Previous use of the INEEL lands as an artillery range has left the potential for encountering unexploded **ordnance** during construction or clearing activities. The proposed silt/clay sources, including the access roads, have been surveyed for unexploded ordnance and ordnance waste (Clayton 1995). No ordnance or evidence of ordnance was found.

Costs to construct the access roads for Alternative 1 would be $211,200 per linear mile (Baker 1996). Opening all three on-site silt/clay sources would cost an estimated $675,840.

**Table 3. Characteristics of Three On-Site Locations for Silt/Clay Material at the INEEL.**

| | Volume, Depth & Area of Disturbance[a] | | |
|---|---|---|---|
| On-Site Alternative | In-Place Volume ($yd^3$) | Average Depth (ft) | Total Surface Area Available for Mining (ac.) |
| Ryegrass Flats | 4,600,000 | 10.5 | 272 |
| Spreading Area A | 4,600,000 | 11.5 | 248 |
| WRTTF | 4,600,000 | 12.5 | 228 |

Source: Webber 1996.
a. Volume, depth, and surface mined to account for compaction, reject material not suitable for construction, and other uncertainties associated with construction activities.

**Figure 2. Ryegrass Flats Proposed Silt/Clay Borrow Source Showing Location of Access Road and Boreholes.**

**Figure 3. Spreading Area A Proposed Silt/Clay Borrow Source Showing location of Access Road and Boreholes.**

**Figure 4. WRRTF Proposed Silt/Clay Borrow Source Showing Location of Access Road and Boreholes.**

### 2.1.2 Operation

Operation includes activities and costs for loading, transporting, and unloading silt/clay material and the rehabilitation of the mine site at the end of each construction year. The round-trip distance to transport silt/clay within a 10-mile radius is an estimated 24 miles. Operation at each location would require clearing the vegetation and stripping the topsoil before actual mining of the silt/clay. The cleared vegetation and stripped topsoil would be mixed and temporarily stockpiled near the pit in compliance with the project's storm water pollution prevention plan. To reduce mortality of soil **microorganisms** and the invasion of weedy plant species, topsoil stockpiled for more than one year would be seeded with native grasses.

Mining techniques used to open pits and remove silt/clay material would vary depending on the size of the individual project. For projects requiring large volumes of silt/clay, more than 5,000 cubic yards, scrapers would be used to make a series of parallel cuts, each 10-ft. in width and 8 in. in depth, running the length of a predetermined area. The sequence of cuts would produce a stair-step configuration with the deepest portion of the pit mined to **bedrock** and extending outward to the surface. Material removed would be stockpiled near the mined area. A front-end loader would be used to place the stockpiled material into belly dumps or haul trucks for transport to the project site. For projects requiring smaller volumes a bulldozer or front-end loader would be used to push material from the pit into nearby stockpiles where it would be loaded and transported to the project sites. Under normal mining operations about 1,600 cubic yards would be removed each day from an area about 1,700 square yards in size. Under Alternative 1, no more than 24 acres would be mined each year.

The operational costs for Alternative 1 would be $4.56 per cubic yard[b] of silt/clay removed. The total operating costs associated with meeting proposed project needs of 2,300,000 cubic yards over the next 10 years would be $10,500,000.

### 2.1.3 Rehabilitation

Rehabilitation at each location would occur at the end of the construction year in October or November and include backsloping, regrading, and reseeding the active mine area. The depleted pit would be backsloped and regraded with a minimum of two feet of soil overlaying bedrock to approximate the original contour. Stockpiled topsoil would then be applied to this area at a minimum depth of 6 to 12 inches. Tillage for seed preparation would occur when soil moisture content is optimum. Reseeding would follow in accordance with guidelines described in Anderson and Shumar, 1989. **Erosion** prevention, **fugitive dust emission** controls, and sediment controls would also be implemented according to best management practices from EPA (1992). The initial cut or working face of the pit, constructed in compliance with Occupational Safety and Health regulations 29 CFR 1926.651-652, would be left open for future projects. At the end of the 10 years each pit would be assessed for remaining in-place volumes of silt/clay. Depending on the outcome of this assessment and future project needs, some sites may remain active. Inactive pits would be closed with final rehabilitation of the area, including closure of access roads and any equipment storage areas. Annual rehabilitation costs for Alternative 1 would be $1,700 per acre or a total of $40,800 for the 24 acres. The total rehabilitation costs over the 10-years is $183,600 for Alternatives 1 and 3 (see Table 10).

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[b] 24 miles round-trip times $0.19 per cubic yard per mile.

### 2.1.4 Standard Mitigation

If the proposed action is selected, DOE will adopt the following mitigation measures as an integral part of its plan to ensure that the overall effects of the action will not be significant (Table 4). Each project will be responsible for the cost of all mitigation.

Air Emissions - Controls will be applied to limit fugitive dust emissions from construction and operation in compliance with Idaho Administrative Procedures Act (IDAPA) 16.01.01.650 and best management practices (EPA 1992). These include but are not limited to:

- watering,
- approved dust suppressants (e.g., water, chemicals),
- covering of trucks and storage piles,
- temporary seeding of stockpiles using an approved seed mixture.

**Table 4. Mitigative Measures Applied as Construction and Operational Controls on Alternative 1 Locations for the New Silt/Clay Borrow Sources.**

| Construction and Operational Controls |
|---|
| • Because of the degree of uncertainty about individual on-site silt and clay volumes, additional geotechnical investigations of each new site would be done before development. |
| • Before beginning construction and operation activities, all personnel involved would receive an ordnance recognition briefing. |
| • Application of water or surfactants on access roads. Covering haul trucks, and temporary seeding of stockpiles. |
| • Cleared vegetation and stripped topsoil would be mixed and temporarily stockpiled near the pit in compliance with the project's storm water pollution prevention plan. To reduce mortality of soil microorganisms and the invasion of weedy plant species, topsoil stockpiled for more than one year would be seeded with native grasses. |
| • Erosion prevention, sediment controls, and Storm Water Pollution Prevention Plan (SWPPP) would be implemented as appropriate. Spreading Area A requires a Section 404 Permit under the Clean Water Act. |
| • A total of 24 acres would be mined each year with rehabilitation of these acres occurring at the end of each construction season. |
| • All slopes, laydown areas, etc. will be revegetated with approved seed mixture. |
| • Cultural Resource surveys would be done before access roads are upgraded and before mining exceeds the 40 acres previously surveyed and cleared. Any resources identified during these surveys will be avoided by project activities. Mitigation under 36 CFR 800 will proceed if any impacts are deemed unavoidable. |
| • In the event unusual materials such as bones, chips/flakes, "arrowheads," or charcoal colored soil are discovered during construction or operation phases, the INEL Stop Work Authority would be invoked and all work temporarily halted until the INEL Cultural Resource Office provides a clearance or mitigative action plan. |
| • Job safety analysis plan for individual projects would be implemented. |
| • Spills of gravel or silt and clay on or along the highways would be mitigated under a project specific Job Safety Analysis Plan. |
| • Hearing protection if noise levels exceed 85 decibels. |

Soil Disturbance - Bare soil, bare unprotected soil, and soil erosion associated with construction and operation will be mitigated by rehabilitating or restoring the affected area at the end of each mining year and by reducing or eliminating the impact over time by preservation and maintenance activities during life-of-mine operations. These controls, in compliance with best management practices (EPA 1992) and administrative requirements identified in stormwater pollution prevention plans approved for each site, include but are not limited to:

- Final pit slopes will be no steeper than 4:1 and slope crests rounded once excavation ceases,
- Reject piles or other stockpiles of silt/clay would be leveled and recontoured to blend into the pit area.
- After backsloping and regrading, a minimum of 12 inches of stockpiled topsoil or other suitable material would be placed over an established seedbed.

Revegetation - Revegetation associated with construction and operation and closure will be in accordance with Anderson and Shumar (1989), a revegetation plan approved by the Environmental Science and Research Foundation, and administrative requirements identified in the stormwater pollution prevention plans approved for each site. The revegetation objectives include but are not limited to:

- Area will be revegetated using an approved seed mixture during late fall (mid October through November) or late winter early spring (February/early March),
- Seed mixtures selected will provide diversity and **perennial** cover equivalent to the cover existing before mining activities, and will stabilize the soil surface,
- Where reseeding or revegetation efforts are unsuccessful, revegetation efforts will continue until at least 70 percent of pre-mining vegetative density is obtained,
- Sites will be restored to conditions capable of supporting predisturbance vegetation.
- Noxious weeds will be controlled through life-of-mine.

Water - Erosion prevention and sediment and stormwater discharges will be controlled according to best management practices (EPA 1992) and administrative requirements identified in stormwater pollution prevention plans approved for each site. These include, but are not limited to:

- Minimizing the amount of disturbed soil within the mining area,
- Diverting offsite **run-off** from flowing across the mining area,
- Constructing sediment basins to capture eroded materials from mining and stockpile areas,
- Stabilizing existing vegetation or revegetating disturbed mining area.

Biological Resources - Impacts to terrestrial plant and animal communities during construction and operation will be mitigated by minimizing the amount of land disturbed during construction and operation, implementing soil erosion control measures, and revegetating all disturbed areas at the end of each mining year.

Cultural Resources - Cultural resource surveys will be completed before construction and before operation extends beyond the 40 acres previously surveyed. Surveys will also be completed before any road improvements. Whenever possible, archaeological resources will be avoided by all activities associated with the construction and operation of each pit. In the event that avoidance is not feasible, mitigation plans will be developed in consultation with the State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation, and the Shoshone-Bannock Tribes. In the event materials, such as, bones, chips or flakes, "arrowheads," or charcoal-stained soil are discovered during construction and

operation, the INEEL Stop Work Authority will be invoked and all excavation temporarily halted until INEEL Cultural Resource Office provides a clearance or mitigative action plan.

Transportation - In compliance with Occupational Safety and Health, 29 CFR - 1926.651-652 and Mine Safety and Health Administration, 30 CFR 56, a Job Safety Analysis Plan will be implemented before construction and operation begins.

Noise - In compliance with Occupational Noise Exposure, 29 CFR 1910.95, hearing protection will be provided to workers during construction and operation if noise levels exceed 85 **decibels**.

## 2.2 Alternative 2: Lidy Hot Springs

Lidy Hot Springs Mine is privately owned and is located 54 miles north of CFA (Figure 1). The mine is currently operating; therefore, construction activities would not be required to open any pits. Operational activities would consist of removing bentonite clay from an open pit using front-end loaders and bulldozers. Belly dumps would transport the material off-site to project locations on the INEEL. Exposed surfaces are rehabilitated using a native seed mix (Wilson 1996). In addition, cultural resource surveys will be completed before any mining for INEEL projects (see Section 5.1, p. 27).

The operational cost of Alternative 2 would be $23.76[c] per cubic yard of bentonite clay removed (Wilson 1996). The total operating costs associated with meeting the proposed project needs of 2,300,000 cubic yards over the next 10 years would be an estimated $54,600,000. Costs for construction and rehabilitation are included in the cost per cubic yard.

## 2.3 Alternative 3: No Action -- Spreading Area B

Spreading Area B is 8.5 miles southwest of CFA (Figure 1). The following projects would require an estimated 300,000 cubic yards from Spreading Area B through 1997: Stationary Low-Power Reactor-1 at the Auxiliary Reactor Area, Boiling Water Reactor Experiment-I burial ground caps at the RWMC, CFA Landfills I, II, III , and three Naval Reactor Facility caps. Under this alternative, mining activities will continue until the area is depleted. Future expansion of this site is restricted because of shallow subsurface **basalt** and Goodale's Cutoff, a northern spur of the Oregon Trail, which passes through the center of the site. Consequently when Spreading Area B is depleted activities requiring silt/clay material would cease or DOE-ID would use a suitable off-site commercial source.

Spreading Area B is serviced by an existing access road and therefore has no construction costs associated with remaining mining operations. The operational costs of mining the remaining material is $5.70 per cubic yard[d]. The total operating cost of removing the remaining material is estimated to be $1,700,000. Rehabilitation costs for about 36 acres are estimated to be $61,200.[e]

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[c] 54 miles from CFA to Lidy Hot Springs times $0.44 per cubic yard per mile.

[d] 30 miles round-trip times $0.19 per cubic yard per mile.

[e] $1,700.00per acre rehabilitation cost times 36 acres.

# 3. AFFECTED ENVIRONMENT

The INEEL is a 890 square mile DOE research facility located in southeastern Idaho (Figure 1). The physical and biological environment of the region, in general, and the INEEL in particular, has been extensively described in the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement*, DOE/EIS-0203-F, April 1995 (FEIS) (DOE 1995a). All land within the INEEL is controlled by DOE, and public access is restricted to highways, DOE-given tours, special use permits, and the Experimental Breeder Reactor I National Historic Landmark. The INEEL occupies portions of five Idaho counties. The area surrounding the INEEL is classified as a **Prevention of Significant Deterioration** (PSD) Class II Area, designated under the Clean Air Act as an area with reasonable or moderately good air quality while still allowing moderate industrial growth. To the west, about 12 miles, is the Craters of the Moon National Monument and Wilderness Area, classified as a PSD Class I Area. Population centers in the region include Idaho Falls (1990 population was 43,929), Pocatello (46,080), Blackfoot (9,646), Arco (1,016), and Atomic City (25) (Bureau of Census 1990). There are no permanent residents on the INEEL.

DOE's FEIS and **Record of Decision** (DOE 1995b) discussed the expansion of gravel sources on the INEEL. To date, active gravel pits and the one silt/clay source represent a total land surface disturbance of about 374 acres (Table 5). In addition, there are two cinder pits and several piles of rip-rap located on the INEEL. These aggregate resources (e.g., sand, gravel, pumice, cinders, silt) could be used in support of proposed projects on the INEEL (DOE 1995a)[f]. Opening new sources for gravel, sand, cinder, rip-rap, or clay and silt would require additional environmental analysis (e.g., environmental checklist, environmental assessment). At this time, no additional need beyond that identified in this EA/Plan has been identified. About 122 of these acres have been sucessfully revegetated. The FEIS estimated that 856,650 cubic yards of gravel and silt/clay would be required to meet INEEL needs through 2005. Therefore, besides the continued mining of Spreading Area B covered under the FEIS, followed by the mining of the proposed alternative (Ryegrass Flats, Spreading Area A, and WRRTF), six active gravel pits would be expanded by about 85 acres (Table 5).[g]

## 3.1 Biological Resources

All proposed on-site alternatives are within the shrub-steppe environment typical of the upper Snake River Plain. A vegetation survey was conducted at the on-site locations to obtain information on plant species specific to each site (Blew and Glennon 1995). No threatened, endangered, candidate or other plant species of special concern were found, nor do historical records indicate any within a mile of the proposed sites. The birds, mammals, amphibians and reptiles at the on-site locations were characterized using existing surveys (Warren and Reynolds 1995), some of which were site specific and some from reasonably similar areas on the INEEL. These surveys show species of concern (formerly candidates[h] for listing as threatened or endangered) may occur within or near one or more of the proposed on-site

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[f] FEIS, Volume 2, Part A, Section 5.18 and Volume 2, Part B, Appendix C, C-3.4.3, "Irreversible and Irretrievable Committments of Resources." and Volume 2, Part B, Appendix C, C-4.9.2, "Gravel Pit Expansions."

[g] The DOE Spent Nuclear Fuel and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programmatic Final Environmental Impact Statement discusses the expansion of Spreading Area B and gravel sources, but reports the total expansion as 20.12 acres. The correct number is 121 acres (85 acres of gravel plus 36 acres of silt/clay from Spreading Area B).

[h] The U. S. Fish and Wildlife Service eliminated category 2 classifications in March 1996.

alternative borrow source areas. These species are the ferruginous hawk, trumpeter swan, burrowing owl, loggerhead shrike, northern sagebrush lizard, and pygmy rabbit. Bald eagles may occassionally rest or hunt within or near these areas during flooded conditions.

### 3.1.1. Ryegrass Flats Location

Livestock grazing is not permitted in this portion of the INEEL. This area is a grassy basin of native Great Basin wildrye with annual species scattered throughout (Blew and Glennon 1995). No threatened or endangered animals are known to occupy the area. Based on previous research conducted in a grassland nearby, few animal species, and then only limited numbers of each, can be expected to occupy the area

**Table 5. INEL Gravel, Silt\Clay Sources Showing Acres Disturbed Through 1995 and Planned Disturbance Through 2005 Based on Estimated Resource Needs.**

| Borrow Sources | Average Depth (ft) | Estimated Disturbance Through 1995 (Ac.) | Estimated Revegetation Through 1995 (Ac.) | Estimated Needs Through 2005 ($yd^3$) | Additional Disturbance Planned Through 2005 (Ac.) |
|---|---|---|---|---|---|
| **Gravel Sources**[a] | | | | | |
| TAN | 15.0 | 60 | -[b] | 12,650 | 2 |
| Lincoln Blvd. | 29.0 | 70 | 30 | 21,400 | 2 |
| NRF | - | 5 | - | - | - |
| TRA | 17.0 | 30 | 5 | 60,000 | 4 |
| CFA | 14.0 | 22 | 10 | 63,100 | 12 |
| BORAX | 13.0 | 30 | 5 | 78,850 | 5 |
| RWMC | 16.0 | 40 | - | 620,650 | 60 |
| **Total Gravel** | | **257** | **50** | **856,650** | **85** |
| **Silt/Clay Sources** | | | | | |
| **Current** | | | | | |
| Spreading Area B | 10.5 | 117 | 72 | 300,000 | 36 |
| **Proposed** | | | | | |
| Ryegrass Flats | 10.5 | - | - | 925,000 | 119 |
| Spreading Area A | 11.5 | - | - | 925,000 | 110 |
| WRRTF | 12.5 | - | - | 150,000 | 25 |
| **Total Silt/Clay** | | **117** | **72** | **2,300,000** | **290** |

Source: Webber 1996.
a. FEIS Project Summary, Volume II, Part B.
b. " - " equals no information available.

(Reynolds and Trost 1980). The number of species and animals occupying the area is related to the simple structure of the grassland. Only the most common species of lizards and snakes on the INEEL (short-horned and northern sagebrush lizards, gopher snakes and rattlesnakes) are likely to occur here. Bird species likely to nest here are those species typical of grasslands on the INEEL, including horned larks, meadow larks, and vesper sparrows. No hawks are known to nest in Ryegrass Flats, although marsh hawks and short-eared owls nest in other grasslands and could nest here. Burrowing owls, a sensitive species, are not known to nest within Ryegrass Flats, but suitable sites doe exists within the area.

Use of Ryegrass Flats by mammals is limited, again due to the simple habitat. No unique or sensitive mammals are known to occupy the area. Elk have been occasionally recorded in the general area, and may forage in Ryegrass Flats in the spring and early summer. Deer have been seen near, but not in, Ryegrass Flats. They probably use the flats occasionally. Use by pronghorn is also limited, with nearby densities of less than two per square mile in the summer.

### 3.1.2 Spreading Area A Location

This area is sometimes heavily used by cattle. It is dominated by weedy species characteristic of disturbed sites. Spreading Area A is designed to flood when flows from the Big Lost River exceed 900 cfs. As a result, Spreading Area A and the surrounding disturbed sites lack species diversity. Two exceptions are the large number and diversity of waterfowl, including swans and shorebirds that use the area when it is flooded, and the herds of pronghorn ranging from 30 to 100 individuals that historically used Spreading Area A during the summers when water remains from spring run-off. Bald eagles, a threatened species, have infrequently been observed during winter and early spring floods. Spadefoot toads, the only amphibians identified on the INEEL, can be abundant in years when water is present in the spring and early summer. Several species of concern have been observed or are likely to be found in or near Spreading Area A. These include ferruginous hawks that nest nearby, loggerhead shrikes, sagebrush lizards, pygmy rabbits, and burrowing owls. Sage grouse use the general area throughout the year, and a grouse **lek** is located nearby in Spreading Area B. Some deer winter in the general area, and occasionally elk are sighted nearby.

Spreading Area A is not classified as a wetland, however, the Army Corps of Engineers has determined it meets the definition of "Waters of the United States" under the Clean Water Act (Corps 1994).

### 3.1.3 WRRTF Location

This tract is largely representative of the habitat found over most of the INEEL, with sagebrush as the most obvious plant. However, a portion of this area has a covering of a moss and lichen crust (Blew and Glennon 1995). This amount of crusting is very unusual on the INEEL. The access road to this tract is at the beginning of one of the INEEL annual Breeding Bird Survey routes, along which surveys have been conducted annually since 1985. This same road is part of the annual Jackrabbit Census route established in 1980.

No threatened or endangered species have been observed in this general area, nor have any sensitive bird species been recorded nesting in the area. Only nine bird species have been observed here during the breeding season. Ferruginous hawks, a species of concern, nest nearby and have been infrequently observed near the WRRTF location. The northern sagebrush lizard, a species of concern that is abundant throughout much of the INEEL, is likely to occur here. Like much of the northern portion of the INEEL, the WRRTF site provides important winter range for pronghorn during some winters. Limited use by

pronghorn occurs during the summer. This is not an important area for deer or elk. Although this area is within the floodplain of both the Big Lost River and Birch Creek, it is not classified as either a wetland or "Waters of the United States."

## 3.2 Cultural Resources

The INEEL possesses a rich and varied **prehistoric** and **historic** record. Resources include but are not limited to: Native American hunting and camping areas, stone circles, **cairns**, pictographs, a northern spur of the Oregon Trail, stage stations, turn-of-the-century homesteads, diversions and canals, ranching camps, railroad sidings, pre-INEEL military facilities, important scientific and technical facilities related to development of the U. S. and international nuclear program, paleontological localities, and areas of special importance to contemporary local Native Americans (Miller 1995, Irving 1993). Intensive **cultural resource** inventories have been completed within 40-acre plots at each on-site alternative borrow source area (see Appendix C, p. 47). No significant cultural resources were identified within these areas, although several potentially significant prehistoric and historic resources are located nearby (Ringe Pace 1996a).

# 4. ENVIRONMENTAL IMPACTS

The following sections evaluate short-term, long-term, and cumulative environmental impacts that are likely to occur from the alternatives described in Section 2. The environmental impacts associated with Alternative 1, the proposed action, are discussed under Section 4.1. The impacts of Alternatives 2 (Off-Site) and 3 (No Action) are discussed in Section 4.2 and Section 4.3, respectively. Section 4.4 compares the impacts of each alternative. Impacts would be mitigated (see Section 2.1.4, p. 10, "Standard Mitigation") by rehabilitating or restoring the affected areas at the end of each mining year and by reducing the impact over time by preservation and maintenance during the 10-year mining period.

## 4.1 Alternative 1 (Proposed): On-Site Locations - Ryegrass Flats, Spreading Area A and WRRTF

### 4.1.1 Construction and Operational Impacts

*4.1.1.1 Air Emissions.* Air quality impacts from fugitive particulate emissions for this alternative would be less than those that have historically occurred from Spreading Area B (Alternative 3, No Action) because the area in acres actively mined per year would be less. Since the impacts from Spreading Area B and all other INEL particulate sources were evaluated in DOE (1995a) and determined to pose no unacceptable air quality impacts, the closure and rehabilitation of the Spreading Area B location and replacement by the Alternative 1 areas would result in a net decrease in air quality impacts from INEEL borrow material mining operations.

However, to provide the reader with an *upper-bound* estimate of the maximum potential air quality impacts from Alternative 1, a *screening* modeling analysis was accomplished to determine the maximum increase in Particulate Matter less than 10 μm in diameter (PM-10) concentrations at worst-case (nearest) ambient air receptor locations. PM-10 is currently the only regulated air pollutant that would be emitted from the proposed action, and the sites are free of radioactive contamination from INEL activities (Clark 1992). Emissions from daily borrow operations were calculated using a conservative **AP-42** (EPA 1995) emissions factor for heavy construction operations (1.2 tons of total particulate per acre of construction per month of activity), assuming a total of 24 acres per year mined for each site and a 5000 $ft^2$ storage pile area adjacent to the mined area. This emission factor will conservatively bound (likely overestimate) fugitive particulate emissions from all types of operations in the pit and also from fugitive releases from storage piles. The **SCREEN3** model (EPA 1995) was run to evaluate maximum air concentrations at the *nearest* ambient air receptor location for each site (Ryegrass Flats is 0.7 miles from U.S. Highway 20; Spreading Area A is 3.5 miles from the south INEL boundary; and WRRTF is 0.5 miles from State Highway 33). In addition, maximum impacts were evaluated at Craters of the Moon National Monument, the nearest PSD Class I area.

Based on the modeled results (Appendix B), maximum PM-10 impacts from operations at any of the sites would be less than **National Ambient Air Quality Standards** (NAAQS) or PSD increments (Table 6). Air concentrations at all other ambient air locations would be significantly less. Due to the conservative downwind dispersion assumptions used by the SCREEN3 model, actual impacts from borrow pit operations are likely to be significantly less than those listed in Table 6. These results, along with those determined in DOE (1995a) indicate that the proposed action would result in no unacceptable air quality impacts.

**Table 6. Particulate Matter less than 10mm in Diameter Maximum Concentration Estimates for the On-site Alternatives.**

| On-Site Alternatives | Closet Ambient Air Receptor (Distance) | Maximum Concentrations ($\mu g/m^3$) | | | Regulatory Criteria ($\mu g/m^3$) NAAQS | | |
|---|---|---|---|---|---|---|---|
| | | 1-hr | 24-hr | Annual | 24-h | Annual | 24-hr PSD Increment |
| Ryegrass | U.S. Highway 20 (0.7 mi.) | 23.5 | 9.4 | 2.90 | 150 | 50 | 30 |
| Spreading Area A | INEL Boundary (3.5 mi.) | 2.6 | 1.10 | 0.33 | 150 | 50 | 30 |
| | Craters of the Moon National Monument (17.4 mi.) | 0.34 | 0.14 | 0.043 | 150 | 50 | 8 |
| WRRTF | State Highway 33 (0.5 mi.) | 45.2 | 18.0 | 4.70 | 150 | 50 | 30 |

Source: See Appencix B.
a 1-hr value multiplied by a 0.4 persistence factor.
b 1-hr value multiplied by a 0.125 persistence factor.

Fugitive dust emissions that may be produced during construction and operation activities must be controlled in accordance with IDAPA 16.01.01.650, "Idaho Rules for Control of Fugitive Dust." This requires that all reasonable precautions be taken to prevent the generation of fugitive dust. Some reasonable precautions may include the use of water or soil supressants, the use of control equipment, the covering of trucks, and others.

*4.1.1.2 Land Use.* Most of the INEEL's 572,067 acres serve as buffer and safety zones around facilities. The facility areas occupy 1,114 acres, or about 0.2 percent of the INEEL (DOE 1995c). Most activities are conducted within the INEEL's facility areas. Activities associated with opening and operating silt/clay sources, under Alternative 1, would disturb an estimated 240 acres over a 10-year period. A total of 24 acres (see Section 2.1.1, p. 5) would be mined each year with rehabilitation of these disturbed acres occurring at the end of each construction season in October or November.

*4.1.1.3 Water Resources.* There are no **jurisdictional wetlands**, streams or rivers, or permanent bodies of water on any of the on-site alternative locations. However, Spreading Area A experiences periodic flooding during years of high run-off and is designated "Waters of the U.S." As a result it would require a Clean Water Act Section 404 Permit to discharge dredged and fill material if discharge were to occur (Corps 1994). The Ryegrass Flats site is located within a closed basin that experiences short, intermittent flows from three drainages during periods of high run-off, rain, and rapid snow melt. Water flows to this site are not expected to curtail mining activities. No on-site locations would receive surface flow from a contaminated site or waste management area.

*4.1.1.4 Ecological Resources.* By the nature of the activity, the extraction of silt/clay from any of the on-site alternatives would alter the immediate contour of the ground surface. Some individual plants

or animals would be affected by the removal of silt/clay. Some members of less mobile species, such as lizards, snakes, and some small mammals would be displaced during surface clearing operations. Other more mobile species would simply avoid the disturbance. Although mining would clearly impact some individual plants and animals, it is unlikely that populations of any plants or animals beyond the immediate vicinity of the operations would be measurably affected. The intention to close and revegetate the mined portion of the pits each fall would reduce the acreage disturbed at any one time, and speed the overall rehabilitation process. Some individual northern sagebrush lizards, a species of concern, may be displaced as a direct result of developing a silt/clay source. However, this species remains the most abundant lizard throughout much of the upper Snake River plain, including the INEEL.

Recently, Ute's ladies tresses (*Spiranthes diluvialis*) was identified in southeastern Idaho and was added by the U. S. Fish and Wildlife Service (FWS) to the list of threatened and endangered species that may occur on the INEEL (Martin 1996). Ute's ladies tresses is found on moist soils in **mesic** or wet meadows near springs, lakes and perennial streams. The FWS has recommended that before any disturbance of these habitats on the INEEL, they first be surveyed for the presence of Ute's laddies tresses (Ruesink 1997). The WRRTF site and Ryegrass Flats are upland sites with no perennial or **ephemeral** water bodies nearby. Even though Spreading Area A is classified as Waters of the U.S., it does not include any perennial waters or perennially moist soils that would support Ute's ladies tresses. Likewise, none of the plant species commonly associated with Ute's ladies tresses were found in the vegetation assessment of Spreading Area A. Ute's ladies tresses occur on soils with textures not finer than fine silty sand. The proposed silt/clay borrow sites were chosen based on the presence of soil material finer than silt.

***Ryegrass Flats.*** Impacts to biological resources other than in the immediate area would be minor. Impacts within the physically disturbed area would be short-term. Because this area lacks a large shrub component, rehabilitated areas could be expected to return to the pre-mining plant cover and composition a few years after replanting.

***Spreading Area A.*** Measurable effects to biological resources would be limited to the immediate area of disturbance and be relatively short-term. Pronghorn use could decline during active mining operations due mostly to the presence of humans and heavy equipment. However, pronghorn would likely become accustomed to and tolerant of the disturbance and return to normal use patterns after mining is completed. The large number of water birds using the area, when flooded, would not be adversely impacted during or after soil removal. During active mining, flood waters would be diverted to other spreading areas, or elsewhere in Spreading Area A. Therefore, water would still be available for birds and other animals. Stockpiled topsoil would be spread over the mined area and reseeded each fall (see Section 2.1.1, p. 5). Although the soil is the same, it is unknown if the rehabilitated areas would have the same ability to hold water during flooding as the original site did before mining. This could impact the number of birds and other animals using the area. Because flooding of Spreading Area A occurs only during high water years or unusual snowmelt when water is plentiful, it is doubtful that excavating silt/clay would measurably affect populations of water birds.

***WRRTF.*** Measurable impacts to biological resources beyond the immediate mining site would be small. With the exception of damage to the moss and lichen cover, direct effects within the mined area would be relatively short-term. While it may take several years for the plant community to resemble the pre-mining condition, it may take several decades for the lichens and mosses to reestablish. Improving and using the access road and mining in this area would also affect the continuity of the annual Jackrabbit Counts and Breeding Bird Surveys conducted since 1980 and 1985, respectively. Mining in this area is not expected to measurably affect wintering patterns or populations of pronghorn.

*4.1.1.5 Cultural Resources.* Cultural resource surveys completed within 40-acre plots at each on-site alternative location have revealed no significant resources (see Appendix C, p. 47, Figures 5, 6 and 7). However, potentially significant archaeological sites were identified in the vicinity of the 40-acre plots and along access corridors (Ringe Pace 1996a). Therefore, archaeological surveys would be conducted before any expansion beyond the surveyed 40-acre plots. In addition, while access to and from the 40-acre plots via the existing dirt tracks is not restricted, additional surveys would be completed if the existing access tracks were upgraded. Whenever possible, mining activities and road upgrades will be designed to avoid adverse impact to cultural resources identified during archeaological surveys at each borrow source site. In the event that resources cannot be avoided, mitigation will be planned and conducted according to legal directives (36 CFR 800) (see Table 4).

Finally, due to high rates of soil deposition in the proposed on-site silt/clay locations, the probability of encountering buried cultural materials is quite high. In the event that materials such as bones, obsidian debris, "arrowheads," or charcoal-colored soil horizons are encountered, the INEEL Stop Work Authority would be invoked and the INEEL Cultural Resource Management Office consulted immediately to assess the find(s) and conduct necessary mitigation (see Table 4).

*4.1.1.6 Visual Resources.* Construction and operation of a silt/clay source at the Ryegrass Flats site would be visible from U.S. Highway 20 and the WRRTF location would be visible from State Highway 33. Activity at Spreading Area A would not be visible from the highway. No long-term impacts to visual resources on or near the INEEL would occur from construction and operation of these on-site silt/clay sources. Short-term stock piles and fugitive dust plumes may be visible from time to time.

While the INEEL site may be visible from the Craters of the Moon Wilderness Area under certain atmospheric conditions, the viewing distance of about 12 miles negates any adverse impacts that might be caused by the siting and construction of the proposed silt/clay sources (DOE 1995a).

*4.1.1.7 Socioeconomics.* It is projected that the work force associated with the construction and operation of one or more new silt/clay sources would be existing INEEL personnel and local subcontractors on a seasonal basis. Therefore, employment levels would remain within the normal fluctuation at the INEEL and not affect the local economies.

*4.1.1.8 Transportation.* Accidents resulting in fatalities or injuries are potential risks during transportation of gravel or silt/clay on-site or off-site during construction and operation activities. Table 7 shows on- and off-site estimated fatal and injury accidents projected to occur during transport of gravel material and silt/clay material on U.S. Highway 20/26 and State Highways 22, 28, and 33 to INEEL projects. Total on-site miles driven would result in less than one fatal accident for both haul trucks and belly dumps (Table 7). Injuries are expected to be less than four persons for haul trucks and less than three persons for belly dumps (Table 7). The difference between haul trucks and belly dumps is due to the number of miles driven (Table 7). Spills of gravel or silt/clay on or along one of the highways would be mitigated under the Job Safety Analysis Plan for each individual project.

*4.1.1.9 Noise.* Construction and operation of a silt/clay source at any of the on-site locations would result in a temporary increase in ambient noise levels. Hearing protection would be used if noise levels exceeded 85 decibels. These operations are not close to any facilities, so only those workers in close proximity would be exposed.

**Table 7. Estimated Fatal and Injury Accidents Resulting From Transportation of Silt/Clay Material to Construction Sites From Borrow Source Locations.**

| | | Haul Truck | | | Belly Dump | | |
|---|---|---|---|---|---|---|---|
| | | | Accidents[c] | | | Accidents[c] | |
| Location | Volume Needed[a] ($yd^3$) | Total Trip Miles[b] | Fatal | Injury | Total Trip Miles[b] | Fatal | Injury |
| No Action (Spreading Area B) | 300,000 | 600,000 | 0.01 | 0.59 | 375,000 | 0.01 | 0.37 |
| On-Site Alternatives | | | | | | | |
| Ryegrass Flats | 925,000 | 1,850,000 | 0.04 | 1.81 | 1,156,250 | 0.02 | 1.13 |
| Speading Area A | 925,000 | 1,850,000 | 0.04 | 1.81 | 1,156,250 | 0.02 | 1.13 |
| WRRTF | 150,000 | 300,000 | 0.01 | 0.29 | 187,500 | 0.00 | 0.18 |
| **Total On-Site** | 2,000,000 | 4,000,000 | 0.08 | 3.92 | 2,500,000 | 0.05 | 2.45 |
| Off-Site Alternatives | | | | | | | |
| Lidy Hot Springs | 2,300,000 | --[d] | --[d] | --[d] | 14,375,000 | 0.30 | 14.07 |
| **Total Off-Site** | 2,300,000 | --[d] | --[d] | --[d] | 14,375,000 | 0.30 | 14.07 |

a. See Table 2, "*INEL Gravel, Silt, and Clay Sources Showing Acres Disturbed Through 1995 and Planned Disturbance Through 2005 based on estimated resource needs*"
b. Total trip miles = Volume divided by haul truck or belly dump load capacity multiplied by round trip miles (on-site ≈ 20 miles; off-site ≈ 100 miles.
c. Calculation based on Table 10, "*Fatal and Injury Accident Rates for Local State System Roadways: 1991-1994 (Idaho Transportation Department 1994).*
d. Only belly dumps would be used to transport silt/clay from Lidy Hot Springs.

### 4.1.2 Cumulative Impacts of Alternative 1 and Gravel Pit Operations

This section discusses potential impacts resulting from on-going INEEL gravel mining operations. In combination with potential impacts from the new silt/clay sources, these contribute to cumulative impacts.

Gravel mining operations and silt/clay mining operations would result in short-term, elevated levels of fugitive dust in localized areas. However, these impacts would be less than those fugitive dust levels analyzed for the No Action Alternative evaluated in the FEIS. PM-10s generated during high levels of mining activity and during operating at any of the on-site locations, would not exceed significance levels as defined in the NAAQS or PSD (see Appendix B, p. 45). There would be a negligible increase in PM-10 concentrations and no change in existing visibility at areas such as Craters of the Moon National Monument or Wilderness Area. These impacts would be less than those that currently result from Spreading Area B, which would be closed and reseeded before beginning new mining operations.

Gravel mining operations and silt/clay mining operations would result in total soil disturbances of an estimated 85 and 290 acres, respectively (Table 5) These 375 acres represent less than 0.1 percent of the 572,067 acres of INEEL lands. At the end of each year the mined areas would be rehabilitated and, after a few years, be visible as shallow barren or newly reseeded landform depressions on the INEEL.

Cumulative impacts to jurisdictional wetlands, streams or rivers, playas, or permanent bodies of water are not anticipated as a result of mining operations within on-site locations. Unavoidable, short-term impacts to Waters of the U.S. would result from mining operations conducted in Spreading Area A.

Operational mining activities would result in a short-term localized loss of plant productivity, habitat fragmentation, temporary displacement of some animal species, and direct mortality of less mobile animal species. Although changes in the dominant vegetation may be visible for several decades, with the exception of the loss of lichens and mosses at the WRRTF site, only minor long-term biological impacts are expected. Cumulative impacts to cultural resources are not anticipated as a result of mining operations within on-site locations. However, the surrounding area would be permanently altered by evidence of modern activity such as ground scars from roads and depressions from pits. Rehabilitation and standard mitigation (see Sections 2.1.3 and 2.1.4, p. 10 and Table 4) of all borrow areas would help to ensure that these indirect impacts to cultural resources are short-term.

## 4.2 Alternative 2: Lidy Hot Springs (Off-Site Location)

Construction and operational impacts from this alternative would be small since Lidy Hot Springs is an existing mine under private ownership. Also, the mine is in a previously disturbed area where a continuation of operational activities would likely not have a measurable impact on the environment. Operational impacts would be mainly from transportation of the bentonite clay from the pit to the INEEL. The transportation distances would be greater under this alternative, thus increasing the likelihood of accidents. Based on total miles driven, it is estimated that under this alternative, less than one fatal accident and 14 injury accidents would occur (Table 7). Similar impacts would likely occur at any off-site location.

## 4.3 Alternative 3: No Action

Under this alternative DOE would continue to mine from Spreading Area B. However, the silt/clay material from this pit would be depleted after 1997 forcing the DOE to curtail activities requiring silt/clay or use off-site sources that would increase costs and accident potential with an increase in transportation mileage. This would restrict INEEL activities (see Table 1, Section 1, p. 1) requiring silt/clay and may impact the INEEL mission. These impacts are uncertain.

## 4.4 Comparison of Environmental Impacts

The impacts of each alternative are described in Sections 4.1, 4.2, and 4.3. Tables 8, 9, and 10 summarize construction and operational impacts and project costs and duration.

The maximum impact would be from construction and operation scheduled simultaneously at on-site locations. The mining of Spreading Area A could alter the water holding ability of the area and the subsequent use of the area by water birds and other animals, including spadefoot toads. Upgrade of the access road at WRRTF would change the continuity of the Breeding Bird Survey route and the Jackrabbit Survey transect resulting in a loss of comparable data. Potential long-term loss of lichens and mosses

would occur during mining at WRRTF. Ongoing survey efforts and archaeological mitigation at cultural resource locations that cannot be avoided should ensure that no cultural resources are aversely impacted by the project (see Table 4).

Some impacts would remain even after construction and operational controls were implemented. Construction and operation activities would result in increases in visible dust emissions from heavy equipment and increases in ambient noise levels. As much as 24 acres per year of habitat for small burrowing mammals, insects, some native plants, and less mobile organisms would be lost. Data from a Breeding Bird Survey route and Jackrabbit Survey transect would be permanently distorted or biased. Shallow landform depressions resulting from all mining operations would remain visible on the INEEL indefinitely. Rehabilitation efforts would help minimize these scars. Most impacts would be seasonal and occur only during construction and operation activities.

The cost of construction, operation, and rehabilitation for the proposed alternative would be about $15,100,000 over 10 years. Costs associated with alternative 2 would be about $85,200,000 over 10 years. Most of this cost is related to transportation of the silt/clay material to project locations (Table 10).

## Table 8. Summary of Construction Impacts from the Upgrade of Mine Access Roads Across Alternatives.

| | Alternative 1 (Preferred) | | | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| | On-Site Sources | | | Off-Site Source | No Action |
| **Construction Impacts[a]** | **Ryegrass Flats** | **Spreading Area A** | **WRRTF** | **Lidy Hot Springs[a]** | **Spreading Area B[a]** |
| Air Emissions | Short-term elevated levels of fugitive dust and exhaust emissions | | | None | None |
| Land Use and Soil/Land Disturbance | ≈21 ac. permanently disturbed for upgrade of access roads | | | None | None |
| Water | No impact to regulated wetlands, perennial steams or rivers, permanent bodies of water, or Waters of the U.S. | Short-term impact to Waters of the U.S. | Same as Ryegrass Flats | None | None |
| Biological Resources | Loss of habitat, small mammals, insects, native plants, and other less mobile organisims in the disturbed area | Same as Ryegrass Flats plus short-term disturbance of pronghorn antelope | Same as Ryegrass Flats, plus loss of moss and lichens plus loss of comparable data for Breeding Bird Survey Route and data from the Jack Rabbit Survey Transect would be permanently skewed | None | None |
| Cultural Resources | Potential impact to cultural resources in the disturbed area | | | | None |
| Visual Resources | Short-term fugitive dust emissions; visible from Highway 20 | Short-term fugitive dust emissions; visible from Highway 20/26 | Short-term fugitive dust emissions; visible from Highway 33 | None | None |
| Socioeconomic | Within the normal fluctuations of employement | | | None | None |
| Transporation[b] | Potential for accident resulting in fatality, injury, or spill | | | None | None |
| Noise | Temporary increase in ambient noise levels | | | None | None |

a. Construction impacts represent costs incurred during the upgrade of access road to mine site.
b. See Table 6, "Estimated Fatal and Injury Accidents Resulting From Transportation of Silt/Clay Mateiral to Construction Sites from Borrow Source Locations."

## Table 9. Summary of Operational Impacts from Mining Activities Across Alternatives.

| | Alternative 1 | | | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| | On-Site Sources (Preferred) | | | Off-Site Source | No Action |
| **Operational Impacts[a]** | **Ryegrass Flats** | **Spreading Area A** | **WRRTF** | **Lidy Hot Springs** | **Spreading Area B** |
| Air Emissions | Short-term elevated levels of fugitive dust and exhaust emissions | | | Same | Same |
| Land Use and Soil/Land Disturbance | Temporary disturbance of soil -- not to exceed 24 ac./yr. | | | None | Temporary disturbance of soil -- about 36 ac. |
| Water | No impact to regulated wetlands, perennial steams or rivers, or Waters of the U.S. | Short-term impact to Waters of the U.S. | Same as Ryegrass Flats | Same as Ryegrass Flats | Short-term impacts to Waters of the U.S. |
| Biological Resources | Short-term loss of plant productivity and habitat fragmentation. Loss of small mammals, insects, native plants, and other less mobile organisms in the disturbed area | Same as Ryegrass Flats plus short-term disturbance of Pronghorn Antelope. | Same as Ryegrass Flats plus long-term loss of lichens and mosses | None | None |
| Cultural Resources | Expansion of area beyond currently surveyed area (40 ac.) may impact cultural resources | | | Expansion may impact cultural resources | None |
| Visual Resources | Short-term fugitive dust emissions; visible from Highway 20 | Short-term fugitive dust emissions; visible from Highway 20/26 | Short-term fugitive dust emissions; visible from Highway 33 | None | None |
| Socioeconomic | Within the normal fluctuations of employment | | | None | Same as Alternative 1 |
| Transporation[b] | Potential for accident resulting in fatality, injury or spill | | | None | Same as Alternative 1 |
| Noise | Temporary increase in ambient noise levels | | | None | Same as Alternative 1 |

a. Impacts incurred during mining activities.
b. See Table 6, "Estimated Fatal and Injury Accidents Resulting From Transportation of Silt/Clay Mateiral to Construction Sites from Borrow Source Locations."

## Table 10. Summary of Costs Across Alternatives.

| | Alternative 1 | | | Alternative 2 | Alternative 3 |
|---|---|---|---|---|---|
| | On-Site Sources (Proposed) | | | Off-Site Source | No Action |
| Costs | Ryegrass Flats | Spreading Area A | WRRTF | Lidy Hot Springs | Spreading Area B |
| Construction[a] | $253,440 (1.2 mi.) | $211,200 (1.0 mi.) | $211,200 (1.0 mi. | None | None |
| Operation[b] | $0.19/yd$^3$ | $0.19/yd$^3$ | $0.19/yd$^3$ | $27.00/yd$^3$ [c] | $4.56/yd$^3$ |
| Rehabilitiation (end of year)[d] | $40,800 | $40,800 | $40,800 | None | $61,200 |

a. 1995 costs to upgrade INEL access roads to mine site ($211,200/mi.).
b. 1995 costs to transport silt and clay material from Alternative 1 sites and Alternative 3 equals [($0.19/yd$^3$ per round trip mile) x (24 mi.) = $4.56/yd$^3$].
c. 1995 costs to transport silt and clay material from Lidy Hot Springs to CFA equals $27.00/yd$^3$.
d. 1995 costs to backslope, regrade, and reseed Alternative 1 sites equals [($1700/ac.) x (24 ac.) = $40,800].

# 5. PERMIT AND REGULATORY REQUIREMENTS

## 5.1 Federal

Section 106 of the National Historic Preservation Act of 1966, as amended, requires Federal agencies to consider the impact of all undertakings[i] on properties listed or eligible for listing in the National Register of Historic Places, and further requires that the agency consult with the SHPO and the Advisory Council on Historic Preservation. Section 110 directs federal agencies to establish programs to find, evaluate, and nominate eligible properties to the National Register of Historic Places, including previously unidentified historic properties that may be discovered during the implementation of a project. Locations of proposed activities must also be evaluated for resources protected by the American Indian Religious Freedom Act of 1978 and Executive Order No. 13007, "Native American Sacred Sites." No significant cultural resources have been identified within 40 acre plots where excavation is scheduled to begin at each of the proposed on-site locations. Additional archaeological surveys will be conducted before ground disturbance beyond the 40-acre plots. Any significant resources identified during these surveys will be avoided or mitigated in consultation with the SHPO, Advisory Council on Historic Preservation, and the Shoshone-Bannock Tribes (see Table 4).

DOE is required to review as guidance the most current U.S. Fish and Wildlife Service (FWS) list for threatened and endangered (T&E) plant and animal species. If, after reviewing the list, DOE determines that the proposed action would not impact any T&E species, DOE may determine or document that formal consultation with the FWS is not required for this action. DOE has determined that a biological assessment would not be required for the proposed or alternative actions.

Before construction and operation of a new silt/clay source, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared and approved for construction and operational activities in accordance with the INEEL SWPPP (DOE 1993). During construction and operation phases, erosion prevention and sediment controls would be implemented according to best management practices from EPA's Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices (EPA 1992).

The Occupational Safety and Health regulations [29 CFR 1926.651(j)(k)(l) and .652 (a)(b)] and DOE Order 5483.1A/CI-CIII ensure employee protection from pit cave-ins during mining operations if the excavations are not in stable rock or less than 1.5 m (5 ft) in depth. Protective systems must have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system. To comply with this protective system, excavations must be sloped at an angle not steeper than one and one-half horizontal to one vertical, equivalent to 34 degrees measured from the horizontal.

The Occupational Safety and Health regulation [29 CFR 1910.132(d)] and DOE Order 5483.1A/CI-CIII require employer assessment of the workplace to determine if hazards are present, or are likely to be present, which require the use of personal protective equipment. To comply with this requirement INEEL industrial hygienists must be aware of the potential for exposure to crystalline silica during earth disturbing activities, and those that create large amounts of fugitive dust.

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[i] "undertaking" means any project, activity, or program under the direct or indirect jurisdiction of a Federal agency that can result in changes in the character or use of historic properties, if any historic properties are located in the area of potential effect. Refer to 36 CFR 800.2(dd) for further details.

The Mine Safety and Health Administration (30 CFR 56.3130 and .3131) specifies requirements for wall, bank, and slope stability in places where employees work or travel in performing their assigned tasks. Loose or unconsolidated material must be sloped to the angle of repose or stripped back for at least 3 m (10 ft) from the top of the pit wall.

The Clean Water Act requires, following soil-disturbing activities, establishment of at least 70 percent of pre-mining vegetative cover. The native species selected will provide species diversity, composition, and **perennial** cover equivalent to the cover existing before disturbance.

The Federal Noxious Weed Act (as amended in Section 15 of the 1990 Food, Agriculture, Conservation and Trade Act) requires, through life-of-mine, the control of noxious weeds.

Coordination with the Bureau of Land Management will occur when mining activities commence in Spreading Area A that is within the Big Butte grazing allotment.

## 5.2 State and Tribes

Air emissions controls need to be implemented to limit fugitive dust emissions from construction and operation in compliance with IDAPA 16.01.01.650.

In compliance with the National Historic Preservation Act and its implementing regulations (36 CFR 800), all cultural resource evaluations and recommendations are subject to review by the Idaho SHPO. DOE-ID's "Working Agreement" with the Shoshone-Bannock Tribes also mandates consultation on cultural resource issues.

# 6. COORDINATION AND CONSULTATION

The following agencies and individuals were contacted for information regarding environmental resources on or near the INEEL. In addition, the DOE met with the Shoshone-Bannock Tribe on April 21, 1997 to discuss DOE's response to comments. No additional comments were submitted.

| Information | Agency | Contact |
|---|---|---|
| Biological Consultation | U. S. Fish and Wildlife Service, Boise, Idaho | J. Eshe,<br>A. BeckHaas |
| Threatened, Endangered, Candidate, and other species of concern | Idaho Department of Fish and Game, Boise, Idaho | G. Stephens |
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# APPENDICES

# Appendix A. Glossary

**AP-42**. EPA Document Number AP-42, *Compilation of Air Pollutant Emission Factors*, Environmental Protection Agency, Research Triangle Park, North Carolina. Supplements are published regularly. This document includes process descriptions and emission factors for a broad range of criteria pollutant emission sources.

**Basalt**. A hard, dense, dark volcanic rock composed chiefly of plagioclase, pyroxene, and olivine, and often having a glassy appearance.

**Bedrock**. The solid rock that underlies loose material, such as soil, sand, clay, or gravel.

**Bentonite**. An absorbent aluminum silicate clay formed from volcanic ash and used in various adhesives, cements, and ceramic fillers.

**Best Management Practices**. Practices designed, implemented, and maintained to give full protection to the environment.

**Cairn**. A mound of stones erected as a memorial or marker.

**Council on Environmental Quality (CEQ).** A council established by the National Environmental Policy Act of 1969, as amended (Public Law 91-90, 42 U.S.C. 4321-4347, January 1970, as amended by Public Law 94-52, July 3, 1975, and Public Law 94-83, August 9, 1975). The Council's duties are described in Title II of the National Environmental Policy Act.

**Cultural resource**. Prehistoric or historic sites, structures, districts, landscapes or objects of some importance to a culture or community for scientific, traditional, religious, or other reasons. A broad general term meaning any cultural property or traditional lifeway value.

**Decibels**. A unit used to express relative difference in power or intensity, usually between two acoustic or electric signals

**Environmental Assessment (EA)**. A concise public document for which a Federal agency is responsible that serves to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.

**Environmental Impact Satement (EIS)**. A document that serves to ensure that the policies and goals defined in NEPA are incorporated into the programs and actions of the Federal government. An EIS gives a full and fair discussion of significant environmental impacts. The EIS informs decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

**Ephemeral**. Lasting for a markedly brief time; living or lasting only for a day, as certain plants or insects do.

**Erosion**. The wearing away of land surface by wind or water. Erosion occurs naturally from weather or run off but can be intensified by land-clearing practices.

**Finding of No Significant Impact (FONSI).** A document, based on an environmental assessment by a Federal agency briefly presenting the reasons why an action will not have a significant effect on the human environment and for which an environmental impact statement will therefore not be prepared.

**Fugitive Dust Emission**. Fugitive emissions composed of particulate matter (e.g., dust, vehicle emissions).

**Grubbing**. To dig up by or as if by the roots.

**Historic**. Historic represents about 150 to 50 years before present.

**Infrastructure**. The basic facilities, services, and installations needed for the functioning of the INEEL, such as transportation and communications systems and water and power lines.

**Jurisdictional wetlands**. Wetlands under the jurisdiction of the Clean Water Act and regulators such as the Environmental Protection Agency or Army Corps of Engineers.

**Lek**. Grouse mating grounds.

**Mesic.** An ecology term, Of, characterized by, or adapted to a moderately moist habitat.

**Microorganisms**. An organism of microscopic or submicroscopic size, especially a bacterium or protozoan.

**National Ambient Air Quality Standard (NAAQS)**. Those standards set forth by federal law to promulgate maximum levels of air pollutants that can exist in the ambient air without producing an adverse effect to humans (primary standard) or the public welfare (secondary standard).

**National Environmental Policy Act (NEPA)**. A Federal law, enacted in 1970, that requires the Federal government to consider the environmental impacts of, and alternatives to, major proposed actions in its decisionmaking processes. Commonly referred to by its acronym, NEPA.

**Off-site**. An area outside the INEEL boundaries.

**On-site**. The area within the INEEL boundaries. This does not include in-town facilities.

**Ordnance**. Military materiel, such as weapons, ammunition. In this case artillary shells, bombs, etc. left from the Navy's bombing range activities.

**Perennial**. A plant that lives three or more years.

**Permeability**. The rate of flow of a liquid or gas through a porous material.

**PM-10**. Particulate matter with an aerodynamic diameter less than or equal to 10 microns.

**Prehistoric**. Prehistoric represents about 12,000 to 150 years before present.

**Prevention of Significant Deterioration (PSD).** Clean Air Act regulations designed to "protect public health and welfare from any actual or potential adverse effect . . .", U.S. Code, Title 42, The Public Health and Welfare, Chapter 85--Air Pollution Prevention and Control, Subchapter I--Programs and Activities, Part C--Prevention of Significant Deterioration of Air Quality.

**Record of Decision (ROD).** A concise public record of decision (40 CFR 1505.2) at the conclusion of the an environmental impact statement. The ROD, which must be published in the *Federal Register*, will (a) State what the decision is, (b) Identify all alternatives considered and specify the alternative or alternatives which were considered environmentally preferable, and (c) State whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted and, if not, why they are not.

**Run-off.** That part of precipitation or snow melt that runs off the land, and pavement into streams or other surface-water. It can carry pollutants from the air and land into the receiving waters.

**SCREEN3.** An Environmental Protection Agency approved analytical model used to estimate airborne pollutant concentrations in source analysis.

**Surficial.** Of, relating to, or occurring on or near the surface of the earth.

**Topsoil.** Top layer of soil containing plant roots and soil microorganisms.

**Total suspended particulate (TSP).** Total suspended particluates (e.g., dust) in the air.

# Appendix B. Air Emission Evaluation

Emission Rate Factor - Calculation of a maximum 24-hour average **total suspended particulate** (TSP) emission rate factor (Q) is based on an AP-42 (EPA 1985) emissions factor for heavy construction operations (1.2 tons per acre of construction per month of activity):

$$Q = \frac{1.2\ tons}{ac.\text{-}mo.} \times \frac{1\ mo.}{30\ day} \times \frac{1\ day}{24\ hr.} \times \frac{1\ hr.}{3600\ \text{sec.}} \times \frac{1\ ac.}{4047\ m^2} \times \frac{9.07 \times 10^5\ gm}{1\ ton}$$
$$= 1.04 \times 10^{-4}\ gm/m^2\text{-}s$$

This emission factor conservatively bounds particulate emissions from all types of operations in the pit and also from fugitive releases from storage piles.

SCREEN3 Model Emission Rate - The maximum 24-hour emission rate for SCREEN3 modeling input ($S_{input}$) is calculated by multiplying the emission factor (Q) by the maximum area of operations over a 24-hr period (2,255 $yd^2$ or 1,886 $m^2$).

Maximum area of pit *worked* per day = 1,700 $yd^2$ (1,421.4 $m^2$)
Maximum area of storage pile = 555 $yd^2$ (464.5 $m^2$)

$$1{,}886\ m^2 = [(1{,}700\ yd^2 + 555.5\ yd^2)] \times \frac{m^2}{1{,}196\ yd^2}$$

$$S_{input} = 1.04 \times 10^{-4}\ gm/m^2\text{-}s \times 1{,}886\ m^2$$
$$= 0.196\ gm/s \times (0.5\ PM10/TSP\ particle\ size\ multiplier)$$
$$= 0.098\ gm/s \times (0.5\ reductionforwatering)$$
$$= 0.490\ gm/s\ PM\text{-}10\ with\ watering$$

Additional modeling inputs include a 1-m release height and a 43.4 m effective side length calculated by taking the square root of the 1,886 $m^2$ area. SCREEN3 divides the input Q (0.049 gm/s) by this area to get a real emission rate (0.26 $g/m^2$-s).

02/13/97
08:03:10

*** SCREEN2 MODEL RUN ***
*** VERSION DATED 92245 ***

Barrow Pit 4 - Max 24-h PM-10, 1421m2 pit+465m2 pile, watering, 0.5 PM10 Fract.

SIMPLE TERRAIN INPUTS:

| | | |
|---|---|---|
| SOURCE TYPE | = | AREA |
| EMISSION RATE (G/(S-M**2)) | = | .260150E-04 |
| SOURCE HEIGHT (M) | = | 1.0000 |
| LENGTH OF SIDE (M) | = | 43.4000 |
| RECEPTOR HEIGHT (M) | = | .0000 |
| URBAN/RURAL OPTION | = | RURAL |

BUOY. FLUX = .000 M**4/S**3; MOM. FLUX = .000 M**4/S**2.

*** FULL METEOROLOGY ***

**********
*** SCREEN DISCRETE DISTANCES ***
**********

| DIST (M) | CONC (UG/M**3) | STAB | U10M (M/S) | USTK (M/S) | MIX HT (M) | PLUME HT (M) | SIGMA Y (M) | SIGMA Z (M) | DWASH |
|---|---|---|---|---|---|---|---|---|---|
| 754. | 45.22 | 6 | 1.0 | 1.0 | 10000.0 | 1.00 | 25.40 | 11.70 | NO |
| 1200. | 23.53 | 6 | 1.0 | 1.0 | 10000.0 | 1.00 | 39.27 | 15.81 | NO |
| 5665. | 2.635 | 6 | 1.0 | 1.0 | 10000.0 | 1.00 | 162.33 | 36.31 | NO |
| 7240. | 1.892 | 6 | 1.0 | 1.0 | 10000.0 | 1.00 | 202.41 | 40.61 | NO |
| 7590. | 1.779 | 6 | 1.0 | 1.0 | 10000.0 | 1.00 | 211.17 | 41.41 | NO |
| 10140. | 1.219 | 6 | 1.0 | 1.0 | 10000.0 | 1.00 | 273.69 | 46.69 | NO |
| 28000. | .3441 | 6 | 1.0 | 1.0 | 10000.0 | 1.00 | 673.06 | 67.32 | NO |

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

**********
*** SUMMARY OF SCREEN MODEL RESULTS ***
**********

| CALCULATION PROCEDURE | MAX CONC (UG/M**3) | DIST TO MAX (M) | TERRAIN HT (M) |
|---|---|---|---|
| SIMPLE TERRAIN | 45.22 | 754. | 0. |

**********
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

# Appendix C. Cultural Resource Surveys

Ryegrass Flats (Figure 5) contains evidence of prehistoric Native American use as well as early historic activities possibly associated with agriculture and/or transportation along the Blackfoot Little Lost River Road primarily in use from 1888 - 1909. However, the sensitive areas are all located along the periphery of the proposed mining area and/or along the existing dirt access track. All mining activities would avoid these areas. Surveys within Spreading Area A (Figure 6) revealed no significant cultural resources. Mining within the indicated 40-acre area should have no effect on sensitive remains. Sand dunes near the WRRTF site (Figure 7) revealed evidence of prehistoric Native American use. However, the sensitive area is located on the periphery of the proposed mining area and would be avoided by all activities associated with the project.

**Figure 6. Areas Surveyed for Cultural Resources at the Proposed Spreading Area A Silt/Clay Source.**

Figure 7. Areas Surveyed for Cultural Resources at the Proposed WRRTF Silt/Clay Source.

# Appendix D. Response to Public Comment

In accordance with the U. S. Department of Energy, Idaho Operations Office policy, the draft Environmental Assessment for the New Silt/Clay Source for the Idaho National Engineering and Environmental Laboratory (INEEL) was provided to the State of Idaho and Shoshone-Bannock Tribes for their review on October 22, 1996. In addition, the draft EA and/or a fact sheet was distributed to federal, state, and local government officials, regional newspapers, public libraries, INEEL regional outreach offices, and interested stakeholders for a 30-day public review and comment period.

Comments were received from the State of Idaho, Shoshone-Bannock Tribes, and several private individuals. This appendix contains DOE's responses to those comments. Comments are designated as "General" or "Specific."

## United States Environmental Protection Agency

**1. Specific Comment (page 1, Section 1):** The reference for the 1996 survey supporting the need for 2,300,000 [cubic yards] of silt/clay material should be identified in Section 8, References.

**Response:** The reference, Webber 1996, as referenced in the draft Environmental Assessment is found in Section 8, p. 35.

**2. Specific Comment (page 2, Table 1):** The site selection criterion that the silt and clay permeability be less than or equal to 1.0 x $10E^{-7}$ cm/s has not been required for the ER landfill capping projects undertaken to date. Therefore, other sites closer to contaminant source areas may prove more suitable as soil borrow sources. Unless specifically required, there are serious freeze/thaw concerns with using very low permeability material for capping. Given the low net annual precipitation, alternate designs are more cost effective.

**Response:** The selection criterion was established to ensure the availability of silt/clay material with the lowest permeability to satisfy requirements/specifications for sewer lagoon liners. Permeability requirements/specifications for additional projects, such as capping and engineered barriers, would be adjusted by applying soil additives and controlling compaction and moisture levels.

**3. Specific Comment (Page 2, Section 2):** It is not clear from the discussion whether the determination of permeability is from visual observation or laboratory testing, or both. This should be clarified.

**Response:** The determination of permeability is from visual observation and laboratory testing, (Smith et al. 1994). Testing of soil samples included grain-size distribution and textural classification, hydraulic properties (permeability and percent moisture content), and geotechnical properties (compaction testing).

**4. Specific Comment (Page 8, Table 2):** The question of how potential ordnance site screening may affect the unit cost estimate should be addressed.

**Response:** As discussed in Section 2.1.1, p. 5, the proposed silt/clay sources, including the access roads, have been surveyed for unexploded ordnance and ordnance waste (Clayton 1995). No ordnance or evidence of ordnance was found. This survey does not affect the unit cost estimate to mine silt/clay material from the proposed pits because the areas were surveyed prior to any disturbance and will not be re-surveyed through life-of-mine activities.

**5. Specific Comment (Page 8, Table 2):** Although a borrow surface area of 254 acres is small compared to the entire site, some mention of what if any impacts on drainage and groundwater recharge should be made as the replacement soils would likely be several orders of magnitude higher permeability.

**Response:** Impacts to drainage and groundwater recharge would be minimal. All proposed on-site locations contain deep, well drained soil on old lakebeds with slopes 0 to 1 percent. These silty clay soils have high water storage capacity, surface runoff is very slow, and the hazard of erosion is slight.

**6. Specific Comment (Page 9, Section 2.1.3):** The need to rehabilitate each borrow pit with "topsoil" again begs the question of the need for the silt/clay material and also whether the borrow source for the "topsoil" also requires rehabilitation?

**Response:** Topsoil or the top layer of soil containing plant roots and soil microorganisms would be stripped and mixed temporarily with any vegetation that occurs at the location of the proposed pit. The cleared vegetation and stripped topsoil would be temporarily stockpiled near the pit. To reduce mortality of soil microorganisms and the invasion of weedy plant species, this material stockpiled for more than one year would be seeded with native grasses. Stockpiled topsoil would be applied to the area to be rehabilitated in accordance with guidelines described in Anderson and Shumar 1989.

## The Shoshone-Bannock Tribes

**7. General Comment:** "In general, the plan ignores the original and present role of the Shoshone-Bannock Tribes, and the Fort Bridger Treaty of 1868, which provides that the Shoshone-Bannock Tribes continue to have rights at the area encompassing the INEL. Water rights, cultural resource protection, land use, fisheries, and environmental protection are among the rights which are retained as part of the treaty-rights. The inadequate consideration of these rights . . . give reason to our support [of] a full Environmental Impact Statement . . ."

**Response:** The language of the Fort Bridger Treaty of 1868, as well as the subsequent case law regarding the meaning of the Treaty, are legal issues that are outside the scope of this NEPA document. As part of its obligation when occupying this land, the Department is committed to the protection of the environment.

The Department performed the cultural resource surveys for the New Silt/Clay Source Environmental Assessment, consistent with the National Historic Preservation Act, the Archaeological Resources Protection Act and other statutes, as well as standards and guidelines issued by the Idaho State Historic Preservation Office, National Park Service, and the Secretary of Interior.

These surveys did not identify any cultural resources within the proposed 40-acre borrow source sites. In addition, should any cultural resources or suspected resources be unexpectedly discovered during the proposed activities, the mitigation proposed in the Environmental Assessment (see Section 2.1.4, p. 10) will be to stop work until further investigations can be completed.

Also, refer to Comments 18, 33, & 34.

**8. General Comment:** ". . . whichever alternative is selected, the proposed borrow pit where hundreds of thousands of cubic yards of dirt will be mined out, is *significance* by any yardstick one may chose including that of NEPA's (40 CFR part 1508.27) which should immediately place the project into a full EIS track."

**Response:** The Department of Energy, when proposing activities, routinely considers the question of whether the proposed action will significantly affect the quality of the human environment. The focus of a question of the significance of a proposed activity is based upon the following: will the proposed action have more than minimal impact on the environment? As discussed in the EA, mining 24 acres of silt and clay per year would result in:

- short-term elevated levels of fugitive dust and exhaust emissions
- no net increase in total suspended particulates emissions and no change in visibility impacts to areas such as Craters of the Moon National Monument or Wilderness Area
- less than one fatal accident and less than four injuries during construction and operation activities
- no impact to jurisdictional wetlands, streams or rivers, or permananet bodies of water
- alteration of the ground contour in the immediate pit area
- the loss and dispersion of some individual plants and animals
- no long-term impacts to visual resources on or near the INEEL.

As proposed, the mining of "dirt" would occur in 24-acre increments over a 10-year period. In addition, remediation activities such as recontouring and reseeding would be implemented at the end of each construction season to reduce the likelihood of cumulative impacts from fugitive dust, noxious weed invasion, etc. Over this 10-year period, less than 0.1 percent of the 572,067 acres of the INEEL would be disturbed from this activity. Finally, biological and cultural resource surveys revealed no significant resources in any of the three on-site locations.

Based on these findings, and the NEPA regulations and case law, this project will not significantly affect the quality of the human environment.

**9. General Comment:** "NEPA also requires that lead agencies (DOE) should seek cooperating agency support as early as possible in the planning process. The Shoshone-Bannock Tribes with the BIA should have been brought into this project at an earlier date."

**Response:** DOE-ID uses several avenues to inform the Tribes, State of Idaho, federal agencies and the public of planned activities. This project was first discussed in DOE-ID's *Annual National Environmental Policy Act Planning Summary*, attached to a "Dear Citizen" Letter dated April 6, 1995; and again on January 26, 1996. DOE's Order 451.1 requires the field offices to submit an annual NEPA planning summary to the Assistant Secretary for Environment, Safety and Health by January 31 of each year and make it available to the public. The Shoshone-Bannock Tribes are on distribution for these letters. In addition, the INEEL cooperated with the Shoshone-Bannock Tribes' in identifying potential Native American concerns related to the opening of these pits (see Response to Comment Number 34 and Section 6, "Coordination and Consultation" of the environmental assessment). Finally, the Tribes were sent a draft Finding of No Significant Impact and draft Environmental Assessment and invited to comment on its scope, analysis, and decision. These draft documents were sent out for public review and comment on October 21, 1996. This response document is in response to comments received.

**10. General Comment:** "The proposed project for silt and clay use is too vague to enable an accurate assessment of the impacts of the various projects where the material will be used, and therefore too vague to assess the impacts."

**Response:** The objective of this environmental assessment is to evaluate the expected environmental impacts from the proposed opening and operation of a new silt/clay source(s) for the INEEL. Proposed activities listed in Table 2, see Section 2, p. 3 that might use the silt and clay are as examples only. As required by law, should those illustrated activities become actual proposed projects, analysis under either NEPA or the Comprehensive Environmental Response, Compensation, and Liability Act will be conducted.

Section 1, "Purpose and Need," has been revised to clarify this position.

**11. General Comment:** "It is necessary to assess the no action alternative."

**Response:** The No Action alternative was analyzed. The continued use of Spreading Area B as a silt/clay source was included in the "No Action" alternative because this is an ongoing operation and not a proposed action. The ongoing environmental impacts from this activity were described in the Programatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (FEIS, see Volume 2, Appendix C, Section C-4.9.2, p. C-4.9.2-1).

**12. General Comment:** "This EA is requesting for review of the use of the silt/clay for *any* purpose, for the next ten years. *Any purpose* is not good enough for NEPA requirements to demonstrate a need for the project. This section either needs to be re-worked, or the proposed project withdrawn."

**Response:** The environmental assessment provides examples of the types of use the silt/clay would be used for in Section 1, "Purpose and Need." For example, "The silt/clay would be used for, but not be limited to . . . the construction of soil caps for contaminated sites, research sites, and landfills, . . . the replacement of radioactively contaminated soil . . . for revegetation, and backfill and . . . sealing of sewage lagoons." Also, Table 2 on page 8 identifies potential projects requiring borrow material. These projects are potential projects and may or may not come to pass, depending on need, funding, environmental impacts, etc. NEPA would be required for these and other future proposed projects before Title II Design. See Response to Comment Number 10).

**13. General Comment:** "None of the Alternatives adequately protect public health and air quality impacts from the airborne emissions due to construction, nor do they demonstrate justification for issuing a proposed FONSI. None of the alternatives indicate the type of permits from IDEQ which will be applicable."

**Response:** The FEIS describes the anticipated useage of borrow pits for silt/clay including this project (Section 4.9.2, volume 2). An air analysis was shown in the FEIS which bounds this activity (Volume 2, section C4.9.2). The proposed action would disturb less area than the existing (Spreading Area B) operation, thus would produce less fugitive dust. Fugitive dust emissions will be limited in compliance with IDAPA 16.01.01.650 as discussed in Section 2.1.4, p. 10. In addition to this, the air analysis in this EA which has been slightly revised as shown in Appendix B, p. 45, shows that there will be insignificant air quality impacts to any public receptors including the nearby class 1 area, and an insignificant contribution to the PSD increment. These conclusions are based on conservative emission factors and on conservative screen modelling. Air permits have not been required by IDEQ for this type of activity.

**14. General Comment:** "What about the stockpiles of soil/clay at the borrow pits (proposed and existing)? These should be incorporated into the AP-42 analysis.

**Response:** Calculation has been revised. See Appendix B, p. 45.

**15. General Comment:** "What information is available in the air quality permit application submitted by DOE to the Idaho Division of Environmental Quality (IDEQ) for the *existing* [borrow] pit . . ."

**Response:** The existing borrow pit does not have a DEQ air permit.

**16. General Comment:** Fugitive dust from the borrow pit construction processes, as well as other INEL emissions, will produce site-wide accumulated effects, which may impact the Craters of the Moon National Monument which is a Class I airshed, and the potential adverse impacts should specifically be addressed, and mitigation efforts analyzed."

**Response:** See reponse to Comment Number 13.

**17. General Comment:** None of the alternatives adequately look at the air impacts to the Shoshone-Bannock Tribes' Fort Hall Indian Reservation, located within 50 miles of all three of the alternatives (an "affected State or Tribal Area", see Fed Reg. July 1, 1996-definition of "affected State")."

**Response:** An INEL Criteria Pollutant Impact Evaluation at the Fort Hall Indian Reservation was done on May 1995 at the request of the tribes which bounds this activity. This activity included cumulative releases from all INEEL facilities, including the existing borrow pit operations.

**18. General Comment:** ". . . DOE has not recognized the special relationship that the Tribes have with the land and resources at [the] INEL, nor have they adequately considered the treaty rights of the Shoshone-Bannock Tribes, on this proposed silt/clay project."

**Response:** Refer to Comments #7, 33, & 34.

**19. General Comment:** ". . . where such large amounts of dust will be generated, a Federal New Source (NSR) permit, and Prevention of Significant Deterioration (PSD) should be applied for at the Regional EPA level."

**Response:** Authority for New Source Review has been delegated to the State of Idaho. We have not been required by the State of Idaho to permit this source. The INEEL has used and will use appropriate means as required by Idaho regulations to minimize fugitive emissions.

**20. General Comment (Section 4.1 Alternative 1, 2, and 3 -- Sections 4.1, 4.2, and 4.3):** "These sections, while addressing analyses of emissions for their respective impacts on NAAQS, do not perform the required analyses for Prevention of Significant Deterioration (PSD) increments."

**Response:** See response to Comment Number 13.

**21. General Comment:** ". . . it is possible that this proposed silt/clay project may not, by itself, represent a major modification, but when considered with other existing and proposed projects, it may do so. Such permits, and incremental increases in particulate matter, which will likely require source permits, represent issues that can only be resolved through an environmental impact statement."

**Response:** Currently, the INEEL does not have sufficient emissions from existing point source projects to trigger the need for a PSD permit. Incremental analysis was done for point source projects in the FEIS (April,1995) which bounds this activity. Also, see response to Comment Number 8.

**22. General Comment (Appendix B):** This section should include the silt content in order to properly evaluate air emissions from fugitive dust. Also, a better method to inventory emissions from such sources is to include the silt content and the specific equipment which will be used in the borrow pit. More accurate AP-42 categories can be used for estimating emissions in this EA."

**Response:** The selected AP-42 category used in the EA provides sufficient conservative analysis to provide the necessary information to assess possible environmental impacts.

**23. Specific Comment (Section 4.1.1.2 Land Use):** "The Statement: 'Most of INEL's 572,067 acres serve as buffer and safety zones around facilities.' . . .is not true for air quality where fugitive dust can impact the highway systems which are within the public domain. . ."

**Response:** All public access highways were evaluated in the screening model.

**24. Specific Comment (Sections 4.1.1.2 and 4.1.1.4):** Neither of the categories adequately consider the impacts to the Shoshone-Bannock Tribes' treaty rights."

**Response:** See Response to Comment Number 7.

**25. Specific Comment (Section 5.1):** This section is totally lacking in air quality permits from EPA. EPA continues to hold federal PSD and NSR review of INEL projects. Also, permits of affected Class I areas are subject to comments which must be considered by the INEL permittees."

**Response:** PSD and NSR review has been delegated to the state. The only exception is a 1982 EPA issued air permit for the the coal fired plant at the ICPP. Also, EPA has been asked for, and has provided, comments on this EA. See p. ?

**26. Specific Comment (Section 2.1):** The commentor stated the following quote from the EA, 'This would include taking all of the silt/clay from one or two locations rather than opening all three sites either concurrently or individually.', then asked the following questions, "Has the ecological system been analyzed for exposure of risk or a risk characterization (which includes one or more stressors, both deterministic or qualitative in nature) for the projected time frame? If so, should the risk assessment be included in this EA? Would there not be endpoints included just in case there is some sort of adverse ecological effect? For example, would the temporal patterns fluctuate from the newly exposed borrow sources, would this not affect the biotic and the abiotic environment?"

**Response:** A more formal, mathematical characterization of the risk to ecological resources from the proposed action was not conducted. That level of analysis is beyond the reasonable need of a project of this nature. This Environmental Assessment represents an interpretation of risks and potential injury to ecological resources during and after operation of the proposed silt/clay borrow sources. The interpretation is based on process knowledge and expert opinion.

**27. Specific Comment (Section 2.1.1):** "There has been no mention of indirect effects for the stockpiled material. Was there an assessment of this material? -- introduction of potentially harmful microorganisms that may inhibit the growth of indigenous plants?"

**Response:** The stockpiled material referenced in Section 2.1.1, p. 5, is native soil. It is extremely unlikely that this material would introduce potentially harmful microorganisms that would inhibit plant growth.

**28. Specific Comment (Section 4.1.1.4):** . . . has there been a characterization or analysis of the possible risk from the stressor?

**Response:** See Response to Comment Number 26.

**29. Specific Comment (Section 4.3):** "What would be the problem with curtailing [activities requiring silt/clay]? The INEL mission is to restore not deplete."

**Response:** Many of the projects that require silt/clay over the next ten years are associated with environmental restoration activities (Table 2, also Section 2, p. 3). Without a silt/clay source these types of projects would be curtailed, thus interferring with environmental restoration efforts at the INEEL.

Section 4.3 of the environmental assessment was revised to make this more clear.

**30. Specific Comment (Section 4.3):** "The no action alternative is not analyzed adequately."

**Response:** See Response to Comment Number 11.

**31. Specific Comment (Section 4.3):** "The DOE should explore obtaining fill material from off-INEL sources."

**Response:** The environmental assessment did evaluate an off-site alternative, Lidy Hot Springs. While not the preferred alternative, silt/clay material could be obtained by going to this or other off-site locations.

Sections 2, 2.2, and 4.2 were revised to specifically state that Lidy Hot Springs and other off-site locations continue to be viable sources of silt/clay.

**32. Specific Comment (Section 5.1):** "After determining and documented [sic] the formal consultation with the FWS [U. S. Fish and Wildlife Service], DOE assumes that there is no significant impact or has the FWS actually made a determination that there is no significant impact?

**Response:** In concert with DOE, the Environmental Science and Research Foundation prepared the determination with which the U.S. Fish and Wildlife Service concurred (letter to Tim Reynolds, November 27, 1995, from USF&WS Supervisor, Snake River Basin Office, FILE #506.0000).

**33. General Comment from Summary of Tribes' Letter:** "The Silt-clay draft Environmental Assessment (EA), ignores some of the real impacts to the Shoshone-Bannock Tribes, and does not address the rights of the Shoshone-Bannocks through their Treaty rights."

**Response:** Refer to Comments #7, 18, & 34.

**34. General Comment from Summary of Tribes' Letter:** "The Tribes (in conjunction with the BIA) should be brought in as a cooperating agency, to carry out cultural and environmental assessments."

**Response:** Under the terms of the Working Agreement between the U. S. Department of Energy, Idaho Operations Office and the Shoshone-Bannock Tribes (Tribes), LMITCO's INEEL-CRM Office routinely consults with the Tribes on cultural resource issues. The Draft Management Plan for INEEL Cultural Resources contains the procedures for this routine interaction. In addition, the INEEL-CRM Team (LMITCO, DOE-ID, Tribes' Heritage Tribal Office) informs and invites the Tribes to participate in all cultural resource investigations on the INEEL.

Tribal input on the cultural resource investigations completed for the new silt/clay source was solicited consistent with the Working Agreement and Draft Consultation Procedures referenced above (Ringe Pace 1996b). The Tribes' Heritage Tribal Office concured with LMITCO INEEL-CRM Office recommendations for the project (Yupe 1997). See Responses to Comment Numbers 7, 18, and 33.

**35. General Comment from Summary of Tribes' Letter:** "None of the three alternatives -- the need to continue with, and, indeed, to open new borrow sources, has been adequately described, and thus do not meet the requirements of NEPA, to demonstrate the need."

**Response:** Silt and clay material is needed to continue with projects associated with environmental restoration activities (Table 1, also Section 1, p. 1), and could be required for proposed projects.

Section 2, p. 3 describes the proposed alternative -- On-Site Locations. The proposed action consists of just opening the new pits and their operation.

**36. General Comment from Summary of Tribes' Letter:** "A major flaw in this EA is the lack of information presented, but is readily available to DOE, on the use of construction equipment at the existing borrow pit -- the expansion of which is the no action alternative."

**Response:** See Response to Comment Number 11.

**37. General Comment from Summary of Tribes' Letter:** ". . . Several important details were left out [of the EA], regarding the ecological and air quality impacts."

**Response:** These sections have been revised, see Section 3.1, p. 13; Section 4.1.1.1, p. 17; and Section 4.1.1.4, p. 18.

**38. General Comment from Summary of Tribes' Letter:** "The proposed activities, no matter which alternative, are *significant* as defined by NEPA (Part 1508), and this should underscore the need for a full EIS review."

**Response:** See Response to Comment Number 8.

## W. L. (Walt) Hampson (private individual)

**39. General Comment:** "I strongly favor Alternative 1 . . ."

**Response:** Thank you for your comment. The on-site locations are the preferred alternative. However, off-site is still a viable alternative and may be considered in an appropriate mix of silt/clay sources depending on project location, timing, amount of silt/clay needed, etc.

**40. General Comment:** "The cost difference of $40 MM is substantial; I see a much lower value being attributed to loss of wildlife data, etc."

**Response:** It is hard to put a value on long-term environmental data. The cost of losing wildlife data (e.g., long-term transects) is unknown. However, it is unlikely that it would be greater than the $40,000,000 savings from remaining on-site versus going off-site. Also see Response to Comment Number 39.

**41. General Comment:** ". . . the expansive land areas encompassing [the] INEL, 24 acres and some additional depressions in surface area seem an almost insignificant or negligible impact."

**Response:** Thank you for your comment.

**42. General Comment:** "This subject [opening of a new silt/clay source] seems to be taking the principle of Public Review to extremes -- what is the cost for publicizing, soliciting, & evaluating comments on something the INEL [Management] should be able to decide within broad policies and guideline?"

**Response:** The Department has made every effort to minimize the cost and maximize the quality and accuracy of evaluating possible environmental impacts from its proposed actions. However, the Department must do a thorough and scientifically and legally sufficient NEPA review of its proposed actions , which it has done in this EA.