
# FINAL

# Environmental Assessment

# for the

# National Security Test Range

DOE/EA-1557

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# Environmental Assessment for the National Security Test Range

The objective of this environmental assessment (EA) is to evaluate the potential environmental impacts by evaluating alternative approaches to achieve the proposed action as well as a no action alternative. 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 Order 451.1, and DOE NEPA Implementing Regulations (10 CFR Part 1021). This EA serves as the basis for issuing a Finding of No Significant Impact.

## 1. PURPOSE AND NEED

In today's world, the country needs effective security systems to protect people and facilities against potential threats. The potential for terrorist attacks against United States interests requires governmental agencies at the federal, state and local levels to constantly evaluate the types of threats and devise appropriate systems to protect against them. Potential adversaries may use a variety of methods to accomplish their objectives including the use of explosives and explosive devices. The bombing of the Murrah Federal Building in Oklahoma City, Khobar Towers in Saudi Arabia, American Embassies in Africa, and the daily use of improvised explosive devices in Iraq highlight the variety of ways explosives are used to destroy American facilities and harm U.S. citizens. The Department of Energy (DOE) must continually test, analyze, and fortify its security systems to protect the nation's energy producing assets such as nuclear power producing reactors, oil refineries, electricity-generating stations and grids, and hydropower-producing dams.

For a number of years the Idaho National Laboratory (INL) has conducted security systems testing and research. The DOE has directed the INL to be its' Vulnerability Assessment (VA) Center of Excellence. In this role, the INL's mission responsibilities include developing DOE wide courses of instruction on how to perform vulnerability assessments, reviewing and validating vulnerability assessment methodologies and supporting software, and research and testing to validate models and assumptions used in designing buildings, and security systems. A key aspect of validating the modeling and design assumptions is to perform tests. The INL performs tests to determine the effects of a variety of explosives and explosive devices on DOE security systems and facilities, as well as security systems and facilities for a number of other government agencies and the private sector. Over the past decade, adversaries have shown their willingness and ability to use ever larger quantities of explosive materials in more sophisticated ways. The INL, in support of its mission as the VA Center of Excellence, must expand its ability to test against today's potential threats.

These increasing programmatic needs require routine tests during the March-November timeframe. Most of these tests are small scale, less than 100 lb Net Explosive Weight (NEW). These frequent testing operations demand ongoing review, work, and daily involvement of a number of personnel with specialized expertise. INL personnel define the test objectives, develop test articles, set up and calibrate test instrumentation and conduct the test. The scope of security testing activities currently conducted by the INL includes evaluation and development of technology and protocols for the detection of trace explosives, detonation of bulk explosives, detonation of a variety of explosive devices, and the evaluation of protective measures against these threats. Testing includes the use of shoulder-fired rockets, breaching charges, and Vehicle Borne Improvised Explosive Devices. Larger scale tests require the assembly of complete systems with larger data acquisition and instrumentation requirements. Larger scale tests also require a larger cadre of personnel to develop and conduct the tests. Therefore, there is a

need for a single, readily available, National Security Test Range at the INL to accommodate the increasing scale and frequency of testing in support of the INL vulnerability assessment mission.

Currently, INL conducts explosive detonation activities at two locations: the Live Fire Range (LFR) with a maximum permissible limit of 200 lb NEW and the Mass Detonation Area (MDA) with a limit of 500 lb NEW. Neither of these areas was designed as a testing location and each is used for other activities. The LFR is the principal location used to conduct weapons training for INL Security Forces. It is also used by state and local law enforcement for weapons training. The MDA is used to detonate unexploded ordnance found on the INL from its history as a Naval Gunnery Proving Ground. In addition, the MDA is in close proximity to the Naval Reactors Facility (NRF) and large-scale explosive tests would negatively impact the facility. Furthermore, there is a need for semi-permanent infrastructure (buried data acquisition cables, protective camera boxes and other such devices) which does not presently exist at the LFR or MDA. Installation and dismantling of this infrastructure for each test at the LFR and MDA increases the cost, preparation and dismantling time, and reduces the quality of the testing data. The Mass Detonation Area will still be used for its original purpose of disposing of unexploded ordinance found on the INL. The Live Fire Range will still be used to train and qualify the protective force. The security systems testing and research work that is now being conducted at these two facilities would be moved to the new NSTR.

The VA Center of Excellence work-scope involves full-time, year-round activities employing a hand-full of experts in a variety of research activities. These same experts are also involved in research and training activities for entities such as the Department of Defense, Department of State, Secret Service, Department of Homeland Security, Nuclear Regulatory Commission, Bureau of Reclamation, and the transportation programs of several states and private companies. If this small team of specialized experts were continually traveling for the purpose of conducting testing at other locations, the VA Center of Excellence would be significantly compromised because other work-scope would be interrupted.

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# 2. ALTERNATIVES

DOE proposes to consolidate all INL explosive testing activities at one centralized location that can accommodate the increased explosives weights and eliminate scheduling conflicts. In addition, if a centralized location is selected DOE proposes to stop security system testing at the LFR and MDA.

DOE considered several alternatives for meeting its need to consolidate testing. Those included a preferred alternative and three additional alternatives: (1) consolidating test ranges on the INL into a new National Security Test Range (Preferred alternative), (2) consolidating testing at the LFR or MDA, (3) conducting testing at a non-INL location, and (4) taking no action, thereby continuing to perform testing activities at the LFR and MDA at current levels. DOE used the following criteria to determine if the preferred alternative and alternatives were reasonable. The preferred alternative or alternatives must accomplish the following:

- Provide a testing location that accommodates appropriate data collection systems.
- Provide the ability to test using a range of explosives and explosive type devices up to 20,000 lb NEW.
- Provide sufficient distance from the testing location to eliminate damage, disturbance, or injury by ground or air transmitted shock pressure and projectile fragments to buildings, structures, or the public.
- Provide an 8,750-yard safety fan.
- Be readily available on a continuing basis to INL VA Center of Excellence personnel to conduct testing.
- Minimize conflict with other activities.
- Consolidate testing activities at one location.

Only one alternative meets all of the above criteria: consolidate testing at the INL on a new National Security Test Range. This is DOE's preferred alternative.

## 2.1. Consolidate Testing on a New National Security Test Range at the INL (Preferred Alternative)

The preferred alternative is to develop a new National Security Test Range at the INL. The proposed test range would be specifically designed and constructed to accommodate testing activities in support of analyzing the effects of explosives and explosive devices, munitions, and similar items on security systems, facilities, vehicles, structures and other materials.

Consolidation of existing activities includes relocation of ongoing and future explosives related testing at the INL. Semi-permanent infrastructure (buried data acquisition cables, protective camera boxes and other such devices) would be installed. A mowed test area would be created, as well as lay down areas for staging material, and road upgrades to allow for access to the area.

The proposed location is about 1.5 miles west of Road T-25, 7.1 miles north of the Materials and Fuels Complex (MFC), and 10 miles south of Test Area North (TAN). The proposed location is 10.9

miles to the closest INL boundary, 7 miles from the closest public road (Idaho State Highway 33 passes through the northern half of INL), 13 miles from the closest publicly inhabited building and 1.5 miles west of the Twin Buttes Grazing Allotment, where Bureau of Land Management issues grazing permits (see Figures 1 and 2).

The proposed location was selected because of its remote location on the INL with adequate separation from any surrounding population or facilities that could be affected by blast or sound and access to the area can be effectively controlled. Radiological materials have not contaminated the soil at the proposed test range and the proposed test range is in an area that does not contain unexploded ordnance.

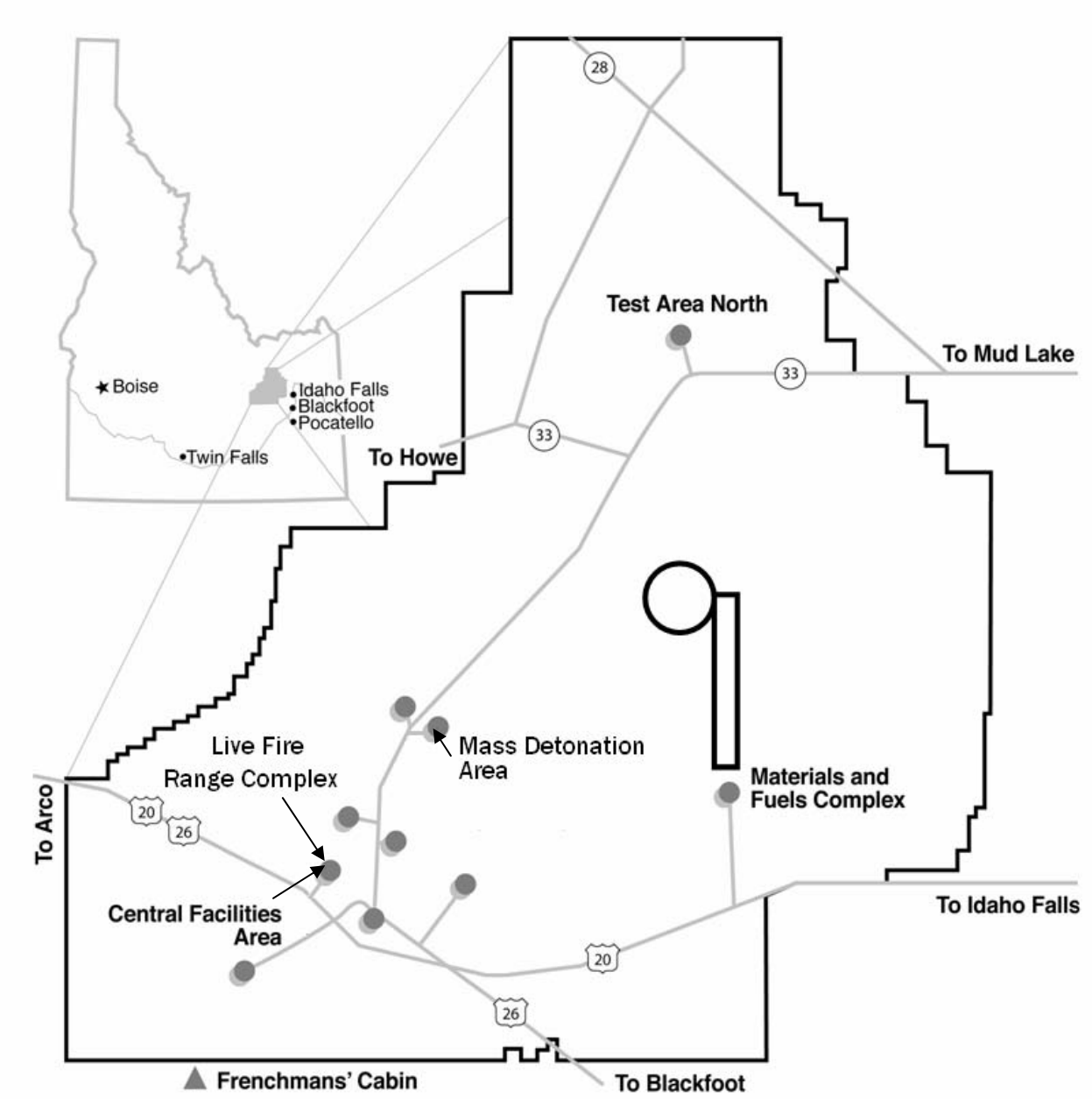


Figure 1. INL and Approximate Location of Proposed Test Range (Circle) and T-25 Road Upgrade Corridor (Rectangle).

### 2.1.1 Construction Activities

Proposed construction activities would include the following (see Table 1):

- Upgrading road T-25.
- Constructing a new access road and buried cable route along the access road corridor.
- Preparing the new test range.
- Creating an earthen berm within the test range area.
- Creating two lay down and administrative areas.

Project activities would not require installation of water wells, septic, or waste systems. Project personnel would use bottled water and portable sanitary facilities. In addition, portable generators would provide power for electrical needs.

### 2.1.2 Operational Activities

Test activities would use a variety of conventional explosive materials (see Table 2), depending on the type of testing being conducted. Typical test articles would include chain link fencing, concrete barriers, electronic sensors (microwave sensors, balanced magnetic switches, closed circuit television, etc.), security vehicles (drained of all fluids and tires, batteries and mercury switches removed), reinforced concrete walls, armor plates, and masonry walls. No depleted uranium will be used.

Testing would also entail firing of non-explosive projectiles into different test media to understand their effectiveness in resisting fragment penetration. While the projectiles would normally be stopped by the test specimen, an earthen berm would be constructed to stop any projectile that might penetrate the test specimen. As a further safety measure, an 8,750-yard 'safety fan' would be established behind the berm to ensure no personnel would be injured.

## 2.2 Alternatives Considered, but Eliminated from Detailed Analysis

### 2.2.1 Consolidate Work at One of the Current Ranges at the INL

Consolidation of work at the LFR or MDA fails to meet the following criteria:

- The ability to test using a range of explosives and explosive type devices up to 20,000 lb NEW.
- Provide sufficient distance from the testing to eliminate damage, disturbance, or injury by ground or air transmitted shock pressure and projectile fragments to buildings, structures, or the public.
- Provide an 8,750-yard safety fan.
- Minimize conflict with other activities.

### 2.2.2 Consolidate Work at an Off-Site Facility

The performance of the INL mission as the DOE VA Center of Excellence depends upon a wide range of laboratory resources. These resources include technical experts, safety and testing support

personnel, specialized data acquisition equipment, and associated materials used in testing. Project personnel are engaged in all aspects of research and testing activities at the INL and are essential and limited resources. Removing those resources from their daily activities and programmatic responsibilities at the INL to conduct work at a distant location is not acceptable, as it would have adverse impacts upon overall program execution. The time required for transportation, test setup, analysis and after test demobilization using a distant location would be substantial.

There are currently two other DOE sites that conduct testing using explosives that were considered, the Nevada Test Site (NTS) and Sandia National Laboratory (SNL). Two Department of Defense sites, Mountain Home Air Force Base (MHAFB) and Hill Air Force Base (HAFB) were also considered as possible alternatives. Relocation of ongoing and proposed work to an off site location would not allow INL to maintain the proposed schedule of operations in an effective manner.

NTS does not meet the following criterion:

- Be readily available on a continuing basis to INL VA Center of Excellence personnel to conduct testing.

The NTS has a long and distinguished history of conducting very large explosives tests and has several test beds it has developed within the NNSA National Center for Combating Terrorism that would serve to adequately stage such tests. However, the logistics of developing target materials and other devices at INL, transporting such items and associated materials to NTS, conducting the necessary tests and returning to INL is overly time consuming. The travel time is not reasonable for consolidation of INL explosive testing/research activities at a centralized location at the expected testing frequency.

SNL does not meet the following criteria:

- The ability to test using a range of explosives and explosive type devices up to 20,000 lb NEW.
- Provide sufficient distance from the testing to eliminate damage, disturbance, or injury by ground or air transmitted shock pressure and projectile fragments to buildings, structures, or the public.
- Provide an 8,750-yard safety fan.
- Be readily available on a continuing basis to INL VA Center of Excellence personnel to conduct testing.

Although SNL has historically conducted tests up to 2000 pounds NEW, the current explosives limit is 450 pounds NEW and cannot support the level of proposed activity. The logistics of developing target materials and other devices at INL, transporting such items and associated materials to SNL, conducting the necessary tests and returning to INL is overly time consuming. The travel time is not reasonable for consolidation of INL testing at a centralized location at the expected testing frequency.

Hill Air Force Base (HAFB) does not meet the following criteria:

- Be readily available on a continuing basis to INL VA Center of Excellence personnel to conduct testing.
- Minimize conflict with other activities.

The logistics of developing target materials and other devices at INL, transporting such items and associated materials to HAFB, conducting the necessary tests and returning to INL is overly time consuming and cost prohibitive. The travel time is not reasonable for consolidation of INL testing at a centralized location at the expected testing frequency. Additionally, the range area at HAFB is to support Air Force mission requirements.

Mountain Home Air Force Base (MHAFB) does not meet the following criteria:

- The ability to test using a range of explosives and explosive type devices up to 20,000 lb NEW
- Be readily available on a continuing basis to INL VA Center of Excellence personnel to conduct testing.
- Minimize conflict with other activities.

The explosives limit at the base is set at 200 pounds for both use and storage and cannot support the proposed type or level of activity. The Squadron personnel have stated that they are not able to support this type of activity on their base.

## 2.3 No Action Alternative

Selection of the No Action Alternative would mean that the INL would continue to conduct explosive detonation activities at the LFR and MDA; however, these activities would not be consolidated into one centralized area. Current roads would not require upgrading and new laydown areas would not be needed. The No Action Alternative would not allow the INL to meet the mission requirements of the VA Center of Excellence. Specifically, the INL would not be able to collect test data about the effects of larger scale explosive detonations on facilities or security systems, nor would the INL be able to conduct testing at the frequency required.

Table 1. Proposed Construction and Operational Activities and Controls

| Proposed Construction Activities | Proposed Construction Controls |
|---|---|
| T-25 Road<br>• Widen and gravel road T-25 from MFC to the Test Range (6.7 miles) to accommodate the increase in traffic and make maintenance easier to complete.<br><br>New Access Road/Cable Route<br>• Construct new gravel road from T-25 to the new test range (about 1.5 miles); following land contours to the extent practicable.<br>• Lay underground cable to the new test range along the new access roadway.<br>• Construct small stations along the road to house monitoring and signal boosting equipment.<br><br>New Test range<br>• Mow a 900-ft diameter test range.<br>• Install a concrete or asphalt test pad, approximately 30 feet by 30 feet, near the perimieter of the 900 ft diameter mowed area. The test pad would be used for small scale tests to provide an area free of dust for high resolution photography of effects.<br>• Install structures to house and protect sensor and monitoring equipment.<br><br>New Earthen Berm and Safety Fan<br>• Construct a 30 ft long and 16 ft high earthen berm inside the test range as an impact area for ballistic testing.<br>• Obtain soil for the berm by excavating the area immediately behind the berm.<br>• Establish and mark a test range safety fan 8,750 yards long.<br><br>Administrative and Lay down Areas<br>• Construct and gravel an administrative and equipment lay down area for temporary storage of targets, equipment, and portable/temporary facilities (about 1.7 acres in size).<br>• Construct and gravel an alternate administrative, lay down, and turnaround area within 50 ft of either side of Road T-25 for use when the size of a test prohibits use of the primary area. | • Complete the archaeological survey by surveying the perimeter of the safety fan.<br>• Promptly revegetate areas of soil disturbance using native seeds or wildings.<br>• Control invasive and noxious weeds at all disturbed areas, including mowed areas, lay-down areas, the earth berm, and along access roads.<br>• Provide training in cultural resource protection for all test range personnel.<br>• Escort visiting personnel to prevent accidental disturbance of cultural artifacts.<br>• Halt work if project personnel discover any unusual materials (i.e., bones, obsidian flakes, “arrowheads,” etc.) during construction activities, and contact the INL Cultural Resource Management (CRM) Office.<br>• Coordinate work with an INL archaeologist to avoid blading and leveling activities inside the boundaries of identified archaeological sites.<br>• Place gravel on access roads and lay down areas to reduce fugitive dust and control erosion.<br>• Control dust and erosion on the test range using water or soil stabilizers.<br>• Locate the administrative area to avoid known archaeological resources.<br>• Use ATV’s when staking the safety fan.<br>• Limit ATV travel and signage to areas outside the boundaries of any identified cultural resources to prevent disturbance. |
| **Proposed Operational Activities** | **Proposed Operational Controls** |
| General Activities<br>• Coordinating all testing with INL site personnel and activities that could be affected.<br>• Recording ground motion and air blast data at various locations both on and off the INL to document site-specific effects.<br>• Notifications to state and local law enforcement and surrounding communities for tests of 3,000 lb NEW or larger.<br><br>Testing Activities<br><br>• Testing may include explosive effects, ballistic penetration, and explosive detection at the following levels of use:<br>o The test range would be used most working days from March through November.<br>o Use between December and February is expected to be sporadic.<br>o Large explosive events (11,000 –20,000 lb NEW) are expected to occur once every five years.<br>o Mid-test range events (3,000 – 10,000 lb NEW) are expected to occur once or twice a year.<br>o Small events (100 – 3,000 lb NEW) could occur once per month.<br>o Very small events (less than 100 lb NEW) could occur weekly.<br>o Small scale projectiles (30 mm or less) would probably be fired on a bi-weekly basis. | • Arrange for an annual breeding bird survey prior to mowing activities each year and before each test exceeding 5,000 lb NEW during the months of February through August. If any breeding birds are discovered, consult with the local Fish & Wildlife Service office.<br>• Review effects of tests on sage grouse in the area.<br>• Monitor ground motion at nearby archeological sites during the first three experiments with greater than 5,000 lb NEW, and with every experiment at or exceeding 15,000 lb NEW, unless data indicates sites are not affected.<br>• Limit travel to established roadways and limit speed to 15 mph to minimize dust and potential collision with and disturbance of wildlife.<br>• Minimize disturbance to wildlife by utilizing appropriate methods, which could include techniques such as seasonally timing activities, fencing, warning signs, reflectors, ultrasonic warning whistles, animal hazing, and/or awareness training. |

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|---|---|
| o Large projectiles (40 mm to 120 mm ) would probably be fired three or four times per year. | • Support yearly visits of known archaeological resources in the project area by the INL archaeologist and take additional protective measures as necessary.<br>• Provide training in cultural resource protection for all test range personnel involved with operations activities.<br>• Escort visiting personnel to prevent accidental disturbance of cultural artifacts.<br>• Halt work if project personnel discover any unusual materials (i.e., bones, obsidian flakes, "arrowheads," etc.) during operating activities, and contact the INL CRM Office.<br>• Coordinate with BLM and grazing allotment holders.<br>• Mow the test range to reduce the probability of accidental range fires.<br>• Limit vehicular traffic to established roadways (such as T-25 and the new access road), lay down and turnaround areas, and the test range.<br>• Limit off-road travel to foot inside the safety fan and ATV traffic around the perimeter of the safety fan.<br>• Limit vehicle speeds to less than 15 mph.<br>• Drain all fluids, lubricants, refrigerants and remove batteries, mercury switches, tires and other potential sources of contamination from any vehicles used as test specimens.<br>• Verify all explosive material is consumed or removed and disposed leaving no unexploded ordnance on the test range.<br>• Remove and dispose all explosives after each test.<br>• Remove and dispose used test articles and debris from the test range and surrounding area on a routine basis.<br>• Use ejected soils to refill any craters caused by testing. If ejected soils are insufficient, utilize additional backfill provided from on-site borrow areas.<br>• Control invasive and noxious weeds at all disturbed areas, including mowed areas, lay-down areas, the earthen berm, and along access roads<br>• Monitor the test range area at least every five years for deposition/accumulation of explosive residues. If soils samples indicate a build up of residues that may pose a threat, take appropriate clean up actions.<br>• Sound a siren, generating at least 140 dB at a range of 1 mile for three minutes before all explosions exceeding 500 lb NEW.<br>• Exclude personnel from portions of the test range safety fan when conducting tests (such as firing projectiles); and determining the safe standoff distance and exclusion zones for each test based on the type of experiment and the size of the charge used. The explosive use supervisor would determine the safe standoff distance for primary and secondary fragmentation, air blast, and noise levels.<br>• Establish personnel check points to prevent people from accidentally entering the exclusion zones and verify the exclusion zone is clear of unauthorized personnel before conducting a test.<br>• Evacuate all nonessential test personnel to a location outside the |

| | |
|---|---|
| | 140 dB sound range.<br>• Monitor weather conditions prior to testing to identify unfavorable environmental conditions, such as high winds, temperature inversions, and low cloud cover, and postpone the test if necessary.<br>• Aim all projectiles fired on the test range along the centerline of the test range safety fan toward the earthen berm. A projectile missing the berm would land in the test range safety fan. No depleted uranium projectiles will be used.<br>• Not firing projectile capable of traveling more than 8,750 yards and using the safety fan as an impact area for inert projectiles only. |
| Proposed Closure Activities | Proposed Closure Controls |
| • Ensure all test articles and associated material are removed from test range area.<br>• Remove all structures, equipment, data cables, conduit, data stations and any other material.<br>• Remove earhen berm and regrade berm area.<br>• Remove pad.<br>• Fill and level any areas where soils have been removed or displaced.<br>• Restore access road corridor to original contours to maximum extent practical.<br>• Conduct final soils sampling regimen. Conduct any needed environmental clean up if warranted.<br>• Promptly revegetate all disturbed areas with native seeds or plantings.<br>• Dispose of all removed materials in approved land fills or other suitable disposal locations | • Halt work if project personnel discover any unusual materials (i.e., bones, obsidian flakes, “arrowheads,” etc.) during construction activities, and contact the INL Cultural Resource Management (CRM) Office.<br>• Coordinate work with an INL archaeologist to avoid blading and leveling activities inside the boundaries of identified archaeological sites.<br>• Limit travel to established roadways and limit speed to 15 mph to minimize dust and potential collision with and disturbance of wildlife.<br>• Minimize disturbance to wildlife by utilizing appropriate methods, which could include techniques such as seasonally timing activities, fencing, warning signs, reflectors, ultrasonic warning whistles, animal hazing, and/or awareness training.<br>• Control invasive and noxious weeds at all disturbed areas, including mowed areas, lay-down areas, the earthen berm, and along access roads |

Table 2. List of Explosive Material That May Be Used on the Proposed Test Range

RDX Explosives
- Bulk RDX
- Plastic explosives, Composition C-4 or PE-4
- Demx
- Shaped Charges
- Linear Shaped Charges (LSC)
- Flexible LSC (FLSC)
- Explosive Cutting Tape (ECT)
- Shock Reflecting Tape (SRT)
- SX-2 Primasheet 2000 Sheet Explosives
- Plastic Bonded Explosives (PBX)
- Shoulder Fired Rockets

Pentaerythritol Tetranitrate (PETN) Explosives
- Bulk PETN

Ammonium nitrate (AN) Explosives
- AN and Fuel Oil (ANFO)
- AN Slurries
- AN Gels

HMX Explosives
- Bulk HMX

Smokeless Powder

Black Powder Devices
- Bulk Black Powder
- Time fuse, Safety fuse
- Diversionary devices, Flashbangs

Nitroglycerine Explosives

Dynamite
- Straight

Binary Mixtures
- Binex 400
- AN-NM
- NM-Al
- AN-Al
- HMX-GAP
- Al-IPN

Mixed Explosives
- Semtex (50% RDX, 50% PETN)
- Composition B, Shaped Charges, Warheads (40% TNT, 60% RDX)
- Octal, Shaped Charges, Warheads (TNT 30%, HMX 70%)
- Pentolite (TNT 50%, PETN 50%)

| | | |
|---|---|---|
| Detonation Cord | Ammonia | Dexs (PETN 40%, AN 35%) |
| Sheet Explosives, DetaSheet, SX-1, Metabel, | Detonators | Baratol, Warheads (TNT 80%, Barium |
| Primasheet | Electric | nitrate 20%) |
| Boosters, DetaPrime | Non-electric | Explosive D, Warheads |
| TNT Explosives | Exploding Bridge Wire (EBW) | Tetryol (TNT 30%, Tetryl 70%) |
| Bulk TNT | | |
| Cast Boosters | | |

Table 3. Calculated Effects at Selected Points of Interest for Tests Using 20,000 lbs NEW

| Point of Interest | Distance from Test Range (Miles) | Sound Level (Decibels) | Ground Displacement (Inches) | Peak Ground Velocity (Inches/Second) | Acceleration (g) |
|---|---|---|---|---|---|
| Sage Brush Steppe | 2.6 | 145 | 0.003 | 0.025 | 0.001 |
| Closest Public Road | 7.0 | 136 | 0.001 | 0.006 | <0.001 |
| MFC | 7.1 | 136 | 0.001 | 0.006 | <0.001 |
| TAN | 10.0 | 133 | <0.001 | 0.004 | <0.001 |
| Nearest INL Boundary | 10.9 | 132 | <0.001 | 0.003 | <0.001 |
| NRF | 11.6 | 131 | <0.001 | 0.003 | <0.001 |
| Closest Inhabited Building | 13.0 | 130 | <0.001 | 0.002 | <0.001 |
| INTEC | 14.8 | 129 | <0.001 | 0.002 | <0.001 |
| RTC | 15.8 | 128 | <0.001 | <0.002 | <0.001 |

# 3. AFFECTED ENVIRONMENT

The INL is an 890 square mile DOE facility located in southeastern Idaho. The DOE Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Program Final Environmental Impact Statement, DOE/EIS-0203-F, April 1995 (DOE 1995a), describes the physical and biological environment of the region, in general, and INL in particular. The following subsections describe specific information on ecological resources (fauna and flora), historical and cultural resources, and air and water quality as it relates to the proposed test range at INL.

The INL consists of several facility areas situated on an expanse of otherwise undeveloped, cool-desert terrain. Most buildings and structures at the INL occur within those developed site areas, which are typically less than a few square miles in size and separated from each other by miles of primarily undeveloped land. DOE controls all land within the INL. The INL occupies portions of five Idaho counties: Butte, Bingham, Bonneville, Clark, and Jefferson.

Population centers in the region include large cities (>10,000) such as Idaho Falls, Pocatello, and Blackfoot, located to the East and South, and several small cities (<10,000) located around the site, such as Arco, Howe, Mud Lake, and Atomic City. Craters of the Moon National Monument is 40 miles to the west and Yellowstone and Grand Teton National Parks are located less than 60 miles to the Northeast. There are no permanent residents on the INL.

The proposed location has not been subjected to INL construction or project activities, however it is an area that was burned by a wildfire in 1999. Figure 3 depicts the general landscape of the location.

Figure 3. View of Area Representative of the Proposed Test Range (North to South).

## 3.1 Ecological Resources

The following sections provide site-specific information on the plant communities (including invasive and sensitive species), ethnobotany, and wildlife resources of the proposed range. Much of the information comes from a report prepared by S. M. Stoller, Inc. (Blew, et al, 2006).

### 3.1.1 Plant Communities

Two distinct vegetation community types occur around the proposed test range. One plant community type occurs on basalt outcroppings and in the shallow soils on ridges immediately adjacent to those outcroppings. The second plant community type occurs in the deep, well-drained sandy soils in the basins and bowls around the basalt outcroppings. Additionally, nearly half of the two-mile radius survey area and nearly all of the intensive survey area burned in a 1999 wildfire; thus each of the vegetation communities are present in burned and unburned condition.

The vegetation communities of the burned portion of proposed test range are characteristic of excellent condition sagebrush steppe subsequent to wildland fire. Native perennial grasses with abundant native perennial and annual forbs dominate these communities. Some resprouting shrubs are also present within the vegetation communities. Data from a recent fire ecology study in the area indicate that the cover and density of native grasses and forbs are similar to other burns of the same age and are similar to cover and density of those species in unburned areas on the same soil type (R.D. Blew unpublished data).

In the burned area of the proposed test range, native perennial grasses that dominate the plant community on the ridges adjacent to basalt outcroppings include needle-and-thread grass (*Hesperostipa comata*) and Indian ricegrass (*Achnatherum hymenoides*). Sandberg bluegrass (*Poa secunda*) and bottlebrush squirreltail (*Elymus elymoides*) are also present in shallow soils on the ridges. Common perennial forbs on the basalt outcropping and on the adjacent ridges include ballhead ipomopsis (*Ipomopsis congesta*), turpentine wavewing (*Pteryxia terebinthina*), and cushion buckwheat (*Eriogonum ovalifolium*). Native annual forbs common in this community type include nodding buckwheat (*Eriogonum cernuum*), flatspine stickseed (*Lappula occidentalis*), and Pinyon Desert cryptantha (*Cryptantha scoparia*). Broom snakeweed (*Gutierrezia sarothrae*) and dwarf goldenbush (*Ericameria nana*) are abundant shrubs on outcroppings in this vegetation community, and green rabbitbrush (*Chrysothamnus viscidiflorus*) and gray horsebrush (*Tetradymia canescens*) are resprouting shrubs that occasionally occur along the ridges. Two species of non-native, weedy species, cheatgrass (*Bromus tectorum*) and musk thistle (*Carduus nutans*) also occur on the basalt outcroppings; cheatgrass can become quite abundant on some outcroppings.

The deep, sandy soils of the basins and bowls in the burned area are dominated by needle-and-thread grass and thickspike wheatgrass (*Elymus lanceolatus*). Patches of Douglas' sedge (*Carex douglasii*) also occur occasionally throughout this community type. This plant community has a very high diversity of native perennial forbs. Abundant perennial forb species include painted milkvetch (*Astragalus ceramicus*), lemon scurfpea (*Psoralidium lanceolatum*), sand dock (*Rumex venosus*), fernleaf biscuitroot (*Lomatium dissectum*), thorn skeletonweed (*Stephanomeria spinosa*), pale evening primrose (*Oenothera pallida*), and tapertip hawksbeard (*Crepis acuminata*). However, many additional forb species occur regularly and may be locally abundant. Introduced species are relatively rare in this plant community and occur occasionally. Introduced species include Russian thistle (*Salsola kali*) and desert alyssum (*Alyssum desertorum*).

Vegetation communities found in the project area include Sagebrush Steppe, Sagebrush/Rabbitbrush, Rabbitbrush, Native Grasslands, Crested Wheatgrass, and

Annual/Playas/Disturbed Area (Blew, et al. 2006; BLM, 2003, Anderson et al., 1996; and McBride et al., 1978).

An extensive, but not exhaustive, species list including species from both community types in the burned and unburned areas is found in Blew, et al. 2006.

### 3.1.2 Invasive and Non-Native Species

Eleven Idaho noxious weeds have been identified on the INL. Of those, only musk thistle (*Carduus nutans*) and Canada thistle (*Cirsium arvense*) presently occur in the project area. Other significant non-native and/or invasive plants found on or near the proposed road corridors include cheatgrass, Russian thistle (*Salsola kali*), halogeton (*Halogeton glomeratus*), tumble mustard, and crested wheatgrass.

Musk thistle and Canada thistle are both very common noxious weeds on the INL. Canada thistle appeared only once in the survey, along T-25. Musk thistle was found within the intensive survey area at the proposed test range.

Cheatgrass is present on most of the road segments and dominates some areas along T-25. Halogeton is present on many of the road segments as well.

### 3.1.3 Sensitive Plant Species

A list of sensitive plant species that potentially occur within the area affected by the proposed test range and the road upgrades was compiled using data from the Idaho Conservation Data Center (CDC 2006). All sensitive species known to occur in Butte, Custer, Jefferson, Bonneville and Bingham counties were considered. Species with habitat requirements similar to the conditions occurring in and around the proposed test range are included in Table 4.

Table 4. Sensitive Plant Species Potentially Occurring on or Around the Proposed Test Range

| Scientific Name | Common Name | State | USFS Reg. 4 | BLM |
|---|---|---|---|---|
| *Astragalus aquilonius* | Lemhi milkvetch | GP3 | S | TYPE 2 |
| *Astragalus ceramicus* | painted milkvetch | | W | |
| *Astragalus diversifolius* | meadow milkvetch | GP2 | S | TYPE 3 |
| *Camissonia pterosperma* | wing-seeded evening-primrose | S | | TYPE 4 |
| *Eriogonum capistratum* var. *welshii* | Welsh's buckwheat | GP2 | S | TYPE 3 |
| *Ipomopsis polycladon* | spreading gilia | 2 | | TYPE 3 |
| *Silene scaposa* var. *lobata* | Lost River silene | M | | |

### 3.1.4 Ethnobotany

Vegetation plot data collected along T-25 and the proposed access road was analyzed for the frequency of occurrence of several species of ethnobotanical interests. Additionally, a vegetation plot was surveyed in the proposed lay down area and a vegetation plot was surveyed at the center of the proposed test range (Blew, et al., 2006). Anderson et al. (1996) compiled a list of species thought to be of historical importance to local Native American tribes from Plant Communities, Ethnoecology, and Flora of the

Idaho National Engineering Laboratory. The list includes those species documented to have been used by "indigenous groups of the eastern Snake River Plain" (Anderson et al. 1996).

Twenty-five species of ethnobotanical concern were documented in the vegetation survey plot at the center of the proposed test range, and 16 species were documented in the plot surveyed at the lay down area. With the exception of *Lygodesmia grandiflora*, most of the species found in the plots at the center point and lay down area are common across the INL. *Lygodesmia grandiflora* can be found elsewhere on the INL but its populations are much more restricted in abundance and distribution than the other species of ethnobotanical interests found in those plots. As with the species of ethnobotanical concern found at the center point and lay down area, many of the species found in the survey plots along the road are commonly found and widely distributed across the INL. Species with relatively lower abundances and more restricted distributions both along the route and across the INL include *Allium textile, Carex douglasii, Delphinium andersonii, Lomatium foeniculaceum, Lygodesmia grandiflora, Oenothera pallida, Packera cana, Ranunculus glaberrimus, Sporobolus cryptandrus,* and *Stephanomeria spinosa.*

### 3.1.5 Wildlife Resources

Scientists at the INL have been collecting wildlife data for more than 30 years and have recorded a total of 219 vertebrate species (Reynolds et al. 1986) occurring at the INL, many of which are directly associated with sagebrush steppe habitat. After the fire that occurred during 1999 in the proposed project area, the habitat changed from a dominant sagebrush ecosystem to dominant grassland system, which contained a scattering of sagebrush plants and lava outcroppings. This changed how wildlife utilizes the immediate area. Although species such as the pygmy rabbit (*Brachylagus idahoensis*), sage sparrow (*Amphispiza bilineata*), and Brewer's sparrow (*Spizella breweri*) are dependent upon sagebrush, species that thrive in grasslands such as elk (*Cervus elaphus*), mountain cottontail (*Sylvilagus nuttallii*), horned larks (*Eremophila alpestris*), and vesper sparrows (*Pooecetes gramineus*) predominate; sagebrush dependent species, such as the sage grouse, continue to flourish in the surrounding sagebrush areas and may live in the adjacent grasslands.

Species that permanently reside in the proposed project area include small and medium-sized mammals (e.g., bushy-tailed woodrat [*Neotoma cinerea*], Ord's kangaroo rat [*Dipodomys ordii*], black-tail jackrabbit [*Lepus californicus*], mountain cottontail, long-tailed weasel [*Mustela frenata*], badger [*Taxidea taxus*]), and reptiles (sagebrush lizard [*Sceloporus graciosus*] and gopher snake [*Pituophis catenifer*]). These species have small home ranges, limited mobility, or a social structure that restricts movement.

The western rattlesnake (*Crotalus viridis*), gopher snake (*Pituophis catenifer*), northern sagebrush lizard (*Sceloporus graciosus graciosus*), and short-horned lizard (*Phrynosoma douglasii*) were observed using rocky outcroppings that surround the proposed project area. At the INL these habitats are typically associated with volcanic features such as craters, cones, and lava tubes. The presence of rattlesnakes and gopher snakes suggests that a snake hibernaculum (wintering area) is present in the general area.

Two species considered uncommon on INL, leopard lizards (*Gambelia wislizenii*) and desert striped whipsnakes (*Masticophis taeniatus*), have only been found in this general area of INL (Linder and Sehman 1978) and were not observed during our survey. All Idaho reptiles and amphibians (except bullfrog) are classified as protected non-game species. This designation is held at the state level to help protect populations (Idaho State Department of Fish and Game 2005).

Several species of small mammals were observed using the proposed project area. These include black-tailed jackrabbit, mountain cottontail, Townsend's ground squirrel (*Spermophilus townsendii*),

bushy-tailed woodrat, Ord's kangaroo rat, deer mouse (*Peromyscus maniculatus*), and montane vole (*Microtus montanus*). Although these species are not listed on any sensitive list, they do provide a food resource for many that are, such as prairie falcon (*Falco mexicanus*), ferruginous hawk (*Buteo regalis*), bald eagle (*Haliaeetus leucocephalus*), and golden eagle (*Aquila chrysaetos*). These small mammal species also provide a major prey base for coyotes (*Canis latrans*) and bobcats (*Lynx rufus*) using the proposed project area.

Many species use the proposed project area in a transitory manner. Species that use the area in this manner are in search of prey or forage, areas to reproduce, or shelter from the elements. Although sage grouse primarily use sagebrush-dominated areas, droppings observed in the surveyed area suggest that they frequent the proposed project area. Nests of sagebrush obligate birds located in the area include sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), and sage thrasher (*Oreoscoptes montanus*). Other species of birds observed using the area included horned lark, western meadowlark (*Sturnella neglecta*), vesper sparrow, grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike (*Lanius ludovicianus*), rock wren (*Salpinctes obsoletus*), common nighthawk (*Chordeiles minor*), red-tailed hawk (*Buteo jamiacensis*), ferruginous hawk, prairie falcon, and common raven (*Corvus corax*). Each of these is protected under the Migratory Bird Treaty Act , 16 USC 703-712. Although ferruginous hawks were not observed nesting within 3.2 km (2 miles) of the proposed area, they have been documented using nests that are currently occupied by red-tailed hawks, which are found within the project area, and along T-25. Unoccupied nests and use of nests by other raptor or corvid species does not eliminate nesting activity in future years by ferruginous hawks. In addition, bald eagles have been observed using the general area during the winter, and golden eagles have been observed using the area throughout the year.

Although the 1999 burn resulted in a significant long-term impact on nesting habitat, sage grouse still occupy areas of dominant sagebrush adjacent to the proposed test range during the winter and spring (Blew, et al., 2006). It is likely that they use the proposed test range in a transitory manner year-round.

Populations of pygmy rabbits on the INL lands may be relatively stable because much of the site remains undisturbed; however, little is currently known about the status of pygmy rabbit populations on the INL lands.

Both elk and pronghorn (*Antilocapra americana*) were observed using the proposed project area during the survey. Mule Deer (*Odocoileus hemionus*) also occur on the INL but were not observed during this survey. Big game surveys that have been conducted every winter and summer indicate that big game species use the proposed project area at various times throughout the year (Blew, et al., 2006). Elk and pronghorn benefit from fires due to the increased herbaceous vegetation production. A research study conducted on INL lands (Comer 2000) found that elk used the general area, including the proposed project area, for calving purposes. In addition, pronghorn have been observed using the area for fawning. Large herds, numbering more than 130 individuals, have been observed using the proposed project area during different times of the year.

Even though nocturnal species such as bats are difficult to locate during daytime surveys, past studies (Haymond 1998) indicate bats use the INL lands throughout the year. The western small-footed Myotis (*Myotis ciliolabrum*) is considered the most abundant bat on the INL lands during the spring and summer. They roost in sagebrush, junipers, buildings, and rocky outcroppings. Townsend's big-eared bat (*Corynorhinus townsendii*), a BLM sensitive species (BLM 2003), has been documented as roosting in caves and lava tubes throughout the INL (Earl and Morris 1995) as recently as 2003 (Earl 2003).

### 3.1.6 National Environmental Research Park

The INL is also the site of the Idaho National Environmental Research Park (NERP). Congress established the NERP program in the early 1970s. Idaho NERP was chartered in 1975. NERPs are field laboratories set aside for ecological research, for study of the environmental impacts of energy developments, and for informing the public of the environmental and land-use options open to them. According to the NERP Charter, those goals have been articulated in the NEPA, the Energy Reorganization Act, the Department of Energy Organization Act, and the Nonnuclear Energy Research and Development Act. The public's concern about environmental quality was translated through NEPA into environmental goals, and NERP provides a land resource for the research needed to achieve those goals. The NERP Charter allows that, while execution of the program missions of DOE sites must be ensured, ongoing environmental research projects and protected natural areas must be given careful consideration in any site-use decisions.

The primary objectives for research on NERP are to develop methods for assessing the environmental impact of energy development activities and to develop methods for predicting and mitigating those impacts. NERP achieves these objectives by facilitating use of this outdoor laboratory by university and government researchers. Several research and monitoring projects have study sites near the proposed facility and roads (Figure 4).

The Long-Term Vegetation Plots were established in 1950 and have been read on a regular basis since then. The data from these plots represents one of the longest rangeland vegetation databases in the western U.S. The plots are currently being surveyed.

A recent research project studying vegetation recovery following wildland fires established plots near the proposed road corridors. The plots were established with the expectation of being used as a long-term monitoring plot for assessing vegetation recovery following a fire. Some of these plots are very near T-25, north of MFC.

A new study of the population biology of sagebrush, underway in 2006, has plots just within or on the periphery of a 5-mile radius of the proposed test range.

In 2004, researchers from Utah State University initiated a research project to study fine-scale movement patterns of coyotes. As part of this study, 30 adult coyotes were fitted with very high frequency telemetry radio collars. Some of these animals were also fitted with collars that record Global Positioning System locations. The home range of some of these animals includes the proposed test range.

In addition to the NERP activities described above, additional DOE-sponsored ecological monitoring is conducted near the proposed test range (Figure 4). Two Breeding Bird Survey routes on the INL are in the vicinity of the proposed project. One route follows the fence line around MFC, and the other follows T-17 from Power Burst Facility to Highway 28. These routes are surveyed during June each year and are shown in Figure 4.

Secretary of Energy Bill Richardson established the SSER in 1999 for the purpose of conservation of native plant communities and to provide for the study of an undisturbed sagebrush steppe ecosystem. No explosives activities will be conducted within the area of the SSER and little or no entry to the area is anticipated.

## 3.2 Soils

The soils in the area of the proposed test range are generally sand over basalt. (Olson, et al., 1995) identified the soils in the area as the Grassy Butte-Rock Outcrop Complex. This complex of soils includes a number of soil mapping units. Grassy Butte's stony, loamy sand makes up about 30% and the Rock Outcrop makes up about 20% of the area in this soil complex.

The remaining 50% of this soil complex consists of about equal parts of Grassy Butte 10 to 40 inches deep to bedrock, Grassy Butte 40 to 60 inches. deep to bedrock, Matheson loamy sand, Bondfarm sandy loam, and Grassy Butte loamy sand. The soil at the lay down area is most likely the Grassy Butte series. The proposed new road will likely intersect areas of Grassy Butte and Rock Outcrop. Based on topographic position, the proposed test range and much of the 650 ft. surrounding impacted area are likely Bondfarm sandy loam.

Both the Grassy Butte and the Bondfarm sandy loam have a very high hazard of soil blowing (wind erosion). The very high hazard of soil blowing imparts certain limitations to use of these soils (Olson et al., 1995). They are not suited to mechanical rangeland management treatments including seeding. These soils are classified as Land Capability Class VIIe and have very severe limitations that make them unsuitable for cultivation due to erosion.

Soil at the proposed test range was sampled for radionuclides using Cs-137 as an indicator. The Cs-137 concentration averaged over a 9-in. depth was 0.22 pCi/g, within the lowest range of the background concentration generally quoted for INL (0.44 ±0.22 pCi/g; Table 23 of Rood, et al., 1995).

The proposed test range is in a remote area of the INL where radionuclides in soil are either from natural sources, or from worldwide fallout. As part of the routine soil sampling program conducted on the INL site, four locations were sampled during the summer of 2006. The four sampled locations are north, south, east and west of the proposed test range. Data from these samples correlate well with the sample taken at the proposed test range. Figure shows the sampling locations, shown by purple numbers.

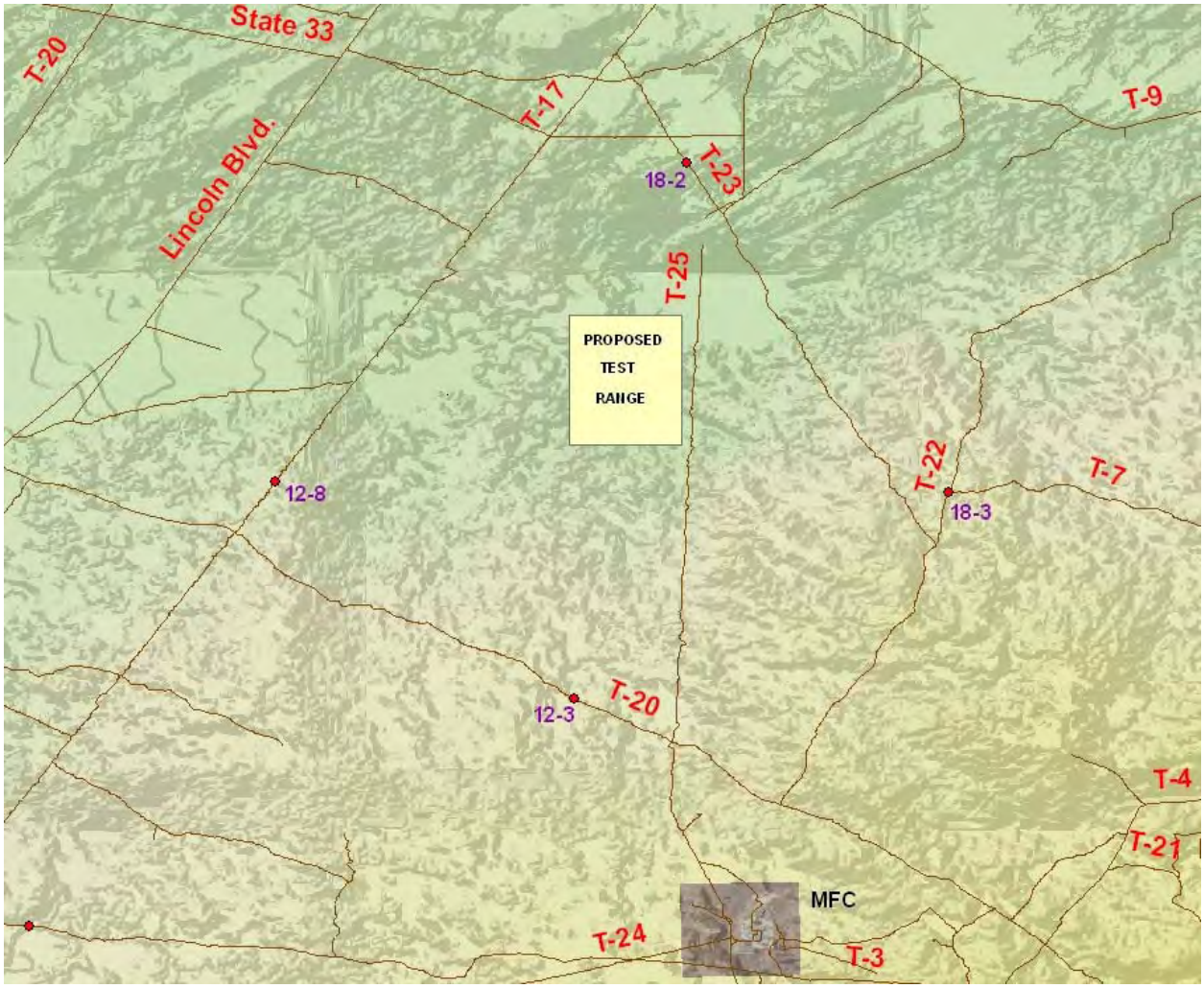


Figure 5. Location of soils samples surrounding the proposed test range.

## 3.3 Historical/Cultural Resources

For human populations, the INL site area has always had much to offer. Native American hunter-gatherers, who utilized the area on a seasonal basis for more than 12,000 years, found game animals and useful plants in abundance and nearby Big Southern Butte was attractive for the obsidian toolstone that outcrops near its crest. Members of the Shoshone-Bannock Tribes today continue to value a variety of resources and settings found on INL lands, including the thousands of prehistoric archeological sites located there. Further information can be obtained at www.shoshonebannocktribes.com. Historic archeological sites are also numerous, reflecting use by emigrants who began to pass through the area along a northern spur of the Oregon Trail (Goodale's Cutoff) some 150 years ago. Soon thereafter, early homesteaders sought to harness the intermittent flows of the Big Lost River and transform sagebrush flats into green pastures but few were successful. During World War II, land once inhabited by Native Americans and homesteaders were designated a Naval Proving Ground in support of the war effort. In 1949 the National Reactor Testing Station (NRTS) was established on the site to support the development and testing of nuclear reactors. The NRTS has gone through several name changes and is known today as the INL.

Cultural resource investigations completed to assess the potential impact of construction and operation of a proposed test range included cultural resource archive searches, intensive archaeological field surveys, reconnaissance-level archaeological field surveys, and coordination with the Shoshone-Bannock Tribes (Pace, et al., 2006)[1]. In the areas of potential effect for the project, 20 cultural resources were formally recorded or reevaluated as a result of these efforts. Nine of these resources are previously recorded archaeological sites (10-JF-77, 10-JF-78, 10-JF-80, 10-JF-83, 10-JF-84, 10-JF-85, 10-JF-88, 10-BM-123, 10-BM-124) and two are newly recorded archaeological sites (2006-20-7, 2006-20-12) potentially eligible for nomination to the National Register of Historic Places for their potential to yield information that may contribute to a better understanding of prehistoric human occupation of the northeastern Snake River Plain. One historic trail (road T-20, Blackfoot and Little Lost River Road ca. 1888 – 1920) also passes through the project area and is evaluated as potentially eligible to the National Register for its associations with broad historic themes including emigration, transportation and commerce, and mining. The eight remaining archaeological resources identified in the project area are isolated finds (2006-20-1, 2006-20-2, 2006-20-3, 2006-20-4, 2006-20-5, 2006-20-6, 2006-20-10, 10-JF-108) that are unlikely to yield any additional information and are evaluated as ineligible for nomination to the National Register. However, four of these isolates are located in sandy areas where additional artifacts may be present.

In addition to these resources, the surveyors in the areas of potential effect also observed six single isolated flakes of stone tool material (obsidian and/or chalcedony); two along the proposed new access road and four along road T-25. In three instances, isolated flakes found along T-25 in 2006 were confirmed to be within the boundaries of previously recorded resources. Information from these localities was added to existing documentation for these resources, but the remaining isolated flakes were not formally recorded. These materials probably represent very short-term cultural activities in the area and may be simple outliers to the more intensive activities represented at larger archaeological sites nearby. None of the locations where these materials were observed is likely to yield any additional information and as a result, all are considered ineligible for nomination to the National Register.

[1] Unless otherwise noted, information given on ecological resources of the proposed project area come from INL's Cultural Resource Management Office (Pace, et al., 2006).

## 3.4 Air Quality

The five Idaho counties (Butte, Jefferson, Bingham, Bonneville, and Clark) represented at INL are all in attainment or are unclassified for National Ambient Air Quality Standards (NAAQS) status under the federal Clean Air Act. The nearest nonattainment area is located approximately 50 miles south of INL in Power and Bannock Counties. That area has been designated nonattainment for respirable particulate matter.

INL is a major source for the purposes of prevention of significant deterioration (PSD), and an analysis must be performed whenever any new source or modification would result in a significant net increase in any air pollutant. The Idaho Department of Environmental Quality (DEQ) specifies significance levels for PSDs in Idaho Adminstrative Procedures Act (IDAPA) 58.01.01.006. The INL is classified under the PSD regulations as a Class II area, an area with reasonable or moderately good air quality that allows moderate industrial growth. The Craters of the Moon Wilderness Area, located approximately 25 miles west-southwest of the proposed test range is a PSD Class I area. Class I areas have the highest level of protection from air pollutants, and very little deterioration of air quality is allowed.

In addition to NAAQS and PSD requirements, the Federal Clean Air Act (CAA) includes National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. The primary application of NESHAP requirements at INL is for control and reporting of radionuclide emissions (40 CFR 61, Subpart H). INL complies with the standards and requirements for radionuclide emissions and associated dose limits to the public (DOE/ID-10890, June 2006). In addition, under NESHAP, the INL is considered a major source for hydrochloric acid emissions.

## 3.5 Water Quality

### 3.5.1 Surface Water

The Big Lost River crosses the INL. As an ephemeral stream, it carries water on an irregular basis, as the majority of the flow is typically diverted for irrigation before entering the INL. The INL has no "end-of-pipe" discharges to the Big Lost River, and thus no National Pollutant Discharge Elimination System point source permits. Idaho Water Quality regulations identify protection requirements for surface water. The section of the Big Lost River on the INL is protected for the anticipated uses of cold-water biota, salmonid spawning, primary contact recreation, domestic water supply and as special resource water. It has also been used by the INL since its inception as a federal reservation, and therefore remains subject to federal environmental laws protecting water quality.

### 3.5.2 Groundwater

The Snake River Plain Aquifer (SRPA) is located approximately 350 ft below the proposed test range. The geology above the SRPA is generally a layer of soil on top of basalt interspersed by relatively thin layers of soil. The SRPA, like other sources of groundwater in the state of Idaho, is subject to the protection standards identified in federal and state regulations. These standards generally reflect drinking water standards for a variety of chemicals and pollutants. The water in the SRPA under the INL generally meets these standards. However, past practices at the INL have caused localized contamination of the SRPA by both chemicals and radionuclides. These zones have been identified and are being addressed through various remedial actions implemented, or planned, through the Comprehensive Environmental Response, Compensation and Liability Act, often known as Superfund. The nearest of these is a very localized zone at TAN, approximately 10 miles from the proposed test range.

The SRPA is recognized and protected by the Environmental Protection Agency as a Sole Source Aquifer because the majority of people living above the aquifer use it as their only potential source of drinking water. This designation recognizes the importance of the existing water quality in the SRPA. The water in the SRPA located at most places beneath the INL meets drinking water standards established under both state and federal regulations.

There is no known past source of potential groundwater contamination of the SRPA at, or near, the proposed location of the National Security Test Range. There are no known wells in the area of the proposed test range, so sampling the SRPA at the site is not possible. The nearest INL drinking water wells, located several miles from the proposed test range, meet all state groundwater and drinking water standards.

# 4. EXPECTED ENVIRONMENTAL IMPACTS

The following sections evaluate the potential impacts that are likely to occur from the preferred alternative and the no action alternative on the ecology, historical, cultural, air, and water resources, human safety and health, intentional destructive acts, and environmental justice.

## 4.1 Preferred Alternative: Develop a National Security Test Range at the INL

### 4.1.1 Ecological Impacts

#### *4.1.1.1 Plant Communities*

An area of about 900-ft diameter at the test range would be mowed to reduce the possibility of starting a wildland fire. Likewise, direct loss of vegetation would result from soil disturbance associated with construction activities and traffic on and near the proposed test range. Any direct loss of vegetation associated with upgrading road T-25 that occurs outside of the designated road will be mitigated through revegetation with native species. Direct loss of vegetation on the actual test range site would be mitigated through revegetation with native plant species at such time use of the Test Range is terminated. Upgrading T-25 and constructing a new access road would increase soil disturbance, possibly impact study plots and cause vegetation community fragmentation. Increased soil disturbance would likely lead to increases in weedy non-native species and the potential to displace native species in the communities adjacent to the upgraded road. The prevalence of needle-and-thread grass as a community dominant or co-dominant in plots along the route is indicative of sandy soils along that route. Because sandy soils tend to have less structure and are more easily displaced, invasion of noxious weeds and invasive plants can occur as evidenced by the substantial amount of cheatgrass already present there. These soils are not suited to mechanical rangeland management techniques, including seeding.

The only sensitive plant species found to occur on the proposed test range is the painted milkvetch. Limiting soil disturbance and fire risk by mowing and quickly reseeding any disturbed areas is expected to minimizing impacts of the proposed test range and road upgrades on these plant populations. During road upgrades, coordination will be made with Environmental Surveillance Education and Research (ESER) Program to ensure long term vegetation plots are not adversely affected.

Soil disturbance and invasion of non-native species would affect plant populations, including those of ethnobotanical interest. The most effective mitigative measure to protect those populations is to minimize the amount of soil disturbed. Potential impacts to populations of plant species of ethnobotanical concern would be mitigated through revegetation of areas impacted by soil disturbance. Seeds or seedlings are commercially available for some of the species. Those species would be directly replanted, using appropriate subspecies and cultivars. The use of a diverse mix of native species in revegetation efforts would be important if species of concern, for which seed or stock is not available, are to repopulate naturally. Finally, weed control would be critical to facilitate reestablishment of native communities, including species of ethnobotanical concern.

#### 4.1.1.2 Invasive and Non-Native Species

Soil disturbance is a primary contributor to the spread of invasive plants. Invasive and non-native plants are present on much of T-25, the new road route, and the proposed test range, and could be spread by mowing, blading, and any other means used to remove the vegetation to support construction of the road and facilities. Seed dispersal plays a large role in spreading invasive species. Project activities in

late summer increase the potential for seed dispersal onto the project site and roads. It is likely that the proposed test range and the berm created as a backstop for the projectile tests would be prone to weed invasion. A plan would be developed and implemented to prevent noxious and invasive weeds on the proposed test range and berm.

#### 4.1.1.3 Wildlife and Habitat Resources

The preferred alternative would physically disturb soils and eliminate vegetation on approximately 12 acres of INL lands. This acreage represents approximately 0.002% of the total INL site land area. The disturbance would result from the following construction activities:

- Widen T-25 road – 4.0 acres.
- New road from T-25 to the proposed test range – 2.5 acres.
- Proposed test range detonation area – 2.6 acres.
- Lay down and Administrative areas – 2.1 acres.
- Target berm and excavation area – 0.4 acres.

Mowing the 900 ft. diameter proposed test range during the dormant season should have little direct impact on vegetative cover. The vegetation losses would include some sensitive plant species and species with identified ethnobotanical value. The soil disturbances would also contribute to the spread of invasive plants that could adversely affect native plants and increase the fire hazard in this area.

The proposed test range activities would destroy or displace ground-dwelling animals that reside in the areas subject to disturbance. Increased traffic, human activity, and the detonations may fragment plant communities and wildlife habitats. The increased activity would also disturb and interfere with animals that use the affected area for breeding, nesting, birthing, or transitory purposes. Species of special concern seen in and near the proposed test range include sage grouse, hawks and eagles, and big game animals.

Therefore, the impact of the preferred alternative could result in (1) unavoidable loss of ground-dwelling wildlife species and associated habitat, (2) displacement of certain wildlife species from the cleared area, (3) an increase in the potential for collisions between wildlife and motor vehicles (we anticipate this impact to be minimal due to the slow travel speeds required on the roads to the proposed test range), and (4) increased interactions between wildlife and project personnel. Various practices can lessen the impacts on wildlife. Those practices would utilize appropriate methods which could include techniques such as seasonal timing of activities, lower speed limits, warning signs, reflectors, ultrasonic warning whistles, habitat alteration, animal hazing from the road and/or proposed test range and awareness programs. Table 1 identifies the mitigation techniques and measures to be implemented at the Test Range. In addition, the potential exists for large blasts or frequent activity to displace wildlife from the area.

**Pygmy Rabbits.** Pygmy rabbits are sagebrush obligate species and have recently been the subject of a Petition for Protection under the Endangered Species Act. Pygmy rabbits depend on sagebrush for cover and forage. Once sagebrush is removed from an area, pygmy rabbits vacate the area (Green and Flinders 1980, Katzner, et al., 1997). Pygmy rabbit occurrence was assessed based on the presence of pygmy rabbit signs (i.e., sightings of rabbits, burrows, and/or scat) and the presence of suitable sagebrush

habitats. Although our survey located only one potential pygmy rabbit site, more locations might exist since our surveys were not conducted under conditions conducive to observing pygmy rabbit signs.

**Greater sage grouse**. Although the 1999 burn resulted in a significant long-term impact on nesting habitat, sage grouse still occupy areas of dominant sagebrush adjacent to the proposed test range during winter and spring. It is likely they use the proposed test range in a transitory manner year-round. Disturbances associated with the preferred alternative have the potential to temporarily displace sage grouse during winter and spring. Winter and spring are critical survival and reproductive periods, respectively, for sage grouse. Clearing vegetation on the proposed test range within 2 miles of nesting habitat may increase use of the area by breeding sage grouse by providing them an ideal area for breeding displays during the spring. If this occurs, time-of-day and seasonal restrictions would be implemented (see 'Breeding Season' below). The 2006, Sage Grouse State Wide Management Plan will be used as the guidance for mitigating human impacts to this species.

**Ferruginous hawk**. The influx of humans to the area in spring would likely displace nesting ferruginous hawks. If displacement of incubating or young-rearing ferruginous hawks from nests result in nest abandonment or in loss of eggs or nestling birds, it would constitute a significant short-term impact (see 'Breeding Season' below). Ferruginous hawks are highly sensitive to human-induced disturbance during incubation (Bechard and Schmutz 1995), and nest abandonment due to human disturbance has been documented by several sources (e.g., Fitzner et al 1977, Smith and Murphy 1973, Smith and Murphy 1978). In Idaho, White and Thurow (1985) found a significant difference in nest desertion between nests with created disturbance designed to simulate human activities and controlled, undisturbed nests. The BLM has documented nest abandonment after a single visit by researchers and considers nest abandonment a potentially "severe population limiting factor" (Snow 1974).

**Elk**. The general elk hunt for Unit 63 (which includes 0.5 mile within the INL boundary) occurs from August 1 through December 31. The hunting season causes increased movement of elk and could increase the potential for vehicular/elk collisions. However, because of the low speed limits, it is likely that elk mortalities would be low to none. Test Range activities have the potential to move elk onto surrounding agricultural areas. If agricultural deprivation due to Test Range activities becomes an issue, DOE will coordinate with Idaho Department of Fish and Game.

**Breeding Seasons.** The proposed project area provides important breeding habitat to many species during the spring. A breeding bird survey of the 900 ft. diameter test range would be conducted annually between February 1 and August 31. The survey would be conducted prior to mowing each year. Additional surveys will be performed before each test exceeding 5,000 lb NEW conducted between February and June. If any nesting activities are discovered, DOE will consult with U.S Fish & Wildlife Service on appropriate actions.

The following list shows times when specific animals are breeding, nesting, or birthing:

- Sage Grouse: February 15 - June 30
- Passerines: April 15 - June 30 (a few nest until Sept 1)
- Raptors: February 1 - July 1
- Snakes: August - September
- Pygmy rabbits; February - July
- Big Game: May - June

Habitat fragmentation would occur from the proposed road improvements and construction involved with the proposed test range and disturbance caused by tests. Infrastructure affects natural systems in both direct and indirect ways. Habitat fragmentation on the INL would result in increased brood parasitism, limit pygmy rabbit (Brachylagus idahoensis) dispersal, facilitate the spread of invasive species, disrupt succession of native species, and reduce natural regeneration in shrub lands by limiting the availability and dispersion of seed sources.

### 4.1.2 Historical/Cultural Resources

Ground disturbance associated with the construction of the proposed test range, new access road, buried cable route, lay down/administrative area, and improvements to Road T-25 would occur and have the potential to impact prehistoric archaeological sites, a historic trail, and Native American resources located in the proposed project area. Heavy equipment would be used in all of these areas, for activities such as mowing, leveling, grading the ground surface, and adding fill to build features like the earthen berm. The integrity of any archaeological sites located within the construction zone would be destroyed. However, the survey yielded no artifacts within the proposed construction zone. Any artifacts that would be discovered during the construction of the range would be preserved by altering the route of the new road or moving the construction zone. Gravel will be used to improve the exisiting T-25 access road. Artifacts that cannot be avoided during the activities to upgrade T-25 will be mapped and relocated to prevent impact. Sections 3.1.4 and 3.1.5 discuss the distribution of plant and animal species in the proposed test range area and their abundance in the test range as compared to the rest of the INL site. While there could be loss of plants or animals of ethnobiological concern losses would be localized.

During operation of the proposed test range, there is a very slight possibility of impacts to archaeological sites and Native American resources resulting from the impact of projectiles and associated fragments, or the air blast and shock waves associated with the detonation of explosives. Table 5 lists a number of potentially impacted cultural resource sites. Site 10-JF-88 is a campsite with rock structures. Based on modeling results, the detonation of 20,000 lbs of explosive would result in a maximum acceleration of 0.0028 g at that site. By comparison, the 1982 Borah Peak earthquake yielded a maximum acceleration of 0.025 g at RTC and the 2005 Dillon, Montana earthquake yielded maximum acceleration of 0.0044 g at TAN. Given that neither of the earthquake events resulted in any evident damage to Site 10-JF-88 or to any cultural resources found in lava tubes or caves, there will likely be no impact to these sites from test range operations. (Weathersby, 2006).

In addition to direct impacts from heavy equipment and earth-moving, archaeological sites and Native American resources identified in the proposed test range could also be subject to indirect impacts during construction and operation as a result of higher visibility on the landscape and overall increases in activity levels in an area that has always been quite remote.

Table 5 lists all cultural resources in the areas of potential impact from construction and operation of the proposed test range and indicates the relationship of each property to anticipated project impacts.

Table 5. Potentially Impacted Cultural Resource Sites

| Site no. | NRHP eligibility | Location | Anticipated Impact |
|---|---|---|---|
| 2006-20-1 | Isolate location – Not eligible | Lay down/Administrative Area | No effect |
| 2006-20-2 | Isolate location – Not eligible | New Access Road | No effect if monitoring demonstrates no additional material |
| 2006-20-3 | Isolate location – Not eligible | New Access Road | No effect if monitoring demonstrates no additional material |
| 2006-20-4 | Isolate location – Not eligible | New Access Road | No effect if monitoring demonstrates no additional material |
| 2006-20-5 | Isolate location – Not eligible | Test range | No effect if monitoring demonstrates no additional material |
| 2006-20-6 | Isolate location – Not eligible | T-25 Road Upgrade | No effect |
| 2006-20-7 | Lithic scatter – Potentially eligible criterion “d” | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 2006-20-10 | Isolate location – Not eligible | T-25 Road Upgrade | No effect |
| 2006-20-12 | Lithic scatter – Potentially eligible | Lay down/Administrative Area | No adverse effect if ground disturbance is avoided |

| Table 5. Potentially Impacted Cultural Resource Sites | | | |
|---|---|---|---|
| Site no. | NRHP eligibility | Location | Anticipated Impact |
| | criterion "d" | | |
| 10-JF-77 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 10-JF-78 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 10-JF-80 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 10-JF-83 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 10-JF-84 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 10-JF-85 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 10-JF-88 | Campsite with Rock Structures – Eligible criterion "d" | Fragmentation/air blast/shock wave zone | No adverse effect if ground disturbance is avoided |
| 10-JF-108 | Isolate location – Not eligible | T-25 Road Upgrade | No effect |
| 10-BM-124 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| 10-BM-123 | Lithic scatter – Potentially eligible criterion "d" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |
| Road T-20 | Historic Trail – Potentially eligible criterion "a" | T-25 Road Upgrade | No adverse effect if ground disturbance is avoided |

### 4.1.3 Air Quality

The preferred alternative would generate air pollutants including fugitive dust, criteria pollutants (e.g. sulfur oxides, carbon monoxide), and toxic pollutants (e.g. ammonia, formaldehyde). The amounts and types of explosive materials used for the testing would be controlled so that the emissions would satisfy Idaho Permit to Construct (PTC) exemption criteria. Under these criteria, the emissions from the proposed testing activities would not exceed ambient air quality limits.

Release estimates of criteria and toxic pollutants were based on the Environmental Protection Agency's (EPA's) AP-42, Section 13.3, "Explosives Detonation" (EPA 1995) or, for explosives not listed in AP-42 and mixtures of explosives, the CHEETAH code (Lawrence Livermore National Laboratory). The emission factors are shown in Table 6. The factors were used to back-calculate the amounts of each explosive that could be detonated within applicable NAAQS averaging times to remain within regulatory limits and within the PTC exemption requirements.

Calculated maximum quantities of explosives that could be detonated without exceeding ambient air concentration limits for Toxic Air Pollutants (TAPs) and Criteria Pollutant NAAQS standards at points of compliance are documented in an engineering design file (EDF-7147). Calculations were based on air modeling (using EPA's Toxic Screening model), regulatory air quality limits, and existing background air concentrations. Receptor locations included the following: 1) the nearest public access location, which is a point on Idaho State Highway 33, 7.0 miles from the proposed test range (used for all criteria pollutants and TAPs with short-term limits), or 2) a point on the nearest INL land boundary, 10.9 miles from the proposed test range (used for formaldehyde, the carcinogenic TAP with an annual limit).

In addition to the explosive material detonation products, soil particles could be ejected by the blasts. Emissions of soil particles with an aerodynamic diameter less than or equal to 10 micrometers ($PM_{10}$) were conservatively estimated based on blast crater volumes and the clay fraction measured in soil samples from the proposed test range. Modeling data show there would be no PM-10 ambient air limits exceeded.

Table 6. Explosive Material Emission Factors.

| | | Criteria Pollutants | | | | | | Toxic Pollutants | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sulfur Oxides (SO2) | Carbon Monoxide (CO) | Nitrogen Oxides (NO2) | PM10 | PM10 from soil[a] | Lead | Hydrogen Sulfide (H2S) | Ammonia (NH3) | Hydrogen Cyanide (HCN) | Hydro-chloric Acid (HCl) | Formic Acid (CH2O2) | Methanol (CH3OH) | Aluminum & Oxides (Al) | Formalde-hyde (CH2O) |
| Molecular Weight | | | 28 | 46 | | | 207 | | | | 36 | 46 | 31 | 27 | 30 |
| | | | | | | | | | | | | | | | |
| Explosive | | Ap-42 Emission Factors (lb emission/ton explosive) | | | | | | | | | | | | | |
| Black Powder | | | 170 | | | 1.4 | | 24 | | | | | | | |
| Smokeless Powder | | | 77 | | | 1.4 | | 21 | | | | | | | |
| Dynamite Straight | | | 281 | | | 1.4 | | 6 | | | | | | | |
| Dynamite Ammonia | | | 63 | | | 1.4 | | 31 | | | | | | | |
| Dynamite Gelatin (nitroglycerine) | | 1 | 104 | 53 | | 1.4 | | 4 | | | | | | | |
| ANFO | | 2 | 67 | 17 | | 1.2 | | | | | | | | | |
| TNT | | | 796 | | | 1.4 | | | 29 | 27 | | | | | |
| RDX | | | 196 | | | 1.4 | | | 44 | | | | | | |
| PETN | | | 297 | | | 1.8 | | | 2.5 | | | | | | |
| | | Calculated Emission Factors for Explosives Not Listed in AP-42 (lb emission/ton of explosive) | | | | | | | | | | | | | |
| HMX Explosives | $C_4H_8N_8O_8$ | | 263.73 | | 87.41 | 1.4 | | | 0.87 | | | 0.83 | 0.08 | | 0.04 |
| Binex 400 | NaCl+Al+C2H6O2+H2O | | | | 78.44 | 1.4 | | | | | 98.93 | | | 242.41 | |
| AN-NM | NH4NO3+CH3NO2 | | 0.02 | | | 1.4 | | | | | | | | | |
| NM-Al | CH3NO2 + Al | | 304.58 | | 238.75 | 1.4 | | | 0.15 | | | | 0.01 | 261.50 | 0.01 |
| AN-Al | NH4NO3+Al | | | | 235.80 | 1.4 | | | | | | | | 235.80 | |
| HMX-GAP | $C_4H_8N_8O_8$ + C3H5N3O + Al | | 232.06 | | 220.42 | 1.4 | | | 3.52 | | | 0.35 | 0.14 | 31.73 | 0.14 |
| Al-IPN | C3H7NO3 + Al | | 126.96 | | 494.58 | 1.4 | | | 0.19 | | | | | 206.93 | |
| Dexs | C5H8N4O12+H4N2O3+ H2O+C2H6O2 | | | 1.14E-07 | | 1.4 | | | | | | | | | |
| Semtex[b] | $C_3H_6N_6O_6$+C5H8N4O12 | | 247.00 | | | 1.4 | | | 23.00 | | | | | | |
| Ammonium Picrate | C6H6N4O7 | | | 7.16E-08 | | 1.4 | | | | | | | | | |
| Baratol | BaN2O6+C7H5N3O6 | | | 7.86E-08 | 189.20 | 1.4 | | | | | | | | | |
| Tetryol | C7H5N5O8+C7H5N3O6 | | | 6.55E-08 | | 1.5 | | | | | | | | | |
| Detonators | $Pb(N_3)_2$ | | | 1906.00 | | 1.4 | 1420 | | | | | | | | |

a. Based on maximum crater size per lb TNT and AP-42, Table 11.3-1 emission factor of 0.53 lb/ton; adjusted for TNT equivalent, if available b. Semtex emission factors are means of factors from RDX and PETN since Semtex is a 50/50 mixture

Under the preferred alternative, no individual detonations would exceed 20,000 lb NEW. Based on the NAAQS and the IDAPA requirements, the maximum amounts of explosives that could be detonated at the proposed test range in compliance with applicable standards and PTC exemption criteria are shown in Table 7. As the table shows, some of the explosives used in tests would be limited to amounts less than 20,000 lb. Large explosive tests would occur infrequently and would likely use ammonium nitrate and fuel oil (ANFO) as the primary explosive material.

Table 7. Maximum Tons of Explosives that Meet Air Quality Standards and PTC Exemption Criteria.

| | Averaging Time | | | |
|---|---|---|---|---|
| Explosive | 1 hr | 8 hr | 24 hr | Annual |
| Black Powder | 6.7 | 11.3 | 21.8 | 117.6 |
| Smokeless Powder | 14.7 | 25.0 | 25 | 259.7 |
| Dynamite Straight | 4.0 | 6.8 | 56.7 | 71.2 |
| Dynamite Ammonia | 16.9 | 16.9 | 16.9 | 317.5 |
| Dynamite Gelatin (nitroglycerine) | 10.9 | 18.5 | 56.7 | 150.9 |
| ANFO | 16.9 | 28.7 | 69.2 | 298.5 |
| TNT | 1.4 | 2.4 | 6.9 | 25.1 |
| RDX | 5.8 | 9.8 | 15.3 | 102.0 |
| PETN | 3.8 | 6.5 | 44.7 | 67.3 |
| HMX Explosives | 0.9 | 0.9 | 0.9 | 34.3 |
| Explosive Mixtures | | | | |
| Binex 400 | 1.0 | 1.0 | 1.0 | 38.2 |
| AN-NM | 56.7 | 56.7 | 56.7 | 2124.9 |
| NM-Al | 0.3 | 0.3 | 0.3 | 12.6 |
| AN-Al | 0.3 | 0.3 | 0.3 | 12.7 |
| HMX-GAP | 0.4 | 0.4 | 0.4 | 13.6 |
| Al-IPN | 0.2 | 0.2 | 0.2 | 6.1 |
| Dexs | 56.7 | 56.7 | 56.7 | 2124.9 |
| Semtex | 4.6 | 7.8 | 29.3 | 81.0 |
| Ammonium Picrate | 56.7 | 56.7 | 56.7 | 2124.9 |
| Baratol | 0.4 | 0.4 | 0.4 | 15.9 |
| Tetryol | 53.5 | 53.5 | 53.5 | 2004.6 |
| Detonators | 0.1 | 0.1 | 0.1 | 0.4* |

*No more than 0.1 ton per quarter year

The explosive material limits established for the proposed test range would limit emissions such that NAAQS and TAP air quality standards would not be exceeded. Fugitive dust would be controlled as appropriate by applications of water or chemical suppressants to unpaved roads and work areas. Radionuclides in the soil are typical of regional background concentrations and would not pose elevated dose risk to members of the public. The proposed intermittent, short duration testing activities coupled with the remote location of the proposed test range would ensure that adverse air quality effects upon potential receptors and Class 1 areas are minimal.

The proposed test range is in a remote area of the INL lands, where radionuclides in soil are either from natural sources or from worldwide fallout. Even though blast detonations at the proposed test range would resuspend some of this contamination, the resuspended dust would be at very low concentrations at downwind receptor locations, and exposures would be intermittent and of very short duration. Since inhalation dose from airborne radionuclides is dependent upon cumulative annual intake, the total annual potential dose from these short duration events would be far less than that which typically occurs from chronic windblown dust exposure, especially, for example, around agricultural and construction operations.

### 4.1.4 Water Quality

#### *4.1.4.1 Surface Water*

The nearest surface water, the Big Lost River, is 7 to 8 miles from the proposed test range. Other off-INL sources of surface water, such as Birch Creek, the Little Lost River, and Mud Lake, are located even further away. Fragments from the explosive work would travel only a few hundred feet and would not reach surface waters. Air emissions from explosive materials are expected to disperse before reaching surface water sources.

Storm water run-off, if any, from the proposed test range would not reach surface water, such as the Big Lost River.

#### *4.1.4.2 Ground Water*

The SRPA is located below the proposed test range. The geology above the SRPA is generally a layer of surficial soil followed by basalt interspersed by relatively thin layers of soil. Detonation of explosives on the surface of the ground would be attenuated by the soil and rock, resulting in no perceptible shock impact to the SRPA

Small amounts of explosive residues would be generated during testing. Some of the residues would collect on the ground and would be available for infiltration with snowmelt and rain. These residues are not expected to have an impact on the SRPA due to a low infiltration rate and adsorption onto the soil. Studies at the INL undertaken through the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) program, have demonstrated that small amounts of chemical contaminants, located at the ground surface, do not present a risk to groundwater even if there is no adsorption on soil. (Comprehensive Remedial Investigation Feasibility Study (RI/FS) for Waste Area Group 6 (WAG-6) and Waste Area Group 10 (WAG-10) Operable Unit (OU) 10-04, DOE-ID-10807.)

### 4.1.5 Safety and Health

Testing conducted at the proposed range could present certain safety and health concerns due to fragmentation, air blasts, ground shock, and projectiles.

No adverse impacts to human health and safety are anticipated from the preferred alternative. Appropriate precautions and procedures would be employed to minimize health and safety risks. Explosive charges would be assembled under the supervision of explosive use supervisors and explosives safety officers. All personnel involved with construction and operations, including those handling explosives, would be properly trained, use appropriate protective equipment and maintain close communication with one another. Standoff distances would be determined using standard formulation from the U.S. Army Manual Department of Defense-6055.9 STD. Once it is declared safe, essential personnel would be allowed to enter to collect data and to take photographs. Each work activity would include processes to identify, analyze, and control the hazards. Table 1 provides further detail on the operational controls that would be used during testing.

The closest INL facilities and employees not involved in conducting tests would be at the MFC, which is 7.1 miles from the Test Range area. Table 3 describes the noise and ground velocity information associated with the maximum test size of 20,000 lbs NEW at locations away from the proposed test range. Characteristic noise associated with testing would occur as pulses rather than continuous noise. At the locations specified in the table as examples, these noise pulses would occur at levels below the limits established by the Occupational Safety and Health Administration standards. Industry recognized blasting

safety standards recommend maintaining peak ground velocities below 2.0 inches per second (ips) to prevent damage to light civilian type structures. The maximum ground velocity at the nearest area with structures at MFC would be 0.006 ips. Therefore noise and ground motion from a 20,000 lb explosive test would not pose any significant impact to personnel or facilities on or off of the INL.

Table 8 lists the maximum predicted noise levels at two locations: the Big Lost River Rest Area on U.S. Highway 20 and Atomic City.

Table 8. Maximum Predicted Noise Levels at Select Locations

| Site | Distance | noises level (dB) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 100 Lbs | 500 Lbs | 1000 Lbs | 5000 Lbs | 10000 Lbs | 15000 Lbs | 20000 Lbs |
| Atomic City | 19 miles | 109 | 114 | 117 | 122 | 124 | 125 | 126 |
| Big Lost River Rest Area on U.S. Hwy 20 | 19 miles | 109 | 114 | 117 | 122 | 124 | 125 | 126 |

For comparison purposes, the following provides the noise levels associated with several commonly understood items:

65 dB Normal Conversation
125 dB Chain Saw
140 dB Air Raid Siren (at 100 feet)
145 dB Jet Takeoff (at 100 feet)
170 db Discharge of 30.06 Hunting Rifle

Explosives to be used at the test range would be delivered to the INL in commerce by a private carrier. While in commerce, all shipments are covered by Department of Transportation (DOT) regulations for the shipment of hazardous materials. Once the INL takes possession of the material it would be managed in accordance with Laboratory Wide Procedure (LWP) 14201 “Explosive Safety”. This document covers procurement, transportation, security, storage and handling of explosives. Plan (PLN) 14201 “Transportation Plan for the Movement of Explosive Materials within the Boundaries of the Idaho National Laboratory” would be used to manage the movement of explosives out of commerce within the boundaries of the INL but not on public roads. The INL follows DOT regulations for movement of explosives on the public roads within the INL boundaries.

Consolidation of current testing activities at a new National Security Test Range would result in the transportation of explosives on U.S. Highway 20 from Gate 1 of the INL to the turn-off to MFC. This distance is approximately 11 miles. Using a conservative assumption of 4 trips per week over 30 weeks per year results in 120 trips to transport explosives, traveling a total yearly distance of 1,232 miles. Data from the Federal Motor Carrier Safety Administration indicates that 1,260,000,000 commercial vehicle miles were traveled in Idaho in 2005. In 2005, 824 trucks were involved in an accident in Idaho. That represents one accident for every 1,441,000 miles traveled. The addition of 1,232 more miles traveled due to transport of explosives to the test range would only increase the risk to the public by an extremely small amount.

### 4.1.6 Ecological Monitoring and NERP Research Activities

There is the potential for impact to other research and monitoring activities near the proposed test range. This includes ongoing ecological monitoring and research conducted by the ESER Program and academic researchers. The potential for impact may be in the form of direct damage to plots, alteration of natural animal behaviors being investigated, or potential loss of access to the area for data collection.

Most of these potential impacts would be avoided by implementing a few administrative controls. Travel would be strictly limited to the designated areas. Project Managers would coordinate their activities, through use of the Plan of the Week and Plan of Day documents, with ESER personnel to avoid conflicts with long-term scheduled monitoring activities such as the Breeding Bird Survey, Long-Term Vegetation Survey, Rabbit Survey, Big Game Surveys, Sage Grouse Surveys, and other data collection activities.

For some large-scale projects that involve studying animal behavior or movement patterns, such as the coyote project previously described, there is potential for impacts. Utah State University researchers conducting the coyote project have indicated that development of a long-term or permanent test range for similar activities in this area would likely cause them to move their research program somewhere other than the Idaho NERP (Mike Jaeger, Utah State University, personal communication). Current research has been completed. However, there is potential impact of further and similar research being proposed in this area.

### 4.1.7 Impacts Due To Intentional Destructive Acts

The potential exists for theft of explosive materials stored and used on the INL Site and for the explosives to be used against facilities and personnel at the INL. Extensive security measures are in place to prevent this from occurring because the proposed activity would occur within the INL boundary. Access to the INL is controlled, with only those persons performing official business and presenting the proper credentials being allowed on-site. The INL perimeter is monitored and patrolled to prevent unauthorized entry. All explosives are stored in approved explosive storage magazines, which include locks and alarm systems. The INL maintains a highly trained and equipped protective force intended to prevent attacks against and entry into INL's facilities. Additionally, for large scale tests above 1,000 lbs NEW, the explosive materials for those tests would be delivered at the time of the test and the protective force will provide security of those explosives until the test is conducted.

### 4.1.8 Environmental Justice

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to address disproportionately high and adverse human health or environmental effects of proposed projects on minority populations and low-income populations. Because this proposed project would be located in a remote portion of the INL with no significant adverse impacts to human health and the environment, DOE anticipates there would be no disproportionately high and adverse impacts to minority populations.

### 4.1.9 Cumulative Impacts

The preferred alternative represents a small percentage of the overall 890 square mile INL. The test range, lay down areas, and T-25 road upgrade would involve about 12 acres (or about 0.02- square miles) of INL land. The current developed area, including all facilities at the INL equals 15 square miles or 1.7% of the total size of the INL . While the 12 acres affected by the proposed test range is a small portion of the INL it does represent development within a relatively pristine desert ecosystem.

Cumulative impacts on ecological resources would most likely come by increasing habitat fragmentation and the potential to spread noxious weeds (including other invasive plants). Project activities, including more frequent site access and explosive testing, could change the behavior of elk, pronghorn, sage grouse, and other wildlife. Reduced speed limits, limited access, additional surveys, and seasonal limitation on activity would lessen the impacts resulting from increased activity and access. In addition, project activities would likely increase the potential for spread of noxious and invasive weeds by increased soil disturbance from vehicle traffic and explosive testing. Conducting an aggressive reseeding and weed control program would help lessen the impacts from soil disturbance.

Cumulative impacts to air quality would be generation of fugitive dust and pollutants generated as by products from explosive detonations. As described in Table 1, construction and operational controls would be in place to minimize fugitive dust. Table 7 describes the limitations that would be placed on the quantities of explosives that could be used to ensure compliance with air quality requirements. With these control measures in place, any cumulative impacts should be minimal and remain within prescribed air quality standards.

Given that an explosives test is an instantaneous event, the noise generated would be a brief pulse. The cumulative impact would be negligible relative to the ambient noise level at the INL.

## 4.2 No Action Alternative

The No Action Alternative would not change the current activities or the locations at which they are performed. Current testing activities would continue at the LFR and the MDA. The No Action Alternative would avoid any additional impacts on the natural environment since it would not require any ground disturbance or possibly affect wildlife in an additional area.

The No Action Alternative has the potential to impact the human environment on a limited scale. The No Action Alternative would not provide DOE the data necessary to enhance protection of the human environment from security threats. The quality of tests would not increase because of the inability to provide optimal data measurement. The number of tests would not increase because the tests could only occur when the LFR and the MDA were not being used for their established purposes. The size of tests would not increase because they would be limited to the capabilities of those ranges. Thus, the No Action Alterative limits the quantity and quality of data available for the improvement of national security.

# 5. COORDINATION AND CONSULTATION

INL personnel coordinated and consulted with the following agencies and Tribes regarding the preferred alternative and environmental resources on or near the INL lands.

## 5.1 Shoshone Bannock Tribes

On May 10, 2006, the INL Cultural Resources Working Group held its monthly meeting. The INL personnel conducted a briefing on the proposed test range for the Tribal members. Other participants in the meeting were DOE-ID Cultural Resource coordinator, DOE-ID Tribal Liaison and members of the INL Cultural Resource Management (CRM) Office. At that time, Tribal members expressed several concerns about impacts, including adverse effects to plants, animals, the aquifer, and lava tube caves, plus a perceived danger of contaminated soils becoming airborne during the tests. They also indicated that project personnel should go before the Shoshone-Bannock Business Council. At the same meeting, Tribal representatives were invited to participate in the archaeological fieldwork for the project. As a result, Tribal representatives joined INL technical personnel in the field, assisting with the archaeological surveys and becoming familiar with the project and project area. The Tribes provided comments on the draft Environmental Assessment. They continued to express concerns about impacts during these field trips and in their comments. The DOE-ID Tribal Liaison contacted the Tribes to arrange a meeting with the Business Council, which could not be arranged. However, the Tribes indicated they were satisfied with the DOE-ID effort to involve them.

## 5.2 U. S. Fish & Wildlife Service

DOE contacted the U.S. Fish & Wildlife Service on August 8, 2006 to discuss testing on the proposed test range and any potential impacts on wildlife. Discussions also took place in 2005 relative to a similar proposed activity. Concerns raised included noise, explosives use during nesting season, explosives fragments and groundwater and soil contamination. The U.S. Fish & Wildlife Service comments have been addressed in this Final Environmental Assessment. Further consultation with the Service will be initiated as needed.

# 6. PERMITS AND REGULATORY COMPLIANCE

## 6.1 Air Resources

The Federal CAA provides the framework for protecting the nation's air resources. The EPA and the Idaho DEQ are jointly responsible for establishing and implementing programs that meet requirements of the CAA in Idaho. Applicable portions of the CAA with respect to the preferred alternative are found in Idaho Regulation IDAPA 58.01.01. These rules include screening emission rates and acceptable ambient air concentration limits used to determine emission controls and permit conditions. The types and amounts of explosives will be limited such that a Permit To Construct will not be required.

Activities at the INL are subject to a CAA Title V Operating Permit, which specifies facility-wide requirements for activities that generate pollutants such as fugitive dust. Activities at the proposed test range will operate in compliance with all requirements of the Title V Operating Permit.

## 6.2 Water Resources

The Federal Clean Water Act (CWA) provides the framework for protecting water resources at the INL. Because this project will not discharge pollutants or storm water to the Big Lost River, no permit under the CWA is required.

## 6.3 Wildlife/Habitat Resources

Soil disturbing activities have the potential to increase noxious weeds and invasive plant species that would be managed according to the "Management of Undesirable Plants on Federal Lands" (7 United States Code Section 2814) and the Invasive Species Executive Order 13112. The INL would follow the applicable requirements to manage undesirable plants according to PLN-611.

In analyzing the potential environmental impacts of the preferred alternative, DOE-ID has followed the requirements of the Endangered Species Act (16 U.S.C. Sections 1531 et seq.) and has reviewed the most current lists for threatened and endangered plant and animal species.

Other Federal laws that could be applicable include: the Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.), Bald Eagle Protection Act (16 U.S.C. § 668), and the Migratory Bird Treaty Act (16 U.S.C. Sections 715 to 715s).

## 6.4 Cultural/Historical Resources

The INL would comply with the National Historic Preservation Act and its implementing regulations at 36 CFR Part 800 et seq. as well as the broader requirements outlined in the INL Cultural Resource Management Plan (DOE/ID-10997, revision 1, September 2005). DOE-ID also recognizes its responsibilities to the Shoshone-Bannock Tribes under the Agreement in Principle and the "Working Agreement" on cultural resource issues. DOE-ID would also consult with the State Historic Preservation Officer, if necessary.

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# Appendix A

# Glossary

# Appendix A - Glossary

**Affected Environment.** The overall environment potentially affected by the Preferred alternative.

**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.

**Calcareous Soils**. Soils that contain calcium carbonate.

**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 of traditional life-way value.

**Decibel**. The decibel (abbreviated dB) is the unit used to indicate the intensity of a sound.

**Ethnobotany**. The plant lore and agricultural customs of a people.

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

**Environmental Impact Statement (EIS).** A document that serves to ensure that the policies and goals defined in NEPA are incorporated into 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 to the environment.

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

**Fledgling**. A young bird that has recently acquired its flight feathers.

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

**Herbaceous Vegetation**. Relating to or characteristic of an herb as distinguished from a woody plant.

**Hibernacula**. A protective structure in which an organism remains dormant for the winter.

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

**Home Range**. The geographic area to which an organism normally confines its activity.

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

**Lek**. An area where male grouse congregate for breeding purposes.

**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 that requires the federal government to consider the environmental impacts of, and alternatives to, major proposed actions in its decision making processes. Commonly referred to by its acronym, NEPA.

**Nocturnal**. Most active at night.

**Non-game Species**. Animals which are not normally hunted, fished, or trapped.

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

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

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

**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 an environmental impact statement. The ROD, which must be published in the Federal Register, would (a) State what the decision is, (b) Identify all alternatives considered and specify the alternative or alternatives that 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.

**Senescence.** The process of growing old and dying. Gradual deterioration of function in an organism leading to an increased probability of death; aging.

**Transitory**. Existing or lasting only a short time; short-lived or temporary

# Appendix B

# Acronyms

# Appendix B - Acronyms

| | |
|---|---|
| AN | Ammonium Nitrate |
| ANFO | AN and Fuel Oil |
| ATV | All-Terrain Vehicle |
| BEA | Battelle Energy Alliance, LLC |
| BLM | Bureau of Land Management |
| CAA | Clean Air Act |
| CDC | Conservation Data Center |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulation |
| CRM | Cultural Resource Management |
| DEQ | Idaho Department of Environmental Quality |
| DOE | Department of Energy |
| EA | Environmental Assessment |
| EBW | Exploding Bridge Wire |
| ECT | Explosive Cutting Tape |
| EDF | Engineering Design File |
| EPA | Environmental Protection Agency |
| ESER | Environmental Surveillance, Education, and Research Program |
| FLSC | Flexible LSC |
| HMX | High Melting Point Explosive |
| IDAPA | Idaho Administrative Procedures Act |
| INL | Idaho National Laboratory |
| INTEC | Idaho Nuclear Technology and Engineering Center |
| IPS | Inches Per Second |

| | |
|---|---|
| LSC | Linear Shaped Charges |
| MFC | Materials and Fuels Complex |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Policy Act |
| NERP | National Environmental Research Park |
| NESHAP | National Emission Standards specifies those requirements for Hazardous Air Pollutants |
| NEW | Net Explosive Weight |
| NRF | Naval Reactors Facility |
| PBX | Plastic Bonded Explosives |
| PLN | Plan |
| PSD | Prevention of Significant Deterioration |
| PTC | Permit to Construct |
| PTN | Pentaerythritol Tetranitrate |
| RTC | Reactor Technology Complex |
| SRPA | Snake River Plain Aquifer |
| SRT | Shock Reflecting Tape |
| SSER | Sagebrush Steppe Ecosystem Reserve |
| TAN | Test Area North |
| TAP | Toxic Air Pollutant |
| TNT | Trinitrotoluene |
| U.S.C. | United States Code |

# APPENDIX C

# National Security Test Range Environmental Assessment

## Response to Comments

The formal comment period for the National Security Test Range Environmental Assessment ended on January 12, 2007. The DOE received numerous comments from at least seven interested parties and groups that collectively numbered seventeen pages. Because of the similar nature or subject matter of many of the comments, a decision was made to evaluate, consolidate and group the comments according to subject or concern and provide answers appropriate to the grouping. The comments have been reprinted verbatim as received by the DOE. The following pages contain DOE's responses to the various comments. This document is being prepared as an attachment to the EA and will be provided to those individuals and groups who provided comments. It will also be available on line and to other interested parties upon request.

Comments have been organized in the following categories:

Purpose and Need
Alternative Selection
NEPA Process
Additional Information/Technical Edits
Analysis Related
- Flora and Fauna
- Soil
- Air
- Water
- Cultural Protection

## Purpose and Need

**Comments:**

The draft EIS should more clearly explain why the testing has fallen to the DOE and its premier nuclear power research facility

The draft EIS should describe in detail what research and testing and real-world improvements have already occurred. The draft EIS, by the same token, should describe in detail what research and testing would lead to additional, identified real-world improvements.

The draft EIS should explain the nearly direct relationship of explosive size and test frequency. Why do smaller explosives require so much more testing (particularly in light of the draft EA's assertion that "adversaries have shown their willingness and ability to use ever larger quantities of explosive materials")?

Without the "Need" for consolidation of the existing test ranges, new identified testing for Homeland Security could be provided at other sites such as the Nevada Test Site (NTS).

**Response:**

The primary purpose of conducting this type of research and testing is to meet DOE requirements for ensuring security of its facilities. The DOE has multiple requirements it must meet to perform its defined missions. In order to accomplish those missions, it relies on its national laboratories and other sites to perform a wide variety of tasks. Very few laboratories or sites within the DOE complex are focused on a single mission requirement. INL, throughout its history, has supported a variety of DOE missions, nuclear power, renewable energy such as geothermal and hydro power, basic scientific research such as subsurface science and national security in areas such as nuclear nonproliferation and weapons of mass destruction detection.

One of the key requirements which DOE has is the protection of its facilities and other assets. In order to protect these assets, DOE must understand potential threats, either natural or human, and design and implement the mitigations to prevent or mitigate against possible occurrences. Over the years the INL, through this type of research and testing, has developed designs for more robust walls, doors, and sensors for Special Nuclear Material vaults. It has performed analyses of numerous DOE buildings, including the DOE Headquarters building in Washington D.C., to help determine placement of barriers to keep an explosive-laden vehicle detonation at a sufficient distance to prevent catastrophic failure of the building. The research and testing that would be conducted at the proposed National Security Test Range will support DOE in continuing to understanding the effects of explosions against the various security systems and measures DOE has in place to protect its own assets. As stated in the EA, these activities have been performed at the INL for a number of years and the INL has developed significant expertise in this area.

Development of any new or improved systems, begins with testing of the concepts. Normal practice is to conduct a number of small scale tests, looking at performance of individual parts of an overall system, scale models of the system and measuring how the system works. In the case of a wind driven electrical generator, one might test the tower and blades at a 1/10 or 1/5 scale in a small wind tunnel to see if the blade design is correct for the tower size being used. As confidence is gained that the design is appropriate, larger scale tests would be conducted, perhaps at ¼ or ½ scale, and usually culminates in full scale tests. In designing more effective security and protective systems, the same basic process is used. A number of small scale tests are conducted, performance is measured and improvements can be made. As systems design matures, fewer larger scale tests are performed. This is why the number of small tests is higher than larger scale test planned at the proposed test range.

**Comment:**

The need to consolidate the three locations where explosive detonation activities are currently conducted has not been made clear. The document states that: 1. *Research and development work on detection of trace amounts of explosives is expected to remain at the Central Facilities area.* As such, at least one of the three current ranges will have to remain open. 2 *Consolidation of three locations into one location will relieve the scheduling conflicts resulting from having three sites.* This statement is counterintuitive. Independent ranges would appear to result in less scheduling problems then having all of the range activities use the same area. 3. *Consolidation will allow for the installation of semi permanent infrastructure*, The implication is that there is no infrastructure now at any of the existing facilities, and that after new road construction, water wells, waste systems,. and the construction of semi-permanent infrastructure and, consolidation of all the test ranges at the new test range, there will be improvements in cost and quality This is nothing that supports this assertion in the document,

**Response:**

The proposed action does not consolidate the locations, but rather the National Security testing activities. As identified in the EA, the Live Fire Range (LFR) and the Mass Detonation Area (MDA) have primary uses not associated with National Security testing activities that would continue to be performed at those locations. For the LFR, the primary use is to support training of the INL Protective Force. For the MDA, the primary use is for detonation of unexploded ordnance. In addition, each of these locations is in close proximity to other facilities and would not be able to accommodate the larger explosive quantities. The proposed Test Range would be dedicated to supporting the National Security system testing and therefore would not to contend with other priority uses. The semi-permanent infrastructure discussed in the EA refers to testing and data gathering equipment that cannot be semi-permanently installed at the LFR or MDA because of their primary uses.

**Comments:**

The INL currently performs other important missions, such as nuclear energy research and development, and INL maintains valuable undisturbed sagebrush steppe and grassland habitat as a national environmental research park. Should DOE chose to proceed with its preferred alternative, DOE should manage the security test range in a way that appropriately balances these other interests.

Given conceptual proposals to construct new nuclear facilities at the site formerly proposed for the New Production Reactor, it would be helpful for DOE to provide data regarding potential impacts at that location in addition to facilities already included in the draft EA.

**Response:**

DOE agrees that there are a range of interests that must be balanced in managing the activities conducted at the INL. While we understand and agree that there will be some environmental impact from the development of the Test Range, we are minimizing the impact by selecting a site close to an existing road, in a previously burned area and through the administrative controls specified in

Table 1 of the EA. The site was also chosen in order to provide as much physical separation as possible from facility locations and other activities being conducted at the INL. Sites for any new nuclear facilities have not been selected, therefore specific analyses cannot be performed. The strategy for the INL is to use existing facility areas, such as the Materials and Fuels Complex and the Reactor Technology Complex to house the nuclear research activities. The most likely scenario for other conceived nuclear research activities related to GNEP or NGNP would be in close proximity to existing nuclear facilities. INL/EXT-06-11753 "Ground Motion and Noise Levels at Critical Locations On and Near the Idaho National Laboratory Site Due to Explosive Activities at the National and Homeland Security Research and Development Range" indicates that there will be no impact to any existing facilities from activities at the new range.

**Comment:**

What entity sets NEW limits? What criteria does that entity use? Is the process for both establishing criteria and setting explosives limits transparent? Is the public invited to participate? Will explosives be stored at INL? Where, for how long, and in what quantities?

**Response:**

The need for 20,000 lb. NEW limit in this EA was identified first by examining historical data from previous incidents and then determining the likely upper bound for the amount of explosives that could be assembled in a large six wheeled type truck. These are the types of vehicles most likely to be used in historical and hypothesized future attacks. For purposes of determining the appropriateness of that charge weight for testing at the INL, this EA provides the process for setting the NEW limits. Explosives are currently stored at the INL in magazines specifically designed for such storage and with attendant security systems such as entry alarms. The explosives currently stored are used for a range of purposes, such as the testing identified in the EA as currently being performed. The quantities currently stored are significantly less than 20,000 lbs. and even with the proposed consolidation testing activities, the quantity stored will not rise significantly. For large scale tests involving multiple thousands of pounds, the explosives will be delivered either the day before or day of the test. INL protective forces will be used to ensure security of the explosives until the test is conducted.

# Alternative Selection

**Comments:**

If there are benefits to performing this work at a non-weapons testing site such as the INL, DOE should state them.

The DOE has not adequately documented the rationale for the selection of the INL as the preferred alternative for this proposed site. The Draft EA lists certain site requirements that needs to be accomplished, and then declare the preferred site location at the INL, because it is the only site to fulfill these accomplishments. One of the "accomplishments" that was identified was:

" Be readily accessible on a continuing basis to INL personnel for their unique expertise to conduct cost-effective, secure and timely testing."

The Draft EA does not explain why INL staff need to be stationed there. The draft EIS needs to explain why DOE staff couldn't be available at another location to carry out these tests. The equipment needed could be located elsewhere and the requisite staff could either travel, or permanently re-locate.

The INL gives the impression that if they were to use another off site then they would have to conduct tests and travel back and forth. The whole program could be moved to that test site until the tests are complete.

There are already established testing ranges in the west that can facilitate and handle the types of explosions proposed

The primary reason the DOE offers in the draft EA for consolidating explosives testing at INL is to save time and money. The draft EA repeatedly refers to the overly burdensome time and expense related to conducting such explosives tests at any site other than INL. The federal government should not make such decisions based solely on what will be the fastest and cheapest, but rather what is the safest and most responsible action to protect the health of our people and environment. Does the federal government ever transfer employees from one place to another?

It appears as if the "Need" statement has been constructed to eliminate other suitable federal facilities from consideration that would pose a considerably lesser impact on the environment.

**Response:**

As a matter of clarification, the activities analyzed by this EA are not to perform testing as to the effectiveness of explosives themselves. The testing now performed and planned to be performed will test the effects that explosives have on the security systems used to protect DOE facilities. The criteria that were developed to guide alternative selection where based primarily on three factors: Safety, accessibility and the need to meet DOE mission requirements. Accessibility is a factor because INL has a cadre of personnel who have developed unique expertise in the field of understanding the effects of explosions on security systems and structures. That expertise is not found at other DOE laboratories. INL personnel are not employees of the federal government. They are employees of the entity that manages the INL, Battelle Energy Alliance. As such DOE cannot reassign them, nor may DOE direct that they be separated from employment at INL and reemployed at a different DOE laboratory. Each laboratory is managed by a different entity. Temporary assignment of INL personnel to other locations is possible, however it does come with considerable extra expense to the taxpayer. These include costs associated with travel fares, lodging, meals, rental cars or other modes of transport at the temporary duty station, etc. Part of meeting DOE's mission requirements, understanding the effects explosives have on security systems used to protect its' facilities, is to do so in a cost effective fashion. Any activities undertaken by DOE need to be conducted in a safe manner.

**Comments:**

The EA makes no reference to a process for selecting possible alternative sites and the Nature Conservancy feels that multiple sites within the INL would meet the spatial needs of the new test range. We believe that alternative sites may exist that would have fewer environmental impacts with respect to wildlife habitat.

We question why you chose a burn site which exhibits native re-growth rather than one that is relatively void of native vegetation.

In summary, the Nature Conservancy is pleased to read the detail with which this site was analyzed for its ecological value, yet we are confused that some of the findings did not prompt the consideration of alternative sites within the INL boundary. It seems inadequate that there are multiple alternatives to whether or not to site the test range at the INL, but few about where to site it.

Due to the pristine nature of this immediate area, the preferred alternative is unacceptable.

Alternative 3 would be best suited to protect cultural resources, and to maintain the flora and fauna of the area, which has just recently replenished itself in the area.

ALTERNATIVES CONSIDERED Page 5, does not provide a reasonable list of alterative because it unnecessarily ties the conduct of new Homeland Security testing to the relocation of existing test work at three existing INL ranges. Only one location on INL Was evaluated which considered, the ease of access in selecting the location, but not the potential impact on the environment

Finally, it seems that the EA's response to the no action alternative is over-stated; "The no action alternative would not provide the DOE the data necessary to enhance protection of the human environment from security threats (p 32)." Since there are already established locations (LFR, MDA, or the Nevada Test Site) to conduct blast tests in any of the stated magnitudes, it seems that should the DOE (a federal agency) require specific blast information, it could in fact be obtained. It appears this newly proposed facility simply allows a convenient test area at the INL.

**Response:**

The criteria provided in Section 2 were used to provide an initial identification of prospective sites. Given those criteria, in particular the need to provide sufficient distance from the testing location to eliminate damage, disturbance, or injury by ground or air transmitted shock pressure and projectile fragments to buildings, structures, or the public for large scale tests, the central area of the INL was to only area suitable for use as a test range. The specific location on the INL was chosen to:

1. Be away from a known archeological site.
2. Minimize impact to the Sagebrush Steppe.
3. Remain in the 1999 burned area to eliminate loss of any existing sagebrush.
4. Reduce the impact to the environment by reducing the amount of new road construction.

The site selected for the range was the best compromise of all of these requirements.

**Comment:**

I think that conventional explosives testing should not be conducted at the Idaho National Laboratory or any other nuclear, chemical, or biological warfare facility requiring high security. If these facilities were harmed, it could cause disastrous damage to both the environment and people living nearby. This type of testing and the associated personnel should be moved to a more appropriate location without facilities requiring high security. The alternatives analysis needs to be rethought. It makes more sense to transfer personnel to existing test sites if needed, than to create a new site.

**Response:**

INL does not conduct research concerning the development of nuclear, chemical or biological warfare agent or weapons. The INL does conduct research concerning the application of nuclear energy to production of electric power and similar uses. Because of this research, the INL stores nuclear materials. The INL maintains a highly trained and effective protective force to ensure that these materials are safe and secure from theft or diversion. As stated in the EA, the location of the proposed Test Range has been chosen to ensure that it is located in an area that would prevent damage to any existing facilities at the INL or to the general public.

**Comments:**

The project could be carried out at other locations, with Department of Defense (DOD) staff. The presence of radioactive contaminants at the site should make the INL *less favorable* than other sites. Even if the proposed site is not presently contaminated with radionuclides, releases of radionuclides are frequently, if not continually, occurring at the INL (including Cesium 137 at the range site), and it increases the risks to the environment and human health by selecting a site that is vulnerable to radiation contamination, when added to the risks arising from the contamination of the explosive charges themselves.

The next phase of the NEPA document should delete the above referenced "accomplishment" that INL staff must be available and *add* the following needed accomplishments:
The preferred alternative or alternatives must accomplish the following:

- Provide a land area whose soils are not contaminated with RCRA or radionuclides, and is not in close proximity to locations where the release of these contaminants have historically occurred, or are likely to recur.
- Provide a land area that is not within or near a current order under CERCLA or RCRA acts for clean-up of soil contaminants.
- Locate the testing range at a site where munitions and explosive residual chemicals may be cleaned up without leaving the site contaminated, or require CERCLA or RCRA actions to remediate.

**Response:**

The testing that is the subject of this EA supports DOE mission requirement for evaluating the security of its facilities and therefore it is the responsibility of DOE to perform the work rather than

DoD. The proposed Test Range does not contain any RCRA or CERCLA hazardous materials. While environmental cleanup activities are being performed at the INL under CERCLA, the areas subject to cleanup requirements are located a number of miles from the Test Range and would not subject to affects by this testing. The radionuclides found at the Test Range (Cesium-137) are from deposition associated with above ground nuclear weapons testing in the 1950's and 1960's. These levels of Cesium-137 would be found at any location throughout the western U.S., and would in fact be higher in the eastern U.S. As stated in the EA, explosive residues will be removed following testing events and there is no intent to contaminate the site to require remedial actions under either RCRA or CERCLA.

**Comments:**

Page 3, 2. Alternatives; 2nd Paragraph, 3rd bullet-Cultural Resources needs to be included in the list of items that are believed to be located away from the test range.

The required "accomplishments" listed on page 3, should have entrees in it to protect or minimize impacts to the environment. Please add the following required accomplishment to the preferred alternative in the next phase of the NEPA process:

· Provide a site with the least damage to ethnobotanical plant species, and if a site is selected at the INL, provide a mitigation plan negotiated with the Shoshone-Bannock Tribes.

.

**Response:**

The EA analyzes all of the reasonably foreseeable environmental and cultural impacts of the proposed action, including damage to flora and fauna of all types. Different techniques for reducing or eliminating these damages have been discussed in various places in the final document. Activities to reduce or eliminate impacts would be carried out on an as-appropriate basis, factoring in the concerns of interested parties including the U.S. Fish & Wildlife Service, the Tribes, B.L.M, the state of Idaho and others.

**Comment:**

The method of selection of a preferred alternative in the draft is unscientifically biased...leaving out several critical issues of importance to protect cultural resources human health and the environment. The DOE in this EA may not have properly followed DOE orders with respect to consideration of the Shoshone-Bannock Tribes, in this process.

**Response:**

The DOE orders applicable to the NEPA process have been followed for this EA. The NEPA process requires inclusion of reasonable alternatives in the evaluation of environmental impacts. The Tribes have participated or had the opportunity to participate in cultural and ecological surveys of the proposed test range area. They have also participated by providing comments which DOE has considered during revision to the final version of the EA. DOE attempted to meet with the Tribal Council, however, the Tribes were unable to schedule a meeting due to timing and confirmed with

the DOE-ID Tribal Liaison that they had been involved frequently during the process and had provided technical comments and concerns.

## NEPA Process

**Comment:**

In closing we would like prefer the alternative to consolidate work at an off site facility or the no alternative option for the protection of the environment.

**Response:**

As discussed in the EA, consolidating work at off-site facilities does not meet the criteria used to determine if an alternative is reasonable. We acknowledge your alternative preferences.

**Comments:**

EIS is required

because of the serious flaws in the draft Environmental Assessment discussed below and the serious environmental impacts it has not addressed, the Alliance respectfully suggests that the Department of Energy proceed to a full Environmental Impact Statement.

The draft EA fails to recognize the strong possibility of contamination of the site by chemicals that are present in the explosives. The NEPA process needs to advance to a full Environmental Impact Statement (EIS) because of the seriousness of the impacts to the INL environment posed by this project.

Moreover, will the removal of this habitat affect migration of elk or other species. It seems only that various agency investigation and the information obtained through an EIS process could answer these questions.

Given the number of questions raised that may lead to greater impacts to wildlife, air and water quality than what has been identified by the EA, I feel it would be prudent to answer the questions in an Environmental Impact Statement process.

Test range does significantly affect the quality of the pristine desert ecosystem a detailed analysis of the adverse environmental impact from implementing the test range is needed.

**Response:**

When DOE was considering the need for consolidating testing activities at the INL, one of the issues evaluated was whether any NEPA documentation was required due to the fact that the proposed action actually fit into Categorical Exclusion B3.11 of 10 CFR Part 1021.410 Appendix B. Because

some of the hypothetical impacts were not thoroughly researched, DOE elected to prepare an Environmental Assessment to more fully analyze the data. Based upon these thorough analyses, as documented in the EA, both the long- and short-term potential impacts are not of the magnitude that would require the preparation of an EIS.

## Additional Information/Technical Edits

**Comment:**

DOE should also clarify that it must manage storage and transport of explosives associated with the security test range in compliance with applicable INL procedures and best management practices.

**Response:**

Section 4.1.5 of the EA has been modified with the following: Explosives used at the test range would be delivered to the INL in commerce by a private carrier. While in commerce, all shipments are covered by Department of Transportation Regulations for the shipment of hazardous materials. Once the INL takes possession of the material it is covered by Laboratory Wide Procedure (LWP) 14201 "Explosive Safety". This document covers procurement, transportation, security, storage and handling of explosives. Plan (PLN) 14201 "Transportation Plan for the Movement of Explosive Materials within the Boundaries of the Idaho National Laboratory" covers the requirements of movement of explosives out of commerce within the boundaries of the INL but not on public roads. The INL follows DOT regulations for movement of explosives on the public roads within the INL boundaries.

**Comment:**

DOE must also assess these activities in conjunction with the storage and transport of radiological materials associated with other unrelated INL operations to meet the Design Basis Threat and other security requirements.

**Response:**

PLN-14201 addresses movement of explosives on the INL. This document requires notification be made to the Warning Communication Center which coordinates all movement of hazardous materials at the INL.

**Comment:**

DOE should also clarify how the proposal compares to and may affect current and future use of the Mass Detonation Area and Live Fire Range.

**Response:**

Section 1 of the EA has been modified with the following: The Mass Detonation area will still be used for its original purpose of disposing of unexploded ordinance found on the INL. The Live Fire Range will still be used to train and qualify the protective force. The security systems testing and research work that is now being conducted at these two facilities will be moved to the new NSTR.

**Comment:**

DOE should provide better comparison information for noise impacts for public access areas to better represent what a member of the public could expect to hear. DOE should include some publicly accessible locations and populated areas, such as Idaho Falls, Atomic City, and the Big Lost Rest Area)

**Response:**

Section 4.1.5 of the EA has been modified with the following: Table 8 lists the maximum predicted noise levels at the Big Lost River Rest Area on U.S. Highway 20 and at Atomic City.

Table 8. Maximum Predicted Noise Levels at Select Locations

| | | noises level (dB) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Distance | 100 Lbs | 500 Lbs | 1000 Lbs | 5000 Lbs | 10000 Lbs | 15000 Lbs | 20000 Lbs |
| Atomic City | 19 miles | 109 | 114 | 117 | 122 | 124 | 125 | 126 |
| Big Lost River Rest Area on U.S. Hwy 20 | 19 miles | 109 | 114 | 117 | 122 | 124 | 125 | 126 |

**Comment:**

To help give numbers some context, DOE should also provide some recognizable comparisons of decibel ratings, such as automobile horn (110 decibels at 3 feet). Although decibel levels are included for a range of explosive charge weights in the Ground Motion and Noise Levels reference document, it would be helpful to have the decibel information for more frequent tests (i.e., lower explosive charge weights) more readily available to better gauge the potential impacts.

**Response:**

Section 4.1.5 of the EA has been modified with the following:

For comparison purposes, the following provides the noise levels associated with several commonly understood items:

65 dB Normal Conversation
125 dB Chain Saw
140 dB Air Raid Siren (100 ft.), Jet Engine
145 dB Jet Take off (100 ft.)

170 dB Discharge of 30.06 Hunting Rifle

**Comments:**

Table 1. Left column under 'proposed construction and operational activities...' Please clarify what constitutes "favorable" weather conditions.

DOE should clarify how it is accounting for reflective impact of cloud cover in determining acceptable test weather conditions.

**Response:**

Based on ANSI S2.20-1983, it was documented that temperature inversions and wind conditions can cause focusing of air blast and noise. Section 5.3.1 states that for temperature inversions, “incident pressure amplitudes may be enhanced above standard values by factors of two to three”. Presently, there is insufficient data available to accurately and quickly predict the exact increase in pressure and its location caused by these environmental conditions. However, based on the available information, INL Subject Mater Experts (SME’s) have developed a table of acceptable environmental conditions for various charge weights.

**Comment:**

DOE should explain why it chose 140 decibels as the level for evacuation of all nonessential test personnel to locations outside this sound range.

**Response:**

140 dB is the OSHA standard for unprotected people subjected to impulse noises. It can be found at 29 CFR 1910.95 (b)(2) in the footnote to Table G-16.

**Comment:**

DOE should provide a range of potential visibility impacts such as dust clouds for the range of tests and acceptable weather conditions.

**Response:**

Presently, there is no quantifiable data relating the amount of airborne dust produced by different charge weights. The calculations used in the EA overestimate the expected airborne dust because it was assumed that all of the PM-10 sized particles for the entire crater volume would become airborne.

**Comment:**

DOE should identify the location of the nearest INL employee not involved in Test Range activities.

**Response:**

The nearest INL employee not involved in Test Range activities will be located at the MFC, which is approximately 7 miles from the proposed Test Range.

**Comments:**

The concept of the “safety fan” is unclear. DOE should explain the purpose and of the safety fan and the basis for its configuration. DOE should explain what types of projectiles will be used and how they will be recovered. If projectiles involve explosives, DOE should explain how unexploded ordnance will be addressed.

Could not find a discussion of the purpose or characteristics of the "8,750 yard safety fan."

**Response:**

Section 2.1 has been modified as follows: Testing would also entail firing of non-explosive projectiles into different test media to understand their effectiveness in resisting fragment penetration. While the projectiles would normally be stopped by the test specimen, an earthen berm will be constructed to stop any projectile that might penetrate the test specimen. As a further safety measure, an 8,750 yard ‘safety fan’ will be established behind the berm to ensure no personnel would be injured.

Table 1 states that test articles and debris from testing will be removed from the test area on a routine basis.

**Comment:**

DOE should explain its schedule and plans for remediation of detonation holes. DOE should also clarify its plans for treatment or disposal of test articles and debris, both while the range is operational and after its mission is complete.

**Response:**

Any crater from testing will be filled-in using the crater lip material. If over a period of time additional material is needed, material will be brought in from an established borrow pit. Test articles will be disposed of in accordance with applicable laws and regulations.

**Comments:**

Table 1. Right column under 'operational personnel or activities would...': It is stated that the INL would arrange for breeding bird surveys before each experiment exceeding 100 lb new during the months February through June... Please describe what the follow-up will be when the breeding bird surveys are completed? What will the INL do if breeding birds are identified?

Page 26, Breeding Seasons. Please clarify what the breeding bird survey information will lead to.

There are references made in a few spots to "unavoidable loss of ground-dwelling wildlife species" and potential "loss of eggs or nestling birds". As you are aware, take (including harm, harassment, and mortality) under the Migratory Bird Treaty Act is prohibited and there is no "permitting" of incidental take as there is with the Endangered Species Act. The Service suggests providing language in the EA that addresses the need for the proposed activities as related to the potential 'take' of migratory birds, as well as any minimization or mitigation activities, where feasible, that will be conducted to limit 'take'.

**Response:**

These comments were provided in response to the version of the EA released in September, 2006, which was subsequently withdrawn. The subsequent version of the EA, released in December, includes actions taken to reduce or eliminate impacts on breeding bird. The U.S. Fish & Wildlife Service did not have comments regarding those actions in the revised version found in section 4.1.1.3 of the EA.

**Comment:**

Table 1. Right column under 'proposed construction and operational controls...' It is stated that explosive tests would be avoided until consulting with Fish and Wildlife Service regarding breeding birds and migrating birds. Please clarify the level of consultation expected and the frequency, as according to Table 1 events could occur as often as weekly.

**Response:**

Table 1 of the EA has been modified as follows: If any breeding birds are discovered during any survey, the local Fish & Wildlife Service office will be consulted upon discovery of a nesting site.

**Comment:**

The Service recalls that during our August 8, 2006 meeting (via conference call) it was stated that there would be information provided in the EA related to disturbance (i.e., anticipated noise and shock wave distances traveled) following detonations; however, we did not see that information during our review. Please provide that information if available.

**Response:**

Table 3 contains information concerning sound levels and ground movement from the maximum event of 20,000 lbs NEW at selected points of interest. The source document for this information, INL/EXT-06-11753 “Ground Motion and Noise Levels at Critical Locations On and Near the Idaho National Laboratory Site Due to Explosive Activities at the National and Homeland Security Research and Development Range” is in the adminstrative record and covers this information.

**Comment:**

The EA refers to past and ongoing explosives testing at the LFR and MDA, but does not refer to any past assessments of the environmental impact of this testing. The DOE should provide the public with access to such documents. If such assessments have been completed, the DOE should disclose the location of these documents and discuss their conclusions in the draft EIS.

**Response:**

This comment does not address the proposed project that is the subject of this EA.

**Comment:**

The only reference to security of the test material is that "all personnel involved with construction and operations, including those handling explosives, would be properly trained, use appropriate protective equipment and maintain close communication with one another." The draft EA should provide additional details.

**Response:**

In addition to Table 1, Proposed Construction and Operational Controls, which identifies controls that will be implemented to ensure safe conduct of test operations, the security of explosive materials is addressed in Section 4.1.7, Impacts Due To Intentional Destructive Acts, in the Final EA.

**Comments:**

Section 6 discusses expected impacts from, among other things, ground shock and air blast. Numbers are provided for ground motion and sound level at different locations around INL. It would be helpful to understand how these numbers were derived, and what models were used in their calculations. 20,000 lb TNT equivalent is a huge explosion and there are a number of sensitive operations on INL. This program could potentially have a large public perception problem information needs to be included in the EA to adequately understand and address technical issues.

Noise levels will exist at NRF from the proposed test program. Advanced notification needs to be provided to NRF so that workers can be appropriately informed as to the cause.

**Response:**

INL/EXT-06-11753 "Ground Motion and Noise Levels at Critical Locations On and Near the Idaho National Laboratory Site Due to Explosive Activities at the National and Homeland Security Research and Development Range" indicates that there would be no impact to any existing facilities from activities at the new range. Table 1 states that INL personnel who may be effected will be notified. There are multiple processes that can be used to provide notifications. Examples include having the Warning Communications Center issue pager notifications of impending tests, dissemination of information through "plan of the day" meetings which are held at facilities each day to discuss activities being conducted across the INL, use of daily internal communications

venues. All local law enforcment would be notified in advance for any tests using over 3000 lbs Net Explosive Weight.

**Comment:**

In the document there is a statement that addresses the programmatic needs of requiring the routine tests from March to November time frame, what is significant of this time frame?

**Response:**

Weather conditions are more favorable to outdoor activities.

**Comment:**

To our knowledge an archaeological report was completed on the project but was not available for the Tribes to review? We would like to have this document for the Tribes to review and comment.

**Response:**

The cultural resource surveys are documented in INL/EXT-06-11517 "Cultural Resource Assessment of the National and Homeland Security Research and Development Range at the Idaho National Laboratory". This document is part of the file for record. It was provided to the Heritage Tribal Office on February 14, 2007.

**Comment:**

There is a concern from the Tribes on where the explosives will be stored at the INL and will they be transported through the Fort Hall Reservation as they are transferred to the INL. Also what method of transportation will it be such as rail or the truck on the *1-15* corridor?

**Response:**

All explosives on the INL are stored in existing magazines. Explosives delivered to the INL are brought "in commerce" by private carrier. While in commerce, the private carrier is responsible for complying with state and federal transportation regulations. DOE does not have control over routes used by these private carriers.

**Comments:**

EA does not address the construction of the earthen berm how many cubic yards of excavation will be needed to build berm?

The area of excavation is not designated on any map of the project area. Archaeological monitors need to be present to identify any cultural resources unearthed during excavation of berm material.

**Response:**

The exact volume of material needed to construct the berm will be determined at the time of construction. Soil needed to construct the berm will be excavated from the area immediately behind the berm location. As described in Table 1 under proposed construction controls, if any unusual items are discovered, work will be halted and the Cutural Resource Management staff will be contacted.

**Comment:**

Page 12 last paragraph refers to Figure 3 but this figure is titled Figure 33. On page 19 the third paragraph is a single sentence

**Response:**

This has been corrected.

**Comment:**

Also the last sentence on page *25* is not grammatically correct.

**Response:**

This has been corrected.

**Comment:**

Section 6.4 (p 36) first sentence "The INL would comply with NHPA... Change the word would to must comply with...

**Response:**

Future tense is used throughout the document to reflect the fact that the EA is a planning document. We agree that if the National Security Test Range is established on the INL site, the activity must comply with the NHPA.

**Comment:**

Figure 44 (correct titled to Figure 4 on page 18) of the EA

**Response:**

This has been corrected.

**Comment:**

The specification the limit of a net explosive weight of 20,000 tons should be explained. From the context it could have as easily called for 100,000 tons, or 1,000,000 tons. The other test areas mentioned had limits of 100, 500, and even 2,000 tons. Is this a case of "it's a new facility, let's go for really big numbers?". Or is there some rational, justifiable basis for it?

**Response:**

The selection of 20,000 lbs is based on a review of historic data concerning attacks against US facilities. An excerpt of the historic data of previous incidents is shown below:

| Year | Location / Target | Device Explosive Weight in kg (lbs) | Explosive Used |
|---|---|---|---|
| 1983 | Lebanon – US Embassy | 907.18 (2,000) | Military Grade |
| 1983 | Lebanon – US Marine Barracks | 5,443.11 (12,000) | Military Grade |
| 1983 | Kuwait – US Embassy | 1,814.37 (4,000) | Military Grade |
| 1984 | Lebanon – US Embassy Annex | 907.18 (2,000) | Military Grade |
| 1985 | Chile – US Embassy | 29.48 (65) | Dynamite |
| 1985 | W Germany-Rhein Main AB | Unknown | Homemade |
| 1985 | W Germany-PX Frankfurt | Unknown | Unknown |
| 1988 | Italy-USO Club | 18.14 (40) | Dynamite |
| 1992 | Peru-US Ambassador's Residence | 49.90 (110) | Dynamite |
| 1993 | U.S. World Trade Center | 544.31 (1,200) | Urea Nitrate |
| 1993 | Peru-US Embassy | 181.44 (400) | ANFO* |
| 1995 | US Federal Building | 2177.24 (4,800) | ANFO |
| 1995 | Saudi Arabia-OPM Sang | 226.80 (500) | Military Grade |
| 1996 | Saudi Arabia-US Military Barracks | 2,267.96 – 9,071.85 (5,000 – 20,000) | Military Grade |
| 1998 | Kenya-US Embassy | ~793.79 (~1,750) | TNT |
| 1998 | Tanzania-US Embassy | ~453.59 (~1,000) | TNT |

| | | | |
|---|---|---|---|
| 2000 | USS Cole | 362.87 (800) | Comp C-4 |
| 2002 | Pakistan-US Consulate | ~100 (222) | ANFO |
| 2003 | Saudi Arabia-US Residential Compound | 3 cars<br>~200 (400), each | RDX |
| 2003 | Iraq-UN Headquarters | 544.31 (1,200) | Military Grade |
| 2003 | Indonesia-Marriott hotel-regular venue for U.S. Embassy receptions | 200 (440) | Included Potassium Chlorate |
| 2003 | Iraq-US Intelligence Headquarters | 150 – 200<br>(300 – 440) | TNT |

From this data it was determined that the largest Vehicle Borne Improvised Explosive Device used against the US was the 1996 US Military Barracks in Saudi Arabia attack which consisted of an estimated 20,000 lbs TNT equivalent. This also represents a reasonable upper bound for the amount of explosive that could be carried by a six wheeled truck. These are the types of vehicles used in historical and hypothesized future attacks.

**Comment:**

Many in New York City are suffering from respiratory problems related to the concrete dust ejected into the atmosphere after the World Trade Center attacks). The possible contamination resulting from the tested mediums (the stated purpose of the blasts in the first place) should be evaluated.

**Response:**

The total volume of material associated with the destruction of the World Trade Center is estimated at 1.7 million tons. (http://www.eshinc.com/portal/Company/SolutionsCaseStudies/WorldTradeCenterDebrisRecoveryProject/tabid/66/Default.aspx ) Much of that material was steel, wallboard (sheetrock), insulation, and materials associated with office furniture. The exposure of individuals to that material was a result of their proximity to the site of the collapse, the volume of material and exposure over time. The testing proposed at the INL would involve a maximum of several hundred pounds of concrete in the form of concrete barriers, small quantities of metal in the form of fencing, cameras, sensors etc. and possibly some wall sections. The type of testing to be conducted would not result in the concrete barriers pulverized into fine particle sizes. In addition, the nearest inhabited off-site building is 13 miles away and the nearest INL facility is 7 miles away.

**Comment:**

Section 3.3 (p 21) The INL lands are the Shoshone-Bannock Tribes aboriginal lands. In the second sentence of first paragraph the word "...probably utilized..."should be change to did and continue to utilized this area.

**Response:**

The comment is noted and appreciated. However, it raises legal issues that are outside the scope of this EA. A sentence will be added directing readers of the EA to a website for further information – www.shoshonebannocktribes.com.

## Analysis Related - Flora and Fauna

**Comments:**

The draft EA fails to address the impacts to the Shoshone-Bannock Tribes with respect to harm to big game and other fauna, in the short- and long-term, from impacts due to the high level noise events, soil erosion, and explosive residue contamination.

A great deal of environmental research is conducted in natural areas of INL. This proposal will endanger that research and existing wild animal populations.

The cumulative impacts from blasting, air emissions, noise and impacts to wildlife are not adequate in the EA.

The preferred alternative states that impacts will occur to wildlife. There are not adequate mitigation measures. More thorough analysis needs to be completed.

It was evident onsite that a hot wildfire occurred at this site; however due to the moist spring, restoration of native plants has occurred. In comparison on other lands on the INL, there are extremely high levels of non-native grasses, which make this immediate area unique in its native grass restoration.

Within the immediate project area, traditional medicinal plants was growing plentifully. In order to conduct this testing, mowing of the immediate area would be conducted, destroying medicinal plants. This removal of these plants is unacceptable.

No consideration was given to the biological footprint, including the migration routes, the winter range and habitat for big game, impacts to the small game, and native plants; all resources that do not contain themselves within any cartographic delineation.

Increased roads also affect the wildlife, as it impacts their behavior, leading to either avoidance or acclimation to humans

One of the missions of INL is environmental research, and this test range will compromise that research. Studies of coyotes, migrating birds, and the sagebrush steppe ecosystem will be affected. More generally, use of the proposed site will have significant impacts on native animals and plants, both from the explosions themselves and from the explosive ingredients left behind. Within or close to the proposed test range are deer, elk, antelope, small mammals (such as rabbits), snakes and other reptiles, sage grouse, falcons, hawks, and golden eagles. The human activity and frequent explosions will tend to drive away these creatures and may affect reproductive cycles.

The loss of vegetative cover resulting from explosive testing and road building associated with this project may result in water and wind erosion problems in the future. The DOE should consider a re-vegetative plan at the test site to ensure that native grasses, and other ethnobotanical plant species are preserved at the site.

Wildlife use and NERP environmental studies appear to be incompatible, with a test range approved for explosion of up to 20,000 lb TNT equivalent. Despite this fact, the draft EA does not provide detailed discussions, analyses, nor propose adequate mitigations for impacts. In Section 6.2.4 (Wildlife Impacts and Mitigation) impacts discussed are high level, such as “unavoidable loss”, and mitigations measures are equally general such as “seasonal timing of activities”.. The proposed test program calls for testing to occur during most work days between March and November This timeframe includes the same timeframe for nesting Of the Sage Grouse, Raptors, and Pygmy rabbits, and calving and fawning of Big Game. Stating that mitigations include seasonal timing of activities appears to be incompatible with the proposed program schedule. This EA needs to provide a thorough evaluation of impacts and a sincere and well thought out approach to mitigations.

There are still some concerns that the large explosive test may do harm to existing culture sites not only hear the testing range but away from this area as well. The *site* has been “quiet” for a number of years but now this activity will affect the surrounding areas ecosystem again. This will drive the various species of wildlife and upland game birds away from this area once more. The INL has been a safe refuge for big game and other species, as you may recall a number of years ago the antelope had invaded farms and feed-lots in the Mud Lake area and had to be driven off or exterminated, The activation of this range may create the same type of scenario that existed then.

There is also a concern of the sage grouse leks that are established in this area. They have been in this area due to non-disturbance but when the tests are conducted they may be driven off. In our opinion the tests will drive off all of the wildlife and birds in that area.

There is absent any evaluation of how much habitat will be removed due to the increased sound levels of the larger blasts and if they will impact animal species in question. One may ask, would the displacement of wildlife due to the loss of habitat far exceed the localized testing area?

Moreover, will the removal of this habitat affect migration of elk or other species. It seems only that various agency investigation and the information obtained through an EIS process could answer these questions.

In addition, fragmentation of wildlife habitat, plant communities and loss of ethnobotanical resources are a loss of and impact tribal cultural resources. What mitigation measures are available to the Tribes to lessen the loss of these natural resources

Additionally, the EA cites the presence of two rare species (Leopard Lizard and Whipsnake) which are absent from much of the INL site but are present at the proposed location for the test range. The proximity of the proposed test range to an active sage grouse lek and a confirmed nesting site for ferruginous hawks is also a concern to us.

The EA also reports that the preferred alternative will increase damage to these species and increase the possibility of noxious weeds increases, which in turn, may displace the ethnobotanical species of plants. The alternative selection process should be changed to include protection of the environment.

**Response:**

The EA identified the above cited impacts and also provides for a range of actions to reduce them. Table 1 in particular requires a number of measures to reduce prospective impacts. DOE must consider the context and intensity of the potential impacts and practices to reduce or eliminate those impacts before making a determination whether those impacts would be significant.

## Analysis Related - Soil

**Comments:**

The EA maintains that soil samples taken at the proposed test site are below the average Cs-137 levels across INL. How do the levels compare to other areas of Idaho? The draft EIS should detail why other radionuclides were not considered. How much dust will be resuspended by each type of test? Will any of the contemplated tests create craters?

A concern is the Cs- 137 that was detected from the soils sampled at the proposed site, during the initial surface explosive test will this become an airborne hazard for animals, birds and down-winders based on wind patterns?

**Response:**

World-wide fallout has been mapped across the Idaho and the United States by several surveys, all with similar results. Some of the results have been published by the Institute for Energy in Environmental Research (www.ieer.org). According to documents available from the IEER (http://www.ieer.org/offdocs/csdepglo.pdf ,

http://www.ieer.org/offdocs/csdepnts.pdf , and

http://www.cdc.gov/nceh/radiation/fallout/feasibilitystudy/Technical_Vol_1_Chapter_3.pdf),

The background concentration of Cs-137 in this region of Idaho is approximately 2000-4000 Bequerel/square meter. Concentrations across the United States, from world-wide fallout, range from 0-13,000 Bequerel/square meter. The concentration of 2000-4000 Bequerel/square meter can be compared to the concentration found at the proposed site of the Explosives Test Range by assuming a depth of 1 cm, and a soil density of 1.3 grams/cubic centimeter.

1 square meter = 100 cm X 100 cm = 10,000 square centimeters ($cm^2$)

10,000 $cm^2$ X 1 cm (soil sample depth) = 10,000 $cm^3$

10,000 $cm^3$ X 1.3 g/cm = 13,000 grams of soil**.**

1 curie = 3.7E+10 radioactive decay/second.

1 Bequerel = 1 radioactive decay/second

1 Bequerel / 3.7E+10 = 2.7E-11 Bequerel/Ci

1 picocurie (pCi) = 1E-12 curies

2.7E-11/ 1E-12 = **27 pCi/Bequerel**
2,000 Bequerel Cs-137/meter squared X 27 pCi/Bequerel = 54,000 pCi/meter squared

From above: 1 meter squared = 13,000 grams of soil

54,000 pCi / 13,000 grams = **4.15 pCi Cs-137/gram of soil**

The background value of Cs-137 measured at the proposed test site is approximately
0.22 pCi/gram averaged over the top six inches of soil. Assuming all of this was concentrated in the top 1 cm:

9 inches X 2.54 cm/inch = 22.86 cm

4.15 pCi / 22.86 = **0.18 pCi /Cs-137**

The measured value of Cs-137 in soil at the proposed range of 0.22 pCi/gm agrees very well with the reported value. The conclusion is that dust suspended or transported during explosives tests will not spread radioactive contamination to surrounding areas. As a comparison, the background level of Cs-137 was recently measured in Denmark, it was 11-16 Bequerel/Kg soil (0.011 – 0.016 Bequerel/gram soil, equivalent to 0.3 – 0.4 pCi/gram) and was reported by the Project Group for Monitoring of Radioactive Substances in the Baltic Sea, June 2004 (see references). This value also agrees very closely to the values measured at the test range and estimated for the Idaho region.

Each test conducted on soil is expected to generate some degree of crater; those conducted on the proposed concrete pad are not expected to penetrate the concrete. The size of the craters will range

from less than 1 cubic meter for 100 lbs of TNT, to an estimated 436 cubic meters for 20,000 lbs of explosives.

Craters will be backfilled with the soil expelled around the rim of the crater. If this is not sufficient, additional soil from an existing INL fill site will be used.

Similarly, the amount of soil suspended by a test will be dependent on the location and size of the test. Testing performed on the concrete pad will not suspend soil in the air. Experience with past explosive work indicates that the vast majority of soil dust generated during an explosion will fall to earth within just a few seconds. Reference documents, including EPA's AP-42, based on work done in the mining and brick-making industries, state that up to 1.8 lb/ton of soil will be smaller in size, as small as PM-10, and will become windborne; this is documented in EDF-7147, referenced in the draft EA. Section 4.1.3 of the draft EA addresses this small fraction of the soil demonstrating compliance with the state and Federal PM-10 standard.

**Comments:**

The draft EA does not detail how the test range will be cleaned up between explosions, let alone discuss final cleanup. The draft EIS should correct these shortfalls.

The most unrealistic aspect of this draft EA is the complete lack of discussion and review of the potential for contamination of the soils from the chemicals remaining from residual explosives.

The draft EA fails to recognize the strong possibility of contamination of the site by chemicals that are present in the explosives.

There is also the issue of additional costs associated with operating a site that may require future clean-up of radionuclide contaminated soils *mixed* with explosive residues, compared with other sites that may not have the large radionuclide emission inventory to contend with. The INL is one of the largest Superfund (CERCLA) sites in the United States because of past releases of radioactive contaminants, and it is still an operating nuclear facility. To select this site as a preferred alternative when detonating explosions that will certainly re-suspend soil contaminants into the air-shed ...makes no sense from a long-term risk standpoint or on a cost basis. It appears that DOE has used an unscientific bias toward selecting the preferred alternative.

DOE needs to expand significantly the clean-up plans for this proposed project and include them in the next phase of documentation. What residual chemicals are expected to remain (or be disbursed in the air-shed) after the explosions? How will DOE identify the contaminants of concern? How will DOE clean up after each detonation? Are there other federal facilities more experienced and equipped to handle these types of residual contaminants? How are the aforementioned questions addressed in the selection of alternatives and alternative sites? Will DOE restore the site to its original state, or simply clean-up to regulatory levels, which often results in the lands declared off-limit to the Tribes and public for decades?

The impacts of the detonations, when considering both the short- and long-term impacts may be significant. The draft EA has a serious deficit by not addressing the contamination to the

environment that will be caused by residual chemicals from the munitions and explosions. There is a need for a comprehensive program to be established to monitor and clean-up after each explosion. Unfortunately the draft EA has not explored this aspect of environmental risk in any way in spite of the high incidence of wide-spread contamination of these types of test sites across the United States.

The cumulative effects of blast contamination over time, seems to have been overlooked. On page 30 the EA states that there would be no storm water run-off to surface waters and that low adsorption rates would prevent the contamination of the SRPA. It would seem to me, that over time those accumulated contaminates must go somewhere; likely into the aquifer. At least as a precautionary measure, there should be some type of ongoing sampling regimen of the soils in and around the test site so that some mitigation could take place if or when elevated contamination levels are detected so as to prevent a future irreversible contamination scenario. However, the EA makes no provision for any testing of soils to ascertain future accumulations of possibly harmful materials.

**Response:**

Table 1 of the EA, in the section on Operational Controls lists a number of actions that are required to be performed to address residues. They include verifying that all explosive material has been consumed or removed after testing is performed; remove and dispose of test articles after testing is performed; perform soil sampling in the area for residue deposition/accumulation at least every five years.

**Comment:**

There is a section in the EA that discusses air quality contaminant issues, but not one that discusses soil/sediments. The Service recommends including information about the potential for soil/sediment contamination resulting from long-term use of the test range.

**Response:**

The most likely pathway for any explosive residue to affect human health or the environment is through surface or groundwater contamination. In Section 4.1.4, the EA describes the projected impacts to water quality. Table 1 describes the operational controls that would be put into place to prevent explosive residues from accumulating and prescribes soil sampling be performed at 5 year intervals to monitor soil conditions. If soils sampling reveals a build up of explosive residues that may pose a threat, appropriate clean up actions will be taken.

Table 1 of the EA has been modified as follows: Use ejected soils to refill any craters caused by testing. If ejected soils are insufficient, utilize additional backfill provided from on-site borrow areas.

**Comment:**

How much waste will be shipped off-site? What will be the costs?

**Response:**

Waste materials generated from testing are expected to be construction type waste and will be disposed of at the INL on-site industrial land fill. No waste is expected to be shipped or disposed of off-site.

## Analysis Related - Air

**Comments:**

The draft EIS should include any correspondence between DOE and IDEQ that reveals a waiver of the [air quality] permit requirements, needs to be attached to the next phase of the NEPA process, or EIS.

The Draft EA refers to communication between DOE and Idaho DEQ staff regarding air quality compliance, but these communications are not provided in the document. Please add these important communications to the draft EIS.

**Response:**

The draft EA does not refer to any communication between DOE and Idaho DEQ staff regarding air quality compliance. Sections 3 and 6 of the draft EA do refer to regulations established by DEQ. There has been no communication between DOE and IDEQ regarding any waiver of any environmental law or regulation in relation to establishment and operation of the proposed test range.

**Comment:**

The draft EA focuses particularly on models that show how the proposed project will be compliant with the National Ambient Air Quality Standards (NAAQS). This is not enough.

**Response:**

All activities in the state of Idaho, unless specifically exempted, are required to comply with federal and state air emissions laws and regulations. As stated in the previous response, Test Range activities must comply with existing state and federal air quality requirements. Air quality models are a long established and accepted mechanism for demonstrating whether an activity will meet or not meet air quality standards.

**Comment:**

the standard for particulate matter (PM-10 and PM 2.5.) is a 24 hour standard, and so a short interval of very poor air quality –several hours for example– may present a health or environmental risk, yet not exceed the standard when measured over the full 24 hours.

**Response:**

Modeling of potential air pollutant was completed to meet environmental regulations, which, as the commenter points out, is based on a 24hr averaged standard for particulate matter. The model does provide useful information to determine the short-term concentrations. Worker exposure will be controlled through the established INL worker protection programs, and the dust plume would be largely dissipated before reaching the site boundary or nearest road where the general public would have potential for exposure. At the point where the public could be exposed to particulate matter from activities at the proposed test range, the 15 minute averaged concentration is less than 2 mg/m3. This is less than the OSHA respirable particulate matter concentration limit of 5 mg/m3. In addition the modeling is based on a conservative assumption that the entire clay fraction of the displaced soil will be of the regulated particle sizes. Based on the modeling and the conservative assumption, there should not be a significant health or environmental risk from the proposed test range activities.

**Comment:**

The Air Quality Regulations (Rules for the Control of Air Pollution in Idaho) IDAPA 58.01.01 include among other things, Visible Emission limits (Section 625), Excess Emissions, Fugitive Emission Controls, and General Rules. The following are the State of Idaho's Air Quality Rules that apply to DOE, and need to be included in the discussion and alternatives.

**Response:**

Activities and emissions at the INL are subject to a Title V permit issued by the IDEQ to the DOE and its contractors. Compliance provisions in the permit include sections on the subjects of Visible Emissions, Excess Emissions, Fugitive Dust, and General Rules. Any alternative in the draft EA that takes place at the INL must comply with the Title V permit and so additional discussion would not differentiate between alternatives unless one or more alternatives could not comply with a particular Permit requirement. The preferred alternative identified in the draft EA is expected to fully comply with Idaho regulations and the INL Title V permit.

**Comments:**

The Draft EA Did not adequately address the activities DOE will take to control excess emissions from the detonation. The application of dust suppressants to the road and work areas may not be sufficient to keep the project in compliance with Idaho Air Quality regulations. The draft EA fails to consider and discuss various ways that DOE could utilize to comply with the Idaho Air Quality Rules and prevent particulate matter from becoming airborne with this project, or to prevent

violations of the Visible Emission Standard. What steps, or alternatives, are possible to provide control of fugitive dust at the explosion site?

In both long and short-term the DOE should ensure that they continually comply with the Opacity and fugitive dust standard

The use of different methods to determine that DOE is in continual compliance with State Air Quality Rules on fugitive dust control needs to be discussed in the draft EIS or next phase of the NEPA process.

the DOE should adhere to the following excess Emission Section Idaho Regulations and revise the EIS to address this section

**Response:**

Activities that may generate air emissions are subject to state air regulations through provisions in the Title V permit, which echoes regulatory requirements on the topics of Opacity, Fugitive dust, and Excess emissions. The proposed test range would be subject to these requirements.

Table 1 in the draft EA identifies methods by which fugitive dust will be minimized. These include: 1) graveling sections of the road; 2) a speed limit of 15 mph on un-paved roads; 3) potential application of water or other dust suppressants. It is recognized that detonating large amounts of explosives will generate dust and that simply applying dust suppressant to the top of the soil will not eliminate all dust. However, based on the physical characteristics of the soil, including low clay content, it is believed that most particulate matter will fall to the earth within a very short time after the explosion. In addition, IDAPA 58.01.01.651 requires "all reasonable precautions" to prevent suspension of particulate matter. The distance of a source generating fugitive dust far from human habitations may be factor when identifying "all reasonable precautions".

The state standard for Opacity states that 20% opacity may not be exceeded for more than 3 minutes in any 60 minute period. Experience at the INL, and other locations, indicates that suspended dust, from even the largest explosions, will rapidly settle to earth, meeting this standard.

Excess emissions occurs when emission limits for various contaminants, established in a permit, are exceeded. The proposed activity is subject to Title V permit limits for fugitive dust and opacity, but violation of these limits is not anticipated. The expected emissions from the proposed activity are below the levels that require a permit.

**Comment:**

The Shoshone-Bannock Tribes believe that a State air quality permit is required. If DOE has communicated to IDEQ, the large potential emissions from these detonations, a permit will be required.

**Response:**

General activities, as well as specific sources, at the INL are subject to a Title V air permit. The scope of the proposed work has been restricted, by limiting the types and amounts of explosives used, to levels and rates that would not require a Permit-To-Construct (PTC). The criteria for exemption from a PTC are identified in IDAPA 58.01.01.220-223

**Comments:**

The emissions from the proposed test range explosives will be significant, especially carbon monoxide, and particulate matter.

The estimated emissions exceed the threshold for a minor source permit and, depending on the number of explosions, they may exceed the Federal requirement for a Major Source Permit (Clean Air Act Title V, 40 CFR Part 70).

The alternative section of the draft EA should have included different scenarios for tonnages of explosions to be detonated and their associated annual emissions, regardless of the location, so that the issue of which air quality permit is required and what air quality controls will be imposed is resolved and documented in the next phase of the NEPA process.

**Response:**

The Explosive Test Range Project was evaluated for Permit to Construct requirements. IDAPA 58.01.01.220-223 allows for an exemption from the requirement to obtain a PTC. As demonstrated by the data in Tables 6 and 7 in the draft EA both the type and quantity of material proposed for use at the test range has been limited so the emissions meet the exemption requirement levels in IDAPA 58.01.01.220-223.

40 CFR 70 addresses the establishment of State Operating Permit Programs that are consistent with the Title V requirements of the Clean Air Act. The INL is a major facility as defined in IDAPA 58.01.01.008.10, and therefore sources on the INL comply with the requirements of the Title V permit.

**Comments:**

Another oversight related to the explosives is the emissions in the associated blasts.. The only chemical contaminates identified by the EA are in the explosives themselves (pg 30). There is no mention of possible contamination resulting from the tested mediums of those blasts, e.g. lead in car batteries, or mercury in a control switch. Tested mediums such as these would surely volatize or scatter in a high temperature/pressure blast thus affecting air or water quality.

Additionally, the EA maintains that the ambient air limits measured as PM-10 or less would not be exceeded based upon the amount of soil disturbed by the blast (pg 28). One may ask if those limits would be exceeded if the tested medium particulates were added to the soil particulates. Should the

test include a building or large structure using drywall, concrete block, etc., the amounts of particulate will surely be elevated above that of simply the soil disturbance itself,

**Response:**

Section 2.1.2 of the draft EA states that all fluids and tires will be removed from test vehicles. Removal of fluids includes crankcase and transmission oils, coolants, other liquid lubricants, refrigerants, as well as batteries and mercury switches. Tires will be removed to prevent fires. A requirement to remove batteries and mercury switches has been added to the EA in Table 1 and to Section 2.1.2.

Other materials that might be tested are exemplified by concrete, steel, and other metals. Drywall and other friable materials are not expected to be used. Experience indicates that less than 1% of concrete, and far less than that of metals, may become dust, even during very large tests. These quantities are not significant when compared to the emissions from the explosives and cratering.

**Comment:**

There are no stated air quality monitoring techniques in place to monitor the air quality? Concern for impact to air quality is real. Craters of Moon have Class I air how will air quality be monitor to protect their air quality?

**Response:**

Emissions limitations are established by limiting the amount and type of explosives used. In addition, all activities at the proposed test range will be conducted in compliance with the INL Title V permit. These restrictions are expected to preserve the existing air quality at off-site locations without additional monitoring.

## Analysis Related - Water

**Comment:**

Page 31. 4.1.4.2 Ground Water – The studies need to be sent to the Tribes for review as impacts to the ground water are an immediate concern.

**Response:**

The studies are identified in the EA as "*Comprehensive Remedial Investigation Feasibility Study (RI/FS) for Waste Area Group 6 (WAG-6) and Waste Area Group 10 (WAG-10) Operable Unit (OU) 10-04, DOE-ID-10807*". The studies are available to the public at: http://ar.inel.gov/owa/search_by_cercla_2?cerclatype=RIFS.

**Comment:**

The EA asserts that the SRPA will be unaffected by the concussion of a proposed 20,000 lb NEW blast. They reason that the interspersed layers of basalt rock and soil will protect the *350'* deep aquifer (pg 23). However, I question if the concussion may cause the release of contaminated underground water sources into the SRPA currently under the INL termed as perched water. This contaminated perched water source lay upon impermeable strata closer to the ground's surface above the aquifer. Could a blast from 20 tons of explosives fracture the layers that currently keep the contaminated perched water sequestered? The EA gives no discussion, thus there should be some geological investigation to ensure that the aquifer would indeed remain un-impacted by such large explosions.

**Response:**

Sources of contaminated perched water at the INL are located at operating facilities. Studies, as discussed in the draft EA (Weathersby, J.H., 2006, "*Ground Motion and Noise Levels at Critical Locations On and Near the Idaho National Laboratory Site Due to Explosive Activities at the National and Homeland Security Research and Development Range." INL/EXT -06-11753, October, 2006*) and summarized in Table 3 of the EA, have shown that the expected ground motion/disturbance at INL facilities, from the largest test at the proposed test range, to be far below that which would be expected to cause any change in geologic perched water confinement systems.

**Comment:**

Section *3.5.2* (p 23) The Snake River Plain Aquifer is a significant cultural resource if there are no known wells in this preferred alternative location how will ground water be monitored for contamination from activities at the test range?

**Response:**

Rather than drill a new well and conduct routine groundwater monitoring, the project will prevent groundwater contamination by routine monitoring, and cleanup, as required, of surface soil that may become contaminated with explosive residues and by-products, as discussed in Table 1 in the draft EA. In addition, monitoring wells do exist in a down gradient direction from the test range site. These wells are subject to routine sampling and this sampling data will be monitored to determine if any contaminants were to reach the SRPA.

## Analysis Related - Cultural Protection

**Comment:**

Adequate mitigations were not presented as to any inadvertent discoveries and the Shoshone-Bannock Tribes interests

**Response:**

Under DOE-ID's Agreement in Principle (AIP) with the Shoshone-Bannock Tribes, notifications are made to the DOE Tribal Program and Heritage Tribal Office in the event of any inadvertent discoveries of cultural materials. The AIP also invites tribal participation in archaeological fieldwork, which included the archaeological surveys completed in advance of the project as well as any future monitoring or additional survey. The DOE will continue open communication between DOE-ID/INL Cultural Resource Management Office and the Shoshone-Bannock Tribes.

**Comment:**

Page 21 3.3 Historical/Cultural Resources, Paragraph 1, Sentence 7-This sentence should include language referring to the fact that there were no CR laws that required surveys which would protect CR in the test areas, therefore at the time it was thought to be "well suited".

**Response:**

The text of the EA has been modified: "Members of the Shoshone-Bannock Tribes today continue to value a variety of resources and settings found on INL lands, including the thousands of prehistoric archaeological sites located there, further information can be obtained at www.shoshonebannocktribes.com. Historic archaeological sites are also numerous, reflecting use by emigrants who began to pass through the area along a northern spur of the Oregon Trail (Goodale's Cutoff) by 150 years ago. Soon thereafter, early homesteaders sought to harness the intermittent flows of the Big Lost River and transform sagebrush flats into green pastures, but few were successful. During World War II, lands once inhabited by Native Americans and homesteaders were designated as a Naval Proving Ground in support of the war effort."

**Comments:**

Page 27. 4.1.2 Historical/Cultural Resources, Paragraph 1-The second to last sentence reads, "*...placing gravel over the artifact to preserve it as much as possible."* This portion of the sentence will not work. If gravel was place over any artifact, it would still be destroyed by the constant driving over the area covered. The pressure of the vehicles would cause the gravel to crush/destroy the artifact. NOT A GOOD SUGGESTION.

Section 4.1.2 (p 28) Table *5* Potentially impacted cultural resource sites identifies several archaeologica1 sites will be adversely affected if ground disturbance occurs with the upgrade in T-25 road upgrade. How do you avoid ground disturbance on road construction? If these sites are impacted due to construction what mitigation measures are available to the Tribes beyond data recovery?

**Response:**

Gravel will only be employed within tire ruts in existing roads leading to the project area, particularly in low muddy areas. It will not be intentionally placed over artifacts. However artifacts

situated along the roads would be protected from further impact if vehicles are able to stay within the defined roadway instead of skirting out into undisturbed lands to avoid low muddy spots.

The text of the draft EA has been changed as follows: “Any artifacts that would be discovered during the construction of the range would be preserved by altering the route of the new road or moving the construction zone. Gravel would be used to improve the existing T-25 access road. Any artifacts found in the road-bed would be mapped and relocated to prevent impact. Sections 3.1.4 and 3.1.5 discuss the distribution of plant and animal species in the proposed test range area and their abundance in the test range as compared to the rest of the INL site. .”

**Comment:**

Page 27, Section 4.1.2. 1st paragraph. The last sentence, the word "could" needs to be replaced with "will be or would be".

**Response:**

The abundance of plant and animal species at the test range site is similar to other locations at the INL site and there are no unique species to this location. The section has been revised by adding the following in lieu of the last sentence to Section 4.1.2: “Sections 3.1.4 and 3.1.5 discuss the distribution of plant and animal species in the proposed test range area and their abundance in the test range area as compared to the rest of the INL site. While there could be loss of plants of ethnobotanical importance losses would be localized.”

**Comments:**

The Shoshone-Bannock Tribes’ Air Quality Department contends that DOE’s effort to propose the INL as a “preferred alternative” considering it’s large inventory of cultural resources is wrong because, among other things, there are other federal lands, much less likely to contain these important cultural resources. The DOE has inappropriately left out this consideration, when ranking alternative sites for this project

**Response:**

Alternatives are selected based on the criteria by which they can reasonably meet DOE’s need. Then the impacts, including those to cultural resources, of the proposed activity on the environments are assessed. The EA incorporates actions to minimize impacts to cultural resources.

**Comment:**

Has there been a culture survey done on all of the proposed construction activities on this site?

**Response:**

As indicated in Table 1, the range safety fan has not been surveyed for cultural resources. This survey will be completed in advance of construction to identify resources for avoidance when personnel must enter the fan to retrieve debris.

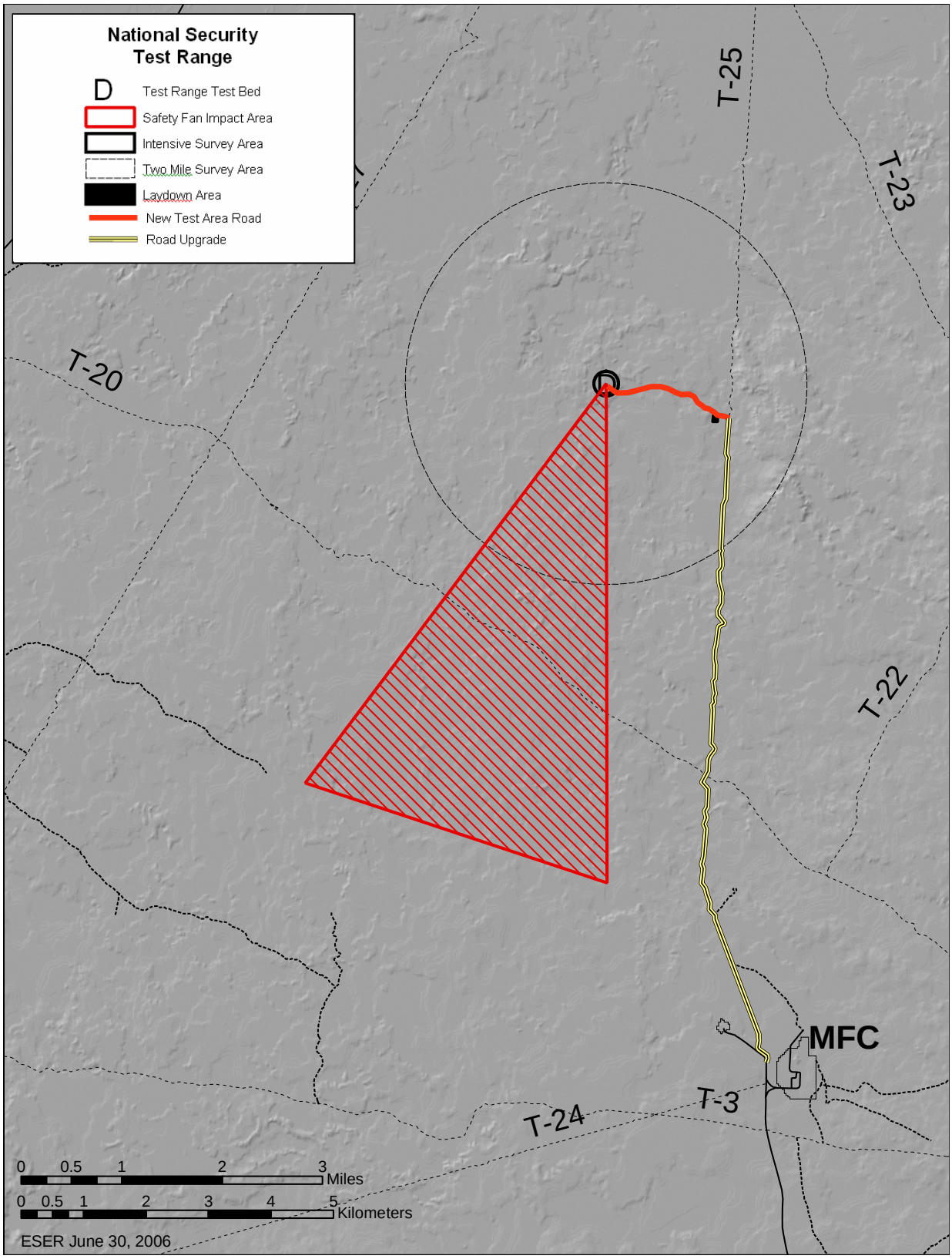


Figure 2. Proposed Test Range and Access Road T-25.

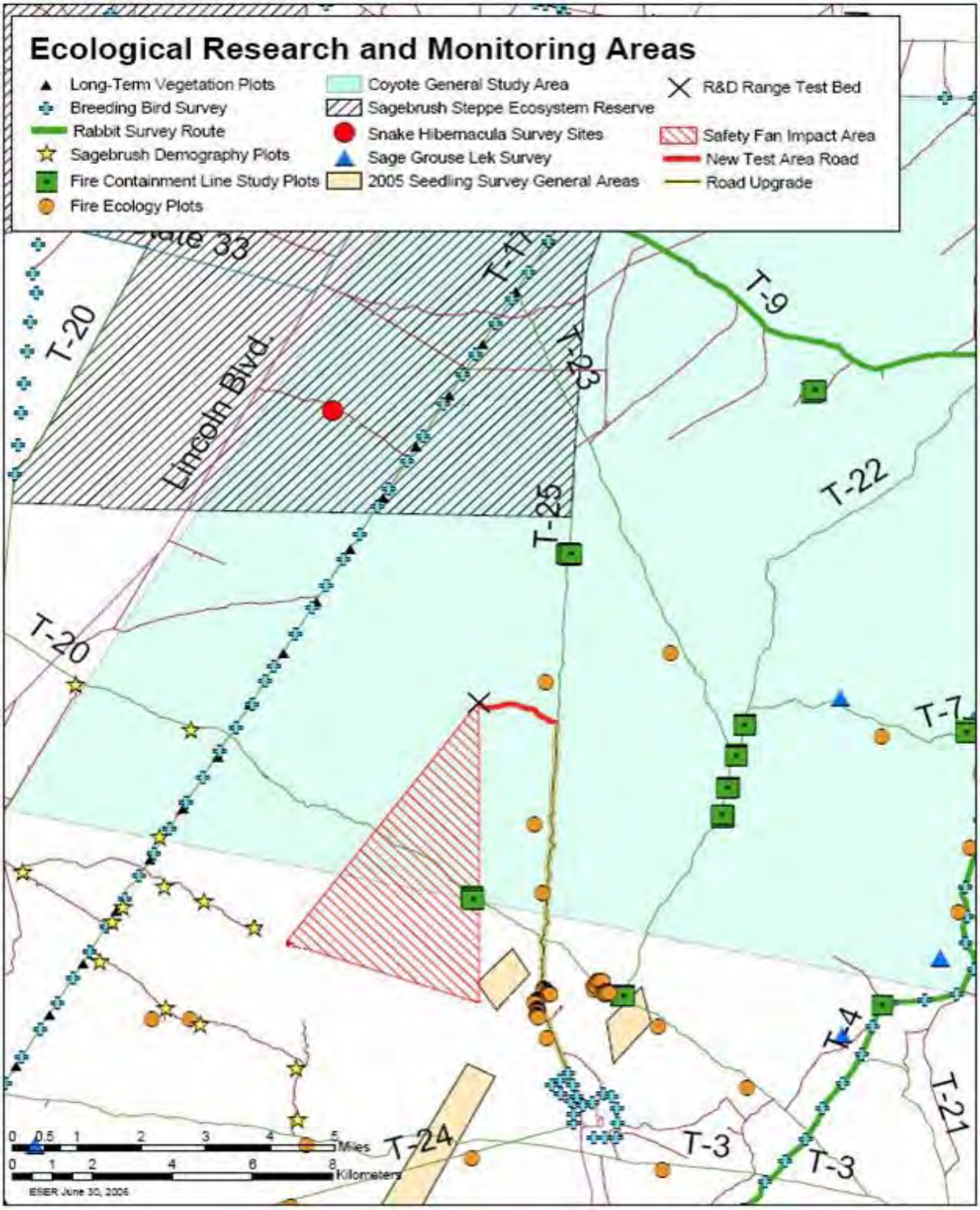


Figure 4. NERP Ecological Research and Monitoring Plots and Study Areas in the Vicinity of the Proposed Test Range.