Final Environmental Assessment

Employment of the 2.75-Inch Rocket at Saylor Creek Air Force Range

Prepared for

Mountain Home Air Force Base

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Prepared by

CH2MHILL

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FINDING OF NO SIGNIFICANT IMPACT

1.0 NAME OF THE PROPOSED ACTION

Employment of the 2.75-Inch Rocket at Saylor Creek Air Force Range, Mountain Home Air Force Base, ID.

2.0 DESCRIPTION OF THE PROPOSED ACTION

Based on the analysis in the final Environmental Assessment, the Air Force has selected Alternative B – Proposed Action.

The Proposed Action would allow a variety of munitions and training ordnance, including the M156 White Phosphorus munition, to be employed on SCAFR to support the Combat Search and Rescue (CSAR) mission of the Idaho Air National Guard (IDANG) 190th Fighter Squadron and the Idaho Army National Guard (IDARNG) 1-183d Attack Battalion stationed at Gowen Field, Boise, Idaho.

The intent of the proposed action is to provide effective, efficient, and realistic training for the IDANG 190th Fighter Squadron and the IDARNG 1-183d Attack Battalion to become fully mission-capable in CSAR mission, which includes tactical day or night mark employment opportunities. Visible marks are essential during Air Strike Control, CSAR, and Joint Air Attack Training (JAAT). The M156 White Phosphorus munition is the only munition currently available to the IDANG that is usable as a mark, especially at night.

The proposed number of rockets and ordnance to be employed in the proposed action is the minimum needed to meet the purpose and need of the project. There would be no flexibility to meet new training requirements that may arise because of future deployments. As many as 2,500 rockets would be released each year under the proposed action including:

- 500 M156 White Phosphorus munition
- 300 M257 Illumination and M278 IR Illumination munition
- 900 MK61 and/or WTU-1/B training munition
- 200 M267 MPSM training munition
- 600 M274 PD Smoke Signature training munition

3.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The Environmental Assessment analyzes the potential environmental impacts from the Proposed Action or alternatives. According to the analysis in this EA, implementation of the Proposed Action at Mountain Home AFB would not result in significant impacts to any resource category or significantly affect existing conditions at Mountain Home AFB. The following summarizes and highlights the results of the analysis by resource category.

Air Quality. A small percentage of toxic air pollutant (TAP) emissions are released from the ordnance when fired from moving aircraft. Ambient air impacts are not considered significant because only a small percentage of TAP emissions exist within the ordnance, the rockets are mobile sources and emissions disperse the small amount of TAPs at high altitudes, and there are no receptors at the point of emission.

Land Use. Existing land uses on SCAFR would not change or be affected by implementation of the Proposed Action.

Noise. Decibel readings in a noise test of the rocket motor ranged from 65.0 dB to 84.9 dB, with the variance in minimum and maximum dB recorded being wind caused. These values are similar to the baseline noise levels measured at SCAFR, therefore, there would be no increase in noise levels associated with the Proposed Action.

Water Resources and Hydrology. No change from existing conditions would result from the implementation of the Proposed Action.

Hazardous Materials, Hazardous Waste, and Solid Waste. An additional 27.4 tons of solid waste would be removed each year under the Proposed Action. If a highly conservative munition dud rate of 7 percent is assumed (MK61 and WTU-1/B excluded), 112 unexploded munitions would require disposal by detonation in place, representing an additional hazard to the EOD teams during range clearance operations. Implementation of the Proposed Action could result in a certain number of "low order" munitions, where the fuse functions as designed, but the white phosphorus only partially burns and could injure the person or animal that disturbed the munition.

Vegetation. An increase in fire potential would be expected, however, the risk of fire would be minimized by using all munitions, except the MK61 and WTU-1/B, during the non-fire season and when an RCO is present. Fire can also affect native vegetation or Greeley's wavewing (sensitive species) through vegetation removal followed by colonization of weedy species.

Wildlife. There is a potential for habitat loss and direct mortality from fire, however, the risk of fire would be minimized as described under *Vegetation* above. The Proposed Action would have no significant direct or indirect affects on wildlife.

Fire. The Proposed Action has a low potential for starting fires because of the proposed season of use and the ability of firefighters and EOD personnel to respond quickly to incidents. Additional EOD, firefighting, and contractor personnel and actions are required to effectively reduce the risk of fire associated with rocket deliveries. With increased manning, the potential adverse effects of the Proposed Action would be insignificant

Outdoor Recreation and Public Access. There is a very small possibility that a member of the public may come in contact with a partially burned white phosphorus munition, resulting in an injury to the person. The presence of an RCO, immediate mobilization of the EOD team in the case of errant rockets, and posting of warning notices moderates this effect.

Economics. Cost for extended RCO time on the range would increase as would costs for range cleanup and fire control.

Cultural Resources. Consultation with federally recognized Tribes and the Idaho State Historic Preservation Officer (SHPO) have been completed for cultural resources within the EUA, and measures to minimize or mitigate adverse effects to cultural resources have been implemented. Potential adverse effects to cultural resources sites inside the EUA would be insignificant.

4.0 CONCLUSION

On the basis of the findings of the EA, which has been conducted in accordance with the National Environmental Policy Act, the Council on Environmental Quality regulations, and Air Force Instruction 32-7061, implementing the Proposed Action would not result in significant impacts to human health or the natural environment. Therefore, a Finding of No Significant Impact is warranted and further analysis under an Environmental Impact Statement is not required.

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Commander

21 May 07
Date

Final Environmental Assessment

Employment of the 2.75-Inch Rocket at Saylor Creek Air Force Range

Submitted to

Mountain Home Air Force Base

June 2007

CH2MHILL

Executive Summary

This Environmental Assessment (EA) describes the potential environmental consequences resulting from the use of the 2.75-Inch Rocket at the Saylor Creek Air Force Range (SCAFR), a property of Mountain Home Air Force Base (MHAFB). A variety of munitions and training ordnance, including the M156 White Phosphorus munition, are proposed for employment on SCAFR to support the Combat Search and Rescue (CSAR) mission of the Idaho Air National Guard (IDANG) 190th Fighter Squadron and the Idaho Army National Guard (IDARNG) 1-183d Attack Battalion stationed at Gowen Field, Boise, Idaho. No significant impacts would result from the Proposed Action or alternatives that would warrant the preparation of an Environmental Impact Statement (EIS).

Environmental Impact Analysis Process

The United States Air Force, Air Combat Command, and the 366th Fighter Wing at MHAFB have prepared this EA in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA, and Air Force Instruction 32-7061, *Environmental Impact Analysis Process* (32 CFR 989, et. seq.).

Purpose and Need for Action

The purpose of using the 2.75-inch rockets on SCAFR is to provide effective, efficient, and realistic training for the IDANG 190th Fighter Squadron and the IDARNG 1-183d Attack Battalion to become fully mission-capable in CSAR mission, which includes tactical day or night mark employment opportunities. Visible marks are essential during Air Strike Control, CSAR, and Joint Air Attack Training (JAAT). The M156 White Phosphorus munition is the only munition currently available to the IDANG that is usable as a mark, especially at night.

The action is needed to provide adequate training in all phases of the CSAR mission and for the pilots to become qualified and proficient in use of the 2.75-inch rockets. The Guard has a requirement to train A-10 and AH-64 aircrews in the employment of 2.75-inch rockets to be proficient in the ability to mark targets for striking aircraft to see and destroy. In addition, rockets provide a means to geographically de-conflict airspace above target areas with a series of air-to-ground rocket impacts. Also, these "marks" can be used in a CSAR mission to mark a survivor's location in regards to an attacking enemy ground force. The AH-64 and A-10 can work together to employ close air support (CAS) for ground troops or provide close security for CSAR operations. The opportunity for combined arms training (CAT) and JAAT with the Guard CAS aircraft in coordinated attacks provides real world training and the experience and coordination to effectively protect ground assets or destroy priority targets. Employment of these munitions on SCAFR (12 minutes flight time from Boise) instead of other ranges (hours away) would save numerous flying hours on already highly tasked national assets.

Proposed Action and Alternatives

This EA analyzes Alternative A-the No Action Alternative, Alternative B-the Proposed Action Alternative, and Alternative C-the Reduced Ordnance Alternative.

Alternative A—No Action

Pilot qualification in the use of 2.75-inch rockets would continue to occur on ranges, some of which are more than 250 miles away, but pilots lose proficiency due to lack of continuous training that SCAFR provides because of its close proximity. Currently A-10s may travel one hour each direction to the current ranges. With only 2-1/2 hours of fuel, this leaves only 30 minutes to employ. Training by the IDARNG does occur on the Orchard Training Area and would continue to occur there; however, no opportunity to train with the A-10 exists at this location. Joint training activities do not occur on OTA because it is not a fixed-wing aircraft air-to-ground range, A-10s are not permitted to train on this helicopter/tank gunnery range, and OTA is an Army range, not an USAF range. The IDANG and IDARNG aviators would continue to practice JAAT, CAT, and CAS scenarios on ranges more than 250 miles away. Employment of 2.75-inch rockets is also an Air Combat Command-directed qualifying event for A-10s and this qualification would not occur on SCAFR.

Alternative B—Proposed Action

The IDANG and IDARNG are proposing to employ 2.75-inch rockets on SCAFR to provide realistic training opportunities for their CSAR mission. In addition to the A-10 close support ground attack aircraft, stationed at Gowen Field, Boise, Idaho, Apache AH-64 helicopters, also stationed at Gowen Field, would participate using the M156 White Phosphorus munition, the M257 Illumination and M278 IR Illumination munitions, the MK61 and/or WTU-1/B training ordnance, the M267 MPSM (Multi-Purpose Sub-Munitions) training ordnance, and the M274 PD (point detonating) Smoke Signature Training ordnance on the 2.75-inch rockets.

Rocket deliveries would include Low Altitude Tactical Rocket (LATR), High Altitude Tactical Rocket (HATR), and LOFT (as in **loft** the rocket) runs, all with restricted run-in headings on targets that keep the weapons footprint inside the exclusive use area (EUA). The Safe-Range computer program was used to identify appropriate targets. The targets for the HATR and LATR events are the same, while the LOFT event utilizes Target 61. Target 61 was selected, because of its proximity to the center of the airfield and the size of the Weapons Safe Footprint Area (WSFA) for the LOFT delivery. All targets selected are in a confined area that will facilitate Explosive Ordnance Disposal (EOD) operations (range clean-up and munition residue removal). As many as 2,500 rockets would be released each year including:

- 500 M156 White Phosphorus munition
- 300 M257 Illumination and M278 IR Illumination munition
- 900 MK61 and/or WTU-1/B training ordnance
- 200 M267 MPSM training ordnance
- 600 M274 PD Smoke Signature training ordnance

Certain restrictions would be placed on when the rocket-mounted munitions could be employed because they have a high potential to start fires. Only the MK61 or WTU-1/B munitions can be used during the fire season (Fire Levels 1, 2, 3, 4, and 5). The white phosphorus munitions would also only be used when a range control officer (RCO) is present, so that if a munition lands outside the EUA, the EOD can be notified immediately. In the event that an M156 White Phosphorus munition lands outside the EUA, an EOD team and fire crew would be immediately dispatched to the site to ensure that a hazard does not exist to the public, wildlife, or livestock. Fire suppression support would be provided by the Range's contractor (currently ANHTECH) or the Bureau of Land Management (BLM) depending on the time of year. Additional fire crews may be warranted as the fire risk increases.

Range clearance activities on SCAFR would continue to be conducted by EOD in a timely manner to minimize impacts to the environment including clearance around targets every 75 days of target use and a complete boundary to boundary clean up annually. The increased EOD workload from the increased number of munitions could increase the number of fires started through EOD activities.

All EOD personnel attend an annual Natural and Cultural Resource Awareness Training prior to range cleanup, that focuses on rare plant and animal identification and avoidance, sagebrush identification and avoidance, noxious and invasive weed identification and prevention, limiting disturbance, fire prevention, and off-road driving procedures. Burned habitat would be restored using native species to develop habitat diversity on SCAFR to the maximum extent practicable. Areas of high disturbance that are likely to be re-disturbed would be reseeded periodically with rugged non-native vegetation like crested wheatgrass to try and curb erosion potential. However, areas that are continually disturbed are highly unlikely to be reseeded successfully because of the opportunistic nature of annual weeds.

Existing public information and warning signs would be revised to reflect the potential new danger on the range from un-exploded white phosphorus munitions.

Alternative C—Reduced Ordnance

Alternative C is similar to Alternative B, but reduces the proposed number of rockets and ordnance to the absolute minimum needed to meet the purpose and need of the project. There would be no flexibility to meet new training requirements that may arise because of future deployments. As many as 1,550 rockets would be released each year under Alternative C including:

- 200 M156 White Phosphorus munition
- 150 M257 Illumination and M278 IR Illumination munition
- 600 MK61 and/or WTU-1/B training ordnance
- 100 M267 MPSM training ordnance
- 500 M274 PD Smoke Signature training ordnance

This alternative would continue to provide the AH-64 and A-10 aircrews opportunities to operate jointly, however, the amount of training conducted would be reduced below that offered under the Proposed Action. All other features of Alternative C are as described for the Proposed Action.

Summary of Environmental Consequences

This EA provides an analysis of potential impacts from employment of 2.75-inch rockets on SCAFR. As indicated in Chapter 4, the use of these rockets and associated ordnance would not result in significant impacts or require new permits from any regulatory agency.

The Proposed Action or alternatives would not have an effect on land use or water resources and hydrology. Air quality, hazardous materials, hazardous waste, solid waste, vegetation, wildlife, soils, fire management, outdoor recreation and public access, and economics would have minor, but not significant, impacts as summarized below. The potential to adversely impact cultural resources exists from the action, but all mitigation measures would be implemented prior to conducting the Proposed Action or Alternatives so that the potential adverse effects would be insignificant.

- **Air Quality.** A small percentage of toxic air pollutant (TAP) emissions are released from the ordnance when fired from moving aircraft. The rockets are self-propelled and TAPs are dispersed into the atmosphere as a rocket flies to a target. Ambient air impacts are not considered significant for several reasons. First, only a small percentage of TAP emissions exist within the ordnance. Second, the rockets are mobile sources and emissions disperse the small amount of TAPs at high altitudes. Third, there are no receptors at the point of emission. Less TAPs would be released under Alternative C compared to the Proposed Action.

- **Land Use.** Existing land uses on SCAFR would not change or be affected by implementation of the Proposed Action or Alternative C.

- **Noise.** Although the sound of the rocket motor could be heard through the noise of the wind rustling foliage during noise tests, it did not cause an increase in the dB reading on the Dosimeter. Decibel readings ranged from 65.0 dB to 84.9 dB, with the variance in minimum and maximum dB recorded being wind caused. These values are similar to the baseline noise levels measured at SCAFR, therefore, there would be no increase in noise levels associated with the action alternatives.

- **Water Resources and Hydrology.** No change from existing conditions would result from the implementation of Alternative C or the Proposed Action.

- **Hazardous Materials, Hazardous Waste, and Solid Waste.** An additional 27.4 or 17.1 tons of solid waste would be removed each year under the Proposed Action or Alternative C, respectively. If a highly conservative munition dud rate of 7 percent is assumed (MK61 and WTU-1/B excluded), 112 and 67 unexploded munitions, under the Proposed Action and Alternative C respectively, would require disposal by detonation in place in compliance with the applicable TM 60 series EOD technical manual. The dud munitions represent an additional hazard to the EOD teams during range clearance operations. Implementation of the Proposed Action or Alternative C could result in a certain number of "low order" munitions, where the fuse functions as designed, but the white phosphorus only partially burns. When the partially burned munition is kicked or disturbed and air comes in contact with the white phosphorus, the material will start to burn again and could injure the person or animal that disturbed the munition.

- **Vegetation.** An increase in fire potential would be expected under the Proposed Action and Alternative C. However, the risk of fire would be minimized by using all munitions, except the MK61 and WTU-1/B, during the non-fire season and when an RCO is present. Fire can effect native vegetation or Greeley's wavewing (sensitive species) through vegetation removal followed by colonization of weedy species. The Proposed Action has a higher potential for increased fire frequency compared to Alternative C based on volume of munitions used.
- **Wildlife.** The Proposed Action has a higher potential for habitat loss and direct mortality from fire than Alternative C based on number of munitions used. However, the risk of fire would be minimized by using all munitions, except the MK61 and WTU-1/B, during the non-fire season and when an RCO is present. Both the Proposed Action and Alternative C would have no significant direct or indirect effects on wildlife.
- **Fire.** The Proposed Action has a higher potential for fire ignition because of the higher number of munitions proposed for use. However, the risk of fire would be minimized by using all munitions, except the MK61 and WTU-1/B, during the non-fire season and when an RCO is present. Alternative C would have less potential to start fires, as fewer rockets are proposed for use. Both the Proposed Action and Alternative C have a low potential for starting fires because of the proposed season of use and the ability of firefighters and EOD personnel to respond quickly to incidents.
- **Outdoor Recreation and Public Access.** There is a very small possibility that a member of the public may come in contact with a partially burned white phosphorus munition. This could result in an injury to the person. This possibility is greater for the Proposed Action compared to Alternative C. The presence of an RCO, immediate mobilization of the EOD team in the case of errant rockets, and posting of warning notices moderates this effect.
- **Economics.** Cost for extended RCO time on the range would increase with the Proposed Action and Alternative C. Less RCO time would be required for Alternative C. Alternative C would also have additional costs for range cleanup and fire control, but at a lower level than the Proposed Action.
- **Cultural Resources.** Cultural resources exist in the EUA and would be expected to experience some effects from rocket impact. Consultation with federally recognized Tribes and the Idaho State Historic Preservation Officer (SHPO) would be completed, and measures to minimize or mitigate adverse effects to cultural resources would be implemented prior to conducting the Proposed Action or Alternatives so that the potential adverse effects would be insignificant.

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1.0 Purpose and Need for Action

1.1 Introduction

The Idaho Air National Guard (IDANG) and Idaho Army National Guard (IDARNG) have proposed to employ 2.75-inch rockets with various ordnance on Saylor Creek Air Force Range (SCAFR), part of the Mountain Home Range Complex (MHRC), Mountain Home AFB (MHAFB), Idaho. The proponents of the action are the IDANG and the IDARNG. The 366th Fighter Wing at MHAFB is preparing this Environmental Assessment (EA).

This EA has been prepared to evaluate the potential environmental effects from implementation of the Proposed Action or alternatives. The alternatives will be prepared in accordance with 32 CFR 989, Air Force Environmental Impact Analysis Process and with the National Environmental Policy Act (NEPA), as amended (PL 91-190).

This EA is organized into five chapters as follows:

- *Chapter 1, Purpose and Need for Action:* This chapter includes background information on the proposal, background information on MHAFB and the MHRC (specifically SCAFR), and the purpose of and need for the project.
- *Chapter 2, Alternatives.* This chapter provides a more detailed description of the Proposed Action and alternatives to the Proposed Action.
- *Chapter 3, Affected Environment.* This chapter describes the human and natural environments in the analysis area. It is organized by resource area.
- *Chapter 4, Environmental Consequences.* This chapter presents the environmental consequences of implementing the Proposed Action and alternatives, including direct, indirect, and cumulative effects.
- *Chapter 5, References.* This chapter presents references consulted during development of the EA.

An acronym list is included as the last page of this EA. The reader can fold it out for convenience as the document is read.

1.2 Proposed Federal Action

The proposed federal action is deployment of 2.75-inch rockets on SCAFR. Ordnance to be used with the rockets include the M156 White Phosphorus Munition, the M257 Illumination and M278 IR Illumination Munitions, the MK61 and/or WTU-1/B training ordnance, M267 MPSM (multi-purpose sub-munition) training ordnance, and the M274 PD (point-detonating) Smoke Signature training ordnance.

The U.S. Air Force (Air Force) proposes to allow 2.75-inch rocket employment into the current SCAFR impact area. Deliveries would include Low-Altitude Tactical Rockets (LATR), High-Altitude Tactical Rockets (HATR), and LOFT (as in **loft** the rocket) delivery,

all with restricted run-in headings on targets that keep the weapons footprint inside the Exclusive Use Area (EUA or R3202 impact area) of SCAFR.

1.3 Purpose and Need

The **purpose** of using the 2.75-inch rockets on SCAFR is to provide effective, efficient, and realistic training for the IDANG 190th Fighter Squadron and the IDARNG 1-183d Attack Battalion to become fully mission-capable in their Combat Search and Rescue (CSAR) mission, which includes tactical day or night mark employment opportunities. Visible marks are essential during Air Strike Control (ASC), CSAR, and Joint Air Attack Training (JAAT). The M156 White Phosphorus munition is the only munition currently available to the IDANG that is usable as a mark, especially at night. An A-10 pilot may take 10 to 15 minutes to adequately talk an F-15E Strike Eagle crew's eyes onto a target to strike. With a marking rocket (M156 White Phosphorus), a Forward Air Controller (FAC) can talk the same crew on to the target in less than 3 minutes. The guard units must practice this maneuver to become proficient in it. The proposed project would meet seven key objectives:

- Improve and increase realistic combat training for A-10 attack pilots.
- Satisfy an Air Combat Command (ACC) directed training requirement for A-10 ASC pilots.
- Provide realistic training for Air to Ground training missions being handled by ASC aircraft by providing realistic marks in the target area.
- Expand and improve the tactical training ranges for the AH-64.
- Improve and increase realistic combat training for attack helicopter pilots.
- Provide Army aviators JAAT, Combined Arms Training (CAT), and Close Air Support (CAS) realistic scenario opportunities.
- Make the best use of limited national assets.

The project is **needed** to provide adequate training in all phases of the CSAR mission and for the pilots to become qualified and proficient in use of the 2.75-inch rockets. The Guard has a requirement to train A-10 and AH-64 aircrews in the employment of 2.75-inch rockets to be proficient in the ability to mark targets for striking aircraft to see and destroy. In addition, rockets provide a means to geographically de-conflict airspace above target areas with a series of air-to-ground rocket impacts. Also, these "marks" can be used in a CSAR mission to mark a survivor's location in regards to an attacking enemy ground force. The AH-64 and A-10 can work together to employ CAS for ground troops or provide close security for CSAR operations. The opportunity for CAT and JAAT with the Guard CAS aircraft in coordinated attacks provides real world training and the experience and coordination to effectively protect ground assets or destroy priority targets. Employment of these munitions on SCAFR (12 minutes flight time from Boise) instead of other ranges (hours away) would save numerous flying hours on already highly tasked national assets.

Employment of 2.75-inch rockets is not only an ACC-directed qualifying event for A-10s, but these rocket deliveries are essential to training combat-ready A-10 ASC pilots. Time and assets are limited, and use of a bombing range close to the home station in lieu of ranges far away would maximize training time currently lost in transit. The 2.75-inch rocket, currently

not used on SCAFR, is common at Tactical and Conventional Ranges used by A-10s across the country and overseas. The footprints for these requested deliveries fit on the SCAFR impact area. The A-10 Required Aircrew Proficiency Message (RAP) dictates that ASC-qualified aircrews perform 12 HATR events, of which 50 percent need to be ground scored. The 124th WG currently has 12 ASC-qualified pilots on the Letter of Certification (Letter of X's). This accumulates into 144 rocket deliveries required for scoring. In addition, the ASC-qualified pilots need to mark targets in a tactical scenario.

Employment of the AH-64 weapon systems is a required annual event for crew qualifications. Weapons employment and CAT like JAAT are essential in the training of effective combat ready attack helicopter pilots. Providing 2.75-inch rocket training opportunities at SCAFR will benefit the nation and maximize the limited time, assets, training money, and man power hours of the IDANG and IDARNG, by providing advanced high quality training close to home.

1.4 Background

1.4.1 Guard Units

The 190th Fighter Squadron, 124th WG, IDANG out of Gowen Field, Boise, Idaho, experienced first-hand joint air attack operations in Operation Iraqi Freedom operating with AH-64 helicopters. The 190th Fighter Squadron has 18 A-10 Thunderbolt aircraft. The 190th is tasked with a variety of missions. These include close air support for Army or Special Forces operations on the ground, combat search and rescue of possible downed aircrew, forward air control of coalition aircraft against enemy targets, and air interdiction against enemy targets deep in country.

In parallel lines, the 1-183d Attack Battalion, IDARNG, also out of Gowen Field, Boise, Idaho, experienced similar situations in numerous recent conflicts and ongoing operations in Bosnia. The 1-183d is assigned 18 AH-64 helicopters. The mission of the 1-183d is to destroy enemy armor, mechanized, and other forces, using fire and maneuver as an integrated member of the combined arms team, through the use of aerial firepower, mobility, and shock effect. They also provide command and control, supervision, staff planning, and unit level personnel service and logistical support for all units organic or attached to the attack battalion, as well as aviation unit maintenance for the attack battalion.

Training opportunities for the IDANG units currently exist at Utah Test and Training Range (UTTR) and Yakima Training Center (YTC), both over 250 miles away. The UTTR is too far for the IDARNG to train. Training for joint air operations are needed closer to Gowen Field to improve efficiency. For example, it takes 6.5 hours of flight time, 8 to 12 hours of mission time, and 3 refueling stops for the AH-64s to perform 2.5-hours of training at YTC. This takes an additional 3,000 pounds of fuel per aircraft, in addition to the logistical coordination for ammunition, fuel, armament support, and transportation of support personnel to YTC. Deployment to the YTC typically is scheduled for 2 to 3 days for the AH-64s to maximize the training benefits. The IDARNG is not reimbursed for these training events, and must pay for these additional expenses out of the unit's funds. This would compare to one non-stop roundtrip for the same 2.5-hour training mission at SCAFR.

The training opportunities that would be gained by guard units utilizing SCAFR are essential for training pilots quickly and efficiently for the many combat roles they will face in any

deployed location. In addition, the opportunity for AH-64 and A-10 aircraft to train jointly closely mimics the missions these units will be called upon to perform in combat.

1.4.2 Air Strike Control Mission

The purpose of the ASC mission is to provide support for ground troops (Wikipedia 2006). The support aircraft can call in whatever air assets are needed to support the ground troops.

1.4.3 Combat Search and Rescue Mission

The purpose of the CSAR mission is to rescue military personnel and downed aircrews exposed to the threat of capture. When an aircraft is shot down during combat operations, a major imperative is to rescue the downed aircrew. Accomplishing this objective requires a myriad of activities, involving many military squadrons and varied support requirements. First, the downed aircrew requiring rescue is located and all threats hindering their survival identified. Then, a strategy is formulated to determine the aircrew's identification, location, and ultimate rescue. Next, plans for implementing this strategy are developed and defined in terms of specific mission requirements for all elements involved in the search and rescue operation. Then, the mission is implemented. Specific training in all aspects of the search and rescue operation during a peacetime environment is necessary to achieve ultimate success in combat situations.

The Air and Army Guard units need to train for the CSAR mission. CSAR includes a very broad scope of activities, many of which require use of the 2.75-inch rocket. Critical CSAR activities include FAC duties and CAS. Tactical marks are an important component of all CSAR activities. A tactical mark (for example, a smoke on the ground) is accomplished in combat and training environments with white phosphorus rockets. While a white phosphorus rocket is typically considered a combat asset, it is not used to attack or strike targets, but to mark a location on the ground.

For example, during forward air controller training, the FAC needs to be able to mark and designate targets for other aircraft, such as a fast-traveling F-15 who may not see the target environment as clearly as the FAC. The white phosphorus munition produces enough smoke to be easily visible from the air or ground and is the only munition that is visible during night. The white phosphorus munition also minimizes weapons' effects on the ground in case the location marked is near friendly forces, reducing fratricide. Employment of white phosphorus rockets can avoid a bomb strike in the wrong location.

Along parallel lines, CAS includes providing cover for friendly troops encountering advancing or fleeing enemy troops. During CAS, confusing battlefield conditions can hamper efforts to locate friendly troops on the ground. As the enemy moves so do coalition forces. Tactical marks are essential for CAS to delimit ground space and provide cutoff points showing where friendly or enemy forces are positioned. These tactical marks effectively "draw lines in the sand." For example, a series of white phosphorus munitions can be laid down in a line to show aircraft the line between friendly and enemy troops. This makes it very clear to aircraft where the weapon impacts are to be placed, minimizing fratricide events.

Overall, "marks" must be used in a combat environment and pilots need to be trained to a proficiency level in the tactical employment of rockets so that these tools will be used

effectively. Deployment of white phosphorus rockets means keeping our troops on the ground covered from the air and out of harms way. In the CSAR mission, all of the types of activities previously described occur simultaneously in order to effect the rescue mission.

1.4.4 Joint Air Attack Training Mission

In a JAAT mission, soldiers from a forward position direct the actions of joint combat aircraft engaged in operations in close proximity to friendly forces (Wikipedia 2006). These close air support operations have the potential to result in "friendly fire" incidents, and therefore this training is critical for protecting ground troops operating in a close air support combat environment.

1.4.5 Combined Arms Training Mission

The use of combined arms is an approach to warfare which seeks to integrate different arms of the military to achieve mutually complementary effects (Wikipedia 2006) One example would be an armored division consisting of a mixture of infantry, tank, artillery, and reconnaissance units, all coordinated and directed by a unified command structure. For training proposed under this assessment, AH-64 helicopters and A-10 aircraft are used in combined operations with other military units.

1.4.6 Close Air Support Mission

Close air support (CAS) is the use of military aircraft in a ground-attack role against targets in close proximity to friendly forces, in direct support of and requiring detailed integration with the fire and movement of ground troops (Wikipedia 2006). In this role, aircraft serve a purpose similar to that of artillery.

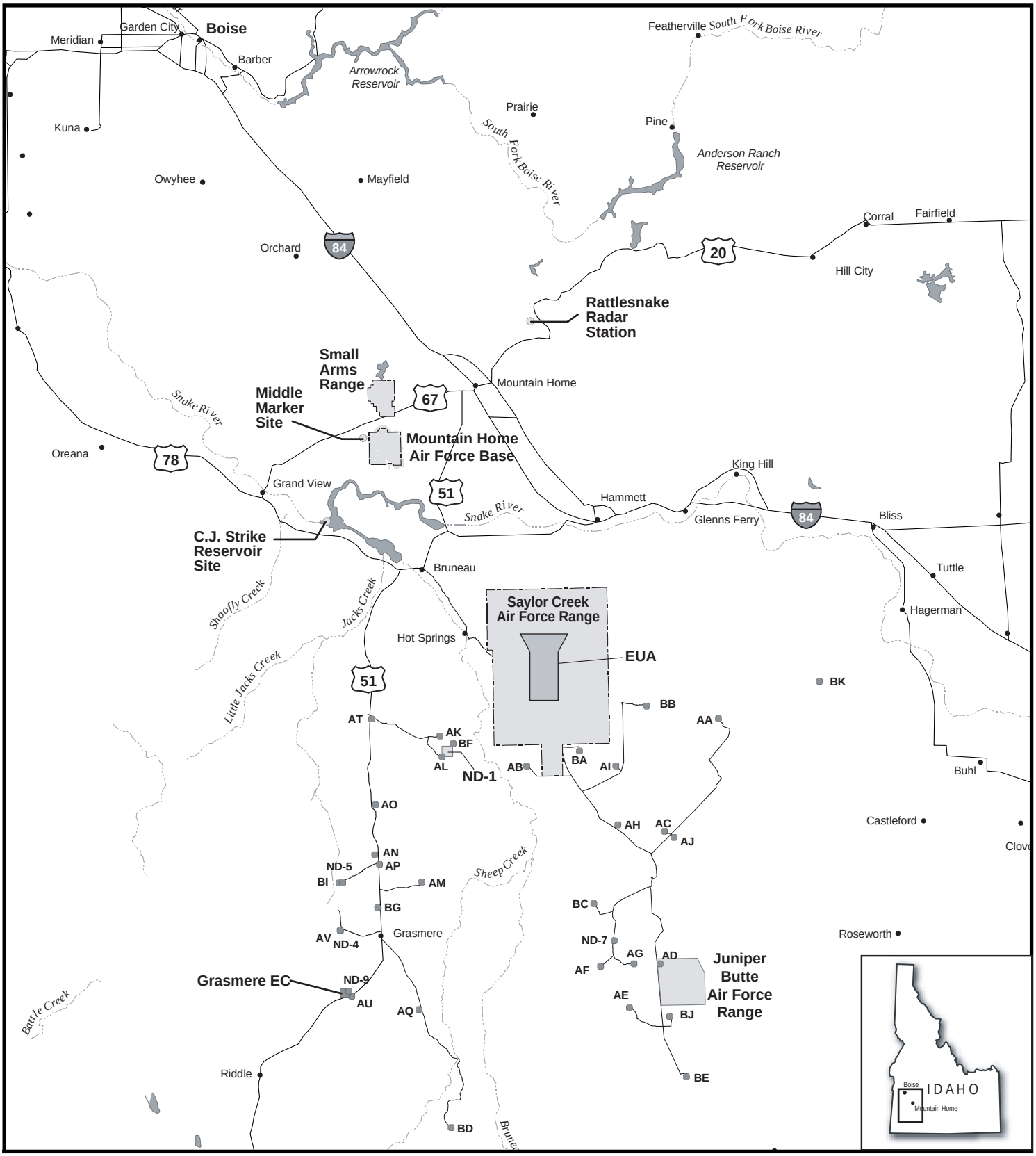
Close air support is a part of modern combined arms doctrine. Close air support requires excellent coordination with ground forces. This coordination is typically handled by specialists such as Joint Fire Observers, Joint Terminal Attack Controllers, and airborne Forward Air Controllers.

1.4.7 Mountain Home Air Force Base

MHAFB is located approximately 50 miles southeast of Boise, Idaho and 8 miles southwest of Mountain Home, Idaho (Figure 1). MHAFB includes the base proper, Small Arms Range, Rattlesnake Radar Station, Middle Marker, and the C.J. Strike Dam Recreation Complex. The 6,844 acres of MHAFB includes all of Sections 20, 21, 22, 27, 28, 29, 32, 33, and 34, and 10 acres in Section 19 in Township 4 South (T4S), Range 5 East (R5E).

1.4.8 Mountain Home Range Complex

The Mountain Home Range Complex encompasses many properties in Owyhee County and one property in Twin Falls County. SCAFR is part of this complex (Figure 1). SCAFR is located in T7S, R7E, Sections 1-36; T7S, R8E, Section 1-36; T8S, R7E, Sections 1-5, 8-17, 20-29, and 32-36; T8S, R8E, Sections 1-36; T9S, R7E, Sections 1-5, 8-17, and portions of 24, 25, and 36; T9S, R8E, Sections 1-18 and portions of 19, 20, 29, 30, 31, and 32. The public-use area of the 109,466-acre SCAFR is located in the relatively flat upland of the Inside Desert at an average elevation of 3,700 feet.



Primary Sites

Mountain Home AFB, Saylor Creek Air Force Range, Juniper Butte Air Force Range, and Small Arms Range.

Secondary Sites

Rattlesnake Radar Station, Middle Marker Site, C.J. Strike Reservoir site, Grasmere Electronic Combat site, Emitter sites, and No-Drop Targets

0 5 10 Miles

1:803,000

Project Vicinity Map

ENVIRONMENTAL ASSESSMENT:
EMPLOYMENT OF THE 2.75-INCH ROCKET
AT SAYLOR CREEK AIR FORCE RANGE

FIGURE

1

W072004004BOI

Several low buttes (Pence Butte, Pot Hole Butte, and Saylor Cap) and several intermittent drainages (Pot Hole Creek, West Fork of Brown's Creek, and East Fork of Brown's Creek) running north, provide topographic relief. Low rimrock and talus slopes can be found in the upper reaches of these drainages. With the exception of the 12,200-acre EUA located in the center of the withdrawn area, livestock grazing is permitted on SCAFR lands and is under the management of the U.S. Bureau of Land Management (BLM). The EUA is fenced and has a 100-foot-wide, bare-ground firebreak that is maintained around its perimeter (Figure 1).

2.0 Description of Proposed Action and Alternatives

2.1 Introduction

This chapter presents the No Action, Proposed Action, and other action alternatives. All alternatives are described in detail and a summary comparison is included.

Federal agencies are required by NEPA to evaluate a range of reasonable alternatives to the action being proposed. All alternatives evaluated must satisfy the purpose and need for the action. MHAFB has worked with the National Guard units, other interested federal and state agencies, tribes, stakeholders, and the public to ensure the selected alternatives respond to identified issues. This Draft EA documents MHAFB's planning process.

2.2 Elements Found in Different Combinations Across Alternatives

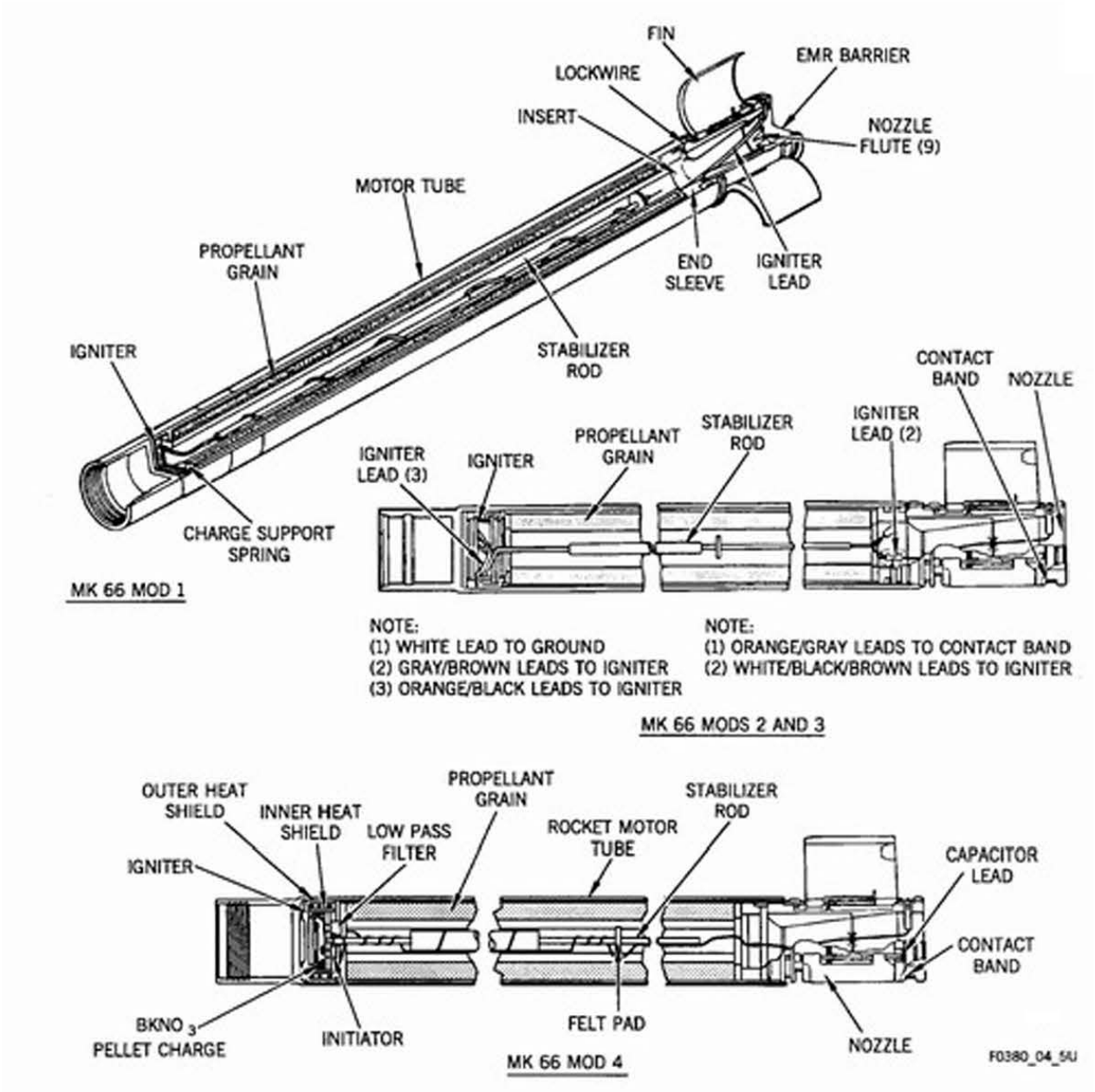
2.2.1 2.75-Inch Rockets

The 2.75-inch rocket with the MK66 rocket motor was designed to provide a common rocket for helicopters and high-performance aircraft (Figure 2). It replaced the MK40 rocket motor and increased rocket performance. It has a longer tube, improved double-base solid propellant, and a different nozzle and fin assembly. The 2.75-inch rocket weighs 13.6 pounds. The velocity and spin rate is higher than the MK40 for enhanced trajectory stability and, therefore, greater accuracy (Aircav, 2004). This unguided rocket has three folding fins that wrap around the rocket motor when in the launcher. The fins spring outward upon launch to aid in stability. Its wingspan is 7.3 inches and its length is 41.7 inches without ordnance.

A variety of ordnance can fit on the MK66 rocket motor. This reduces logistical problems in the field and allows the rocket to be tailored to suit a number of purposes (Jolly Rogers, 2004). Data for ordnance evaluated in this analysis come from Aircav (2004) and include the following:

- **M274 PD Smoke Signature Training Ordnance.** This training ordnance is a ballistic match for the M151 High Explosive (HE) munition. The casing is modified with blowout plugs or vent holes (Figure 3). A cylindrical cartridge is in the forward part of the casing and contains approximately 1.4 ounces of potassium perchlorate and aluminum powder which provides a "flash, bang, and smoke" signature. This training ordnance weighs 9.3 pounds. The training ordnance is a "spotting charge" which ignites and produces a small smoke cloud when the training ordnance impacts the target. The cloud allows the pilot and observers to see where the rocket hit. This training ordnance would not be expected to start a fire and is only visible during daylight operations, however its use would be limited to non-fire season only as a precaution.

FIGURE 2
The MK66 Rocket Motor



- **M257 Illumination and M278 IR Illumination Munitions.** These munitions are used to illuminate an area and can light an area in excess of 247 acres when deployed at their optimum height (1,800 feet for overt drops and 2,500 feet for covert drops). The munitions provide 1 million candlepower for 100 seconds or more. The candle descends at 15 feet per second using the main parachute (Figure 4). The M257 weighs 10.8 pounds, of which 5.4 pounds is magnesium sodium nitrate. These munitions have only one "candle" or "flare," which ignites when the munitions function and are slowed by the parachute. They ignite at an altitude that allows the candle to burn out prior to impacting the ground. These munitions have a minimum firing altitude, which will ensure complete burn prior to impacting the ground. The candle of these munitions can drift with the wind and can start a fire, however their use would be limited to the non-fire season as a precaution.
- **M267 Multi-Purpose Sub-Munition (MPSM) Training Ordnance.** The M267 MPSM training ordnance is a training version of the M261 HE MPSM munition (Figure 5). Each M267 contains three M75 practice sub-munitions and six dummy sub-munitions simulators (Figure 6). Each of the three practice M75 sub-munitions contains approximately 0.6 ounce of pyrotechnic powder. The M267 ejects all nine sub-munitions, which fall to the ground. Upon impact, the spotting charge in the three practice sub-munitions ignites and produces a smoke cloud for visual recognition of weapon impact. The other six inert sub-munitions have no ignitable components. This training ordnance may start a fire and is only visible during daylight operations, however its use would be limited to non-fire season as a precaution.
- **MK61 and/or WTU-1/B Training Ordnance**. The MK61 Mod 0 and the WTU-1/B training ordnance are one-piece dummy versions of the MK1 and M151 munitions, respectively. These are non-explosive training ordnance used with 2.75-inch practice rockets for target practice, or with dummy rockets for instruction and display. The MK61 Mod 0 training ordnance weighs approximately 6.5 pounds and the WTU-1/B training ordnance weighs approximately 9.4 pounds. These are completely inert ordnance composed of solid hunks of metal with the same weight and ballistic design as the actual explosive-filled munition. They are used to allow pilots to practice firing and aiming. Without a spotting charge to see if the pilot hit the target, personnel would actually need to go to the target to see where the impacts occurred. This training ordnance is not likely to start a fire.
- **M156 White Phosphorus Munition.** This munition is a version of the M151 HE munition and is primarily used for target marking and incendiary purposes. The nose section is malleable cast iron, and the base section is steel or cast iron (Figure 7). The munition contains 2.2 pounds of white phosphorus with a 0.12 pound bursting charge of Composition B. The fused munition weighs approximately 9.7 pounds. The phosphorus in this munition produces an intense hot, bright flash and smoke upon impact. While this munition has a higher probability than the other ordnance of starting a range fire (procedures would be in place to mitigate), it is the only munition useable as a mark during night operations. CSAR, ASC, JAAT, and CAS are all missions performed both day and night. This munition would only be used in the non-fire season.

FIGURE 3
The M274 Smoke Signature Training Ordnance

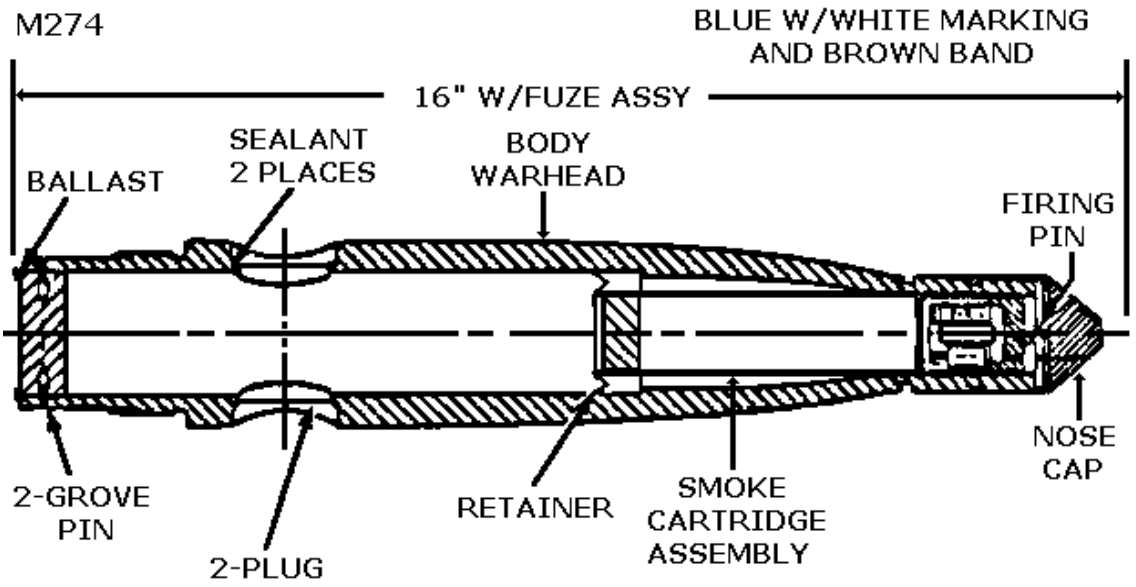


FIGURE 4
The M257 Illumination Munition

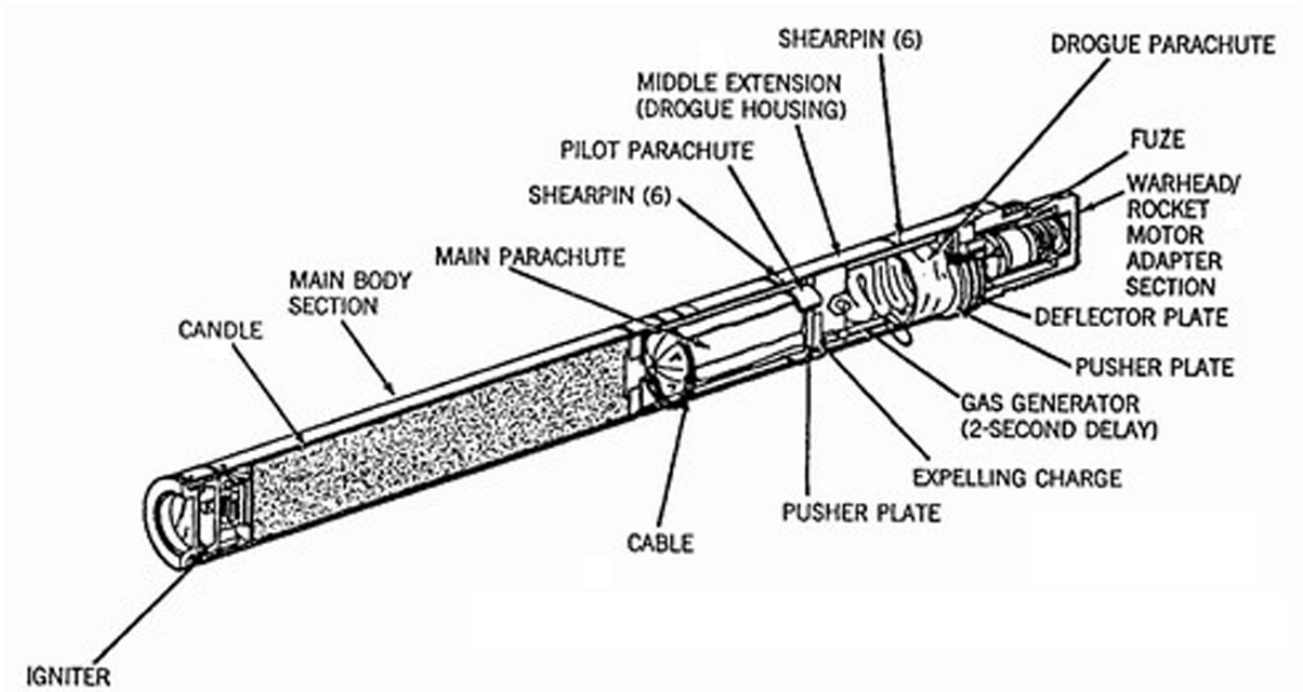


FIGURE 5
The M267 Multi-purpose Sub-Munition Training Ordnance

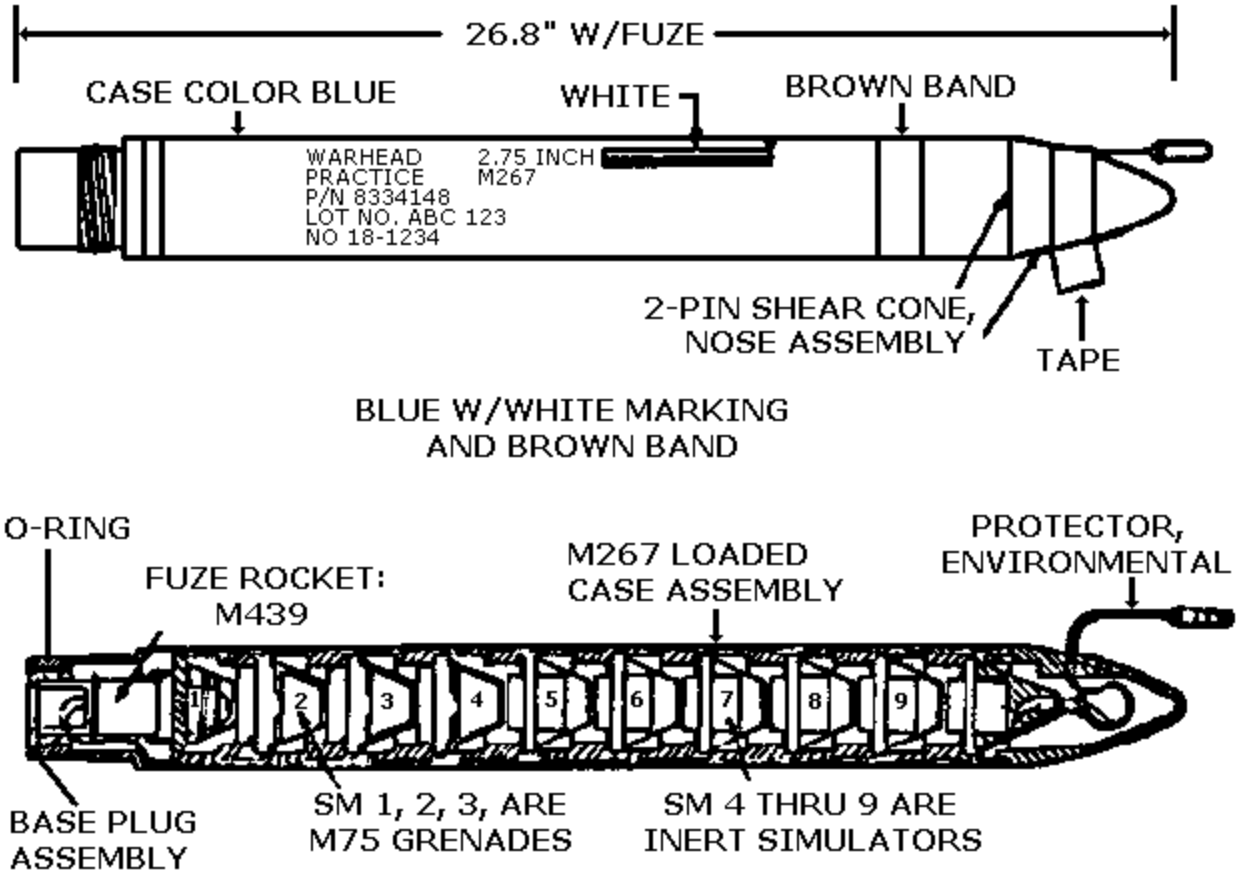


FIGURE 6
The M75 Practice Sub-munition Contained in the M267 Training Ordnance

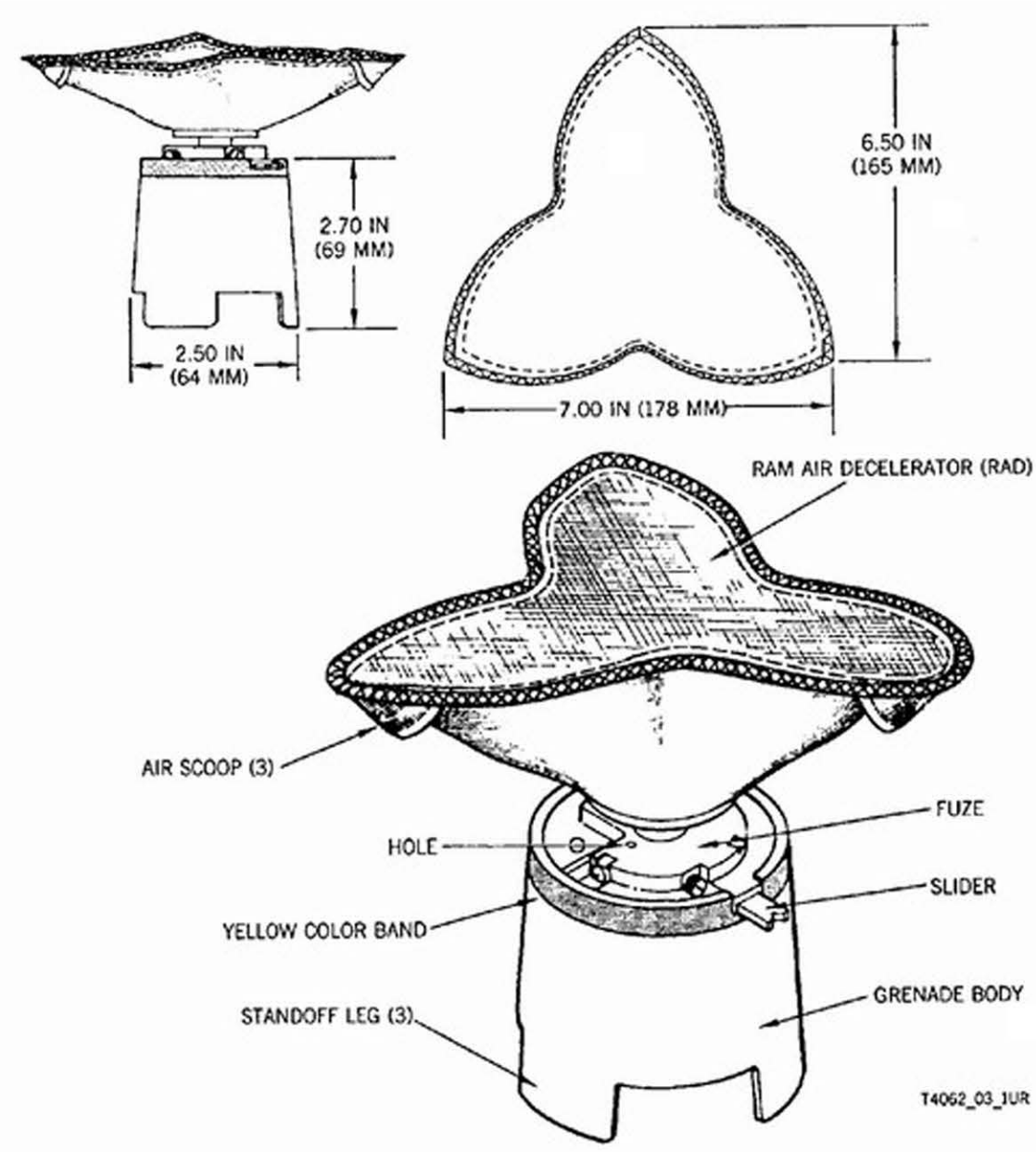
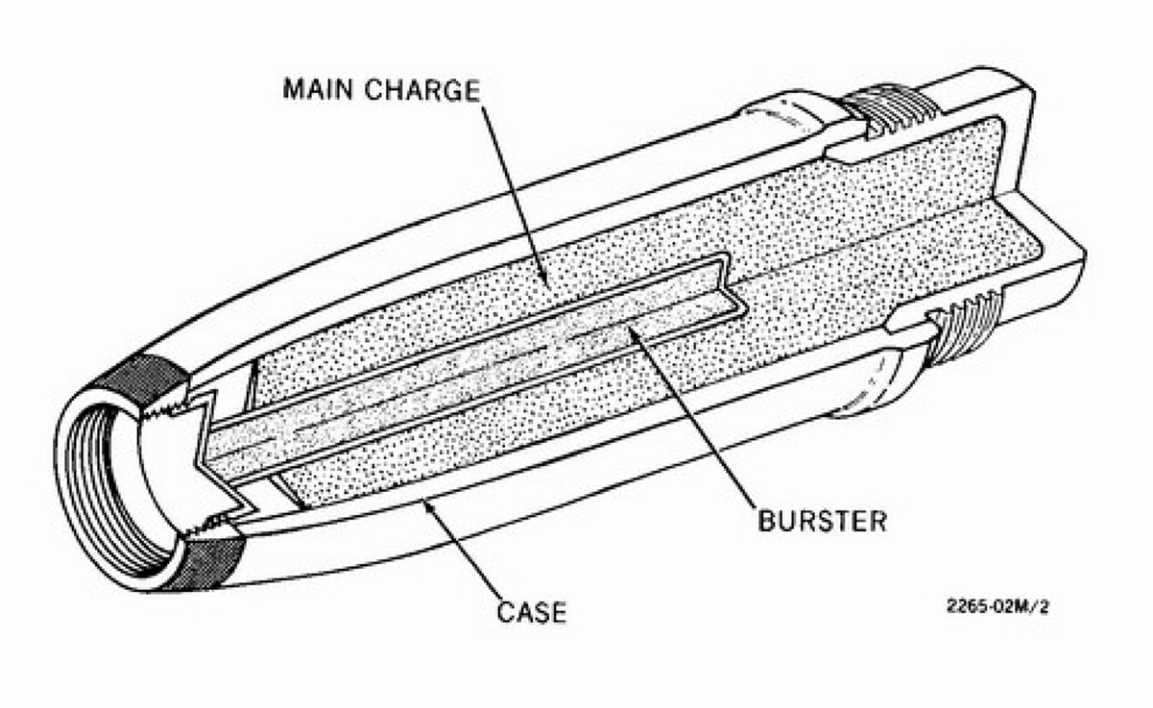


FIGURE 7
The M156 White Phosphorus Munition



2.2.2 A-10 Thunderbolt II Aircraft

The A-10 Thunderbolt II was designed to provide close air support of ground forces (Air Force, 2004). The single-seat, two-engine A-10 has excellent maneuverability at low air speeds and altitude. The first production A-10 entered service in 1975. The A-10 is armed with one 30-millimeter Gattling gun that can fire up to 3,900 rounds per minute. Up to 16,000 pounds of ordnance can be loaded onto eight under-wing and three under-fuselage pylons. Pylon-mounted ordnance could include air-to-ground munitions, air-to-air munitions, AGM-65 Maverick missiles, flares, 2.75-inch rockets, electronic countermeasures, and illumination flares. A low-altitude safety and enhancement system (LASTE) provides a constantly computing impact point for free-fall ordnance. Night vision goggles provide visibility for night operations. Installation of global positioning systems (GPS) equipment is currently underway. The IDANG flies the A/O A-10 model.

2.2.3 AH-64 Apache Helicopter

The AH-64 Apache helicopter was developed for front-line environments. It can operate day or night and in adverse weather using an integrated helmet and display sight system (Army, 2004). The AH-64 entered service in 1984 and has since been remanufactured as the AH-64D Longbow, which features upgraded electronics and targeting capabilities (Army, 2004). Avionics and electronics include target acquisition designation sight, night vision system, radar frequency interferometer, infrared countermeasures, and nap-of-earth navigation. *Nap of earth* refers to the ability to fly very low and follow terrain features to prevent visual detection of the helicopter until it is close enough to the target to fire. The

Apache armament includes Hellfire missiles, 2.75-inch rockets, and 30-millimeter chain gun. The two-person crew consists of a pilot and co-pilot gunner. The IDARNG is currently flying the AH-64A.

2.3 Alternative A—No Action Alternative

Pilot qualification in the use of 2.75-inch rockets would continue to occur on ranges, some of which are more than 250 miles away. However, pilots will lose proficiency in the use of this armament. Currently A-10s may travel one hour each direction to the current ranges. With only 2-1/2 hours of fuel, this leaves only 30 minutes to employ. These opportunities are very limited in number and only provide a basic qualification and not a repetitive occurrence. The repetitive occurrences of rocket employment on SCAFR will provide pilot proficiency and a resultant increased combat capability. Training by the IDARNG does occur on the Orchard Training Area and would continue to occur there; however, no opportunity to train with the A-10 exists at this location. The IDANG and IDARNG aviators would continue to practice JAAT, CAT, and CAS scenarios on ranges more than 250 miles away. Employment of 2.75-inch rockets is also an ACC-directed qualifying event for A-10s and this qualification would not occur on SCAFR.

2.4 Alternative B—Proposed Action

The IDANG and IDARNG are proposing to employ 2.75-inch rockets on SCAFR under the Proposed Action. This employment would help provide realistic training opportunities for their CSAR mission. In addition to the A-10 close support ground attack aircraft, stationed at Gowen Field, Boise, Idaho, Apache AH-64 helicopters, also stationed at Gowen Field, would participate in training exercises on SCAFR.

Ordnance to be used with the 2.75-inch rockets include the M156 White Phosphorus munition, the M257 Illumination and M278 IR Illumination munitions, the MK61 and/or WTU-1/B training ordnance, the M267 MPSM training ordnance, and the M274 PD Smoke Signature training ordnance (see Section 2.2.1).

The Air Force is proposing to allow the 2.75-inch rocket employment at the current SCAFR impact area (R3202). Deliveries would include LATR (Low Altitude Tactical Rocket), HATR (High Altitude Tactical Rocket), and LOFT runs, all with restricted run-in headings on targets that keep the weapons footprint inside the EUA (R3202 impact area). As many as 2,500 rockets would be released each year under the Proposed Action. Table 1 lists the quantities of each ordnance on the 2.75-inch rocket required to be released by the A-10 and AH-64 aviators to meet annual training needs.

TABLE 1
Annual Ordnance Quantities Required to Satisfy A-10 and AH-64 Aviator Training Needs under the Proposed Action

Ordnance Type	Number of Ordnance Required Annually
M156 White Phosphorus Munition	500
M257 Illumination and M278 IR Illumination Munitions	300
MK61 and/or WTU-1/B Training Ordnance	900
M267 MPSM Training Ordnance	200
M274 PD Smoke Signature Training Ordnance	600
Annual Total	**2,500**

Only SCAFR targets capable of supporting the 2.75-inch rocket will be used for the Proposed Action. Potential targets were identified using the Safe-Range computer program. This program uses geographic information system (GIS) data such as roads, buildings, water bodies, Areas of Critical Concern such as manned sites, and other data important to the range managers. Safe-Range then combines that information with weapons delivery parameters such as the weapon, type of aircraft, aircraft altitude, flight path, delivery angle, and target location to produce a map. The map delineates a weapons safe footprint area (WSFA) for that target. If the WSFA extends past the boundaries of the range or into an area to be avoided, the mission profile is changed and a new Safe-Range analysis is run. A Safe-Range analysis was prepared for the Proposed Action. Table 2 shows the mission profile used in the Safe-Range software. Figure 8 shows the WSFAs derived from the Safe-Range analysis. All WSFAs fit within the confines of the SCAFR impact area, but do not overlay any manned sites. All WSFAs referenced are approved footprints and are specific to the A-10. The AH-64 was not analyzed for two reasons: 1) the Safe Range program is not designed to analyze weapons delivery from rotary-wing aircraft; and 2) the AH-64 is much more accurate because it can fire from a stationary point. Risk analysis from Safe-Range indicated no hazards to Areas of Critical Concern on the range for the WSFAs and events listed in Table 2 and shown on Figure 8**.** The targets selected (specifically the airfield complex) were picked to provide the most realistic training. Figure 9 shows locations of different targets. The events selected provide controlled events for qualification training and tactical deliveries for tactical scenarios/training. The targets for the HATR and LATR events are the same, while the LOFT event utilizes Target 61. Target 61 was selected, because of its proximity to the center of the airfield and the size of the WSFA for the LOFT delivery. All targets selected are in a confined area that will facilitate EOD operations (range clean-up and munitions residue removal).

The run-in headings shown in Table 2 provide multiple opportunities for realistic training, while keeping the restrictions constant for simplicity to reduce the possibilities for error. The most restrictive WSFA is 044 for the LOFT rocket delivery, from which the 280 +/- 60 degree restriction was derived. The other two WSFAs (014 and 035) would have been less restrictive, but the intent was to keep the run-in headings and restrictions the same.

TABLE 2
Mission Profiles used to Develop the Weapon Safe Footprint Areas (WSFAs)

Target(s)	WSFA Number	Event	Parameters	Run-in Headings
18-20, 29-41, 60-69, 74-80	014	HATR	1,000 to 15,000 feet above ground level	280 +/- 60
			-60 to -30 dive	
			250 to 450 knots	
18-20, 29-41, 60-69, 74-80	035	LATR	100 to 5,000 feet above ground level	280 +/- 60
			-35 to –5 dive	
			250 to 350 knots	
61	044	LOFT	300 to 3,000 feet above ground level	280 +/- 60
			200 to 300 knots	

Certain restrictions would be placed on when the rocket-mounted munitions could be employed because they have a high potential to start fires. Only the MK61 or WTU-1/B munitions can be used during the fire season (Fire Levels 1, 2, 3, 4, and 5). The white phosphorus munition would also only be used when a range control officer (RCO) is present. This is usually during daytime, but a RCO is onsite when scoring is required during night exercises. This restriction is needed so munitions that land outside the EUA can be observed and EOD notified to prevent injury to the public, wildlife, and livestock. An extra cost may be incurred to cover costs of the RCO and EOD personnel support. The IDANG and IDARNG would maximize use of normal RCO and fire crew hours to the extent practicable, in order to minimize costs. Additional fire crews may be required as the risk of fire increases with implementation of the Proposed Action.

The A-10s at Gowen Field have a night flying program that typically starts at the end of October and finishes at the end of March, coinciding with the end of daylight savings time and the winter months. While this timeframe is specific to the sunset times in relation to the typical duty day, it also coincides with the rains and snowfalls. This is beneficial because the majority of the M156 White Phosphorus munitions would be shot during this time as they are the only munitions usable at night as visible marks when employed. Employment of the white phosphorus rockets during this time should provide excellent training for the A-10 and Apache aviators and prevent occurrences of range fires.

Range clearance activities on SCAFR would continue to be conducted by EOD in a timely manner to minimize impacts to the environment. Clearance would occur around targets every 75 days of target use and a complete boundary to boundary clean up annually. Range clearance operations would be conducted using trucks and personnel that would minimize disturbance to soils and vegetation, as well as avoid cultural sites.

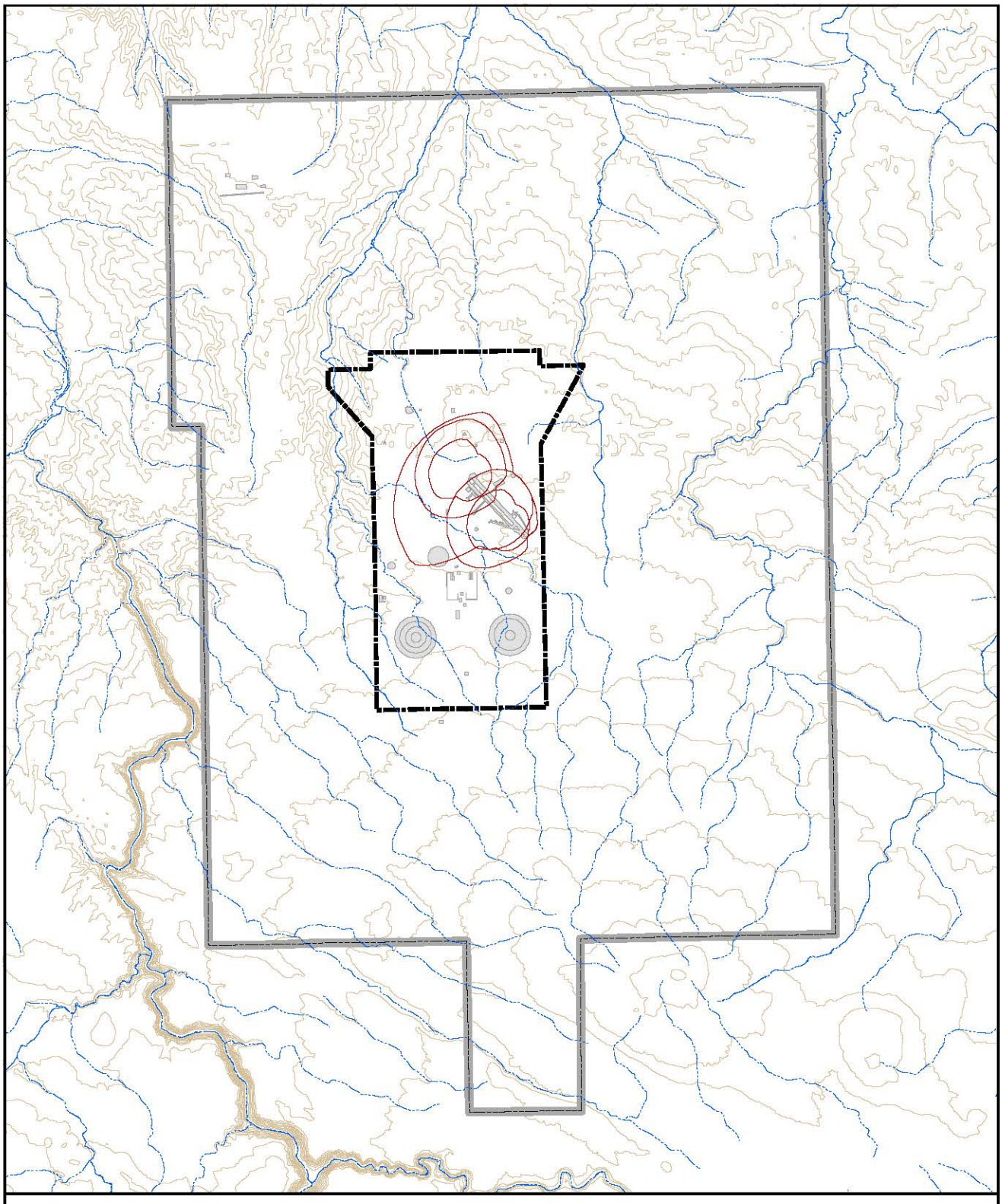


Figure 8.
Weapons Safe Footprint Areas (WSFAs) on Saylor Creek Air Force Range Based on the Safe Range Analysis

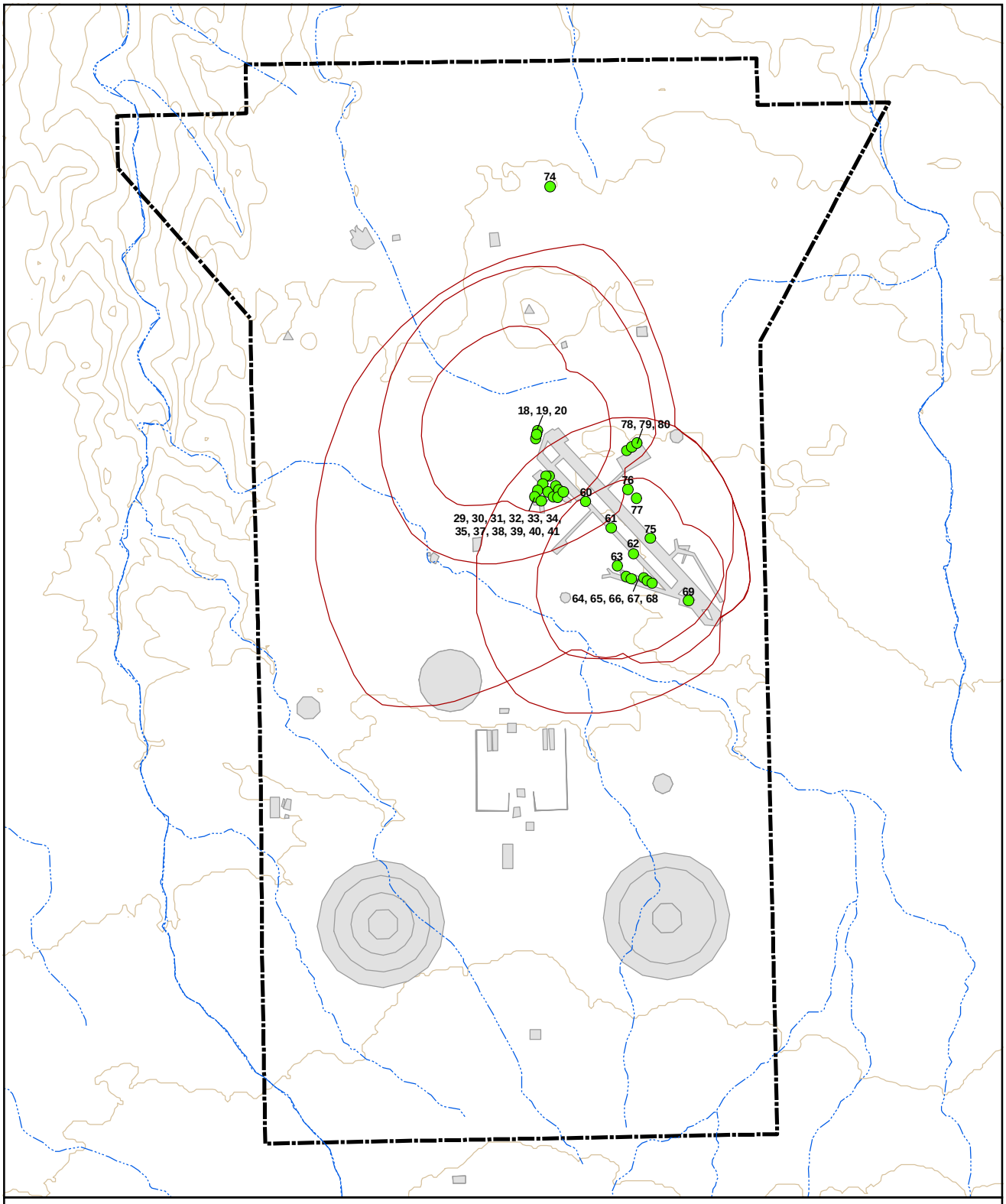


Figure 9.
Exclusive Use Area Target Locations

All EOD personnel are required to implement EOD Operating Instruction 32-3013, September 1, 2002; MHAFB Instruction (MHAFBI) 32-7003, Range Standard Operating Procedures September 16, 2004; and Air Force Instruction 13-212 Volume 1, ACC Supplement 1, Mountain Home AFB Addenda, 5 April 2005 (AFI13-212V1_ACCSUP1_MOUNTAINHOMEAFBADDENA).

All EOD personnel attend an annual Natural and Cultural Resource Awareness Training prior to range cleanup. Training focuses on rare plant and animal identification and avoidance, cultural resource identification and avoidance, sagebrush identification and avoidance, noxious and invasive weed identification and prevention, limiting disturbance, fire prevention, and off-road driving procedures. Driving over sagebrush or otherwise destroying habitat is discouraged. Burned habitat would be restored using native species to develop habitat diversity on SCAFR to the maximum extent practicable.

All unexploded or partially detonated munitions, except the MK61 and WTU-1/B, discovered during range clearance operations would be detonated in place by EOD in compliance with established TM 60 series Explosive Ordnance Disposal procedures. All practical precautions would be taken to prevent fires being started from the munition destruction. Fire crews would be stationed onsite during EOD clearance during the fire season.

It is possible that many of the expended rockets would be sticking up out of the ground with the ordnance end buried. All partially buried munitions sticking up out of the ground would be detonated. This will enhance the safety and efficiency of clean-up operations. This action would also reduce clean-up costs.

In the event that a rocket lands outside the EUA, an EOD team and fire crew would be immediately dispatched to the site to ensure that a hazard does not exist to the public, wildlife, or livestock. Fire suppression support would be provided by the Range's contractor (currently ANHTECH) or the Bureau of Land Management (BLM) depending on the time of year.

Areas of high disturbance that are likely to be re-disturbed would be reseeded periodically with rugged non-native vegetation like crested wheatgrass to try and curb erosion potential. However, areas that are continually disturbed are highly unlikely to be reseeded successfully because of the opportunistic nature of annual weeds. These annual weeds tend to out-compete seeded vegetation. Perennial vegetation (like seeded grass species) is impacted by fires year after year and cannot perpetuate in the plant community. Annual weeds are adapted to repeat fires and flourish. This cycle of fires causes an increase in annual weeds, which then feeds the fires and the cycle becomes self-perpetuating. Road building would be conducted using erosion control best management practices.

Existing public information and warning signs would be revised to reflect the potential new danger on the range from un-exploded munitions.

2.5 Alternative C—Reduced Ordnance

Alternative C is similar to Alternative B, but reduces the proposed number of rockets and ordnance to the absolute minimum needed to meet the purpose and need of the project.

Although the reduced number of rockets would meet the purpose and need, there would be no flexibility to meet new training requirements that may arise because of future deployments. Deliveries would continue to include LATR, HATR, and LOFT with restricted run-in headings on targets that keep the weapons footprint inside the EUA (R3202 impact area). As many as 1,550 rockets would be released each year under Alternative C. Table 3 lists the types and quantities of 2.75-inch rockets required to be released by the A-10 and AH-64 aviators under Alternative C.

TABLE 3
Annual Ordnance Quantities Required to satisfy A-10 and AH-64 Aviator Training Needs under Alternative C

Ordnance Type	Number of Ordnance Required Annually
M156 White Phosphorus Munition	200
M257 Illumination and M278 IR Illumination Munitions	150
MK61 and/or WTU-1/B Training Ordnance	600
M267 MPSM Training Ordnance	100
M274 PD Smoke Signature Training Ordnance	500
Annual Total	**1,550**

This alternative would continue to provide the AH-64 and A-10 aircrews opportunities to operate jointly, as they would be expected to do in combat theaters. However, the amount of training conducted would be reduced below that offered in Alternative B. A combined arms force must train together to be most effective in the field under combat operations. To effectively integrate firing in a Combined Arms or Joint Air Attack, the crews of the different aircraft must first train together—preferably with the munitions they would use in combat.

AH-64 training requirements met with this alternative include Joint Air Attack Training, Combined Arms Training, and Close Air Support, which includes Close Combat Attack. These training activities satisfy some of the Mission Essential Task List set forth by the commander. A-10 training objectives met include using the AH-64 to provide laser targeting for the A-10s, as well as having the AH-64 act as the Forward Air Controller for the A-10. Team deployment techniques and combat maneuvers would be gained by both guard units.

Certain restrictions would be placed on when the rocket-mounted munitions could be employed because they have a high potential to start fires. Only the MK61 or WTU-1/B munitions can be used during the fire season (Fire Levels 1, 2, 3, 4, and 5). The white phosphorus munitions would also only be used when a range control officer (RCO) is present. This is usually during daytime, but a RCO is onsite when scoring is required during night exercises. This restriction is needed so munitions that land outside the EUA can be observed and EOD notified to prevent injury to the public, wildlife, and livestock. An extra cost may be incurred to cover costs of the RCO. The IDANG and IDARNG would maximize use of normal RCO and fire crew hours to the extent practicable, in order to minimize costs.

Range clearance activities on SCAFR would continue to be conducted by EOD in a timely manner to minimize impacts to the environment. Clearance would occur around targets

every 75 days of target use and a complete boundary to boundary clean up annually. Range clearance operations would be conducted using trucks and personnel that would minimize disturbance to soils and vegetation, as well as avoid cultural sites.

All EOD personnel are required to implement EOD Operating Instruction 32-3013, September 1, 2002; MHAFB Instruction (MHAFBI) 32-7003, Range Standard Operating Procedures September 16, 2004; and Air Force Instruction 13-212 Volume 1, ACC Supplement 1, Mountain Home AFB Addenda, 5 April 2005 (AFI13-212V1_ACCSUP1_MOUNTAINHOMEAFBADDENA).

All EOD personnel attend an annual Natural and Cultural Resource Awareness Training prior to range cleanup. Training focuses on rare plant and animal identification and avoidance, sagebrush identification and avoidance, noxious and invasive weed identification and prevention, limiting disturbance, fire prevention, and off-road driving procedures. Driving over sagebrush or otherwise destroying habitat is discouraged. Burned habitat would be restored using native species to develop habitat diversity on SCAFR to the maximum extent practicable.

All unexploded or partially detonated munitions, except MK61 of WTU-1/B, discovered during range clearance operations would be detonated in place by EOD in compliance with established TM 60 series Explosive Ordnance Disposal procedures. All practical precautions would be taken to prevent fires being started from the munitions destruction. Fire crews would be stationed onsite during EOD clearance during the fire season.

It is possible that many of the expended rockets would be sticking up out of the ground with the ordnance end buried. All partially buried munitions sticking up out of the ground would be detonated. This will enhance the safety and efficiency of clean-up operations. This action would also reduce clean-up costs.

In the event that an M156 White Phosphorus munition lands outside the EUA, an EOD team and fire crew would be immediately dispatched to the site to ensure that a hazard does not exist to the public, wildlife, or livestock.

Areas of high disturbance that are likely to be re-disturbed would be reseeded periodically with rugged non-native vegetation like crested wheatgrass to try and curb erosion potential. However, areas that are continually disturbed are highly unlikely to be reseeded successfully because of the opportunistic nature of annual weeds. These annual weeds tend to out-compete seeded vegetation. Perennial vegetation (like seeded grass species) is impacted by fires year after year and cannot perpetuate in the plant community. Annual weeds are adapted to repeat fires and flourish. This cycle of fires causes an increase in annual weeds, which then feeds the fires and the cycle becomes self-perpetuating. Road building would be conducted using erosion control best management practices.

Existing public information and warning signs would be revised to reflect the potential new danger on the range from un-exploded white phosphorus and other munitions.

2.6 Alternative Comparisons

This section compares impacts among the alternatives. Potential negative, though not significant, impacts are discussed in Table 4. Many of the potential impacts associated with

the proposed project are qualitative in nature because of an inability to predict parameters such as severity of a fire season. For the resources having a qualitative assessment, a ranking of alternatives is provided in Table 4. Resource areas for which potential impacts may occur include hazardous materials and waste, vegetation, wildlife, fire management, economics, and cultural resources. The reader is directed to the appropriate section of Chapter 4 for resource-specific discussions.

TABLE 4
Alternatives Comparison for Deployment of the 2.75-Inch Rocket at SCAFR

Resource Area	Alternative A No Action	Alternative B Proposed Action	Alternative C Reduced Ordnance
Solid Waste Disposal	No solid waste generation above current levels	27.4 Tons	17.1 tons
Hazardous Waste	No hazardous waste generation above current levels	No hazardous waste generation above current levels	No hazardous waste generation above current levels
Vegetation loss because of escaped fires	No additional effects	Higher probability than Alternative C or No-Action, but still low due to no rocket use in fire season	Lower probability than the Proposed Action
Wildlife	No additional effects	Higher potential for habitat loss than Alternative C or No-Action Higher potential for fire-related mortality	Lower potential for habitat loss and fire-related mortality than the Proposed Action
Fire Management	No additional effects	Higher potential fire risk than Alternative C or No-Action based on number of ordnance used	A lower potential fire risk compared to the Proposed Action
Economics	No additional costs	Higher additional costs for fire suppression and waste cleanup than Alternative C or No-Action RCO needed for all white phosphorus munitions deployments	Intermediate cost for waste cleanup RCO and fire suppression costs would be lower than the Proposed Action based on number of munitions deployed

3.0 Affected Environment

Chapter 3 is organized by resource area. Resource areas that have no issues associated with them are defined, but not discussed in detail.

3.1 Air Quality

3.1.1 Definition of Resource

Air quality at a given location is described by the concentration of various pollutants in the surrounding atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (EPA) for criteria pollutants including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 micrometers in diameter (PM_{10}), and lead (Pb). NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety to protect public health and welfare.

3.1.2 Existing Air Quality

SCAFR is located in an attainment area for all criteria pollutants.

Fugitive dust emissions result from equipment maintenance activities at SCAFR. Fugitive emissions are those that do not pass (or could not reasonably pass) through a vent, stack, chimney, or other functionally equivalent opening and are usually mobile sources. The Idaho Department of Environmental Quality (IDEQ) has not established fugitive dust emissions standards for Owyhee County.

Toxic air pollutant (TAP) emissions were estimated for five types of proposed ordnance to be fired at SCAFR. It is reasonable to assume that the ordnance are classified as either mobile or fugitive sources because they are self-propelled and release emissions when fired from moving aircraft. However, mobile source emissions are often defined as emissions from vehicles capable of being licensed to travel on a public highway. Therefore, based on this definition, ordnance would be considered as fugitive emissions. However, mobile sources are also defined as things that move and emit air pollutants. Therefore, based on this definition, it is reasonable to classify ordnance as mobile source emissions. In either case, TAP standards have not been established for fugitive sources or for mobile sources in the State of Idaho by IDEQ.

3.2 Land Use

3.2.1 Definition of Resource

All of SCAFR is classified as unimproved land. Minimal ground maintenance activities are performed, and no landscaped areas exist, which is the reason for this designation. Targets,

roads, and firebreaks are included as unimproved and are maintained by the Operations Support Squadron.

Land use is regulated by the SCAFR Withdrawal Acts of 1954 and 1970 (P.L.O. 1027 and 4902, respectively), DoD policy, USAF policy, and Federal, state, and local laws that determine the type and extent of land use allowable in specific areas. These documents are designed to provide for management of specially designated or environmentally sensitive areas and promote compatible use. The applicable documents are for MHAFB, remote sites, and the Mountain Home Range Complex.

3.2.2 Existing Land Use

SCAFR has been used since 1944 for military training activities. With the exception of the 12,200-acre EUA located in the center of the withdrawn area, livestock grazing is permitted on SCAFR lands and is under the management of the BLM. The EUA is fenced and has a 100-foot-wide, bare-ground firebreak that is maintained around its perimeter.

Several public recreation activities are conducted in the public access areas of SCAFR, such as wildlife viewing, off road driving, and hunting. Hunting in the public access area of SCAFR is under the jurisdiction and management of Idaho Department of Fish and Game. Hunting is not allowed in the EUA.

3.3 Noise

3.3.1 Definition of Resource

For the purposes of this analysis, noise, often defined as unwanted sound, includes sounds produced by military aircraft airframes, engines, weapons, and in some instances, sonic booms.

3.3.2 Existing Noise

Values used to represent existing noise levels are from the analysis conducted to evaluate the Enhanced Training in Idaho (ETI) project's Proposed Action (Air Force, 1998). Several reference points used in that analysis were located on Saylor Creek Range (Points A and B) and on the approach route to the Range (Point C). The metric used in the evaluation is called the Onset Rate Adjusted Monthly Day-Night Average Sound Level (L_{dnmr}). L_{dnmr} sums the individual noise events and averages the resulting level over a specified length of time. Thus it is a composite metric representing the maximum noise levels, the duration of events, and the number of events.

Table 5 shows the results of the analysis presented in the FEIS. As shown in Table 5, existing noise levels are similar or lower than noise levels experienced before the ETI project was implemented. Noise is not expected to be greater than 64 decibels (dB) under existing conditions, which is comparable to the upper limit of a normal conversation (50-65 dB).

TABLE 5
Existing Cumulative L_{dnmr} Values (dB) at Saylor Creek Range (A, B) and the approach to Saylor Creek Range (C)

Reference Point	Baseline	ETI Juniper Butte Alternative
A	61	61
B	68	64
C	69	56

3.4 Water Resources and Hydrology

3.4.1 Definition of Resource

For the purposes of this analysis, water resources include all watersheds, surface water, groundwater, and floodplains associated with SCAFR. Flood hazards associated with 100-year floodplains, and quality and availability of surface and groundwater are also addressed in this section, as appropriate.

3.4.2 Watersheds

SCAFR is located within the C.J. Strike Watershed and the Bruneau Watershed. The C.J. Strike Watershed is a drier watershed that is drained by small, intermittent tributaries such as West Fork Brown's Creek, Saylor Creek, Deadman Creek, and Pot Hole Creek. These intermittent tributaries in turn drain north into the Snake River (USAF ACC, 1996a).

The Bruneau Watershed runs from the northwest corner of SCAFR to the middle of the southern SCAFR boundary and is characterized by high elevations and great topographical relief. Precipitation is drained through deeply cut canyons of the major perennial rivers. Major tributaries within the Bruneau River watershed include the Bruneau and Jarbidge Rivers, Big Jacks Creek, Clover Creek, and Sheep Creek. Many other minor and intermittent streams are found in the area. Water collected within this watershed flows north into the Bruneau River and eventually into the Snake River at C. J. Strike Reservoir.

3.4.3 Surface Water

SCAFR contains very few locations where surface water is reliably present. Most surface water is seasonal and found in ephemeral or intermittent streams or as a water impoundment for livestock. No surface waters exist in the EUA, but several ephemeral streams are present.

3.4.4 Groundwater

SCAFR is not supplied with water from the aquifer underlying this location. All water is trucked in from offsite. A test well was drilled to a depth of 980 feet on SCAFR and no ground water was encountered.

3.4.5 Floodplains

No 100-year floodplains are located within SCAFR according to 1988 FEMA maps. No floodplains are associated with SCAFR because of the lack of significant drainages.

3.5 Hazardous Materials, Hazardous Waste, and Solid Waste

3.5.1 Definition of Resource

Solid wastes are generally defined as any discarded material (including solids, liquids, and containerized gasses) that are abandoned, recycled, or considered inherently waste-like. In this document, the term solid waste will not include hazardous wastes.

Hazardous materials are substances with strong physical properties of ignitibility, corrosivity, reactivity, or toxicity, that may cause an increase in mortality, serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. These may include: flammable and combustible liquids; compressed gasses; solvents; paints; paint thinners; pesticides; petroleum, oil, and lubricants (POLs); and other toxic chemicals.

Hazardous wastes are any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment. Hazardous wastes are generated from a variety of functions including, but not limited to, corrosion control, painting, and vehicle maintenance. Hazardous wastes have characteristics of ignitibility, corrosivity, reactivity, or toxicity (40 CFR 261 subpart C) or are a listed waste (40 CFR 261 subpart D).

Hazardous materials and wastes are federally and state regulated in accordance with the Federal Water Pollution Control Act (WCPA); Clean Water Act (CWA); Solid Waste Disposal Act (SWDA); Toxic Substances Control Act (TSCA) (federal only); Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and Clean Air Act (CAA). Pesticide application, storage, and use is regulated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The Occupational Safety and Health Act (OSHA) regulates worker safety when dealing with the use of hazardous materials and wastes. The federal government is also required to comply with the intent of the acts and with all applicable state laws and regulations under Executive Order (EO) 12088, DoD Directive 4150.7, AFI 32-1053, DoD 4715.4, and DoD 4160.21-M.

3.5.2 Hazardous Waste Generation

Generators of hazardous waste are responsible for properly segregating, storing, and labeling the waste generated in their work areas. They are also responsible for marking, packaging, and transferring the hazardous waste to the permitted MHAFB 90-day facility for disposal, if applicable.

MHAFB generates more than 2,200 pounds of hazardous waste per month, thus categorizing the facility as a large quantity generator by EPA definitions. Hazardous wastes are manifested and transported to a permitted treatment, storage, and disposal facility (TSDF) within 90 days of receipt. CEV is the only point of contact for manifesting hazardous

waste off-site. The only hazardous wastes present in the EUA are petroleum products, lubricants, and fluids associated with machinery.

Should any spills occur during range operation, personnel would contact CEV at 828-6351 immediately.

3.5.3 Solid Waste

Non-hazardous solid wastes include spent inert ordnance, target residue, and common household wastes at the EUA. EOD will be conducted for the entire 12,000-acre EUA, including the primary target areas.

3.6 Biological Resources

Biological resources are all the living components of an ecosystem. Biological resources include four major categories: vegetation, wildlife, wetlands, and threatened and endangered species. These categories are described in detail below. A complete list of flora and fauna found on SCAFR is provided in Appendix C.

3.6.1 Vegetation

3.6.1.1 Definition of Resource

For purposes of this EA, vegetation includes terrestrial plants and plant communities, plant species of concern, and weed species of concern. A plant community is a combination of plants that depend on their environment, modify their environment, and influence one another. Together with their common habitat and other associated organisms, communities form an ecosystem, which is in turn, influenced by neighboring ecosystems and the microclimate of the region.

Land within the SCAFR lies within the regional landform and vegetation classification known as the Intermountain Sagebrush Province/Sagebrush Steppe Ecosystem (Bailey and Kuckler, 1996), which is widespread over much of southern Idaho, eastern Oregon, eastern Washington, and portions of northern Nevada, California, and Utah. This ecosystem contains a large diversity of landforms and vegetation types, ranging from vast expanses of flat sagebrush-covered plateaus to rugged mountains blanketed with juniper woodlands and grasslands.

Historic upland vegetation in this area once consisted of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) growing in association with other native shrub-steppe understory species, such as bluebunch wheatgrass (*Agropyron spicatum*), Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Sitanion hystrix*), phlox (*Phlox longifolia.*), lupine (*Lupinus sp.*), Indian ricegrass (*Oryzopsis hymenoides*), needle-and-thread (*Stipa comata*), sharp-leaved penstemon (*Penstemon acuminatus*), and Indian paintbrush (*Castilleja* spp.). Low sagebrush (*Artemisia nova* [formerly *A. arbuscula*]) was a dominant shrub in the higher elevations and along the gravelly ridges in the western part of the region. Rabbitbrush (*Chrysothamnus nauseosus* and *C. viscidiflorus*) was commonly found in swales and disturbed areas. Rabbitbrush was once a minor component of mature sagebrush stands and a major component of plant communities that had undergone fires that removed the sagebrush component. Other mosaic communities that frequently formed within Wyoming big

sagebrush stands, usually on drier, more saline, lower elevation sites, were salt desert shrub community types, such as shadscale (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*), and four-wing saltbush (*Atriplex canescens)*.

3.6.1.2 Plant Species with Conservation Status

Plant species with conservation status include plants considered rare, threatened, or endangered and protected by federal regulations. For this EA, the category also includes those species considered rare, threatened, or endangered by the State of Idaho. Federally listed and proposed threatened and endangered species are provided statutory protection under the Endangered Species Act of 1973 (ESA). While candidate and sensitive species are not protected, many land and resource managers use these classifications in order to manage their activities such that they do not degrade the status of candidate or sensitive species thereby accelerating their decline to such a degree that U.S. Fish and Wildlife Service (USFWS) considers it necessary to list them under the ESA. Furthermore, because lists of special status plants may change during the life of a project, candidate and sensitive species are often assessed and managed as if they were federally protected. One plant species of concern, Greeley's wavewing (*Cymopterus acaulis* var *greeleyorum*), is known to occur on SCAFR.

Greeley's Wavewing. Greeley's wavewing is a rare variety of wavewing or spring parsley described by Grimes and Packard in 1981. A member of the Apiaceae Family (Carrot Family), Greeley's wavewing is acaulescent (no apparent aboveground stem) with bipinnate leaves. It flowers in March or April and sets fruit in June. It is known to occur only in Idaho and Oregon where it is endemic to volcanic ash deposited soils in Elmore and Owyhee Counties in Idaho and Malheur County, Oregon (BLM 2001). It is one of a group of plants that have adapted to the harsh growing conditions on the volcanic ash deposits of the Owyhee Upland Ecoregion (VanderSchaaf 1996). It grows on sandy soils and on brown and white volcanic ash deposits in Wyoming sagebrush, desert shrub and Indian ricegrass zones (BLM 2001). The following text with specific plant description, current specific occurrences and threats is from Murphy et al. (2003):

> This variety of Cymopterus acaulis is distinguished from other varieties by having umbels of yellow flowers (versus white) with yellow stamens. It is a low-growing, taprooted perennial with flat, pinnately dissected leaves (compound leaf with leaflets or leaf lobes arranged along each side of the main leaf stalk, like a feather. Pinnate leaves can be further divided into double pinnate [bipinnate]) near the ground. The fruits have prominent wavy wings. The variety is endemic to the Owyhee Front, the McBride Creek area, and adjacent eastern Oregon. One cluster of populations is known from around Bruneau Dunes State Park. The early spring (or even late winter) flowering period of this species occurs before the time of most special status plant surveys. As a result, the diagnostic yellow flower color is not often observed, and the variety of Cymopterus acaulis at numerous sites has never been confirmed. This plant typically grows on sparsely vegetated, light-colored ash and clay exposures (at McBride Creek), as well as on unproductive sandier sites within mixed desert shrub and Artemisia tridentata ssp. wyomingensis communities (at Bruneau Dunes). Most populations are small and threat information is not well documented within its narrow range.

3.6.1.3 Status and Current Vegetation

Plant communities were classified and mapped on SCAFR during the Ecosystem Survey (USAF ACC, 1996a). Field data collection for 129 plots was done between June 2 and July 24, 1994. Within each plot, information was collected on percent cover of each plant species, bare ground, litter, wood, and rock. Cover for plants is defined as the percentage of ground surface included in the vertical projections of a polygon drawn about the extremities of the undisturbed foliage of the plant (Daubenmire, 1970). Multivariate analysis was used to classify the vegetation. The vegetation plots were grouped according to co-occurrence and similarity in cover of dominant species. These groups were assigned names reflecting the dominant or co-dominant species.

Vegetation on SCAFR varies according to historic and current land use. Areas inside the EUA have been subject to fires, reseeding, weed encroachment, disturbance activities from training, prescribed fires, plowing fire breaks, and road maintenance. Areas that have been converted from shrub-steppe through these practices are relatively weedy, with dominant vegetation in the form of annuals with a perennial, early seral component. Sandberg bluegrass and bottlebrush squirreltail are native remnants in these cheatgrass/annual kochia (*Kochia scoparia*)/Russian thistle (*Salsola iberica*)-dominated communities. Areas not subject to repeat disturbance, but where sagebrush has been removed, may also contain phlox, sego lily (*Calochortus nuttallii*), larkspur (*Delphinium bicolor*), needle-and-thread grass, Indian ricegrass, and, in wetter draws, Great Basin wildrye (*Elymus cinereus*).

Areas outside the EUA that have been burned have a variety of seeded species. Seeded species common on SCAFR outside the EUA include crested wheatgrass (*Agropyron cristatum)*, rangeland alfalfa, four-wing saltbush, and other hardy perennials used for cattle forage. Large, disconnected remnant stands of sagebrush occur in various densities and seral stages. Mature sagebrush stands that have not been subject to fires are usually invaded by cheatgrass to some degree, and perennial grasses are greatly reduced by the competition with sagebrush. Rabbitbrush occurs at low densities throughout SCAFR.

Within SCAFR, Wyoming big sagebrush-grassland communities dominate the western and southern parts of the range in areas that have not been burned or cleared. The majority of SCAFR vegetation has burned in the past and now consists of crested wheatgrass or cheatgrass/Sandberg bluegrass communities (Figure 10). Neither crested wheatgrass nor cheatgrass are native; the former was intentionally seeded and the latter opportunistically invaded disturbed lands. The non-native dominated areas are usually low in plant species diversity and provide little habitat for native wildlife species. This has a negative impact on native wildlife adapted to sagebrush-grassland communities.

Crested wheatgrass or cheatgrass/Sandberg bluegrass communities cover nearly 80,000 acres or almost 73 percent of the range (1997 data). In 1999, a large fire (Impact SE fire) burned approximately 5,000 acres of Wyoming big sagebrush habitat. Five other fires in 1999 brought the total area burned to approximately 12,300 acres. In 2000, a large fire (Impact SE) began on SCAFR and traveled off the range into surrounding BLM land. A total of 9,300 acres (2,300 acres of SCAFR, 5,800 acres of BLM, and 1,200 acres of state land) were burned in this fire. The fire primarily impacted the Wyoming big sagebrush communities. A large lightning-caused fire in 2005 (Clover Fire) started on BLM land south of SCAFR and swept through approximately 35,000 acres on SCAFR before turning east and leaving

SCAFR. The Clover Fire burned approximately 110,000 acres of BLM land east of SCAFR. Vegetation burned on SCAFR included 4500 acres of sagebrush communities. This area was reseeded in fall 2005 to replace sagebrush and other native plants lost in the fire. The remaining 30,000 acres within the fire perimeter were left unseeded, due to the cooler nature of the fire in these areas and probable natural return to its previous condition of crested wheatgrass and cheatgrass dominated vegetation.

Very small areas of wetlands occur on SCAFR and no wetlands exist on the EUA. Wetlands at SCAFR have been developed for livestock use under the management of the BLM and have very little wetland vegetation associated with them. Six playas or vernal pools exist on SCAFR.

3.6.2 Wildlife

3.6.2.1 Definition of Resource

Wildlife resources comprise terrestrial and aquatic fauna. Wildlife habitat consists of all environmental attributes required by an animal or aquatic species to survive and reproduce (for example, food, water, and cover). Geographical species distribution and abundance depends on the quality, quantity, and distribution of available habitat.

3.6.2.2 Wildlife Species with Conservation Status

Wildlife species with conservation status include animals considered rare, threatened, or endangered and protected by federal regulations. For this EA, the category also includes those species considered rare, threatened, or endangered by the State of Idaho. Federally listed and proposed threatened and endangered species are provided statutory protection under the ESA. Many land and resource managers use the candidate and sensitive species classifications to manage their activities even though they are not protected by the ESA. In this way, they do not accelerate their decline to such a degree that USFWS considers it necessary to list them under the ESA. Furthermore, because lists of special status wildlife may change during the life of a project, candidate and sensitive species are often assessed and managed as if they were federally protected.

In spring 1995, habitat mapping and raptor nesting surveys were performed on SCAFR. No federally listed threatened or endangered species were found and limited foraging habitat is available for listed species.

3.6.2.3 Status and Current Conditions

On SCAFR, the State of Idaho, the BLM, and MHAFB all participate in managing habitat. Wildlife habitat is maintained or removed through vegetation manipulation. On SCAFR, outside the EUA, vegetation is largely managed through rehabilitation and grazing practices, by permits administered by the BLM through a public land order. Although the BLM provides administrative support and grazing permits, MHAFB is still responsible for managing wildlife habitat and biological diversity on SCAFR through ecosystem management. The conservation of biodiversity is directed under AFI 32-7064. MHAFB has performed ecosystem surveys to provide information to assist in management decisions. Study results may indicate a need to modify current vegetation management strategies (adaptive management) to meet Air Force ecosystem management requirements and objectives to protect biodiversity.

West Fork Brown's Creek
Brown's Creek
Pothole Creek
Bruneau River
Pothole Butte
Clover Creek Road
N
W
E
S
0 2,500 5,000 10,000 Feet
1:100,000

- Wyoming Big Sagebrush
- Shadscale Saltbrush
- Crested Wheatgrass
- Annual Grasslands
- Cheatgrass
- Sandberg's Bluegrass
- Needle and Thread Grass
- Canyon Shrublands
- Vernal Pool
- Bare Ground
- Agriculture
- impoundment
- vernal pool
- wetland
- Bruneau River
- Stream
- Greeley's Wavewing

Base Map Features

- Saylor Creek Range Boundary
- Exclusive Use Area Boundary
- Gravel road
- Unimproved road
- Township/Range
- Public Land Section Lines

Vegetation on SCAFR

ENVIRONMENTAL ASSESSMENT:
EMPLOYMENT OF THE 2.75-INCH ROCKET AT SAYLOR CREEK AIR FORCE RANGE

FIGURE
10

W072004004BOI

A wide variety of wildlife species are found utilizing habitats on SCR. During recent surveys, 69 species of animals, representing 40 families, have been recorded on SCR (Rudeen 2006). Figure 11 shows how these species are distributed among the various habitats.

During the Ecosystem Survey project, seasonal surveys were performed for pronghorn antelope, sage grouse, raptors, reptiles, and amphibians. Data were also recorded as incidental observations during the plant community and rare plant surveys.

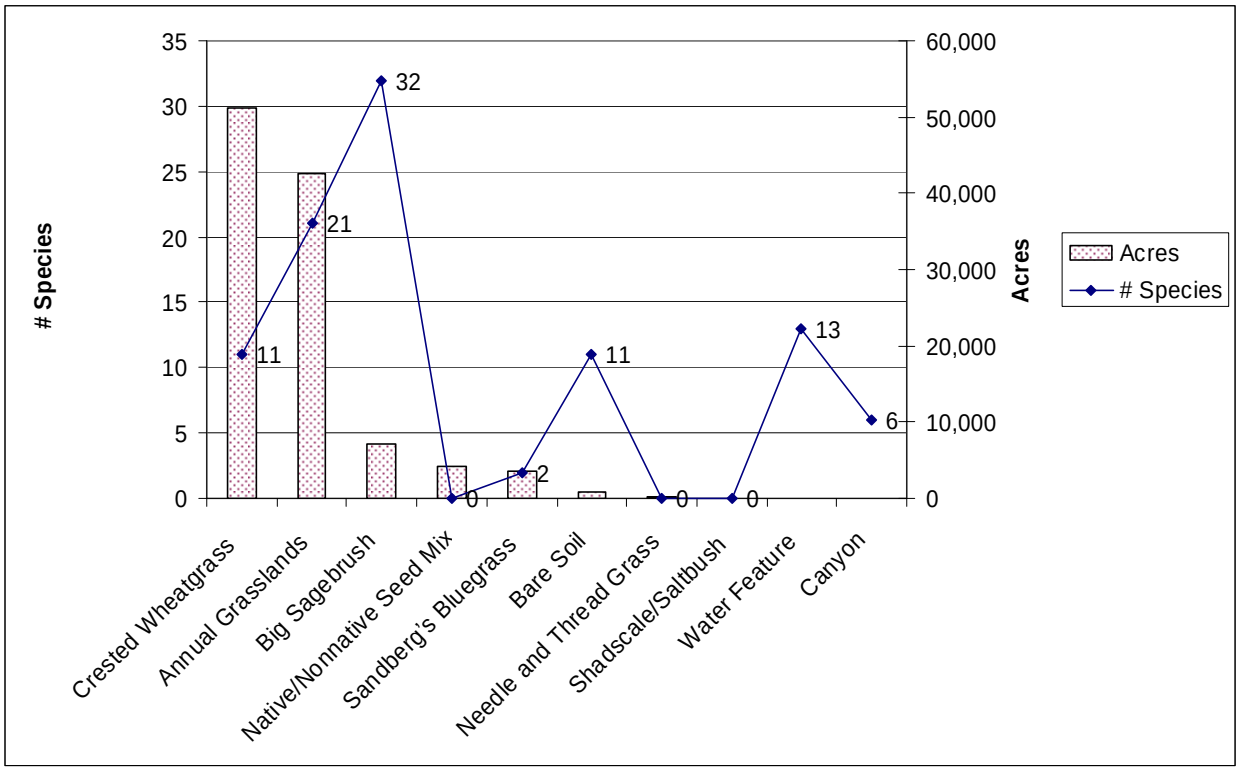


FIGURE 11
Number of species observed per vegetation category and acres of each category.
(All vegetation classes have not been surveyed proportionately. Species data is not flawless and will change as more data is collected.) Source: USAF 2006.

Mammals

Mammals recorded on SCAFR include pronghorn antelope (*Antilocapra americana)*, mule deer (*Odocoileus hemionus)*, elk (*Cervus canadensis*), coyote (*Canis latrans)*, and badger (*Taxidea taxus)*. Pronghorn antelope use SCAFR year-round, including the EUA. Range staff have reported having to suspend operations temporarily to move pronghorn antelope away from the targets and report herds up to 200 animals in the winter. During the surveys, pronghorn antelope were found in higher numbers in the spring (150 animals) than in the winter (25 animals in 1994 and 77 animals in 1995). In the winter, pronghorn antelope appear to concentrate in habitats with a shrub component and they tend to gather in larger herds. Winter use of SCAFR depends in part on the severity of the winter. The southern portion of SCAFR is used more frequently because of the higher component of sagebrush. During very severe (high snow cover) winters, animals congregate in the more snow-free areas near the Bruneau River Canyon. Surveys performed in the Owyhee uplands of southwestern Idaho

found that pronghorn antelope densities in low sagebrush communities were considerably higher than in the Wyoming big sagebrush types. No low sagebrush communities exist in the vicinity of SCAFR. Densities of pronghorn antelope in the crested wheatgrass and Wyoming big sagebrush communities around SCAFR appear to be fairly even and both are lower than for the low sagebrush types. Although crested wheatgrass would not be expected to provide quality habitat for pronghorn antelope, they have been observed in this area, including very small fawns suggesting this area is used for fawning or fawn rearing. Because little research has been done on population numbers and habitats around SCAFR, few inferences can be made as to the relative regional importance of SCAFR on pronghorn population numbers.

The ecosystem survey documented 12 mule deer during the spring surveys. These data suggest that these ungulates migrate through the area in the spring. Observations in winter (December, January, and February) 2000, 2001, and 2005 confirmed that large herds of mule deer use SCAFR as winter range. Coyotes were found to use the area year-round. Badgers were recorded from spring through fall. Elk have been seen in spring.

No small mammal surveys, including bat surveys, were performed. Piute (formerly Townsend's) ground squirrel (*Spermophilus mollis)* is found on SCAFR, but not at the high density that is typical on MHAFB. Voles (*Microtus* spp.) and kangaroo rats (*Dipodomys* spp.) were also observed. Mountain cottontail (*Sylvilagus nuttallii*), black-tail jackrabbits (*Lepus californicus*) and white-tail jackrabbits (*Lepus townsendi*) occur in this area. Bats were also in the area, however, the species has not been identified. It is likely that bats concentrate foraging efforts around the stock tanks and springs or seeps located on SCAFR.

Birds

Raptors. Eleven species of raptors were recorded utilizing canyons and uplands on SCAFR during the various Ecosystem Survey studies. No territories or nests are located on the EUA.

Canyon habitat is found along the Bruneau River outside and to the west of SCAFR. Although some low rimrock occurs on SCAFR, no canyon habitat occurs. Six territories were detected during spring nesting surveys in 1995 along 17 miles of the Bruneau River Canyon that is beneath SCAFR's associated restricted airspace (R-3202). These include golden eagle (*Aquila chrysatos*) (three nests/territories), prairie falcon (*Falco mexicanus*) (two nests/territories), and red-tailed hawk (*Buteo jamaicensis*) (one nest/territory). These densities are lower than those found in the nearby Snake River Canyon, which is 6 miles to the north, possibly because of decreased availability of prey for raptors. Prey availability is related to several factors, including soil texture, vegetation cover, and forage availability. Although no small mammal or songbird surveys have been conducted in the area, it appears that populations of these prey groups are lower in SCAFR than in the areas of the Snake River Birds of Prey National Conservation Area (NCA), which supports significantly higher densities of nesting raptors.

Waterfowl. No concentrations of waterfowl are found within SCAFR, the EUA, or the overlying restricted airspace, because appropriate habitat and bodies of water do not occur. Waterfowl concentrate year-round along the Snake River just north of SCAFR. Densities along the Snake River are significantly less than many other sites in the region, but large numbers of birds migrate through the area during spring and fall. Canada geese (*Branta canadensis)*, mallards (*Anas platyrhynchos)*, wood ducks (*Aix sponsa)*, buffleheads (*Bucephala*

albeola), goldeneyes (*Bucephala clangula)*, coots (*Fulica atra),* loons (*Gavia* spp.), western grebes (*Aechmophorus occidentalis)*, avocets (*Recurvirostra americana)*, and cormorants (*Phalacrocorax auritus*) are among the waterfowl species that occur in the Snake River Flyway. Waterfowl may use temporarily flooded areas (for example, playas) and man-made livestock ponds on SCAFR to provide staging areas during seasonal movements and the spring migration.

Upland Game Birds. Ring-necked pheasants (*Phasianus colchicus*), and chukars (*Alectoris chukar*) were not recorded on SCAFR or the EUA, but anecdotal information indicates chukars use Loveridge Gulch and Browns Gulch. However, pheasants are known to occur along the lower Bruneau River and Snake River Canyon and chukars are common in the Bruneau River Canyon. Mourning doves (*Zenada macroura*) and Gray Partridge (*Perdix perdix*) have been recorded on SCAFR.

Amphibians

The only SCAFR habitat for amphibians includes Pot Hole Reservoir, springs and stock tanks. No amphibians were found during surveys. The EUA has no known or potential habitat for amphibians.

Reptiles

Five reptiles were located during surveys: desert horned lizard (*Phrynosoma platyrhinos*), long-nosed leopard lizard (*Gambelia wislizenii*), sagebrush lizard (*Sceloporus graciosus*), gopher snake *(Pituophis catenifer deserticola)*, and garter snake *(Thamnophis* spp.*).* SCAFR personnel commonly report observing western rattlesnakes *(Crotalus viridus)* at SCAFR. All these reptiles could be expected to occur at the EUA. Reptile activity is highest in the early summer, because all reptiles in the area hibernate during the winter. All reptile species were found in upland locations, with most observed in or near areas with a distinct shrub cover (stands of sagebrush or rabbitbrush several hundred meters in diameter to widely scattered shrubs within a crested wheatgrass seeding). Only the desert horned lizard was commonly encountered within stands of crested wheatgrass.

Invertebrates

Five species of fairy shrimp are reported to be in Idaho. *Branchinecta campestris* is the only species of fairy shrimp which has been found on SCAFR. It was found in Pot Hole Reservoir.

Special Status Species

The Idaho Conservation Data Center (ICDC) tracks rare animals in Idaho. No federally listed threatened or endangered species have been found on SCAFR. Surveys for kit fox (*Vulpes macrotis*) did not reveal this species and it has not been recorded in the vicinity of SCAFR according to the ICDC. The pygmy rabbit (*Sylvilagus idahoensis*) has not been found on SCAFR. No Townsend's big eared bat (*Plecotus townsendii*) surveys have been conducted on SCAFR. The bald eagle (*Haliaeetus leucocephalus)* is known to winter west of SCAFR in the lower Bruneau River Canyon and north along the Snake River Canyon. Bald eagles may forage in the area in winter. Two rare snakes (long-nose snake [*Rhinocheilus lecontei*] and western ground snake [*Sonora semiannulata*]) were not located during surveys on SCAFR. Although the Idaho dunes tiger beetle (*Cicindela arenicola*) has been found north of SCAFR, this species was not found on SCAFR. None of these species have been found in the EUA.

Burrowing Owl (*Speotyto cunicularia*). Burrowing owls are known to occur on SCAFR in areas with less shrubs or in grassland habitat, which could include the EUA. It has not been reported from the EUA.

Ferruginous Hawk (*Buteo regalis*). A ferruginous hawk has been observed flying within the boundaries of SCAFR and could utilize the EUA.

Sage Grouse (*Centrocercus urophasianus*). All large expanses of sagebrush on SCAFR are potential sage grouse habitat or transit areas. Sage grouse have been seen east of the EUA in sagebrush habitat. Use patterns on SCAFR are not well known at this time. A substantial forb component is important during the breeding season.

According to Idaho Department of Fish and Game (IDFG) data from 2000, SCAFR contains five sage grouse leks, areas used for mating displays and breeding. Birds have used three leks within the last 7 years, one has been active in the last 70 years, and one is a historic lek location. The closest active lek to the target locations in the EUA of SCR is over 4 miles. Neither the current nor historic leks are located in the EUA.

Long-billed Curlew (*Numenius americanus*). Long-billed curlews have been found on the northern edge of SCAFR, but no nests have been recorded.

Loggerhead Shrike (*Lanius ludovicianus*). Loggerhead shrikes have been observed on SCAFR in appropriate sagebrush habitat; at one pair has been frequently observed in the sagebrush habitat adjacent to the West EUA gate and use the EUA fence in this area as a perch site.

Sage Thrasher (*Oreoscoptes montanus*). Sage thrashers have been observed singing territorial songs within large sagebrush tracts on SCAFR, but not reported from the EUA.

Brewer's Sparrow (*Spizella breweri*). Brewer's sparrow has been observed singing in sagebrush tracts on SCAFR, but not reported from the EUA.

Sage Sparrow (*Amphispiza belli*). A sage sparrow was observed in a large sagebrush tract on the southern end of SCAFR in June 2003. All remaining large expanses of sagebrush on SCAFR are potential sage sparrow breeding habitat.

3.6.3 Wetlands

3.6.3.1 Definition of Resource

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE, 1987). Areas that are periodically wet, but do not meet all three criteria (hydric vegetation, soils, and hydrology), are not jurisdictional wetlands subject to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. On January 9, 2001, the U.S. Supreme Court ruled on isolated wetlands in a wetland jurisdiction case commonly known as the Solid Waste Agency of Northern Cook County (SWANCC) Decision. In the SWANCC Decision (Solid Waste Agency of Northern Cook County vs. United States Army Corps of Engineers-Slip Opinion, No. 99-1178), the Court ruled that the "Migratory Bird Rule" could not be solely used under Section 404 to assert federal jurisdiction over isolated non-navigable intrastate waters that are not "tributary" to or "adjacent" to navigable waters or tributaries.

3.6.3.2 Status and Current Conditions

A USACE wetland delineation survey was performed on SCAFR during 1997. Wetland surveys were performed for the Ecosystem Survey using a review of National Wetlands Inventory (NWI) maps and through field sampling the range of wetland types found on SCAFR. Two riverine (associated with rivers) and seven palustrine (marshy) wetland types were located. Other wetland information can be found in the Ecosystem Survey, MHAFB and Saylor Creek Air Force Range (SCAFR), Final Report (USAF ACC, 1996a). No wetlands are found in the EUA.

Riverine

The riverine wetlands are found along Brown's Creek and the West Fork of Brown's Creek, located in the northwestern portion of SCAFR and Pot Hole Canyon on the eastern side. None of the riverine wetlands are jurisdictional because they do not meet the hydric soil development and hydrological regime criteria. These intermittent and ephemeral channels fall into the "waters of the U.S." category and are under the jurisdiction of the USACE.

Palustrine

Most of the palustrine wetlands are very small diked or excavated reservoirs developed and maintained as a livestock water source. These areas are not considered jurisdictional wetlands because they were developed and are maintained for agricultural use. Palustrine wetlands that do meet the criteria for jurisdictional wetlands are small seeps found along Pot Hole Creek. Wetland vegetation development is poor and erosion and mud wallows have developed as the result of livestock use.

Playas

Three small vernal pools or playas are located near Pot Hole Butte and one at the very southwestern corner of SCAFR that has been excavated for livestock water. The excavated playa in the southwest corner of SCAFR no longer meets the criteria of wetland, as the playa has been destroyed. These are not classified as jurisdictional wetlands.

Results from wetland surveys on SCAFR completed in 1997 revealed many very small jurisdictional wetlands located in seeps along Pot Hole Creek (Figure 12).

Impoundments

Approximately four small impoundments exist on current NWI maps for SCAFR, which used 1984 photography (Figure 13). These areas are very small diked or excavated reservoirs developed and maintained as a water source for livestock and are not considered jurisdictional wetlands. These areas evaporate during the hot, dry months of summer, and water quality is poor because of the amount of suspended sediment from livestock trampling.

3.6.4 Threatened and Endangered Species

No federally listed threatened and endangered species exist on Air Force land in Idaho at this time.

3.7 Geology and Soils

3.7.1 Definition of Resource

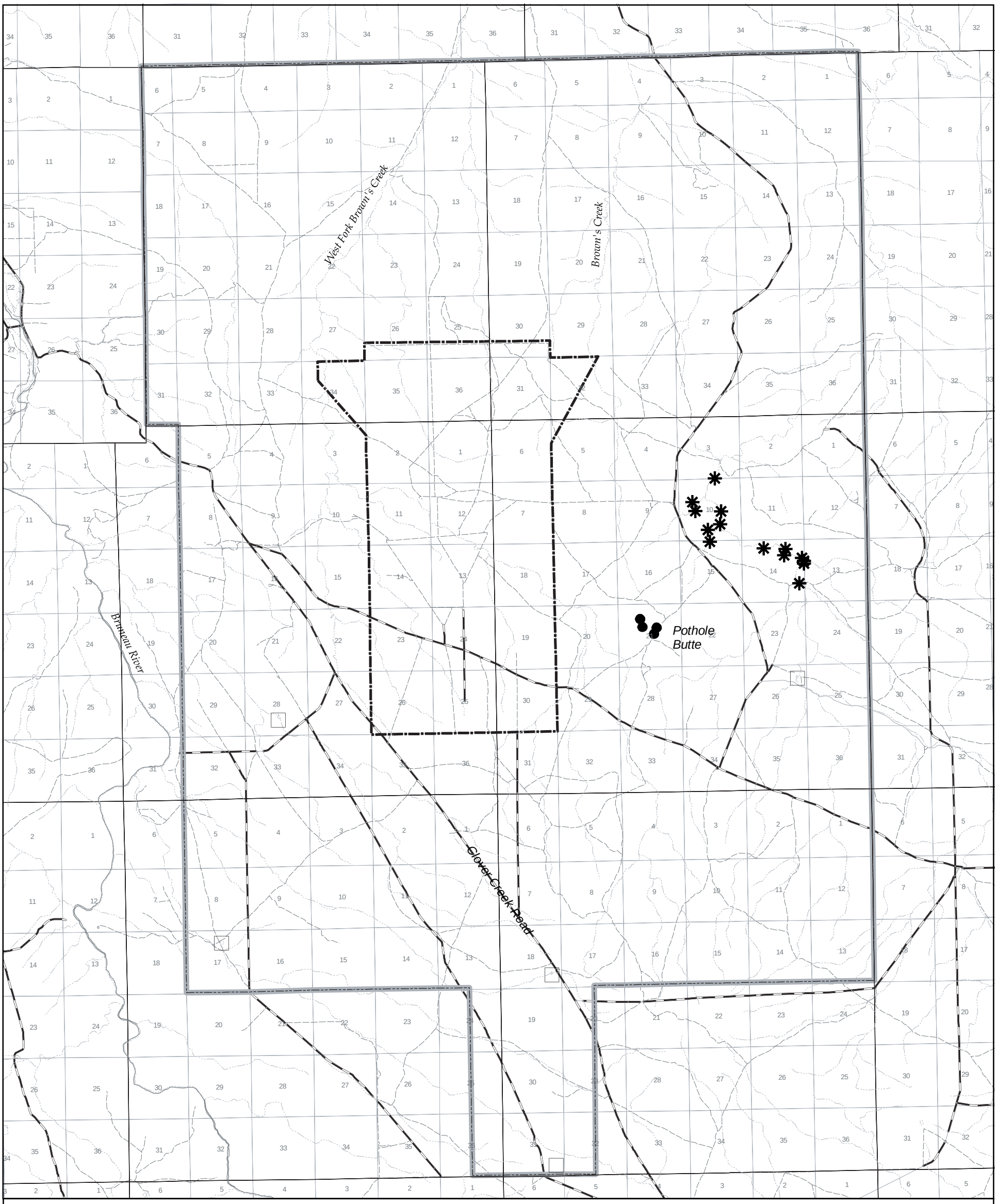
Much of southern Idaho is characterized by a crescent-shaped, relatively flat, broad swath of the Snake River Plain (Figure 14). While the plain has little relief, geologically, it contains distinctive eastern and western parts that differ in structure and geology. The western Snake River Plain is a northwest-trending structural basin bounded on both the southwest and northeast by high-angle faults (Malde, 1991).

The western Snake River Plain is thought to be an area of crustal rifting that started about 16 million years ago and grew southeasterly until approximately 3 million years ago (Malde, 1991). Early volcanism resulted in thick deposits of rhyolites and basalts. Approximately 8 million years ago, a Lake Ontario-sized body of water, often referred to as "Lake Idaho," formed in the western Snake River Plain stretching from roughly the present-day Baker, Oregon, to Hagerman, Idaho. This resulted in thick sedimentary deposits of ash, clays, silts, sands, and gravels (Gillerman and Bonnichsen, 1990). It is thought that the lake drained about 2 million years ago in the vicinity of Hells Canyon, linking the Snake River with the Columbia. Subsequently, basalt flows of the Bruneau Formation and Snake River Group (2 to 0.5 million years ago) have done much to shape the current landscape. The remains of several shield volcanoes, cones, and vents can be found in the vicinity of and on SCAFR (USAF ACC, 1996b).

The Snake River Canyon, just north of SCAFR, has taken much of its present-day form because the western Snake River Plain was inundated by Lake Idaho. Basalt flows from the Bruneau Formation and Snake River Groups have altered the course of the river several times by filling the canyon. The present course of the river lies at the southern margin of the flows from the Snake River Group. The Bonneville Flood, a name given to the catastrophic flood from the outflow of Pleistocene Lake Bonneville about 15,000 years ago, scoured the canyon and deposited the large basalt boulders known as melon gravel. Outcrops occur on SCAFR and basalts of the Snake River Group can easily be found in the vicinity (Gillerman and Bonnichsen, 1990).

3.7.2 Status and Current Conditions

SCAFR lies within the western Snake River Plain. Soils on SCAFR vary widely, with 35 types occurring, but the soil designation of the area is the aridisol order (Figure 14). Soils on the northern portion of SCAFR, closer to the Snake River, are composed of lake and stream deposits. Much of the range has been covered with recent wind-laid deposits with deep alluvial deposits in depressed areas. These soils have a low to moderate potential for erosion; while soils in the flat-lying EUA have low erosion potential (USAF ACC, 1996b). The EUA is dominated by one soil type, Purdam Silt Loam. Lacustrine sediments from Lake Idaho and old river gravels, often interbedded with basalts and rhyolites, can be found on SCAFR (Gillerman and Bonnichsen, 1990).



impoundment

vernal pool

wetland

Bruneau River

Streams

Base Map Features

Saylor Creek Range Boundary

Exclusive Use Area Boundary

Gravel road

Unimproved road

Township/Range

Public Land Section Lines

N

W E

S

0 2,500 5,000 10,000 Feet

1:100,000

Wetlands, Streams, and Impoundments on SCAFR

FIGURE

12

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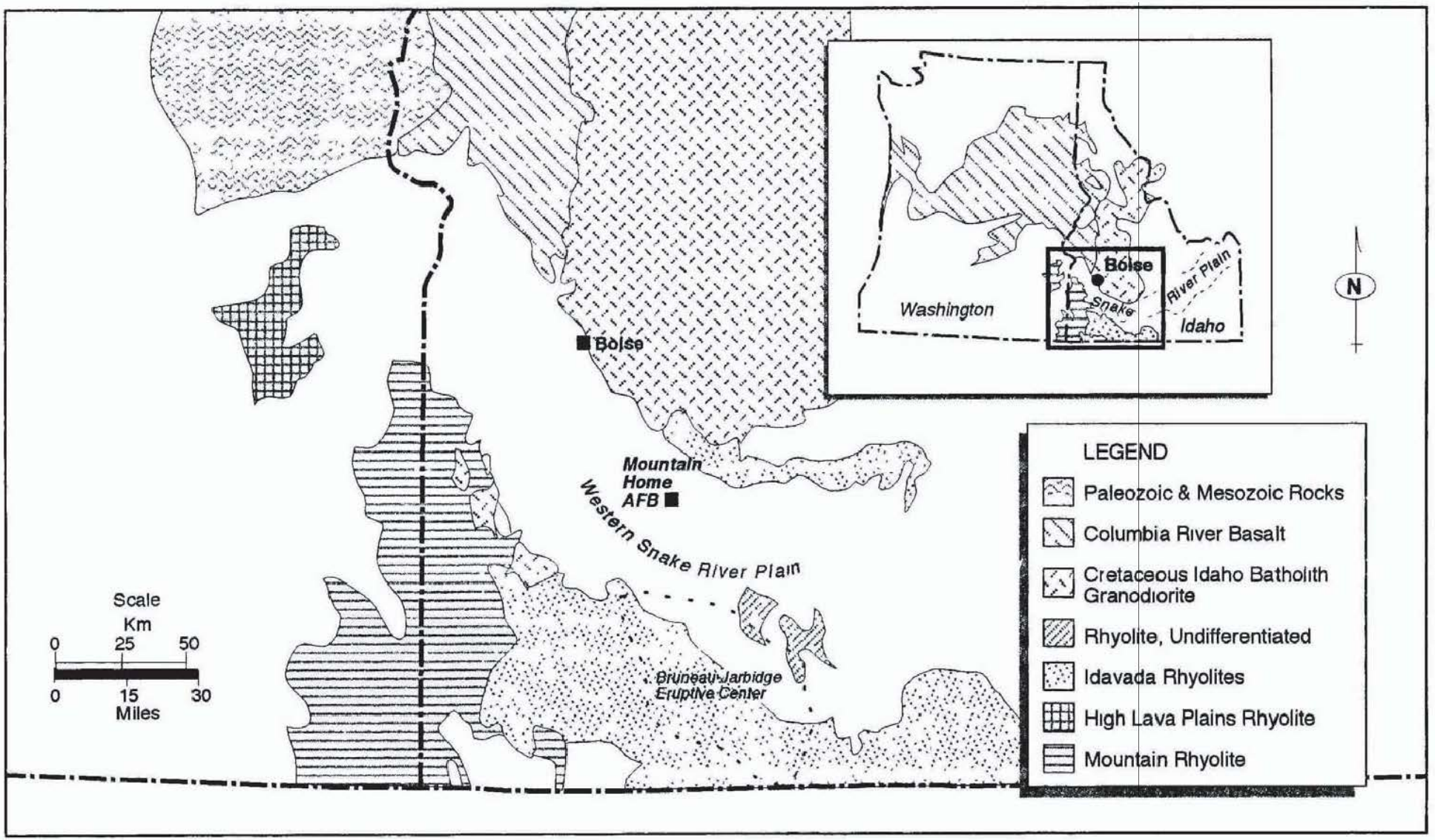
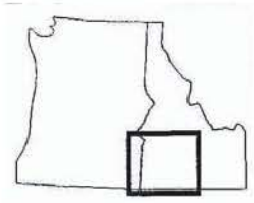




Source Howarth 1989

Geologic Map of Southern Idaho

ENVIRONMENTAL ASSESSMENT:
EMPLOYMENT OF THE 2.75-INCH ROCKET AT SAYLOR CREEK AIR FORCE RANGE

FIGURE

13

3.8 Fire Management

3.8.1 Definition of Resource

This section addresses fire management and the requirements of the Air Force Fire Protection Operation and Fire Prevention Program (AFI 32-2001), as they are implemented for SCAFR. Requirements for fire suppression activities include staffing, equipment and maintenance, accessibility, training, and the Support Agreement Between 366th Fighter Wing, MHAFB, and the BLM Lower Snake River District (July 2003).

3.8.2 Status and Current Conditions

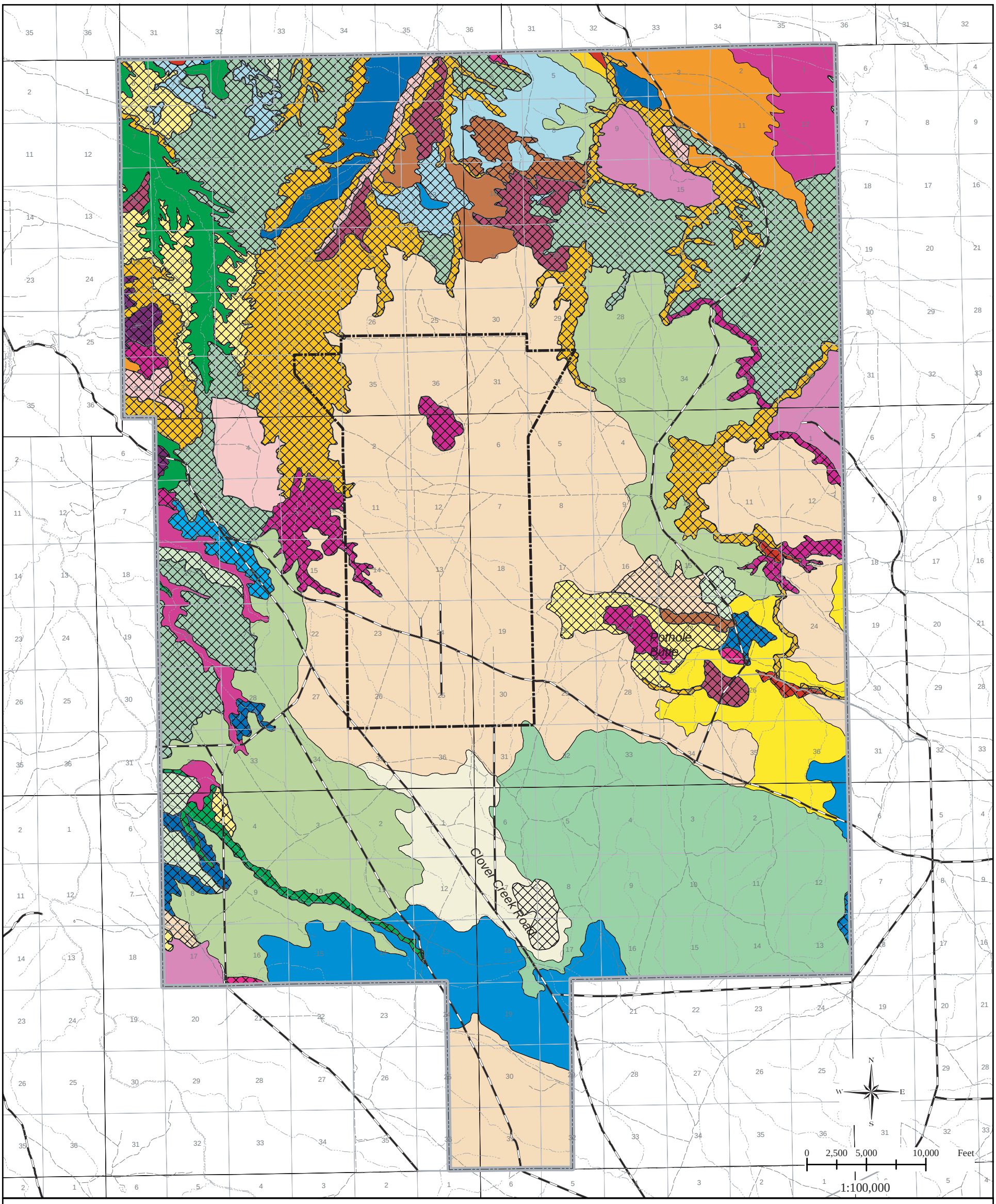
Within the last 10 years, more than 585,000 acres have burned and/or re-burned in the BLM Jarbidge Resource Area, including areas within SCAFR. The majority of fires (65 percent) are started by humans; lightning strikes account for the other 35 percent (BLM, 1996).

Aggressive fire suppression usually begins in June and extends through October. Fire season for the Mountain Home Range Complex is declared by the Base Fire Department, typically on or about June 15. Declaration of fire season can vary with weather and fuel conditions. However, during dry years, the fire season can begin as early as May and last until November. On SCAFR, firebreaks are completed by May 30 in anticipation of fire season declaration. SCAFR lies within Fire Management Zone (FMZ) 1. Current potential sources of ignition are lightning, ordnance delivery, operating vehicles, and conducting range and target maintenance activities.

Fire suppression equipment and personnel are stationed on SCAFR EUA during declared fire season to quickly suppress any fires that may start inside the EUA. In addition, the BLM has a cooperative agreement with MHAFB for protection of withdrawn lands. The Support Agreement between 366th Fighter Wing, MHAFB, and the BLM Lower Snake River District (July 2003) states that BLM will provide fire support for all land outside the EUA on SCAFR. BLM will only respond to fires in the EUA at SCAFR at the request of the Air Force. In the last five years, only one fire has escaped from the EUA onto the SCAFR and that fire was not munition related.

When fires occur outside of the fire season in the public use area, the USAF will conduct an initial attack on the fire and request and recruit BLM personnel for assistance. Fire suppression activity is included under the Interagency Support Agreement between MHAFB and BLM. Fire crews would respond from MHAFB and the BLM Jarbidge Resource Office in Twin Falls. Response times would vary from 1.0-4.0 hours depending on staffing and weather.

Range personnel record all fires. Table 6 presents a summary of all fires reported in the EUA during 1996 through 2006. Appendix A contains the detailed fire occurrence data. As shown in Table 6, 7 to 35 fires have occurred each year, which have burned approximately 42 to 4,739 acres per year. The average has been 22 fires/year with an average of 889 acres burned. Pyrotechnic munitions have not been allowed on the range during fire condition ratings of 3, 4, or 5 since 2002. Only cold munitions can be used during those conditions. Since the munition restrictions were implemented, fires have averaged 16 fires/year burning an average of 655 acres/year. Prior to the restrictions, fires averaged 22 fires/year burning an average of 1,267 acres/year. This is a considerable improvement.



- Arbidge Fine Sandy Loam,1-4% slop
- Buko Fine Sandy Loam,1-4% slop
- Buko Fine Sandy Loam,4-12% slop
- Chlicott-Elijah Silt Loam,4-12% slop
- Colthorp Stony Silt Loam,0-8% slop
- Colthorp-Chilcott Silt Loams,0-8% slop
- Colthorp-Kunaton complex,0-8% slop
- Davey Buko Complex,1-12% slop
- Davey-Quincy Complex,1-12% slop
- Greenleaf-Shano Complex,4-12% slop
- Hawsley Loamy Sand,0-12% slop
- Jacquith Loamy Fine Sand,1-8% slop
- Jacquith-Quincy Loamy Sands,0-12% slop
- McKeeth Gravelly Loam,2-12% slop
- Minidoka-Minveno Silt Loams,0-4% slop
- Owsel-Purdam complex,1-12% slop
- Purdam Silt Loam,0-4% slop
- Purdam-Sebree-Owsel Complex,0-8% slop
- Quincy Fine Sand,0-12% slop
- Quincy Loamy fine Sand,12-30% slop
- Royal Fine Sandy Loam,0-4% slop
- Royal Fine Sandy Loam,4-12% slop
- Royal-Davey Complex, 0-12% slop
- Royal-Davey Complex,12-40% slop
- Scism Silt Loam,0-4% slop
- Scoon Very Fine Sandy Loam,0-4% slop
- Shano Loam,1-12% slop
- Shano-Owsel Complex,0-12% slop
- Shano-Truesdale Fine Sandy Loams,0-12% slop
- Trevino Minidoka Complex,8-30% slop
- Truesdale Fine Sandy Loam,0-4% slop
- Truesdale Fine Sandy Loam,4-12% slop
- Vining Very Stony Fine Sandy Loam,0-8% slop
- Xeric Torriorthents-Xerollic Camborthids Complex,20-70% slop
- XericTorriorthents&XerollicCamborthidsComplex,8-20% slop

Base Map Features

- Saylor Creek Range Boundary
- Exclusive Use Area Boundary
- Gravel road
- Unimproved road
- Streams
- Township/Range
- Public Land Section Lines

Soil Types Located on SCAFR

ENVIRONMENTAL ASSESSMENT:
EMPLOYMENT OF THE 2.75-INCH ROCKET AT SAYLOR CREEK AIR FORCE RANGE

FIGURE

14

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3.9 Outdoor Recreation and Public Access

3.9.1 Definition of Resource

Recreation management on Air Force lands is designated into use classes based on multiple use potential and ecosystem sustainability:

- Class I areas (general outdoor recreation areas) are suitable for intensive recreational activities, such as camping, picnicking, and athletic sports.
- Class II areas (natural environmental areas) can support dispersed occasional activities such as hunting, bird watching, driving, and hiking.
- Class III areas (special interest areas) contain valuable historical, ecological, geological, historic, zoological, scenic, or other features that require protection.

SCAFR supports Class I and Class II recreational activities, but not in the EUA. No delineated Class III areas exist on any SCAFR lands.

TABLE 6
Fire History Summary on SCAFR EUA

Date	Total Number of Fires	Total Area Burned (acres)	Reported Causes (if known)
1996	7	478.5	Smokey Sams
1997	28	228	Smokey Sams, Controlled Burns
1998	28	88	BDU-33[a], Smokey Sams
1999	23	202	Smokey Sams, Controlled Burns, Dummy Bombs [b]
2000	35	1,863.75	BDU-33, Smokey Guns
2001	34	4,738.7	Smokey Sams, Smokey Guns, Dummy Bombs, Flare
2002	10	14	BDU-33, Smokey Sams
2003	33	41.75	Dummy Bomb, Smokey Guns
2004	11	415.5	Dummy Bombs, Smokey Sams, EOD (blow in place)
2005	16	2,179	BDU-50[c], Smokey Guns, Smokey Sams, A-10 Strafe, Lightning Strike
2006	16	626	BDU-33, Smokey Guns, Smokey Sams, GAF/Flare, A-10 Strafe, EOD (blow in place)

Source: Data provided by John Rhynes, Saylor Creek Range Site Manager
[a] BDU-33 is a 25-pound dummy bomb
[b] Dummy bombs include 2,000, 500, and 25-pound inert munitions
[C] BDU-50 is a 50-pound dummy bomb

3.10 Cultural Resources

3.10.1 Definition of Resource

Cultural resources are defined as evidence of past human activity at least 50 years of age. These may include pioneer homes, buildings, or old roads and trails; structures with unique architecture; prehistoric village sites; historic or prehistoric artifacts or objects; rock inscription; and human burial sites or earthworks. Cultural resources are nonrenewable

resources that often yield unique information about past societies and environments. Cultural resources are protected by federal legislation including the National Historic Preservation Act, Archaeological Resources Protection Act, Native American Grave Repatriation Act, and the American Indian Freedom of Religion Act.

3.10.2 Status and Current Conditions

The EUA on SCAFR was surveyed for cultural resources in 1995. Cultural sites have been found within the EUA. In 2000 and 2004, systematic monitoring of some sites within the EUA has been conducted in order to gather additional information. Because of the sensitive nature of such information, details of cultural resource sites and locations are not discussed in public documents or forums, and will not be detailed here. Consultation with the Idaho SHPO and Native American Tribes will occur concurrently with this EA to discuss specific anticipated impacts and mitigation measures required to provide protection to cultural resources.

4.0 Environmental Effects

Chapter 4 is organized by resource area. Resource areas that would not be affected by the proposed project are presented with an explanation of why no effects are expected, but not discussed in detail.

4.1 Air Quality

4.1.1 Alternative A—No Action

No change from existing conditions would occur under this alternative.

4.1.2 All Action Alternatives

4.2.1.1 Direct and Indirect Impacts

An air toxic emissions analysis was conducted for each of the five proposed ordnance to be fired on SCAFR. A small percentage of toxic air pollutant (TAP) emissions are released from the ordnance when fired from moving aircraft. The ordnance are self-propelled and TAPs are dispersed into the atmosphere as a rocket flies to a target. Ambient air impacts are not considered significant for several reasons. First, only a small percentage of TAP emissions exist within the ordnance. Second, the rockets are mobile sources and emissions disperse the small amount of TAPs at high altitudes. Third, there are no receptors at the point of emission.

For comparison only, **mobile** air toxic emission estimates were prepared for each of the five proposed ordnance and compared to **stationary** State Toxic Screening Levels (Appendix B). A conservative estimate of 14 rockets fired per hour was made based on a typical training run. The emission screening results yielded small emission quantities measured in pounds per hour (lb/hr) for each type of ordnance. For example, the total TAP emission estimates consisted of the following:

- M274 = 0.04 lb/hr
- M257 = 0.08 lb/hr
- M267 = 0.12 lb/hr
- M156 = 0.04 lb/hr
- MK61 = 0.04 lb/hr

As shown in Table 7, **mobile** emissions of chromium (III) compounds, hydrazine, and nickel compounds exceeded the **stationary** State Toxic Screening Levels. However, these emissions are very small quantities and there are no TAP standards in Idaho for mobile sources. For example, for the 2,500 rockets in the Proposed Action, the TAP is 6.6854 pounds (Appendix B). Based on this analysis, no permanent impacts on air quality would result from the action alternatives (Alternatives B and C). However, ground disturbed from rocket impact and follow-up cleanup activities would result in a small increase in fugitive dust emissions. The dust emissions would be temporary until vegetation stabilizes the impact area.

Total emissions would be less for Alternative C compared to the Proposed Action (Alternative B, as fewer rockets would be used.

4.1.2.2 Cumulative Impacts

Cumulative effects from the increase in fugitive dust associated with the action alternatives would be insignificant when combined with other ground disturbing activities in the project area.

4.2 Land Use

Existing land uses on SCAFR would not change or be affected by implementation of the action alternatives (Alternatives B and C). Grazing would still be allowed outside the EUA. Training would continue in the EUA. No impacts on land use would result from the action alternatives (Alternatives B and C).

4.3 Noise

4.3.1 Alternative A—No Action

No change from existing conditions would occur under this alternative.

4.3.2 All Action Alternatives

4.3.1.1 Direct and Indirect Impacts

An analysis of the noise made by a M274 Rocket motor was conducted on June 9, 2004, at the Orchard Training Range near Boise, Idaho. A PD Practice round was mounted on the rocket motor. A handheld Noise Dosimeter, the NoisePro SE Dosimeter, was used to record decibel levels during the tests. The Dosimeter had been properly calibrated 24 hours prior to the tests. The microphone of the Dosimeter was covered with a small sponge cover that acted as a windscreen. The microphone was held at chest height and at arms length toward the direction of sound.

The test began at a location on Christmas Mountain, 315° from the target area. Wind speeds were estimated at 15-20 mph with gusts. The location on Christmas Mountain was 3-5 km (1.87-3.10 miles) from the rocket launch area and target (3 km to where the rockets launched, 5 km to target). The wind was blowing away from the recording location towards the launch activity. Doses 1-4 were taken at this location. Dose 5 was taken at a point 15° from the target area. Winds were estimated at 15-20 mph with gusts. This second location was 2-4 km (1.24-2.49 miles) from the rocket launch area and target (2 km to where the rockets launched, 4 km to target). The wind was blowing toward the recording location from the launch activity.

Test results are shown in Table 8. For all noise Dose levels, the variance in minimum and maximum dB recorded was wind caused. Although the sound of the rocket motor could be heard through the noise of the wind rustling foliage, it did not cause an increase in the dB reading on the Dosimeter. Decibel readings ranged from 65.0 dB to 84.9 dB. Table 9 shows selected dB levels that can be used to evaluate the level of noise produced by the rocket motor.

TABLE 7
MHAFB Toxic Air Pollutant Emission Estimates; Cumulative Totals by Ordnance

Toxic Air Pollutant	M274 Emission Estimates (lb/hr)	M257 Emission Estimates (lb/hr)	M267 Emission Estimates (lb/hr)	M156 Emission Estimates (lb/hr)	MK61 Emission Estimates (lb/hr)	Cumulative Emission Estimates (lb/hr)	IDAPA 58.01.01.585/586 Toxic Screening Levels (lb/hr)	Criteria Screening
1,3-Butadiene	0.00E+00	0.00E+00	1.27E-06	2.35E-06	0.00E+00	3.63E-06	2.40E-05	Below
Acetaldehyde	1.02E-04	8.35E-05	1.01E-04	3.28E-05	1.76E-09	3.20E-04	3.00E-03	Below
Ammonia	1.00E-04	9.89E-07	1.01E-04	1.69E-06	8.20E-08	2.04E-04	1.2	Below
Antimony compounds	3.12E-04	2.34E-04	4.95E-05	1.56E-04	1.07E-04	8.59E-04	0.033	Below
Barium compounds	3.05E-04	2.47E-03	4.83E-05	1.52E-04	0.00E+00	2.97E-03	0.033	Below
Benzene	1.20E-04	4.37E-07	1.20E-04	1.21E-05	0.00E+00	2.53E-04	8.00E-04	Below
Carbon disulfide	2.22E-06	4.26E-07	2.37E-06	4.16E-06	7.92E-07	9.97E-06	2.0	Below
Carbon tetrachloride	1.40E-05	1.72E-06	4.95E-06	0.00E+00	1.62E-08	2.06E-05	4.40E-04	Below
Carbonyl sulfide	1.75E-06	3.64E-07	1.89E-06	3.28E-06	6.59E-07	7.94E-06	2.70E-02	Below
Chlorine	8.77E-06	2.19E-03	3.11E-06	0.00E+00	1.02E-08	2.20E-03	0.2	Below
Chlorine dioxide	6.70E-06	1.45E-06	2.38E-06	0.00E+00	7.77E-09	1.05E-05	0.02	Below
Chloroform	1.18E-05	1.46E-06	4.19E-06	0.00E+00	1.37E-08	1.75E-05	2.80E-04	Below
Methyl chloride	4.99E-06	6.14E-07	1.77E-06	0.00E+00	0.00E+00	7.37E-06	6.867	Below
Chromium (III) compounds	**4.09E-02**	**7.74E-02**	**6.03E-02**	**3.42E-02**	**0.00E+00**	**2.13E-01**	**0.033**	**Exceeds**
Cyanide compounds	6.14E-04	5.84E-04	6.09E-04	2.16E-04	0.00E+00	2.02E-03	0.333	Below
Cyclohexane	4.80E-05	1.75E-07	4.81E-05	0.00E+00	0.00E+00	9.63E-05	70	Below
Methylene chloride	7.89E-06	9.71E-07	2.80E-06	0.00E+00	9.14E-09	1.17E-05	1.60E-03	Below
Ethylbenzene	0.00E+00	0.00E+00	3.31E-08	3.03E-06	0.00E+00	3.06E-06	29	Below
Formaldehyde	1.02E-04	8.42E-05	1.01E-04	3.28E-05	8.29E-08	3.20E-04	5.10E-04	Below
Hexachloroethane	2.02E-05	2.48E-06	7.15E-06	0.00E+00	2.34E-08	2.98E-05	1.70E-03	Below
Hydrazine	**2.04E-04**	**1.68E-04**	**2.03E-04**	**6.55E-05**	**1.66E-07**	**6.41E-04**	**2.30E-06**	**Exceeds**
Manganese compounds	0.00E+00	0.00E+00	6.11E-02	9.25E-07	0.00E+00	6.11E-02	0.333	Below
n-Hexane	9.61E-05	3.50E-07	9.85E-05	3.67E-05	0.00E+00	2.32E-04	12	Below
Nickel compounds	**7.33E-05**	**5.29E-04**	**2.97E-04**	**3.47E-05**	**0.00E+00**	**9.34E-04**	**2.70E-05**	**Exceeds**
Nitric acid	1.02E-04	8.51E-05	1.02E-04	1.30E-05	1.65E-07	3.03E-04	0.333	Below
Sulfuric acid	7.17E-06	1.53E-06	7.40E-06	0.00E+00	2.54E-06	1.87E-05	0.067	Below
Tetrachloroethylene	1.40E-05	1.72E-06	4.95E-06	0.00E+00	1.62E-08	2.06E-05	1.30E-02	Below
Toluene	3.40E-04	1.24E-06	3.41E-04	5.55E-06	0.00E+00	6.88E-04	25	Below
Emission Totals	**0.04**	**0.08**	**0.12**	**0.04**	**0.0001**	**0.29**		

Mobile emissions of chromium (III) compounds, hydrazine, and nickel compounds exceeded the **stationary** State Toxic Screening Levels. However, these emissions are very small quantities and there are no TAP standards in Idaho for mobile sources.

TABLE 8
M274 Rocket Motor Noise Test results from Orchard Training Range, Idaho.

Dose	Time Interval	Maximum dB	Minimum dB
1	1 min 59 sec	84.3	65.1
2	1 min 20 sec	84.9	65.3
3	1 min 31 sec	79.5	65.0
4	1 min 10 sec	76.3	65.0
5	1 min 32 sec	75.5	65.0

TABLE 9
Relative Comparisons of Decibel Levels.

Sound	Noise Level (dB)	Effect
Boom Cars	140	
Jet Engines (Near)	140	
Shotgun Firing	130	
JET TAKEOFF (100-200 Fl.)	130	
Rock Concerts (Varies)	110-140	Threshold of pain (125 dB)
Oxygen Torch	121	
Discotheque/Boom Box	120	Threshold of sensation (120 dB)
Thunderclap (Near)	120	
Stereos (Over 100 Watts)	110-125	
Symphony Orchestra	110	Regular exposure of more than 1 minute risks permanent hearing loss (over 100 dB)
Power Saw (Chain Saw)	110	
Jackhammer	110	
Snowmobile	105	
Jet Fly-over (1000 Ft.)	103	
Electric Furnace Area	100	No more than 15 minutes of unprotected exposure recommended (90-100 dB)
Garbage Truck/Cement Mixer	100	
Farm Tractor	98	
Newspaper Press	97	
Subway, Motorcycle (25 Ft)	88	Very annoying
Lawnmower Food Blender	85-90	Level at which hearing damage (8 hrs.) begins (85dB)
Recreational Vehicles, TV	70-90	

TABLE 9
Relative Comparisons of Decibel Levels.

Sound	Noise Level (dB)	Effect
Diesel Truck (40 Mph, 50 Ft.)	84	
Average City Traffic Noise	80	Annoying; interferes with conversation; constant exposure may cause damage
Garbage Disposal	80	
Washing Machine	78	
Dishwasher	75	
Vacuum Cleaner	70	Intrusive; interferes with telephone conversation
Hair Dryer	70	
Normal Conversation	50-65	
Quiet Office	50-60	
Refrigerator Humming	40	Comfortable (under 60 dB)
Whisper	30	
Broadcasting Studio	30	
Rustling Leaves	20	Just audible
Normal Breathing	10	
	0	Threshold of normal hearing (1000-4000 Hz)

The highest existing dB level presented in Section 3.3.2 is 64 dB, which is similar to the baseline noise levels measured in the test. Therefore, there would be no increase in noise levels associated with the action alternatives.

Public access to Saylor Creek Range Exclusive Use Area (SCR EUA) is prohibited by fencing and signs. The closest points the public could be to the proposed target locations for rocket deployment in the EUA are:

- West Side
  - 1.8 miles
  - 2.6 miles
  - 2.7 miles
  - 3.8 miles
  - 4.1 miles
- East side
  - 0.41 miles
  - 0.75 miles
  - 1.2 miles
  - 1.4 miles

These distances correspond to points on the edge of the EUA intersected by two-track roads where the public would contact the EUA boundary fence. The likelihood of the public contacting the range boundary from the east side is low, as the east side roads are not main roads. Only two roads on the west side would be considered main roads: the access road for SCR EUA, and Clover Three Creek Road which touches the southwest corner of the EUA boundary.

Dose 5 measurements were approximately 1.24 miles from the AH-64 helicopter launching the rockets. Although the rocket motor could be heard after the rocket was deployed, the sound did not cause a change in the decibel reading. The sound of the wind rustling the foliage was the dominant sound and the sole cause of the maximum decibel readings.

Only two points on the east side of the range may encounter a dB reading in excess of 84.9 dB from a rocket motor. For the other locations, both east and west of the EUA, rocket motor noise would not be expected to be louder than the noise generated by a 15-20 mph wind.

No significant noise impacts are expected.

4.3.2.2 Cumulative Impacts

Rocket operations would not result in significant noise impacts; therefore no cumulative impacts are expected.

4.4 Water Resources and Hydrology

All activities would be conducted in the EUA where munitions drops are currently employed. There would be no change from existing conditions. No water resource or hydrology impacts would result from implementation of the action alternatives, as no groundwater has been detected during test drilling to 980 feet and no surface water exists in the EUA (Alternatives B and C).

4.5 Hazardous Materials, Hazardous Waste, and Solid Waste

4.5.1 Introduction

The facilities associated with SCAFR qualify as a Conditionally Exempt Small Quantity Generator for hazardous waste. Small amounts of hazardous substances may be stored at SCAFR. Most waste streams are recyclable, reusable, or non-recoverable solid waste. Hazardous wastes that may be generated currently include rags used to clean petroleum spills, antifreeze associated with radar units, and lead and silver solder residue. Potentially hazardous materials stored at SCAFR include diesel fuel, gasoline, oil, lead acid batteries, and propane. These materials would still be generated or stored under all alternatives. Solid wastes continue to be managed according to existing requirement, as would existing prevention measures to prevent fuel and oil spills.

All recovered ordnance related scrap will be managed in compliance with the Defense Demilitarization Manual, DOD 4160.21-M-1 and local directives.

4.5.2 Alternative A—No Action Alternative

No change in existing conditions or operations at SCAFR would occur with implementation of the No Action Alternative. Therefore, no impacts would be associated with Alternative A.

4.5.3 Alternative B—Proposed Action

4.5.3.1 Direct and Indirect Impacts

A total of 2,500 rockets would be fired under this alternative, which includes 500 M156 White Phosphorus munitions. As shown in Table 10, this would result in an additional 27.4 tons of solid waste to be removed each year. Over time this quantity of material would require more disposal space than would have been required under Alternative A, No Action. The expended rocket motors and munitions/ordnance would be tested for chemical residue prior to disposal in the EUA landfill, to ensure the material complies with the landfill permit.

The M156 White Phosphorus munition contains 2.2 pounds of white phosphorus, which burns on contact with the atmosphere. The 2.75-inch rocket system rocket was designed to have a 93 percent reliability, but experience is showing that only 1 to 2 percent or less actually fail. To be conservative, however, an assumption was made that 7 percent (design rate) of the munitions would be duds (the fuse does not function and leaves an armed, intact munition in the target area). Therefore, if a dud rate of 7 percent is assumed, 112 unexploded munitions would require disposal by detonation in place in compliance with the applicable TM 60 series EOD technical manual. This represents an additional hazard to the EOD teams during range clearance operations.

TABLE 10
Solid Waste Material Generated Through Implementation of Each Alternative

Alternative	Total Ordnance Weight* (tons)	Total Rocket Motor Weight (tons)	Total Solid Waste Weight (tons)
Alternative A—No Action	0	0	0
Alternative B—Proposed Action	10.4	17.0	27.4
Alternative C—Reduced Ordnance	6.5	10.6	17.1

*Ordnance weight has been adjusted to account for material expended during employment.

A certain number of "low order" munitions could result (the fuse functions as designed, but the white phosphorus only partially burns, with the unburned material remaining in the munition). The partially burned munitions pose additional hazards to both humans and animals. When a partially burned munition is kicked or disturbed and air comes in contact with the white phosphorus, the material will start to burn again and could injure the person or animal that disturbed the munition.

As discussed in Section 2.4, the Proposed Action Alternative, the WSFA predicts all munitions falling within the EUA. However, the possibility that a rocket would fall outside the EUA into areas open to the public or grazing permittees and livestock always exists. If the munition is a white phosphorus munition, a spot fire could occur, even outside of the

declared fire season. If the white phosphorus munition is a dud or only partially burns, wildlife, the public, or livestock could be seriously injured if they disturb the munition.

4.5.3.2 Cumulative Impacts

Waste generated with this alternative would combine with waste from other activities to put additional pressures on waste holding and disposal facilities.

4.5.4 Alternative C—Reduced Ordnance

4.5.4.1 Direct and Indirect Impacts

The amount of solid waste to be cleaned-up and disposed of is less under this Alternative than that generated under Alternative B (Table 10). A total of 17.1 tons would be deposited in the EUA. The number of munitions (excluding the MK61 and WTU-1/B) employed under Alternative C would be 650 less than for the Proposed Action. Therefore, there would only be 67 potential unexploded munitions to be detonated in place, assuming a dud rate of 7 percent.

4.5.4.2 Cumulative Impacts

Cumulative impacts would be the same as described for Alternative B, but less waste would be generated with Alternative C.

4.6 Biological Resources

4.6.1 Introduction

Four major categories of biological resources are addressed in this section including vegetation, wildlife, wetlands, and threatened and endangered species. Only vegetation and wildlife will be discussed in detail below. No federally listed threatened or endangered species exist on SCAFR and, therefore, they are not discussed further. Although wetlands are located on SCAFR, none are in the area of impact affected by the action alternatives (Alternatives B and C). Wetlands would not be impacted and are therefore, not discussed further.

4.6.2 Vegetation

4.6.2.1 Introduction

Native vegetation inside of the EUA has been severely impacted through fire, reseeding, training, road building, and fire break construction. Shrubs have been mostly replaced by annual vegetation (much of it weedy) and some early-successional perennials. Vegetation impacts on the SCAFR outside the EUA have been primarily the result of fires.

4.6.2.2 Alternative A—No Action Alternative

Existing impacts to vegetation, including fire, would continue under this alternative. Fire mostly affects the EUA, but occasional fires have burned into other parts of SCAFR. The frequency of vegetation disturbance from fire would be similar to past conditions, but is dependent on climatic conditions of any given year. Wildlife would continue to graze

vegetation in the EUA on SCAFR. Livestock and wildlife would continue to graze vegetation outside the EUA, but this has not resulted in adverse impacts.

4.6.2.3 Alternative B—Proposed Action

Direct and Indirect Impacts

Vegetation impacts from fire would be expected to increase slightly with implementation of this alternative (see *Section 4.7 Fire Management*). M156 White Phosphorus munitions could be expected to ignite additional fires compared to existing conditions, even though they would not be employed during fire season. The reason is that white phosphorus rockets may not be completely cleared from the target area prior to the fire season and any duds or partially burned white phosphorus munitions could start a fire if disturbed by other training activities. If these fires escape the EUA, they could burn remnant patches of native vegetation. There is a slight possibility that M257 and M278 Illumination munitions would start a fire (only two fires since 1996 have been attributed to flares), but they would only be used outside the fire season. These conclusions must be tempered, however, by the effect annual weather conditions have on fire ignition and spread.

Cumulative Impacts

Any native vegetation burned as a result of the Proposed Action would add to the rapid, overall regional loss of sagebrush stands as cheatgrass and other opportunistic annual weeds prevent re-establishment of native plants following fire. Indirect impacts to slickspots from fire could contribute to the regional loss of slickspots in southern Idaho.

4.6.2.4 Alternative C— Reduced Ordnance

Direct, Indirect, and Cumulative Impacts

All impacts would be the same as discussed for the Proposed Action (Alternative B). However, fewer ordnance would be used that could start fires. Therefore the incidence of potential fires would be less with Alternative C. This conclusion must be tempered however, by the effect annual weather conditions have on fire ignition and spread.

4.6.3 Wildlife

4.6.3.1 Introduction

Existing and potential impacts to wildlife on SCAFR are related to declining native vegetation and decreased habitat diversity. These trends are a direct result of fires, weed encroachment, and seeding of non-native species.

4.6.3.2 Alternative A—No Action Alternative

Habitat would continue to be affected by fires from existing training activities in the EUA. However, the additional fires that could result from the action alternatives (Alternatives B and C) would not occur with Alternative A.

4.6.3.3 Alternative B—Proposed Action

Direct and Indirect Impacts

Pronghorn antelope are known to inhabit the EUA. Occasionally, training is suspended while the antelope are moved from a target area. Training activities associated with the Proposed Action may result in conflicts between training and antelope. No additional

disturbance from training activity to antelope would likely occur because they are habituated to training activities. The proposed use of 2.75-inch rockets may require antelope to be moved away from certain targets more frequently for their safety if they congregate on certain targets.

The M156 White Phosphorus munitions included in the Proposed Action present an additional hazard to antelope and other terrestrial wildlife in and adjacent to the EUA. If an animal steps on a partially-burned munition, it could re-ignite and result in serious injury or death to the animal.

Sagebrush dependant or sagebrush habitat-using species that are known to be in the area include sage thrasher, sage sparrow, loggerhead shrike, and Brewer's sparrow. These sensitive species are not known to occur in the EUA, but may be affected if additional fires associated with the Proposed Action escape into native habitat outside the EUA (see *Section 4.7 Fire Management)*. Fires would also affect any other species dependant or utilizing the limited amount of native habitat on SCAFR.

Sage grouse and sage grouse leks are known to occur on SCAFR in the vicinity of the EUA. Sage grouse are very sensitive to disturbance during breeding and early brood-rearing times of the year. Disturbance to sage grouse from increased training is not likely to occur, because training already occurs in the EUA and leks are still active.

Golden eagle, prairie falcon, and red-tailed hawks nest in the vicinity of SCAFR. Existing training has not resulted in abandonment of nests; therefore, additional training should also be tolerated by these species.

Cumulative Impacts

Native vegetation burned as a result of the Proposed Action would add to the overall regional loss of sagebrush stands and other native habitat types. Loss of native SCAFR habitat, when combined with all other native habitat losses in southern Idaho, could contribute to the continued decline of sensitive wildlife species such as sage grouse.

4.6.3.4 Alternative C—Reduced Ordnance

Direct, indirect, and cumulative impacts as discussed for Alternative B would occur with implementation of Alternative C. Fire-related impacts would likely be the same as for the Proposed Action, but frequency of disturbance may be lower as fewer fire-producing and other ordnance would be used.

4.7 Geology and Soils

4.7.1 Introduction

Erosion potential and vegetation productivity are the major soil attributes discussed in this section.

4.7.2 Alternative A—No Action Alternative

The wind- and alluvial-deposited soil has a low to moderate erosion potential, particularly in the flat EUA. Current erosion rates are mainly the result of fire, maintenance activities

such as discing firebreaks, ground disturbance by ordnance dropping, or roads. Existing erosion rates would not change with implementation of the No Action Alternative. Increases in erosion that may occur with the action alternatives (Alternatives B and C), as discussed below, would not occur under Alternative A.

4.7.3 Alternative B—Proposed Action

4.7.3.1 Direct and Indirect Impacts

Road construction practices would not change with implementation of the Proposed Action. Erosion associated with this activity would remain the same. However, fire frequency may increase with the Proposed Action's implementation (see *Section 4.7 Fire Management*). Additional fires would have the potential to increase erosion, particularly if precipitation events occur prior to re-establishment of a plant cover. Areas subject to increased wind or water erosion would suffer a loss of soil productivity as soil nutrients are transported offsite and lost. Rocket impacts would also increase the potential for erosion, as the rockets would impale themselves into the ground, thereby causing some disturbance. Additional soil disturbance would result from recovery of the rockets, which could involve some digging out or detonation of the rockets. These erosion losses are expected to be non-significant, because of low and moderate soil erosivity and the ephemeral nature of streams within the EUA indicating overland flow of water to be an infrequent event.

4.7.3.2 Cumulative Impacts

Potential increased erosion rates from the Proposed Action would combine with existing erosion from current ordnance deliveries, discing, target and range maintenance, and road building activities. This may result in a larger, although small, loss of soil and soil productivity. A slight cumulative effect may occur when wind erosion resulting from rocket delivery and clean up combines with wind erosion from other SCAFR activities. This cumulative effect would decrease as disturbed areas become vegetated. This cumulative effect is not significant.

4.7.4 Alternative C—Reduced Ordnance

Direct, indirect, and cumulative impacts would be as described for the Proposed Action, but at a lower intensity, as the number of ordnance that can start a fire or cause soil disturbance are fewer.

4.8 Fire Management

4.8.1 Introduction

Fire is a common occurrence on SCAFR during the summer months. As discussed in Chapter 3, an average of 23 fires have occurred per year since 1996. Dummy bombs (includes BDU-33s) and Smokey Guns/Smokey Sams have started most fires on the range. Fire severity has decreased significantly since 2002, when restrictions on pyrotechnic munitions were implemented during fire condition ratings 3, 4, and 5.

4.8.2 Alternative A—No Action Alternative

Fire would continue to be an element of change on SCAFR. Fire would continue to modify habitat by transforming native shrub communities into non-native annual grass communities. The reduction in fire observed with implementation of the new restrictions in 2002 would continue.

4.8.3 Alternative B—Proposed Action

4.8.3.1 Direct and Indirect Impacts

The potential for fire on SCAFR would increase slightly with implementation of the Proposed Action, even though all munitions except the MK61 and WTU-1/B would be employed outside the fire season, as discussed in Section 4.5.2.3. The last year prior to training restrictions during fire season (2001) saw 4,739 acres burn in 34 fires. In 2002, 2003, and 2004, there were still 29, 33, and 11 fires, respectively. Slightly less than 42 acres burned in 2002 and 2003, but acreage burned increased to 415.5 acres in 2004. This trend of less acres burned would be expected to continue with implementation of the Proposed Action, but the number of fires and the acreage burned could increase with the higher number of pyrotechnic munitions employed outside of fire season as part of the Proposed Action. An additional source of fire could come from EOD destruction of unexploded ordnance, particularly as most EOD work occurs in the fire season. The additional ordnance from this alternative could increase the number of fires, as the number of munitions requiring EOD attention would increase.

4.8.3.2 Cumulative Impacts

Over 585,000 acres have burned within the BLM Jarbidge Resource area over the last 10 years. Any fires escaping from the EUA onto SCAFR would contribute to an increase in the acres burned regionally. Larger burned acres would require more fire suppression effort, which has the effect of straining fire suppression resources and government budgets. More fire reduces the acreage of native habitat available to support wildlife and increases the need for weed control efforts and reseeding projects. Many of the species dependent on native sagebrush habitats are experiencing regional or distribution-wide population declines as habitat disappears. This could result in some species becoming listed as threatened or endangered by the federal government as a direct effect of the cumulative impacts of fire throughout the species range.

4.8.4 Alternative C—Reduced Ordnance

Direct, indirect, and cumulative impacts would be the same as discussed for the Proposed Action, but at potentially less intensity or frequency with less pyrotechnic ordnance used. This conclusion must be tempered however, by the effect annual weather conditions have on fire ignition and spread.

4.9 Outdoor Recreation and Public Access

4.9.1 Introduction

Levels I and II Recreation would continue with implementation of the action alternatives (Alternatives B and C). Existing public access, including grazing permit allocations would also continue outside the EUA.

4.9.2 Alternative A—No Action Alternative

No additional impacts over existing conditions would result from this alternative.

4.9.3 Alternative B—Proposed Action

4.9.3.1 Direct and Indirect Impacts

A very small possibility exists that a recreationist could come across a partially burned M156 White Phosphorus munition adjacent to the EUA. If the person disturbs the munition, it could ignite and seriously burn or injure the person. Establishment of warning signs along roads would help prevent accidents.

4.9.3.2 Cumulative Impacts

No cumulative impacts would result from the Proposed Action.

4.9.4 Alternative C—Reduced Ordnance

Impacts would be the same as for Alternative B, the Proposed Action, but the probability of encountering a partially burned M156 munition would be even less.

4.10 Economics

4.10.1 Introduction

Economic effects are mainly related to additional cost to the government as described below.

4.10.2 Alternative A—No Action

No additional costs would be incurred under the No Action Alternative.

4.10.3 Alternative B—Proposed Action

4.10.3.1 Direct and Indirect Impacts

As discussed previously, implementation of the Proposed Action could result in additional fires on the SCAFR. This would result in additional costs for suppression activity. Also, an additional amount of solid and hazardous waste would be generated with this alternative. The additional waste would result in more funds needed for waste disposal, compared to current expenditures. Extending the training hours when an RCO must be present would result in additional labor costs. Other additional costs would arise from EOD activities,

reseeding of disturbed areas, and cultural resource mitigation prior to project implementation.

4.10.3.2 Cumulative Impacts

The additional costs would put additional pressures on already committed budgets.

4.10.4 Alternative C—Reduced Ordnance

All direct, indirect, and cumulative impacts discussed for Alternative B would occur with this alternative. The escalation in costs may be less because fewer rockets and aircraft would be involved.

4.11 Cultural Resources

4.11.1 Introduction

Cultural resource sites have the potential to be affected by the proposed action and alternatives, as described in 36 CFR 800.3. Under NHPA, the USAF is required to consult with the Idaho State Historic Preservation Office (SHPO) and Native American Tribes, develop mitigation measures, and implement the measures for any site eligible for the National Register of Historic Places. MHAFB would consult with Native Americans, including the Shoshone-Paiute Tribes of the Duck Valley Reservation and all other federally recognized tribes who wish to consult on the project. Section 106 consultation with the SHPO would be completed and mitigation measures implemented before the proposed action or alternatives would occur.

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APPENDIX A

Detailed EUA Fire Data

APPENDIX A
Fire History on SCAFR EUA

Date	Location	Size (acres)	Probable Cause (if known)
1996			
June 6	Target 46/47 POL	75	
June 11	Target 16 NW Runway	300	
June 12	Targets 75 to 81	50	
June 17	South Tower	50	Smokey Sam
August 19	South Tower	1	Smokey Sam
October 9	South Tower	2	Smokey Sam
October 17	South Tower	0.5	Smokey Sam
	Subtotal (7 fires)	**478.5**	
1997			
June 2	Target 77	1	
June 3	Target 48	1	
June 3	Target 81	1	
June 3	Target 38	50	Controlled burn
June 9	Target 69	3	
June 9	Target 81	10	
June 11	South Complex	1	Smokey Sam
June 11	South Complex	1	Smokey Sam
June 16	Target 100	20	Controlled burn
June 17	Target 81	50	Controlled burn
June 17	Target 69	10	
June 17	Target 94	50	Controlled burn
June 21	Target 94	15	
July 7	South Complex	1	Smokey Sam
July 16	South Complex	1	Smokey Sam
July 23	Target 69	2	
August 7	North Tower	1	Smokey Sam
August 8	North Tower	1	Smokey Sam
August 8	North Tower	1	Smokey Sam
August 8	North Tower	2	Smokey Sam
August 29	South Complex	1	Smokey Sam
August 29	South Complex	1	Smokey Sam
August 29	South Complex	0.5	Smokey Sam
August 29	South Complex	0.5	Smokey Sam
August 29	South Complex	1	Smokey Sam
August 29	South Complex	0.5	Smokey Sam
August 29	South Complex	0.5	Smokey Sam
August 30	North Tower	1	Smokey Sam
	Subtotal (28 fires)	**228**	

APPENDIX A
Fire History on SCAFR EUA

Date	Location	Size (acres)	Probable Cause (if known)
1998			
June 17	Target 81	0.5	BDU-33 [1]
June 18	Target 48	0.5	BDU-33
June 18	Target 69	0.5	BDU-33
June 18	Target 78/79	0.25	BDU-33
June 22	Northwest/AA	6	BDU-33
June 23	Target 83	1	BDU-33
June 23	Southwest/Target 83	0.5	BDU-33
June 23	Target 81	0.25	BDU-33
June 23	Southwest/Target 81	0.25	BDU-33
June 23	Target 69	1	BDU-33
June 24	Target 81	4	BDU-33
June 24	Target 69	3	BDU-33
July 1	Target 30	1	BDU-33
July 2	Target 91	5	BDU-33
July 7	Target 69	10	BDU-33
July 8	Target 21/24	25	BDU-33
July 8	Target 77	2	BDU-33
July 8	Target 69	0.5	BDU-33
July 14	South Tower	20	Smokey Sam
July 22	Target 107	2	BDU-33
July 28	South Tower	0.25	Smokey Sam
July 28	South Tower	0.5	Smokey Sam
July 28	South Tower	1	Smokey Sam
September 2	South Tower	1	Smokey Sam
September 25	South Tower	2	Smokey Sam
	Subtotal (28 fires)	**88**	
1999			
May 8	Target 44	5	Dummy bomb [2]
May 8	Target 77	4	Dummy bomb
May 9	Target 76	9	Dummy bomb
May 9	Target 107	1	Dummy bomb
May 9	Target 107	1	Dummy bomb
June 15	Target 54	5	Dummy bomb
June 15	Target 107	2	Dummy bomb
June 15	Target 75	1	Dummy bomb
June 15	Target 34	2	Dummy bomb
June 15	Target 21	75	Controlled burn
June 16	Target 81	50	Controlled burn
June 16	Target 48	1	Controlled burn

APPENDIX A
Fire History on SCAFR EUA

Date	Location	Size (acres)	Probable Cause (if known)
June 16	Target 107	1	Controlled burn
July 2	South Complex	4	Smokey Sam
July 2	Target 81	5	Dummy bomb
July 2	Target 83	10	Dummy bomb
July 20	South Complex	2	Smokey Sam
August 16	Target 35	15	Dummy bomb
September 8	South Complex	3	Smokey Sam
October 18	Target 81	2	Dummy bomb
October 21	Target 107	2	Dummy bomb
October 21	Target 48	4	Dummy bomb
October 21	Target 47	2	Dummy bomb
	Subtotal (23 fires)	**202**	
2000			
May 9	Target 75	0.125	BDU-33
May 9	Target 29	0.125	BDU-33
May 15	Target 46/47	20	BDU-33
May 18	Target 107	0.5	BDU-33
May 22	Target 79	250	BDU-33
May 23	Target 107	0.125	BDU-33
May 24	Target 75	1	BDU-33
May 24	Target 19	10	BDU-33
May 24	Target 74	1	BDU-33
May 24	Target 76	0.125	BDU-33
May 24	Target 77	0.25	BDU-33
May 24	Target 62/69	20	BDU-33
May 31	Target 107	5	BDU-33
June 1	Target 107	250	BDU-33
June 2	Target 101	150	BDU-33
June 7	Target 56	225	BDU-33
June 20	Target 74	15	BDU-33
June 20	Target 62	25	BDU-33
June 20	Target 69	300	BDU-33
June 20	Target 79	350	BDU-33
June 21	Target 74	5	BDU-33
June 21	Target 46	5	BDU-33
June 22	Target 44	20	BDU-33
June 22	Target 60	2	BDU-33
June 22	Target 62	2	BDU-33
June 22	Target 46	150	BDU-33
July 11	Target 107	2	BDU-33

APPENDIX A
Fire History on SCAFR EUA

Date	Location	Size (acres)	Probable Cause (if known)
July 31	South Tower	0.25	Smokey Gun
July 31	South Tower	0.25	Smokey Gun
September 9	Target 48	25	BDU-33
September 13	Target 76	2	BDU-33
September 13	South Tower	2	Smokey Gun
September 18	Target 61	4	BDU-33
September 18	South Tower	1	Smokey Gun
September 18	Target 61	20	BDU-33
	Subtotal (35 fires)	**1,863.75**	
2001			
May 8	North Tower	0.125	Smokey Sam
May 9	Target 16	3	Dummy bomb
May 9	North Tower	0.063	Smokey Sam
May 9	Target 16	1	Dummy bomb
May 10	South Tower	0.25	Smokey Sam
May 10	Target 94	0.25	Dummy bomb
May 11	Target 41	5	Dummy bomb
May 11	Target 107	0.125	Dummy bomb
May 16	N/W Corner	500	
June 18	N/W Corner	100	Dummy bomb
June 18	North Tower	250	Smokey Sam
June 19	Target111	175	Dummy bomb
June 19	Target 107	100	Dummy bomb
June 19	Target 46	5	Dummy bomb
June 19	Target 43	400	Dummy bomb
June 22	Target 43	100	Bomb/Flare
June 22	Target 107	150	Dummy bomb
June 22	Runway	20	Flare
June 22	North Tower	0.25	Smokey Sam
June 26	Target 107	1,000	Dummy bomb
June 26	Target 69	500	Dummy bomb
June 29	Target 54	200	Dummy bomb
July 2	Target 43	20	Dummy bomb
July 3	Target 46	150	Dummy bomb
July 3	Target 62	50	Dummy bomb
July 11	North Tower	3	Smokey Sam
July 12	North Tower	1	Smokey Gun
July 20	North Tower	1	Smokey Gun
August 1	North Tower	0.5	Smokey Gun
August 7	North Tower	1,000	Smokey Gun

APPENDIX A
Fire History on SCAFR EUA

Date	Location	Size (acres)	Probable Cause (if known)
September 6	North Tower	0.125	Smokey Sam
October 4	Target 54	1	Dummy bomb
October 17	Target 46	1	Dummy bomb
October 25	Target 48	1	Dummy bomb
	Subtotal (34 fires)	**4,738.7**	
2002			
February 27	North Tower	0.5	Smokey Sam
April 25	North Tower	0.5	Smokey Sam
June 6	Targets 78	1	BDU-33
June 17	Target 94	2	BDU-33
July 25	North Tower	3	Smokey Sam
August 1	Target 107	2	BDU-33
October 4	Target 75	1	BDU-33
October 18	Target 46-47	1	BDU-33
October 24	Target 48-54	2	BDU-33
November 1	Target 74	1	BDU-33
	Subtotal (10 fires)	**14**	
2003			
May 12	Target 107	0.5	Dummy bomb
May 27	North Tower	0.25	Smokey Gun
May 28	Target 76/115	4	Dummy bomb
May 28	Target 96	2	Dummy bomb
June 9	Target 74	7	Dummy bomb
June 10	North Tower	0.5	Smokey Gun
June 10	Target 44	0.5	Dummy bomb
June 11	Target 107	0.5	Dummy bomb
June 11	North Tower	0.5	Smokey Gun
June 12	Target 29	0.5	Dummy bomb
June 13	Target 69	0.5	Dummy bomb
June 16	Target 69	0.5	Dummy bomb
June 16	Target 74	1	Dummy bomb
June 17	Target 107	0.5	Dummy bomb
June 17	Target 76	3	Dummy bomb
June 17	Target 43	4	Dummy bomb
June 17	Target 78/79	1	Dummy bomb
June 27	Target 76	3	Dummy bomb
June 30	Target 19	4	Dummy bomb
July 2	Target 21	2	Dummy bomb
September 18	Target 107	0.5	Dummy bomb
September 23	Target 107	0.5	Dummy bomb

APPENDIX A
Fire History on SCAFR EUA

Date	Location	Size (acres)	Probable Cause (if known)
September 24	Target 79	1	Dummy bomb
September 24	Target 29/32	1	Dummy bomb
October 1	Target 107	1	Dummy bomb
October 21	Target 107	0.5	Dummy bomb
October 22	Target 107	0.5	Dummy bomb
October 29	Target 79	0.5	Dummy bomb
October 30	Target 107	0.5	Dummy bomb
	Subtotal (33 fires)	**41.75**	
2004			
June 1	Target 81	2	Dummy bomb
June 3	Target 68	2	Dummy bomb
June 3	Target 79	0.25	Dummy bomb
June 4	Target 107	0.5	Dummy bomb
June 9	Target 44	0.125	Dummy bomb
June 17	EC Site	0.125	Smokey Sam
July 9	N Sam	10	EOD
July 13	Target 78	150	Dummy bomb
July 13	Pence butte	250	Dummy bomb
July 13	Target 95	0.25	Dummy bomb
July 16	Target 81	0.25	Dummy bomb
	Subtotal (11 fires)	415.5	
2005			
June 14	N. Sam	0.5	Smokey Gun
June 16	N. Sam	0.5	Smokey Gun
June 21	N. Sam	1	Smokey Gun
June 23	N. Sam	0.5	Smokey Gun
June 23	N. Sam	0.5	Smokey Gun
June 25	W. Perimeter	400	Lightning Strike
July 26	Target 18-20	200	Strafe (A-10)
July 28	Target 21	25	Strafe (A-10)
Aug 6	Target 117	40	BDU-50 [3]
Sep 7	N. Sam	0.5	Smokey Sam
Sep 7	Target 43	1,500	BDU-50
Sep 8	Target 57	1	BDU-50
Sep 21	N. Sam	4	Smokey Gun
Sep 22	N. Sam	0.5	Smokey Gun
Sep22	N. Sam	3	Smokey Gun
Oct 14	N. Sam	2	Smokey Sam
	Subtotal (16 fires)	2,179	
2006			

APPENDIX A
Fire History on SCAFR EUA

Date	Location	Size (acres)	Probable Cause (if known)
Mar 15	North Tower	0.5	Smokey Gun
Mar 23	North Tower	0.5	Smokey Gun
May 10	Target 46	0.5	BDU-33
May 11	Target 107	0.5	BDU-33
May 15	Target 80	40	BDU-33
May 16	Target 74	0.5	BDU-33
May 17	North Tower	1	Smokey Gun
June 13	Bomb Pit	1	EOD
June 22	North Tower	10	Smokey Gun
June 23	North Tower	2	Smokey Sam
June 27	Target 68	60	GAF/Flare
July 6	North Tower	1	Smokey Gun
July 8	LAS	1	Strafe (A-10)
July 27	Target 20	300	Strafe (A-10)
Aug 10	Jettison Circle	8	EOD
Sep 27	Pence Butte	200	EOD
	Subtotal (16 fires)	626.5	

Source: Data provided by John Rhynes, Saylor Creek Range Site Manager.
1 The BDU-33 is a 25-pound dummy bomb
2 Dummy Bombs include 2,000, 500, and 25-pound inert munitions

3 The BDU-50 is a 50-pound dummy bomb.

APPENDIX B

Air Quality Emissions Data

EXHIBIT B-1
MHAFB Toxic Air Pollutant Emission Estimates for the M274 PD Smoke Signature Training Ordnance A

Toxic Air Pollutant	Emission Factor[b] (lb/item)	Emission Estimates (lb/yr)	Emission Estimates (lb/hr)	IDAPA 58.01.01.585/586 Toxic Screening Levels (lb/hr)	Criteria Screening [c]
Acetaldehyde	7.282E-06	4.369E-03	1.020E-04	3.00E-03	Below
Ammonia	7.172E-06	4.303E-03	1.004E-04	1.2	Below
Antimony compounds	2.228E-05	1.337E-02	3.119E-04	0.033	Below
Barium compounds	2.176E-05	1.305E-02	3.046E-04	0.033	Below
Benzene	8.579E-06	5.147E-03	1.201E-04	8.00E-04	Below
Carbon disulfide	1.583E-07	9.498E-05	2.216E-06	2.0	Below
Carbon tetrachloride	9.972E-07	5.983E-04	1.396E-05	4.40E-04	Below
Carbonyl sulfide	1.249E-07	7.494E-05	1.749E-06	2.70E-02	Below
Chlorine	6.265E-07	3.759E-04	8.771E-06	0.2	Below
Chlorine dioxide	4.788E-07	2.873E-04	6.703E-06	0.02	Below
Chloroform	8.449E-07	5.070E-04	1.183E-05	2.80E-04	Below
Methyl chloride	3.564E-07	2.138E-04	4.989E-06	6.867	Below
Chromium (III) compounds	2.918E-03	1.751E+00	4.085E-02	0.033	Exceeds
Cyanide compounds	4.387E-05	2.632E-02	6.142E-04	0.333	Below
Cyclohexane	3.432E-06	2.059E-03	4.804E-05	70	Below
Methylene chloride	5.633E-07	3.380E-04	7.886E-06	1.60E-03	Below
Formaldehyde	7.283E-06	4.370E-03	1.020E-04	5.10E-04	Below
Hexachloroethane	1.440E-06	8.639E-04	2.016E-05	1.70E-03	Below
Hydrazine	1.457E-05	8.739E-03	2.039E-04	2.30E-06	Exceeds
n-Hexane	6.863E-06	4.118E-03	9.609E-05	12	Below
Nickel compounds	5.238E-06	3.143E-03	7.333E-05	2.70E-05	Exceeds
Nitric acid	7.306E-06	4.384E-03	1.023E-04	0.333	Below
Sulfuric acid	5.122E-07	3.073E-04	7.170E-06	0.067	Below
Tetrachloroethylene	9.972E-07	5.983E-04	1.396E-05	1.30E-02	Below
Toluene	2.431E-05	1.458E-02	3.403E-04	25	Below

[a] Assume 600 rockets per year and that, conservatively, 14 rockets are fired per hour
[b] Emission factors based on Munitions Air Emission Report for TRI Chemicals, Mountain Home AFB, July 2004 [c] Mobile toxic emission factors compared to stationary toxic screening levels. There are no TAP standards in Idaho for mobile sources.

EXHIBIT B-2
MHAFB Toxic Air Pollutant Emission Estimates for the M257 Illumination Munition A

Toxic Air Pollutant	Emission Factor[b] (lb/item)	Emission Estimates (lb/yr)	Emission Estimates (lb/hr)	IDAPA 58.01.01.585/586 Toxic Screening Levels (lb/hr)	Criteria Screening [c]
Acetaldehyde	5.962E-06	1.789E-03	8.347E-05	3.00E-03	Below
Ammonia	7.063E-08	2.119E-05	9.888E-07	1.2	Below
Antimony compounds	1.671E-05	5.013E-03	2.339E-04	0.033	Below
Barium compounds	1.764E-04	5.292E-02	2.470E-03	0.033	Below
Benzene	3.122E-08	9.366E-06	4.371E-07	8.00E-04	Below
Carbon disulfide	3.044E-08	9.132E-06	4.262E-07	2.0	Below
Carbon tetrachloride	1.228E-07	3.684E-05	1.719E-06	4.40E-04	Below
Carbonyl sulfide	2.598E-08	7.794E-06	3.637E-07	2.70E-02	Below
Chlorine	1.561E-04	4.683E-02	2.185E-03	0.2	Below
Chlorine dioxide	1.035E-07	3.105E-05	1.449E-06	0.02	Below
Chloroform	1.040E-07	3.120E-05	1.456E-06	2.80E-04	Below
Methyl chloride	4.387E-08	1.316E-05	6.142E-07	6.867	Below
Chromium (III) compounds	5.529E-03	1.659E+00	7.741E-02	0.033	Exceeds
Cyanide compounds	4.169E-05	1.251E-02	5.837E-04	0.333	Below
Cyclohexane	1.249E-08	3.747E-06	1.749E-07	70	Below
Methylene chloride	6.934E-08	2.080E-05	9.708E-07	1.60E-03	Below
Formaldehyde	6.015E-06	1.805E-03	8.421E-05	5.10E-04	Below
Hexachloroethane	1.772E-07	5.316E-05	2.481E-06	1.70E-03	Below
Hydrazine	1.203E-05	3.609E-03	1.684E-04	2.30E-06	Exceeds
n-Hexane	2.497E-08	7.491E-06	3.496E-07	12	Below
Nickel compounds	3.775E-05	1.133E-02	5.285E-04	2.70E-05	Exceeds
Nitric acid	6.079E-06	1.824E-03	8.511E-05	0.333	Below
Sulfuric acid	1.096E-07	3.288E-05	1.534E-06	0.067	Below
Tetrachloroethylene	1.228E-07	3.684E-05	1.719E-06	1.30E-02	Below
Toluene	8.845E-08	2.654E-05	1.238E-06	25	Below

[a] Assume 300 rockets per year and that, conservatively, 14 rockets are fired per hour
[b] Emission factors based on Munitions Air Emission Report for TRI Chemicals, Mountain Home AFB, July 2004 [c] Mobile toxic emission factors compared to stationary toxic screening levels. There are no TAP standards in Idaho for mobile sources.

EXHIBIT B-3
MHAFB Toxic Air Pollutant Emission Estimates for the M267 MPSM Training Ordnance A

Toxic Air Pollutant	Emission Factor[b] (lb/item)	Emission Estimates (lb/yr)	Emission Estimates (lb/hr)	IDAPA 58.01.01.585/586 Toxic Screening Levels (lb/hr)	Criteria Screening [c]
1,3-Butadiene	9.0941E-8	1.819E-05	1.273E-06	2.40E-05	Below
Acetaldehyde	7.2427E-6	1.449E-03	1.014E-04	3.00E-03	Below
Ammonia	7.1832E-6	1.437E-03	1.006E-04	1.2	Below
Antimony compounds	3.5328E-6	7.066E-04	4.946E-05	0.033	Below
Barium compounds	3.4494E-6	6.899E-04	4.829E-05	0.033	Below
Benzene	8.5791E-6	1.716E-03	1.201E-04	8.00E-04	Below
Carbon disulfide	1.6961E-7	3.392E-05	2.375E-06	2.0	Below
Carbon tetrachloride	3.5349E-7	7.070E-05	4.949E-06	4.4E-04	Below
Carbonyl sulfide	1.3491E-7	2.698E-05	1.889E-06	0.027	Below
Chlorine	2.2208E-7	4.442E-05	3.109E-06	0.2	Below
Chlorine dioxide	1.6972E-7	3.394E-05	2.376E-06	0.02	Below
Chloroform	2.9950E-7	5.990E-05	4.193E-06	2.80E-04	Below
Methyl chloride	1.2632E-7	2.526E-05	1.768E-06	6.867	Below
Chromium (III) compounds	4.3107E-3	8.621E-01	6.035E-02	0.033	Exceeds
Cyanide compounds	4.3493E-5	8.699E-03	6.089E-04	0.333	Below
Cyclohexane	3.4330E-6	6.866E-04	4.806E-05	70	Below
Methylene chloride	1.9967E-7	3.993E-05	2.795E-06	1.60E-03	Below
Ethylbenzene	2.3645E-9	4.729E-07	3.310E-08	29	Below
Formaldehyde	7.2454E-6	1.449E-03	1.014E-04	5.10E-04	Below
Hexachlorethane	5.1037E-7	1.021E-04	7.145E-06	1.70E-03	Below
Hydrazine	1.4491E-5	2.898E-03	2.029E-04	2.30E-06	Exceeds
Manganese compounds	4.3651E-3	8.730E-01	6.111E-02	0.333	Below
n-Hexane	7.0361E-6	1.407E-03	9.851E-05	12	Below
Nickel compounds	2.1211E-5	4.242E-03	2.970E-04	2.70E-05	Exceeds
Nitric acid	7.2794E-6	1.456E-03	1.019E-04	0.333	Below
Sulfuric acid	5.2870E-7	1.057E-04	7.402E-06	0.067	Below
Tetrachloroethylene	3.5349E-7	7.070E-05	4.949E-06	1.30E-02	Below
Toluene	2.4324E-5	4.865E-03	3.405E-04	25	Below

[a] Assume 200 rockets per year and that, conservatively, 14 rockets are fired per hour
[b] Emission factors based on Munitions Air Emission Report for TRI Chemicals, Mountain Home AFB, July 2004 [c] Mobile toxic emission factors compared to stationary toxic screening levels. There are no TAP standards in Idaho for mobile sources.

EXHIBIT B-4
MHAFB Toxic Air Pollutant Emission Estimates for the M156 White Phosphorus Munition A

Toxic Air Pollutant	Emission Factor[b] (lb/item)	Emission Estimates (lb/yr)	Emission Estimates (lb/hr)	IDAPA 58.01.01.585/586 Toxic Screening Levels (lb/hr)	Criteria Screening [c]
1,3-Butadiene	1.6821E-7	8.411E-05	2.355E-06	2.40E-05	Below
Acetaldehyde	2.3400E-6	1.170E-03	3.276E-05	3.00E-03	Below
Ammonia	1.2058E-7	6.029E-05	1.688E-06	1.2	Below
Antimony compounds	1.1141E-5	5.571E-03	1.560E-04	0.033	Below
Barium compounds	1.0878E-5	5.439E-03	1.523E-04	0.033	Below
Benzene	8.6509E-7	4.325E-04	1.211E-05	8.00E-04	Below
Carbon disulfide	2.9703E-7	1.485E-04	4.158E-06	2.0	Below
Carbonyl sulfide	2.3429E-7	1.171E-04	3.280E-06	0.027	Below
Chromium (III) compounds	2.4458E-3	1.223E+00	3.424E-02	0.033	Below
Cyanide compounds	1.5407E-5	7.704E-03	2.157E-04	0.333	Below
Ethylbenzene	2.1627E-7	1.081E-04	3.028E-06	29	Below
Formaldehyde	2.3400E-6	1.170E-03	3.276E-05	5.10E-04	Below
Hydrazine	4.6799E-6	2.340E-03	6.552E-05	2.30E-06	Exceeds
n-Hexane	6.6083E-8	3.304E-05	9.252E-07	12	Below
Nickel compounds	2.6191E-6	1.310E-03	3.667E-05	2.70E-05	Below
Nitric acid	2.4795E-6	1.240E-03	3.471E-05	0.333	Below
Sulfuric acid	9.3161E-7	4.658E-04	1.304E-05	0.067	Below
Toluene	3.9650E-7	1.983E-04	5.551E-06	25	Below

[a] Assume 500 rockets per year and that, conservatively, 14 rockets are fired per hour
[b] Emission factors based on Munitions Air Emission Report for TRI Chemicals, Mountain Home AFB, July 2004 [c] Mobile toxic emission factors compared to stationary toxic screening levels. There are no TAP standards in Idaho for mobile sources.

EXHIBIT B-5
MHAFB Toxic Air Pollutant Emission Estimates for the MK61 Training Ordnance A

Toxic Air Pollutant	Emission Factor[b] (lb/item)	Emission Estimates (lb/yr)	Emission Estimates (lb/hr)	IDAPA 58.01.01.585/586 Toxic Screening Levels (lb/hr)	Criteria Screening [c]
Acetaldehyde	1.2571E-10	1.131E-07	1.760E-09	3.00E-03	Below
Ammonia	5.8561E-9	5.270E-06	8.199E-08	1.2	Below
Antimony compounds	7.6595E-6	6.894E-03	1.072E-04	0.033	Below
Carbon disulfide	5.6598E-8	5.094E-05	7.924E-07	2.0	Below
Carbonyl sulfide	4.7095E-8	4.239E-05	6.593E-07	2.70E-02	Below
Carbon tetrachloride	1.1560E-9	1.040E-06	1.618E-08	4.40E-04	Below
Chlorine	7.2625E-10	6.536E-07	1.017E-08	0.2	Below
Chlorine dioxide	5.5502E-10	4.995E-07	7.770E-09	0.02	Below
Chloroform	9.7944E-10	8.815E-07	1.371E-08	2.80E-04	Below
Methyl chloride	4.1310E-10	3.718E-07	5.783E-09	6.867	Below
Cyanide compounds	5.8938E-8	5.304E-05	8.251E-07	0.333	Below
Methylene chloride	6.5296E-10	5.877E-07	9.141E-09	1.60E-03	Below
Formaldehyde	5.9189E-9	5.327E-06	8.286E-08	5.10E-04	Below
Hexachloroethane	1.6690E-9	1.502E-06	2.337E-08	1.70E-03	Below
Hydrazine	1.1838E-8	1.065E-05	1.657E-07	2.30E-06	Below
Nitric acid	1.1775E-8	1.060E-05	1.649E-07	0.333	Below
Sulfuric acid	1.8172E-7	1.635E-04	2.544E-06	0.067	Below
Tetrachloroethylene	1.1560E-9	1.040E-06	1.618E-08	1.30E-02	Below

[a] Assume 900 rockets per year and that, conservatively, 14 rockets are fired per hour
[b] Emission factors based on Munitions Air Emission Report for TRI Chemicals, Mountain Home AFB, July 2004 [c] Mobile toxic emission factors compared to stationary toxic screening levels. There are no TAP standards in Idaho for mobile sources.

APPENDIX C

Status and Scientific Nomenclature of Flora and Fauna Found on the SCAFR

Appendix C
Status and Scientific Nomenclature of Flora and Fauna Found on the SCAFR

Taken from the 2004 MHAFB Integrated Natural Resource Management Plan

FLORA
(Hitchcock & Cronquist 1994)

		STATUS			
COMMON NAMES	**SCIENTIFIC NAMES**	**CULTIVATED**	**WEED**	**NATIVE**	**OBSERVED**
SHRUBS					
Wyoming big sagebrush	*Artemisia tridentata* ssp *wyomingensis*			X	Yes
Fourwing saltbush	*Atriplex canescens*			X	Yes
Shadscale	*Atriplex confertifolia*			X	Yes
Saltsage	*Atriplex nuttallii*			X	Yes
Gray rabbitbrush	*Chrysothamnus nauseosus*			X	Yes
Green rabbitbrush	*Chrysothamnus viscidiflorus*			X	Yes
Winterfat	*Eurotia lanata*			X	Yes
Spiny hopsage	*Grayia spinosa*			X	Yes
Golden currant	*Ribes aureum*			X	Yes
Grease wood	*Sarcobatus vermiculatus*			x	Yes
FORBS					
Western yarrow	*Achillea millefolium*			X	Yes
Wild onion	*Allium* sp.			X	Yes
Hooker's balsamroot	*Balsamorhiza hookeri*			X	Yes
Arrowleaf balsamroot	*Balsamorhiza sagittata*			X	Yes
Thistle milkvetch	*Astragalus kentrophyta* var *jessiae*			X	No
Sego lily	*Calochortus nuttallii*			X	Yes
Hawksbeard	*Crepis acuminata*			X	Yes
Low larkspur	*Delphinium bicolor*			X	Yes
Flixweed	*Descurainia sophia*		X		Yes
Basin rayless daisy	*Erigeron aphanactis*			X	Yes
Halogeton	*Halogeton glomeratus*		X		Yes
Forage kochia	*Kochia prostrata*	X			Yes
Asiatic yarrow	*Lanulosa mutiflorum*	X			Yes
Davis' peppergrass	*Lepidium davisii*			X	Yes
Clasping-leaf peppergrass	*Lepidium perfoliatum*		X		Yes
Biscuit root	*Lomatium* sp.			X	Yes
Lupine	*Lupinus* sp.			X	Yes
Sharp-leaved penstemon	*Penstemon acuminatus*			X	Yes
Long-leafed phlox	*Phlox longifolia*			X	Yes
Sagebrush buttercup	*Ranunculus glaberrimus*			X	Yes
Hornseed buttercup	*Ranunculus testiculatus*		X		Yes
Russian thistle	*Salsola kali*		X		Yes
Tumble mustard	*Sisymbrium altissimum*		X		Yes
Yellow salsify	*Tragopogon dubius*			X	Yes
GRASSES					
Crested wheatgrass	*Agropyron cristatum*	X			Yes
Intermediate wheatgrass	*Agropyron intermedium*	X			Yes
Bluebunch wheatgrass	*Agropyron spicatum*			X	Yes
Cheatgrass	*Bromus tectorum*		X		Yes
Indian ricegrass	*Oryzopsis hymenoides*			X	Yes
Sandberg's bluegrass	*Poa secunda*			X	Yes
Bottlebrush squirreltail	*Sitanion hystrix*			X	Yes
Needle-and-thread grass	*Stipa comata*			X	Yes

FAUNA

				State	Owyhee County**
		G Rank*	S Rank*	Classification†	
Longnose Leopard Lizard (*Gambelia wislizenii*)	**3** Crotaphytidae	G5	S5	Protected	
Desert Horned Lizard (*Phrynosoma platyrhinos*)	**15** Phrynosomatidae	G5	S4	Protected	
Pygmy Short-Horned Lizard *(Phrynosoma douglasii)*	Phrynosomatidae	G5	S5	Protected	
Western Fence Lizard (*Sceloporus occidentalis*)	**1** Phrynosomatidae	G5	S4	Protected	
Sagebrush Lizard (*Sceloporus graciosus*)	**6** Phrynosomatidae	G5	S5	Protected	
Western Whiptail (*Aspidoscelis tigris*)	**1** Teiidae	G5	S4	Protected	
Great Basin Gopher Snake (*Pituophis catenifer deserticola*)	**3** Colubridae	G5	S5	Protected	
Common Gartersnake (*Thamnophis sirtalis*)	**2** Colubridae	G5	S5	Protected	
Western Rattlesnake (*Crotalus virdis*)	**1** Viperidae	G5	SNR	Protected	
Mallard (*Anas platyrhynchos*)	**17** Antatidae	G5	S5	Game	
American Wigeon (*Anas americana*)	**4** Antatidae	G5	S5	Game	
Green-winged Teal (*Anas crecca*)	**4** Antatidae	G5	S4	Game	
American Coot (*Fulica americana*)	**2** Rallidae	G5	S5	Game	
Long-billed Curlew (*Numenius americanus*)	**15** Scolopacidae	G5	S3	Protected	Special Status
Killdeer (*Charadrius vociferus*)	**3** Charadriidae	G5		Protected	
Gray Partridge (*Perdix perdix*)	**13** Phasianidae	G5	Exotic	Game/Not Native	
California Quail (*Callipepla californica*)	**6** Odontophoridae	G5	Exotic	Game/Not Native	
Greater Sage Grouse (*Centrocercus urophasianus*)	**17** Phasianidae	G4	S4	Game	
Mourning Dove (*Zenaida macroura*)	**26** Columbidae	G5	S5	Game	
Turkey Vulture (*Cathartes aura*)	**3** Catharidae	G5	S4	Protected	
Northern Harrier (*Circus cyaneus*)	**48** Accipitridae	G5	S5	Protected	
Sharp-shinned Hawk (*Accipiter striatus*)	**2** Accipitridae	G5	S5	Protected	
Red-tailed Hawk (*Buteo jamaicensis*)	**17** Accipitridae	G5	S5	Protected	
Swainson's Hawk (*Buteo swainsoni*)	**3** Accipitridae	G5	S4	Protected	
Rough-legged Hawk (*Buteo lagopus*)	**13** Accipitridae	G5		Protected	
Ferruginous Hawk (*Buteo regalis*)	**16** Accipitridae	G4	S3	Protected	Special Status
Golden Eagle (*Aquila chrysaetos*)	**51** Accipitridae	G5	S4	Protected	
Gyrfalcon (*Falco rusticolus*)	**1** Falconidae	G5		Protected	
Prairie Falcon (*Falco mexicanus*)	**20** Falconidae	G5	S5	Protected	
Merlin (*Falco columbarius*)	**1** Falconidae	G5	S1	Protected	
American Kestrel (*Falco sparverius*)	**13** Falconidae	G5	S5	Protected	
Short-eared Owl (*Asio flammeus*)	**76** Strigidae	G5	S5	Protected	
Western Burrowing Owl (*Athene cunicularia hypugaea*)	**29** Strigidae	G4T4	S3	Protected	Special Status
Northern Flicker (*Colaptes auratus*)	**1** Picidae	G5	S5	Protected	
Common Nighthawk (*Chordeiles minor*)	**58** Caprimulgidae	G5	S5	Protected	
Western Kingbird (*Tyrannus verticalis*)	**1** Tyrannidae	G5	S5	Protected	
Horned Lark (*Eremophila alpestris*)	**582** Alaudidae	G5	S5	Protected	
Black-billed Magpie (*Pica hudsonia*)	**4** Corvidae	G5	S5	Protected	
Common Raven (*Corvus corax*)	**21** Corvidae	G5	S5	Protected	
Western Meadowlark (*Sturnella neglecta*)	**298** Icterinae	G5	S5	Protected	
Brewer's Blackbird (*Euphagus cyanocephalus*)	**14** Icterinae	G5	S4	Protected	
Vesper Sparrow (*Pooecetes gramineus*)	**10** Emberizidae	G5	S4	Protected	
Grasshopper Sparrow (*Ammodramus savannarum*)	**3** Emberizidae	G5	S3	Protected	
Lark Sparrow (*Chondestes grammacus*)	**2** Emberizidae	G5	S5	Protected	
White-crowned Sparrow (*Zonotrichia leucophrys*)	**11** Emberizidae	G5	S5	Protected	
Brewer's Sparrow (*Spizella breweri*)	**42** Emberizidae	G5	S4	Protected	Special Status
Sage Sparrow (*Amphispiza belli*)	**32** Emberizidae	G5	S4	Protected	Special Status
Spotted Towhee (*Pipilo maculatus*)	**1** Emberizidae	G5	S5	Protected	
Savannah Sparrow (*Passerculus sandwichensis*)	Emberizidae	G5	S5B	Protected	
Cliff Swallow (*Petrochelidon pyrrhonota*)	**28** Hirundinidae	G5	S5	Protected	
Loggerhead Shrike (*Lanius ludovicianus*)	**32** Laniidae	G4	S3	Protected	Special Status
Sage Thrasher (*Oreoscoptes montanus*)	**12** Mimidae	G5	S5	Protected	Special Status
Rock Wren (*Salpinctes obsoletus*)	**6** Troglodytidae	G5	S5	Protected	
Marsh Wren (*Cistothorus palustris*)	**2** Troglodytidae	G5	S5	Protected	
Mountain Chickadee (*Poecile gambeli*)	**4** Paridae	G5	S5	Protected	
American Robin (*Turdus migratorius*)	**3** Turdidae	G5	S5	Protected	
Mountain Bluebird (*Sialia currucoides*)	**2** Turdidae	G5	S4	Protected	
European Starling (*Sturnus vulgaris*)	Sturnidae	G5	SNA		
Mountain Cottontail (*Sylvilagus nuttallii*)	**37** Leporidae	G5	S5	Game	

Black-tailed Jackrabbit (*Lepus californicus*)	**104**	Leporidae	G5	S5	Predator
Piute Ground Squirrel (*Spermophilus mollis*)	**51**	Sciuridae	G5	SNR	Protected
Northern Pocket Gopher (*Thomomys talpoides*)	**42**	Geomyidae	G5	S5	
Ord's Kangaroo Rat (*Dipodomys ordii*)	**84**	Heteromyidae	G5	S5	
Desert Woodrat (*Neotoma lepida*)	**17**	Muridae	G5	S4	
Coyote (*Canis latrans*)	**39**	Canidae	G5	S5	Predator
American Badger (*Taxidea taxus*)	**17**	Mephitidae	G5	S5	Game
Pronghorn Antelope (*Antilocapra americana*)	**247**	Antilocapridae	G5	S5	Game
Mule Deer (*Odocoileus hemionus*)	**72**	Cervidae	G5	S5	Game
Elk (*Cervus canadensis*)	**3**	Cervidae	G5	S5	Game
69 Total Identified Species	**Total Recorded: 2,282**	**40 Families**			

Source: USAF 2006.

* See Appendix 2: NatureServe Conservation Status

** See IDFG 2006

† See State of Idaho (2006) for definitions

Acronyms

ACC	Air Combat Command	LATR	Low-Altitude Tactical Rockets
ACC	Areas of Critical Concern	LOFT	Rocket Delivery Method (**loft** the rocket)
ASC	Air Strike Control	MHAFB	Mountain Home Air Force Base
BLM	U.S. Bureau of Land Management	MPSM	multipurpose sub-munition
CAA	Clean Air Act	NAAQS	National Ambient Air Quality Standards
CAS	Close Air Support	NCA	National Conservation Area
CAT	Combined Arms Training	NEPA	National Environmental Policy Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NO_2	nitrogen dioxide
CO	carbon monoxide	NWI	National Wetlands Inventory
CSAR	Combat Search and Rescue	O_3	ozone
CWA	Clean Water Act	OSHA	Occupational Safety and Health Act
DOC	Described Operational Capability	Pb	lead
EA	Environmental Assessment	PD	Point Detonating
EO	Executive Order	PM_{10}	particulate matter equal to or less than 10 micrometers in diameter
EOD	Explosive Ordinance Disposal	POLs	petroleum, oil, and lubricants
EPA	U.S. Environmental Protection Agency	R5E	Range 5 East
ESA	Endangered Species Act	RCO	range control officer
ETI	Enhanced Training in Idaho	RCRA	Resource Conservation and Recovery Act
EUA	Exclusive Use Area	SCAFR	Saylor Creek Air Force Range
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act	SCAFR	Saylor Creek Range
FMZ	Fire Management Zone	SHPO	Idaho State Historic Preservation Office
GIS	geographic information system	SO_2	sulfur dioxide
GPS	global positioning system	SWANCC	Solid Waste Agency of Northern Cook County
HATR	High-Altitude Tactical Rockets	SWDA	Solid Waste Disposal Act
HE	High Explosive	T4S	Township 4 South
IDANG	Idaho Air National Guard	TAP	toxic air pollutants
IDARNG	Idaho Army National Guard Aviation	TSCA	Toxic Substances Control Act
ICDC	Idaho Conservation Data Center	TSDF	treatment, storage, and disposal facility
IDEQ	Idaho Department of Environmental Quality	USFWS	U.S. Fish and Wildlife Service
IDFG	Idaho Department of Fish and Game	UTTR	Utah Test and Training Range
INPS	Idaho Native Plant Society	WCPA	Federal Water Pollution Control Act
JAAT	Joint Air Attack Training	WSFA	Weapon Safe Footprint Area
LASTE	low-altitude safety and enhancement	YTC	Yakima Training Center