FINDING OF NO SIGNIFICANT IMPACT

Wildland Fire Management Plan at New Boston Air Force Station, New Hampshire

The U.S. Air Force (USAF) at New Boston Air Force Station (NBAFS), New Hampshire, proposes to implement a Wildland Fire Management Plan. The proposed action is needed to ensure that procedures are in place to safely suppress wildfires and to conduct prescribed burns for fuels and natural resources management.

Potential impacts to the natural and human environment associated with the implementation of the Wildland Fire Management Plan at NBAFS are assessed in the accompanying Environmental Assessment (EA), entitled *Environmental Assessment for a Wildland Fire Management Plan at New Boston Air Force Station, New Hampshire*. The EA was prepared in accordance with specific tasks and procedures of the USAF Environmental Impact Analysis Process (EIAP; Air Force Instruction 32-7061), as it applies to the National Environmental Policy Act of 1969 (Public Law 91-190, 42 U.S.C. Sections 4321-4347). The EA evaluates the environmental consequences of the proposed action and the no-action alternative (i.e., continuing to operate without a wildland fire management plan). The assessment evaluates the potential for impacts to air quality, noise levels, topography, geology, soils, water resources, ecological resources (including threatened and endangered species and wetlands), cultural resources, land use, recreation, visual resources, socioeconomics, and health and safety. The general public was given a 30-day period (December 5, 2003 to January 5, 2003) to comment on the proposed action and the EA. All comments received from the public have been addressed.

The proposed action is preferred over the no-action alternative. The no-action alternative would not provide the guidance necessary to safely suppress wildfires and manage prescribed fires in a manner that maximizes natural resource management while minimizing risks to personnel. The proposed action would result primarily in negligible localized, short-term impacts to the environment such as diminished air quality due to smoke, disturbance of wildlife during a prescribed burn, erosion until vegetation is reestablished, and land-use constraints in the area of a burn.

On the basis of the assessments detailed in the EA, it has been determined that the proposed action would not have a significant effect on the human environment. Therefore, an Environmental Impact Statement will not be required nor prepared for the implementation of the Wildland Fire Management Plan at NBAFS.

12 Jan 04 Date

CHARLES H. CYNAMON, Lt Col, USAF
Commander, 23d Space Operations Squadron

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_____ _____

Date

Charles H. Cynamon, Lt. Col., USAF
Commander

DRAFT

ENVIRONMENTAL ASSESSMENT FOR A WILDLAND FIRE MANAGEMENT PLAN AT NEW BOSTON AIR FORCE STATION, NEW HAMPSHIRE

Prepared by
Environmental Assessment Division
Argonne National Laboratory

For

23 SOPS/MAFCVN
U.S. Department of the Air Force
New Boston Air Force Station
New Hampshire

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CONTENTS

NOTATION v

ABSTRACT 1

1 PURPOSE AND NEED FOR THE PROPOSED ACTION 3

2 DESCRIPTION OF THE PROPOSED ACTION AND THE ALTERNATIVE 5

2.1 Proposed Action 5
2.2 No Action 10
2.3 Comparison of Alternatives 10

3 AFFECTED ENVIRONMENT 15

3.1 Location, History, and Current Mission 15
3.2 Climate, Air Quality, and Noise 15
3.3 Topography, Geology, and Soils 17
3.4 Water Resources 17
3.5 Ecological Resources 18
3.6 Cultural Resources 24
3.7 Land Use, Recreation, and Visual Resources 25
3.8 Socioeconomics 26

4 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVE 27

4.1 Environmental Impacts of the Proposed Action 27
4.2 Environmental Impacts of the No-Action Alternative 35
4.3 Adverse Effects That Cannot Be Avoided if the Project Is Implemented 38
4.4 Irreversible and Irretrievable Commitment of Resources 38
4.5 Relationship between Short-Term Uses and Long-Term Productivity 39
4.6 Cumulative Impacts 39

5 REFERENCES 41

6 LIST OF PREPARERS 45

7 AGENCIES, ORGANIZATIONS, AND PERSONS CONTACTED 47

APPENDIX A: Correspondence A-1

APPENDIX B: Request for Environmental Impact Analysis B-1

TABLES

1 High-Priority Prescribed Fire, Fuel Management, and Firebreak Projects Proposed for NBAFS, New Hampshire 8

2 Comparison of Impacts Associated with the Implementation of the Wildland Fire Management Plan and the No-Action Alternative 11

3 Federally Listed, State-Listed, and Rare Species of Plants and Animals and Rare Natural Communities Found on New Boston Air Force Station, New Hampshire… 22

FIGURE

1 Primary Burn Units, Range Areas, and Operations Area at New Boston Air Force Station, New Hampshire 6

NOTATION

The following is a list of the acronyms, initialisms, and abbreviations (including units of measure) used in this document.

ACRONYMS, INITIALISMS, AND ABBREVIATIONS

AFI	Air Force Instruction
AFSCN	Air Force Satellite Control Network
CFR	Code of Federal Regulations
DOD	Department of Defense
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
FEIS	Fire Effects Information System
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NBAFS	New Boston Air Force Station
NEPA	National Environmental Policy Act
NFES	National Fire Equipment System
NFPA	National Fire Protection Association
NRHP	National Register of Historic Places
NWCG	National Wildlfire Coordinating Group
PA	Programmatic Agreement
PMS	Publication Management System
PPE	Personal Protective Equipment
SATCOM	Satellite Communications Network
SHPO	State Historic Preservation Officer
SOPS	Space Operations Squadron
USAF	U.S. Air Force
UXO	Unexploded Ordnance
WFSA	Wildland Fire Situation Analysis

UNITS OF MEASURE

ac	acres(s)
cm	centimeter(s)
dB	decibel(s)
dBA	unit of weighted sound-pressure level
ft	foot (feet)
ha	hectare(s)
in.	inch(es)
km	kilometer(s)
km^2	square kilometer(s)
L_{dn}	day-night weighted equivalent sound level
L_{eq}	equivalent steady sound level
m	meter(s)
mi	mile(s)
mi^2	square mile(s)
μm	micrometer(s)

ENVIRONMENTAL ASSESSMENT FOR A WILDLAND FIRE MANAGEMENT PLAN AT NEW BOSTON AIR FORCE STATION, NEW HAMPSHIRE

Prepared by

Environmental Assessment Division
Argonne National Laboratory

ABSTRACT

The U.S. Air Force at New Boston Air Force Station, New Hampshire, proposes to implement a wildland fire management plan. The proposed action is needed to ensure that procedures are in place to suppress wildfires and to conduct prescribed burns for fuels and natural resources management. Currently, the station does not have a wildfire management plan. Continuing to operate the station without a wildland fire management plan (i.e., no action) was considered as an alternative to the proposed action. This environmental assessment evaluates the potential impacts of the proposed action and no-action alternative on air quality, noise, topography, geology, soils, water resources, ecological resources, cultural resources, land use, recreation, visual resources, socioeconomics, and health and safety. Implementation of the Wildland Fire Management Plan would result in only minor, localized, short-term impacts to the environment such as diminished air quality from smoke, disturbance of wildlife, and increased soil erosion, sedimentation, and erosion of archaeological sites. Benefits that would be provided by implementation of the Wildland Fire Management Plan would include (1) reduction in fuel loading; (2) fuel breaks to prevent large wildfires; (3) future fire protection, especially for the Operations Area; (4) increase in the production and diversity of herbaceous vegetation; and (5) decrease in soil erosion. Environmental impacts associated with the no-action alternative include increases in fuels that could increase the risk to surrounding properties and personnel during a wildfire, compromise the station's mission, and limit natural resource management (e.g., restrict the establishment of fire-adapted vegetation and habitats).

1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The proposed action evaluated in this environmental assessment (EA) is the implementation of a wildland fire management plan at New Boston Air Force Station (NBAFS), New Hampshire (Bernardy et al. 2003). The Wildland Fire Management Plan was developed in accordance with applicable U.S. Air Force (USAF) regulations including Air Force Instruction (AFI) 32-7064, *Integrated Natural Resources Management*, and AFI 32-2001, *Fire Protection and Operations Program*. Currently, no plan is in place for wildland fire[1] management (Najjar 2003). Prescribed fires are briefly addressed in the Integrated Natural Resources Management Plan for NBAFS (Najjar 1998). However, that plan does not address fire suppression; personnel qualifications and safety operations; and detailed goals, objectives, and procedures for managing fuels[2] and natural resources through fire suppression and prescribed fires. This EA evaluates the impacts associated with implementation of the Wildland Fire Management Plan and was prepared in accordance with specific tasks and procedures of AFI 32-7061: *The Environmental Impact Analysis Process* as it applies to the National Environmental Policy Act (NEPA) of 1969, Title 40, Parts 1500–1508 of the *Code of Federal Regulations* (40 CFR Parts 1500–1508), as amended.

1 A wildland fire is a fire that occurs in undeveloped areas (e.g., forests or fields). A wildfire is a wildland fire that is not a prescribed fire.

2 Fuels consist of live and dead vegetation that can potentially contribute to combustion (Brown and Smith 2000).

2 DESCRIPTION OF THE PROPOSED ACTION AND THE ALTERNATIVE

2.1 PROPOSED ACTION

The proposed action is to implement the Wildland Fire Management Plan at NBAFS (Bernardy et al. 2003). The purpose of the plan is to safely suppress wildfire at minimum cost in a way that is consistent with land and resource management objectives at NBAFS and to provide fire management direction. The plan identifies wildland fire management zones at NBAFS, describes the procedures to be followed in the event of a wildland fire in each zone, assigns the responsibilities for fire suppression decisions, defines the qualifications of firefighters, identifies interactions with cooperating fire departments in the area, and describes the process for pre-suppression activities, including the creation and maintenance of firebreaks and the use of prescribed fire for fuel management and meeting resource management objectives.

The Wildland Fire Management Plan divides NBAFS into three fire management zones (Figure 1). Fire Management Zone I encompasses the Operations Area at the base. All wildland fires within this area would be managed for total control. Fire use within Fire Management Zone I is not authorized unless contained in a grill or incinerator (Bernardy et al. 2003). Fire Management Zone II is comprised of inactive range areas that have the potential for containing unexploded ordnance (UXO). Containment lines would be established and maintained around the range areas. Shaded fuel breaks would also be established to reduce fuel ladders[3] and fuel concentrations, while creating an open understory (Bernardy et al. 2003). Wildfires in Zone II would be managed for containment. Suppression resources would not be allowed to enter range areas. Firefighters would not be authorized in the range areas or within 1,000 ft (305 m) of any actively burning range fire. Prescribed fire use would be authorized in the area between containment lines and range area boundaries. Use of prescribed burns within the range areas would be allowed for controlling dense brush or undergrowth, but not to clear UXO. Prescribed burns planned within range areas would emphasize personnel safety and reduction of the possibility of injury by UXO (Bernardy et al. 2003).

Most of NBAFS is comprised of Fire Management Zone III: undeveloped areas. Management Zone III encompasses essentially all areas of NBAFS that are not contained within Management Zones I and II. All wildland fires in Management Zone III would be controlled, contained, or confined by employing strategies that consider resource availability, values at risk, and cost. The following activities would be authorized in the undeveloped areas: (1) maintenance of containment lines, (2) burning from established containment lines to reduce fire intensity of an advancing wildland fire, (3) use of aerial suppression and observation, and (4) use of prescribed

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3 Layers of flammable material that allow a fire to move from the ground to the tree canopy create fuel ladders. For example, pine needles on the ground can ignite and burn shrubs, which in turn ignite tree limbs or leaves.

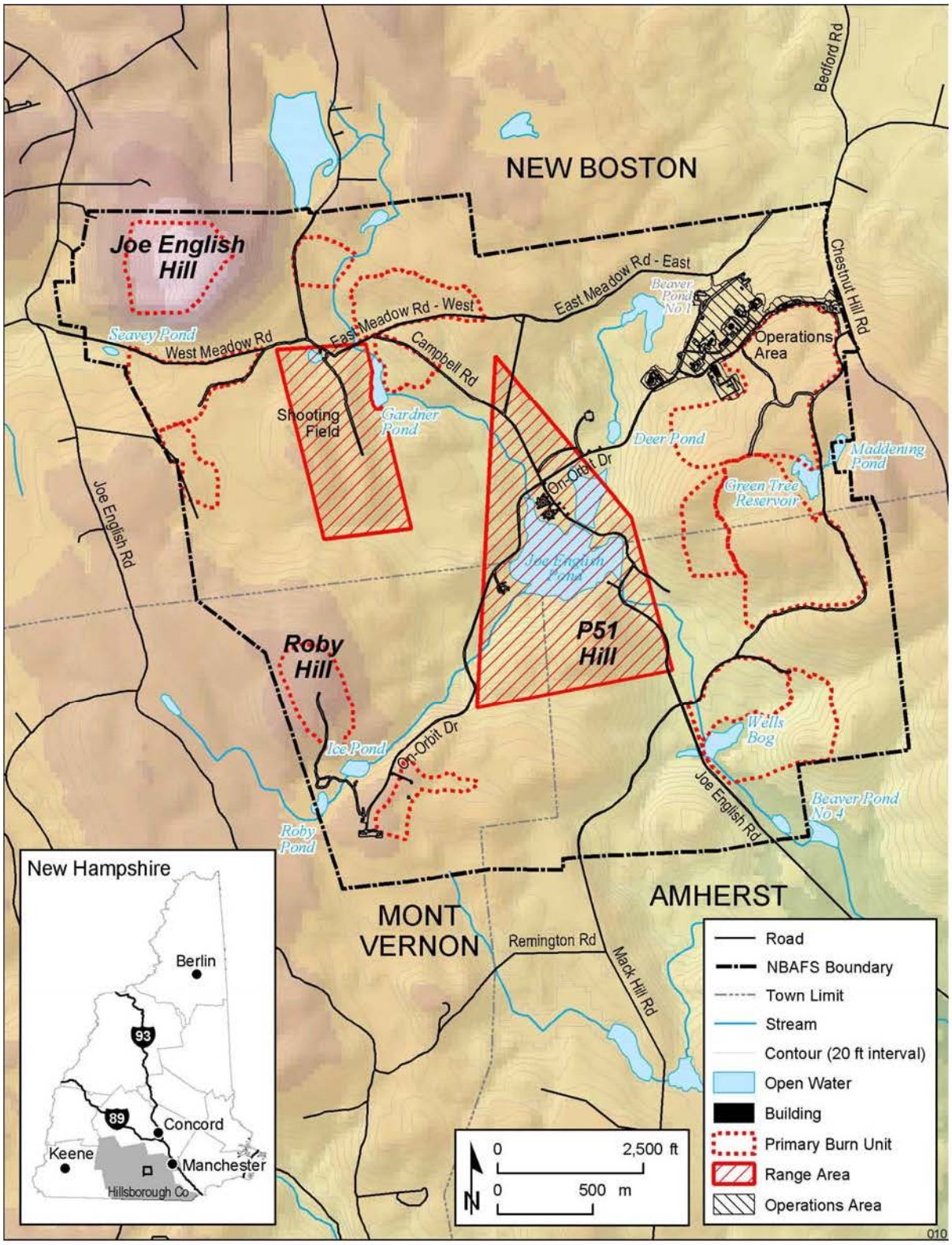

FIGURE 1 Primary Burn Units, Range Areas, and Operations Area at New Boston Air Force Station, New Hampshire

fires to meet resource management objectives (Bernardy et al. 2003). It is projected that prescribed burning of about 50 to 100 acres (20 to 40 ha) would occur annually (Bernardy et al. 2003). Table 1 describes the high-priority areas that are proposed for prescribed burns, fuel management, and firebreak projects. The high-priority areas on NBAFS have been identified as having resources that would benefit from repeated application of prescribed fires (Bernardy et al. 2003). Fuels mapping on NBAFS is proposed as part of a hazardous fuels risk assessment project budgeted for fiscal year (FY) 2004 or 2005 (Bernardy et al. 2003). In addition, the installation of a fire weather station is proposed for FY 05. This station would be utilized to develop more accurate prescribed burn windows and to predict high fire conditions. A communication plan for wildfire resources is also proposed for FY 04 (Bernardy et al. 2003).

In addition to prescribed fires, fuels management could be done by mechanical treatment (e.g., use of chainsaws, brushhogs/mowers, and biomass reducer machines to help remove or lop brush or broken treetops, boles, and limbs). Also, woody debris resulting from activities such as roadside clearing could be burned, chipped, or removed to approved disposal areas to avoid fuel accumulations (Bernardy et al. 2003).

The Natural Resources Management Office at NBAFS is responsible for all aspects of wildfire management on the installation. Department of Defense (DOD) Civilian Natural Resources employees are the principal wildland firefighting staff at NBAFS. USAF active duty personnel and other DOD civilians who are fully-trained to National Wildfire Coordinating Group (NWCG) standards and outfitted with personal protective equipment (PPE) could be used to augment Natural Resources staff during emergencies. A Wildland Fire Situation Analysis (WFSA) would be prepared if a wildland fire exceeds suppression efforts or when a prescribed fire could not be implemented in accordance with plans approved for the fire. The WFSA is used to compare alternatives that reflect the full range of appropriate management responses, and to assess alternatives for realizing protection and/or resource benefit opportunities from future wildland or prescribed fires (Bernardy et al. 2003).

Mutual aid agreements with federal, state, and local fire-management agencies are planned to ensure adequate staffing and equipment coverage for wildfire suppression. Aid agreements and/or yearly operating plans would specify procedures for requesting assistance by any agency involved in the agreement (Bernardy et al. 2003). All fire-management personnel would meet USAF standards, as required by AFI 32-7064, *Integrated Natural Resources Management*, paragraph 11.2.1. However, the Installation Commander would have the authority to accept the risk of using unqualified firefighters in the event of an emergency. Firefighters would also be required to meet the physical standards for their target positions. A local policy is in effect at NBAFS that allows cooperators who cannot meet requirements to institute their own local standards and be used on interagency fire assignments during the initial activities within the local mutual aid area (Bernardy et al. 2003).

In some cases, aircraft may be used to suppress a wildfire. Aircraft would likely only be used in a wildfire situation that is out of control and is hard to suppress due to climatic conditions. The primary use would be delivery of water via a bucket attached to a long-line suspended from a helicopter. Any aircraft used in the suppression of a wildfire on NBAFS

TABLE 1 High-Priority Prescribed Fire, Fuel Management, and Firebreak Projects Proposed for NBAFS, New Hampshire

Project	Location and Area	Vegetation Description	History	Goal	Approximate Fire Rotation
Prescribed Fire Projects					
Joe English Hill South	30 ac including the area south of the hiking trail from Meadow Road	Red oak overstory; scrub oak and blueberry understory	Prescribed burn Oct. 1999, wildfire adjacent to unit 1994; wildfire 1950; wildfire 1942	Increase fern-leaved false-foxglove, blueberry, and training	5 years
Joe English North	30 ac including the area north of the hiking trail from Meadow Road	Red oak overstory; scrub oak, white pine, and blueberry understory	Wildfire 1950; wildfire 1942	Increase fern-leaved false-foxglove, blueberry, scenic viewing, and training	5 years
Roby Hill	35 ac including the entire top of Roby Hill	White pine and mixed hardwood overstory; blueberry understory	Prescribed fire 2000; wildfire 1942	Develop fern-leaved false-foxglove habitat, blueberry, scenic view, and training	5 years
Meadow Road Unit	40 ac including the area south of Meadow Road to Murphy Swamp Road	Red oak overstory; blueberry understory	Prescribed fire 2001; wildfire likely 1942	Blueberry production and training	10 years
Bore Site Tower Clear-cut	7 ac near On-Orbit Drive	Black cherry, raspberry, and blackberry	Wildfire 1942	Blackberry production, wildlife opening, guy wire opening, maintenance, and training	10 years
Green Tree Reservoir Wildlife Opening	100 ac adjacent to Green Tree Reservoir	Grasses, raspberry, blackberry, and 15 ac of field	Prescribed fire 2002; wildfire 1942	Herbaceous vegetation, wildlife opening, and training	3-5 years (Area may be subdivided to accomplish prescribed burns.)

TABLE 1 (Cont.)

Project	Location and Area	Vegetation Description	History	Goal	Approximate Fire Rotation
Gardner Pond Unit	14 ac adjacent to Gardner Pond	White pine and red oak overstory; fern-leaved false-foxglove and blueberry understory	Prescribed burn 2003; wildfire 1942	Fern-leaved false-foxglove and training	3-5 years
Chestnut Hill Unit	110 ac south of Operations Area and adjacent to Gardner Pond Unit	White pine and mixed hardwood (primarily red oak) overstory; blueberry understory	Arson fire 1999; wildfire 1942	Fern-leaved false-foxglove, blueberry, and training	3-5 years
Fuel Management and Fire Break Projects					
West Boundary Trail	West boundary line from Murphy Swamp Road to intersection with Roby Hill Trail	White pine and mixed hardwood (primarily red oak) overstory; mixed understory	NA	Make access trail 6 ft wide; manage fuel concentrations using prescribed fire and vegetation harvesting for 200 feet east of trail. Design will allow to contain fire leaving the Shooting Field Range	NA
South Boundary Trail	South boundary line from On-Orbit Drive to intersection with Mack Hill Trail	White Pine and mixed hardwood (primarily red oak) overstory; mixed understory	NA	Make access trail 6 ft wide. Manage fuel concentrations using prescribed fire and vegetation harvesting for 200 feet east of trail. Design will be suitable to contain fire leaving Joe English Range.	NA

NA = not applicable.

Source: Bernardy et al. (2003).

would meet U.S. Forest Service certification standards or Office of Aircraft Services standards, if the fire were being coordinated by NBAFS. All pilots would be required to have appropriate training. All on-the-ground firefighters would be briefed on the safety issues associated with using an aircraft in fire suppression.

The construction and maintenance of firebreaks and prescribed burning are the primary pre-suppression activities described in the plan (Bernardy et al. 2003). Firebreaks generally consist of existing roadways and trails. One new firebreak may be necessary along the western boundary of the station and would require the clearing of vegetation. Table 1 describes the firebreak and fuel management projects proposed at NBAFS.

Prior to conducting a prescribed fire, a Prescribed Fire Burn Plan would be prepared in accordance with AFI 32-7064, *Integrated Natural Resources Management,* and approved in writing by the Commander. Prescribed fires may be implemented only with trained and qualified personnel under NWCG standards, according to Publication 310-1, *Wildland and Prescribed Fire Qualifications Guide*, National Fire Protection Association (NFPA), or approved cooperators' standards. The size and complexity of each prescribed fire project would determine the size of the team needed to safely achieve the objectives of the prescribed fire (Bernardy et al. 2003). Proposals and decisions to use prescribed fire are subject to the requirements of the National Environmental Policy Act (NEPA). The frequency of prescribed burns is expected to be every five years for most areas.

2.2 NO ACTION

No action is the only alternative considered in this EA. Under this alternative, the station would continue to operate without a wildland fire management plan, in accordance with the Integrated Natural Resources Management Plan (Najjar 1998). For example, the Integrated Natural Resources Management Plan only calls for 5 ac (2 ha) of habitat to be improved annually through the use of prescribed burns, mowing, or silviculture (Najjar 1998). This alternative would have the disadvantage of not addressing (1) fire suppression; (2) personnel qualifications and safety operations; and (3) detailed goals, objectives, and procedures for managing fuels and natural resources through fire suppression and prescribed fires. Therefore, the no-action alternative increases the potential for harming the station and fire-fighting personnel, disrupting the station's mission, and damaging surrounding property. Prescribed burns would be continued as money and opportunity dictated and would follow the guidelines found in the Integrated Natural Resources Management Plan (Najjar 1998). Operating without a more detailed plan could also lead to confusion during a wildland fire situation that could allow a fire to increase in severity and spread while personnel attempt to organize suppression efforts.

2.3 COMPARISON OF ALTERNATIVES

A summary comparison of the expected environmental impacts of the proposed action and no-action alternative is presented in Table 2. Additional discussion of these environmental impacts is provided in Section 4.

TABLE 2 Comparison of Impacts Associated with the Implementation of the Wildland Fire Management Plan (Proposed Action) and the No-Action Alternative

Environmental Parameter	Proposed Action	No Action
Air Quality and Noise	Minor smoke and dust emissions during prescribed burns or firebreak creation. No violations are expected of federal or state ambient air quality standards for criteria pollutants.	Significant impacts from smoke and ash could result from a large wildland fire. The severity of the impacts would vary, depending on the extent and intensity of the wildland fire and climatic conditions.
	Short-term noise associated with equipment operation during creation or maintaining of firebreaks. Noise impacts would be increased if helicopters were required for suppression.	Same as proposed action.
Topography, Geology, and Soils	Localized minor soil erosion caused by machinery from vegetation clearing during the creation and maintaining of firebreaks. Moderate soil erosion could result from a wildfire that denuded parts of the station. No impacts to topographical features or geological resources.	Similar to proposed action. Moderate soil erosion could result from a wildfire that denudes large portions of the base.
Water Resources	Potential for localized, minor decreases in stream flows or lake levels from the pumping of water during a prescribed burn or from wildland fire suppression. Erosion and sedimentation could increase from the creation of containment lines or firebreaks, depending on the proximity of a wildland fire to a water source. Minor erosion could take place from the loss of plant cover during a wildland fire.	Impacts during the suppression of a large wildland fire could result in decreased stream flows and/or the lowering of lake levels. Increased potential for erosion and sedimentation resulting from a large wildfire. The severity of impacts would vary, depending on the extent and intensity of the wildland fire.
Ecological Resources	Short-term localized impacts would occur to the natural vegetation during a prescribed burn or wildland fire. The natural vegetation would benefit from the removal of invasive species or the thinning of overstocked forest stands.	Impacts could occur to the natural vegetation during a wildland fire. The severity of the impacts would vary depending on the severity of the fire, but wildfire impacts could be greater than those resulting from a prescribed burn. Habitat quality could decline as a result of the continued growth of invasive species.
	Nests and burrows and individuals of smaller or less mobile species could be destroyed within a prescribed burn unit or path of a wildland fire. This could occur within a high-priority prescribed area from once every few years to once every 10 years (see Table 1), with 50 to 100 ac (20 to 40 ha) being burned annually.	Similar to proposed action, but only 5 ac (2 ha) would be impacted by prescribed burns, mowing, or harvesting. The area impacted by a wildfire could be greater than that impacted by the proposed action.

TABLE 2 (Cont.)

Environmental Parameter	Proposed Action	No Action
Ecological Resources (Cont.)		
	Localized minor noise impacts to wildlife from equipment during a prescribed burn, the creation of a firebreak, or wildland fire suppression.	Similar to proposed action. Noise impacts could be greater both spatially and temporally in the case of a large wildfire.
	Impacts to individuals of listed threatened, endangered, or rare species could result from a prescribed burn or wildfire. Overall, prescribed fires would maintain suitable habitat for these species. In particular, a prescribed fire could benefit the fern-leaved false foxglove.	Similar to proposed action, although the area impacted by a wildfire could be greater. This wildfire could adversely impact individuals of some threatened, endangered, or rare species. A wildfire could decimate one or more populations of fern-leaved false foxglove.
Cultural Resources	No significant impact to archaeological resources. Prior to a prescribed burn, concentrations of fuel would be removed from cultural resources in the burn unit. Potential for erosion until a burned area is revegetated.	Impacts could result from a wildland fire that burned areas containing cultural resources. Concentrations of fuel could heat and alter subsurface artifacts. A severe wildland fire could increase erosion on archaeological sites. Impacts would vary depending on the location and severity of the fire.
	Prescribed fires would not impact proposed Cold War Historic District facilities contained within the Operations Area. The management of fuel loads around the Operations Area would increase the likelihood that a wildfire in the vicinity of the Operations Area would be suppressed.	Similar to proposed action. However, a slightly higher potential for an intense wildfire to spread to the Operations Area.
Land Use, Recreation, and Visual Resources	Decrease in the likelihood that a wildfire would disrupt the station's mission. Short-term impacts resulting from road closures in the vicinity of a prescribed burn.	Impacts to land use and the station's mission could result from a severe wildland fire. The impacts would vary depending on the location and severity of the fire.
	Short-term impacts to recreation resulting from road closures during a prescribed burn or wildland fire suppression.	Impacts to recreation could result from a severe wildland fire. The impacts would vary depending on the location and severity of the fire.
	Burned areas would have a slight visual impact until revegetated.	Similar to proposed action, but visual impacts could be greater both spatially and temporally from a large wildfire.

TABLE 2 (Cont.)

Environmental Parameter	Proposed Action	No Action
Socioeconomics	No impact on the local economy.	Impacts could result if surrounding properties were destroyed during a wildland fire.
	No environmental justice impact.	No environmental justice impact.
Health and Safety	The potential for health and safety impacts would be generally small. However, potential safety risks are present in any fire suppression or prescribed fire activity. Proper training is identified for fire responders. The potential for a severe wildfire would be greatly reduced by the management of fuel levels at the base.	Potential health and safety risks would be greater than for the proposed action due to the increased potential for a more intense wildfire. Lack of training and fitness requirements increase the potential for injury.

Only negligible or minor impacts are expected to result from implementation of the Wildland Fire Management Plan. The impacts would be localized and mostly of short duration. They would be small, incremental additions to the impacts that have resulted from other projects (e.g., timber management and construction of the Operations Area). Under the no-action alternative, the ability of NBAFS personnel to effectively suppress wildfires and conduct prescribed burns could be limited. Therefore, there is an increased potential for larger wildfires and for a prescribed burn to exceed its prescription, which could result in greater health and safety risks, mission disruption, and greater environmental impacts.

3 AFFECTED ENVIRONMENT

This section presents a general description of NBAFS and the resources that could be affected by the proposed action. The study area is defined as the entirety of the NBAFS and immediate areas surrounding the station.

3.1 LOCATION, HISTORY, AND CURRENT MISSION

NBAFS is located in south-central New Hampshire about 12 mi (19 km) west of Manchester. The 2,826-ac (1,144-ha) site is located within the towns of New Boston, Amherst, and Mont Vernon, in Hillsborough County. On-Orbit Drive bisects the station from the southwest corner of the station to the 44-ac (17.7-ha) Operations Area in the northeastern portion of the station (Figure 1).

As part of the worldwide network of satellite command and control stations of the Air Force Satellite Control Network (AFSCN), the current mission of NBAFS is to serve as a remote tracking station for military and communications satellites. The 23rd Space Operations Squadron (SOPS) at NBAFS provides launch, operation, and on-orbit support for more than 110 military satellites, communication satellites, and North Atlantic Treaty Organization and other allied nation satellites and for National Aeronautics and Space Administration Space Shuttle missions (Najjar 1998).

From 1941 until 1956, NBAFS (then known as the New Boston Bombing and Gunnery Range) was used as an air-to-ground bombing and strafing range. The USAF acquired rights to the site in 1957 for use as a satellite-tracking station. In 1959, the 6594th Instrumentation Squadron was activated at NBAFS. Squadron activities began in 1960; mobile radar units were used until permanent facilities were constructed and in operation by 1964. In the early 1960s, the Operations Area was cleared of UXO before the permanent facilities for the satellite-tracking mission were constructed. The two range areas (Figure 1) may still contain UXO. The site was formerly under the jurisdiction of the USAF Systems Command, which transferred the mission to the USAF Space Command in 1987 (Najjar 1998). The satellite-tracking mission is conducted from the Operations Area; the remainder of NBAFS is managed for military training, recreation, natural resources conservation, and cultural resources protection (ANL 1997; Bernardy et al. 2003).

3.2 CLIMATE, AIR QUALITY, AND NOISE

The region around NBAFS is characterized by a humid continental climate. Precipitation is evenly distributed throughout the year, with no particular wet or dry season. Coastal storms can be a serious weather hazard in southeastern New Hampshire, but decrease in importance northward (Ruffner 1985). Such storms generate very strong winds and heavy rain or snow. Storms of tropical origin affect or threaten New Hampshire about once every two to three years. Thunderstorms occur 15 to 30 times per year. Ice storms occur in the winter, but are usually of

short duration. However, a few widespread and prolonged ice storms have occurred. Data for the 3,530-mi^2 (9,130-km^2) area that includes NBAFS indicate that fewer than two tornadoes occur per year. The localized area affected by a tornado averages only 0.11 mi^2 (0.29 km^2; Ramsdell and Andrews 1986).

The State of New Hampshire Ambient Air Quality Standards are identical to the National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: sulfur oxides (as sulfur dioxide; particulate matter with an aerodynamic diameter less than or equal to 10 μm and 2.5 μm (PM_{10} and $PM_{2.5}$, respectively); carbon monoxide; ozone; nitrogen dioxide; and lead (Sanborn 1998). In 1996, New Hampshire discontinued lead monitoring because lead concentrations were well below the NAAQS and at the lowest levels of the detection limit. As of November 4, 2002, Hillsborough County (which includes NBAFS) was designated as an attainment area for all criteria pollutants except ozone (Bernardy et al. 2003).

Permitted air pollution sources at NBAFS include two large diesel-fuel backup generators at the station's power plant (Najjar 1998). These boilers and other combustion sources are included in annual air emissions inventories. Other combustion sources at NBAFS include 17 fuel-oil generators and heaters; propane space heaters, including four propane heaters for antenna deicing; and a cooling tower. In addition, NBAFS has three diesel, one gasoline, and 13 fuel-oil storage tanks. Fugitive emissions of volatile organic compounds, hazardous air pollutants from chemical use, and ozone-depleting substances are extremely low (Najjar 1998).

Currently, no quantitative noise-limit regulations exist in New Hampshire (ANL 1999). U.S. Environmental Protection Agency (EPA) guidelines recommend an L_{dn} (the day-night weighted equivalent sound level) of 55 dBA,[4] which is considered sufficient to protect the public from the effect of broadband environmental noise in typically quiet outdoor and residential areas (EPA 1974). For protection against hearing loss in the general population from nonimpulsive noise, the EPA guidelines recommend an L_{eq} of 70 dBA or less per day over a 40-year period.[5]

No noise monitoring data are available from the area around the NBAFS site. However, the acoustic environment around the NBAFS site can be considered that of a rural location, with typical residual sound levels of approximately 30 to 35 dBA (Liebich and Cristoforo 1988). The closest off-site residences in the project area occur immediately adjacent to the station boundary along Chestnut Hill Road. Ambient noise levels at these residences would be substantially increased at times when traffic passes by.

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4 dBA is a unit of weighted sound-pressure level, measured by the use of the metering characteristics and the "A" weighting specified in the *American Standard Specification for Sound Level Meters ANSI SI.4-1983* and Amendment S1.4A-1985 (Acoustical Society of America 1983, 1985).

5 L_{eq} is the equivalent steady sound level that, if continuous during a specific time period, would contain the same total energy as the actual time-varying sound. For example, L_{eq}(1-h) is the 1-hour equivalent sound level.

3.3 TOPOGRAPHY, GEOLOGY, AND SOILS

NBAFS is located within an area of hilly and mountainous terrain. The main physiographic features on NBAFS are Chestnut Hill in the northeastern section, Roby Hill in the southwestern section, and Joe English Hill in the northwestern section. Within the center of the station is Joe English Pond (Figure 1). Elevations on NBAFS range from 340 ft (104 m) mean sea level (MSL) where Joe English Brook exits the southeast corner of the station to about 1,275 ft (389 m) MSL at the summit of Joe English Hill (Figure 1; Najjar 1998). The steepest areas of terrain include the near-vertical slopes on the southern cliffs of Joe English Hill and the northeast aspect of P-51 Hill, located south of Joe English Pond. The sides of stream ravines in the south-central and southwestern portions of the station are also relatively steep. The most extensive, nearly level areas are glacial till uplands that occur in the area east of Roby and Ice Ponds. Small, nearly level outwash plains or stream valley areas occur south of Joe English Hill, near Joe English Pond, and surrounding Wells Bog (ENSR 1993).

The bedrock geology underlying NBAFS consists of Pre-Quaternary metamorphic and igneous rocks. Generally, the bedrock is buried beneath glacial drift. Till is the dominant surficial deposit and is composed of an unsorted to poorly sorted mixture of clay, silt, sand, pebble, cobbles, gravel, and boulders. However, swamp deposits and recent alluvium are also present. Glacial striations and drumlins (elongated or oval hills) are present throughout the area and provide evidence of general north-to-south glacial movement. Chestnut Hill (a drumlin) and Joe English Hill (a moutonee) are two such glacial features.

Soil units, phases, and complexes of the area are described in the Soil Survey of Hillsborough County, New Hampshire, Eastern Part (Bond and Handler 1981). Twenty-three soil map units occur within the limits of NBAFS. Over 90% of the soils on NBAFS were formed in glacial till; the remainder formed in outwash plains, kame terraces, or stream valleys. Soils formed in glacial till tend to be fine-textured and dense and contain many stones. Soils covering about one-half of NBAFS are classified as stony or very stony. The erosion hazard of the soils on NBAFS is slight if stabilized by vegetative cover; however, they have moderate to extreme erosion potential in bare areas because of their fine texture and the steep slopes present in portions of NBAFS. Activities that disturb or remove vegetation are likely to increase the erosion hazard, particularly on slopes (ENSR 1993). Some areas of NBAFS contain exposed bedrock (Najjar 1998). A more detailed description of the soils of NBAFS, including soil maps, can be found in Najjar (1998) and Bond and Handler (1981).

3.4 WATER RESOURCES

Most of NBAFS is located within the Joe English Brook watershed. The station contains a number of open waters and stream segments (intermittent and perennial) (Figure 1). The approximate maximum acreages of the site's larger open waters (including associated wetlands) are Seavy Pond, 0.5 ac (0.2 ha); Joe English Pond, 50 ac (20 ha); Gardner Pond, 6.0 ac (2.4 ha); Green Tree Reservoir, 7.5 ac (3.0 ha); Ice Pond, 2.8 ac (1.1 ha); and Roby Pond, 0.75 ac (0.3 ha) (Najjar 1998a). The ponds range between 1.0 and 28 ft (0.3 and 8.5 m) in depth. Seavy Pond is

the only completely man-made impoundment on the site. The other ponds listed above have had dams constructed at their outlets to improve wildlife habitats (PES 1996).

The stream segments on NBAFS include those that flow into Joe English Pond from the upland wetland areas of Murphy Swamp, Gardner Pond, Beaver Pond No. 1, Deer Pond, and Ice Pond. Drainage from the Operations Area is generally to the northwest toward Beaver Pond No. 1 (ANL 1999). Drainage from Joe English Pond flows southeast along Joe English Brook, which exits the installation boundary about 1.0 mi (1.6 km) downstream. Joe English Brook is the largest on-site stream. It ranges from 10 to 20 ft (3.0 to 6.1 m) wide and between 2.0 and 5.0 ft (0.6 and 1.5 m) deep (PES 1995). Both Joe English Pond and Joe English Brook are designated as Class B waters and are considered suitable for swimming and other recreation, fish habitat, and, after adequate treatment, use as a water supply (PES 1995).

The major aquifer system at NBAFS is in the bedrock. Fractured metasedimentary rocks that have adequate effective porosity, permeability, and thickness to provide a high degree of groundwater transmissivity in the aquifer system are typical. Groundwater levels at NBAFS range from 73 ft (22 m) below land surface to flowing artesian conditions near Joe English Pond. Four wells have been drilled into the groundwater system on NBAFS to obtain potable water (only three are currently used). Four other wells have been drilled for nonpotable grounding wells used for the satellite tracking facilities (ANL 2000).

Permitted water pollution point sources include the station wastewater treatment plant and three storm water discharge points. Two discharge points carry runoff from the Building 141 parking lot, and the third drains the sand borrow pit, salt and sand storage shed, and hazardous waste storage area. Discharges from the first two eventually drain into Bog Brook, which is located off-site, north of the Operations Area. The third eventually drains into Joe English Pond (Najjar 1998). Industrial and sanitary wastewater from the Operations Area is collected by a sewer system and routed to the station's wastewater treatment plant. The plant provides primary treatment and extended aeration treatment and disinfection. Outflow from the wastewater treatment plant is then discharged through a National Pollutant Discharge Elimination System-permitted outfall to a hillside, where it eventually discharges into Beaver Pond No. 1 (Najjar 1998).

3.5 ECOLOGICAL RESOURCES

NBAFS has been identified as a Category I installation by both the New Hampshire Department of Fish and Game and the U.S. Fish and Wildlife Service. This classification indicates that NBAFS has habitat suitable for conserving and managing fish and wildlife. An Integrated Natural Resource Management Plan is used to guide management of the natural resources of NBAFS using an ecosystem approach (Najjar 1998). The relatively high biodiversity supported on NBAFS is attributable to the presence of generally undisturbed lands on much of the site and to the types of low-impact activities that occur on the station (ANL 1997). Three surveys have been conducted to determine the habitats and biotic composition of NBAFS — wetland delineations (PES 1996), a biodiversity survey (ANL 1997), and a bat survey (ANL 2002).

Much of the area surrounding NBAFS is rural, with interspersed farms, forests, and residential areas. Land cover on the station is consistent with the surrounding area, and much of the habitat present on the station is represented elsewhere in the county and region. However, residential development of surrounding lands has increased within the past decade, resulting in an increase in the ecological importance of the undeveloped land on the station grounds.

Over 450 species of plants have been identified on NBAFS (ANL 1997). About 98% of NBAFS is covered with native vegetation, and the majority of the site is forested. Dominant forest trees include red oak (*Quercus rubra*), eastern white pine (*Pinus strobus*), eastern hemlock (*Tsuga canadensis*), red maple (*Acer rubrum*), black birch (*Betula lenta*), and American beech (*Fagus grandifolia*; Bernardy et al. 2003). Vegetation within Fire Management Zone I (Operations Area) is managed grass with scattered landscape trees and a small patch of quaking aspen (*Populus tremuloides*) in the west section of the zone (Bernardy et al. 2003). Both Fire Management Zone II (the range areas) and Fire Management Zone III (undeveloped areas) contain a mixture of forest, wetlands, open water, and old fields (ANL 1997; Bernardy et al. 2003). The following text (based on ANL 1997) describes the characteristics of habitat types on NBAFS.

Coniferous Forest: Areas with a tree canopy comprised of 60% or more coniferous trees, especially eastern white pine or eastern hemlock. Areas dominated by hemlock typically have little if any vegetation in the understory, but areas dominated by white pine often have relatively diverse understories comprised of young deciduous trees, including red oak, red maple, and black birch; shrubs such as mountain laurel (*Kalmia latifolia*) and lowbush blueberry (*Vaccinium angustifolium*); and herbaceous species such as Solomon's seal (*Polygonatum pubescens*), bracken fern (*Pteridium aquilinum*), clubmoss (*Lycopodium* spp.), and pipsissewa (*Chimaphila umbellata*). Coniferous forest is well represented on NBAFS, especially in the southern portions of the station, and occupies a total of about 710 ac (288 ha).

Deciduous Forest: Areas with a tree canopy comprised of 60% or more deciduous trees, especially red oak, black oak (*Quercus velutina*), American beech, white ash (*Fraxinus americana*), sugar maple (*Acer saccharum*), red maple, and gray birch (*Betula populifolia*). The understory of deciduous forest is typically dominated by saplings of these and other deciduous trees, as well as occasional white pine and hemlock; shrubs such as witch hazel (*Hamamelis virginiana*), mountain laurel, and highbush blueberry (*Vaccinium corymbosum*); and herbaceous species such as wild sarsaparilla (*Aralia nudicaulis*), Canada mayflower (*Maianthemum canadense*), starflower (*Trientalis borealis*), clubmoss, wintergreen (*Gaultheria procumbens*), whorled wood aster (*Aster acuminatus*), Indian cucumber root (*Medeola virginiana*), and hay-scented fern (*Dennstaedtia punctilobula*). Deciduous forest occupies about 540 ac (219 ha) on NBAFS, and the largest stands are located in the northeastern portion of the station.

Mixed Forest: Areas with a tree canopy comprised of a nearly even mix of coniferous and deciduous trees (each less than 60%). Mixed forests vary widely in species composition and typically feature a mix of the species found in coniferous and deciduous forests. Mixed forest is the most extensive habitat type on NBAFS and occupies about 1,300 ac (527 ha).

Old Field: Early successional areas dominated by grasses and forbs. Most of the old-field habitat on NBAFS is located in three areas — the Shooting Field, the area south of Green Tree Reservoir, and the area east of Joe English Hill (Figure 1). Species found in old-field habitats include broomgrass (*Andropogon scoparius*), timothy (*Phleum pratense*), meadow fescue (*Festuca pratensis*), New York aster (*Aster novi-belgi*), Queen Anne's lace (*Daucus carota*), goldenrod (*Solidago* spp.), and fireweed (*Erechtites hieracifolia*). Some shrubs and small trees are also scattered throughout old-field habitats and include Russian olive (*Elaeagnus angustifolia*), multiflora rose (*Rosa multiflora*), red maple, paper birch (*Betula papyrifera*), and white pine. Old-field habitat occupies a total of 49 ac (20 ha) on NBAFS.

Parkland: Areas with few if any buildings that are maintained for recreational purposes and characterized by regularly mowed grass, interspersed ornamental plantings, natural woodlands, and wetlands. Parkland areas at NBAFS include Joe English Pond Campground and areas near Deer Pond and Seavey Pond (Figure 1). Parkland habitats occupy about 47 ac (19 ha) on NBAFS.

Wetland: Areas containing vegetation adapted to saturated soil conditions. A variety of wetland types, including marshes, fens, bogs, and swamps, occur on NBAFS and were delineated and described in detail in PES (1996). These wetland types differ in hydrology, soils, and plant species composition. Wetland species on NBAFS include cattail (*Typha latifolia*), sedges (*Carex* spp.), rushes (*Juncus* spp.), Virginia chain fern (*Woodwardia virginica*), pitcher plant (*Sarracenia purpurea*), meadowsweet (*Spirea alba*), boneset (*Eupatorium perfoliatum*), buttonbush (*Cephalanthus occidentalis*), leatherleaf (*Chamaedaphne calyculata*), sphagnum moss (*Sphagnum* spp.), sweet gale (*Myrica gale*), three-way sedge (*Dulichium arundinaceum*), red maple, and black gum (*Nyssa sylvatica*). Wetlands (excluding deep-water habitat) occupy a total of about 85 ac (34 ha).

Deep Water: Areas of permanent water that do not support emergent vegetation. Deep-water habitat on NBAFS is limited to Joe English Pond (Figure 1) and occupies 43 ac (18 ha).

Developed Land: Areas dominated by buildings, parking lots, roads, or other built structures; but are interspersed with areas of mowed lawn or landscape plantings. Developed land on NBAFS is largely limited to the Operations Area in the northeast portion of the site and occupies about 44 ac (18 ha) (Figure 1).

Disturbed Land: Areas with little vegetation and no built structures, such as clearcuts, gravel pits, or recently graded areas. Disturbed land occupies about 37 ac (15 ha) on NBAFS.

Wildlife species on the site are typical for the region. A total of 147 species of birds have been observed on NBAFS, with 109 of these species being neotropical migrants. The most common species on the station included common grackle, broad-winged hawk, black-capped chickadee, American robin, tree swallow, blue jay, American crow, Canada goose, dark-eyed junco, and cedar waxwing. At least 58 species breed on NBAFS, and 42 of these are neotropical migrants. The largest numbers of bird species have been observed in wetlands, parkland, mature mixed forest, and mature deciduous forest; more than 80 species have been observed in each of

these habitats. The fewest species were observed in developed, disturbed, and young coniferous forest; fewer than 50 species have been observed in each of these habitats (ANL 1997).

Twenty mammal species have been observed on NBAFS. The eastern chipmunk, red squirrel, coyote, and white-tailed deer are abundant, while the woodchuck, red-backed vole, porcupine, red fox, and fisher are common. Among the 18 species of reptiles and amphibians observed on NBAFS, the most abundant species include red-spotted newt, spring peeper, wood frog, pickerel frog, painted turtle, and garter snake (ANL 1997).

Joe English Pond provides aquatic habitats that support a warmwater fishery. Species include largemouth bass, smallmouth bass, brown bullhead, pumpkinseed sunfish, chain pickerel, yellow perch, and golden shiner. Rainbow trout and brook trout are stocked annually in Joe English, Ice, and Roby Ponds to provide an early spring fishery (PES 1995). Rainbow trout are stocked in Joe English Pond in the fall to make them available during the ice fishing season and to provide a more "wild" trout population during the spring. No special management is provided for warmwater fish species (Najjar 1998). Brook trout are also stocked in Joe English Brook in the spring; however, summer water temperatures of the brook approach upper lethal limits for that species (PES 1995). Little information is available on the aquatic biota of other ponds and streams on NBAFS. As most streams are intermittent and lack flowing water during most dry summer months, fish assemblages are limited.

The threatened, endangered, and rare species and rare natural communities that are known to occur on NBAFS are listed in Table 3. No federally listed plant species, or plant species proposed for listing, has been observed at NBAFS. Six populations of the state-listed endangered fern-leaved false foxglove (*Aureolaria pedicularia* var. *intercedens*) have been identified at the station. All but one population occur on Joe English Hill (ANL 1999). The other population occurs at the brow of a wooded cliff southwest of Wells Bog in the south-central portion of NBAFS. However, this population had decreased from 10 plants (ANL 1997) to only one plant (Sperduto and Nichols 1999). This species' long-term viability may be improved by periodic fires that create a spatially and temporally variable mosaic of burned areas, some of which at any one time would presumably provide an appropriate seed bed and other conditions appropriate for maintenance of the species (Sperduto and Nichols 1999).

Several state-listed birds (bald eagle, pied-billed grebe, osprey, northern harrier, and Cooper's hawk), a state-listed snake (eastern hognose snake), and a state-listed bat (small-footed bat) have been observed on NBAFS (Table 3). The bald eagle is the only federally listed species known to occur on the station. In addition, several animal species that are listed by the New Hampshire Natural Heritage Inventory as rare have been observed. These include several moths and butterflies, northern leopard frog, Blanding's turtle, American bittern, and eastern pipistrelle (Table 3; ANL 1997, 2002; Najjar 2000, 2003). Many of these listed and rare species have been observed on or near Joe English Pond (e.g., mulberry wing, Appalachian brown, pied-billed

TABLE 3 Federally Listed, State-Listed, and Rare Species of Plants and Animals and Rare Natural Communities Found on New Boston Air Force Station, New Hampshire

Common Name	Scientific Name	Federal Status	State Status	State Rank[a]	Number of Observations[b]
Natural Communities[c]					
Black gum-red maple basin swamp	NA[d]	–	–	S1/S2	Common
Coastal/southern dwarf shrub bog and acidic fen	NA	–	–	S1/S2	1
Hardwood-conifer basin swamp and coastal/southern dwarf shrub bog	NA	–	–	SU/S1	1
Coastal/southern acidic fen	NA	–	–	S2	1
Transitional/Appalachian acidic talus woodland	NA	–	–	S3	1
Dry transitional oak-white pine forest	NA	–	–	S3/S4	1
Southern acidic rocky summit community	NA	–	–	S3/S4	1
Oak-pine rocky summit woodland community	NA	–	–	SU	1
Plants					
Fern-leaved false foxglove	*Aureolaria pedicularia*	–	LE[e]	S1	>100
Moths					
No common name	*Aphareta purpurea*	–	–	S2	1
Orange-spotted idia	*Idia diminuendis*	–	–	S2/S4	1
Butterflies and Skippers					
Appalachian brown	*Satyrodes appalachia*	–	–	S1?	7
Delaware skipper	*Anatrytone logan*	–	–	S3/S4	1
Mulberry wing	*Poanes massasoit*	–	–	S1/S3	4
Little glassywing	*Pompeius verna*	–	–	SU	1
Amphibians					
Northern leopard frog	*Rana pipiens*	–	–	S3	Common
Reptiles					
Blanding's turtle	*Emydoidea blandingii*	–	–	S3	16
Eastern hognose snake	*Heterodon platirhinos*	–	LT[f]	S3	10
Birds[g]					
Pied-billed grebe	*Podilymbus podiceps*	–	LE	S1B,SZN	10
American bittern	*Botaurus lentiginosus*	–	–	S3B	2
Osprey	*Pandion haliaetus*	–	LT	S2B,SZN	57
Bald eagle	*Haliaeetus leucocephalus*	LT	LE	S1	5

TABLE 3 (Cont.)

Common Name	Scientific Name	Federal Status	State Status	State Rank[a]	Number of Observations[b]
Birds (Cont.)					
Northern harrier	*Circus cyaneus*	–	LE	S2B,SZN	8
Cooper's hawk	*Accipiter cooperii*	–	LT	S2B,SZN	9
Mammals					
Eastern pipistrelle	*Pipistrellus subflavus*	–	–	S1N,SUB	4
Small-footed bat	*Myotis leibii*	–	LE	S1	2

Source: *Biodiversity Survey of New Boston Air Station,* ANL (1997).

[a] State Rank Codes: S1 = Critically imperiled because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction. S2 = Imperiled because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range. S3 = Either very rare and local throughout its range, or found locally (even abundantly at some of its locations) in a restricted range, or vulnerable to extinction throughout its range because of other factors (in the range of 21 to 100 occurrences). S4 = Apparently secure, though it may be quite rare in parts of its range, especially at the periphery. SU = Possibly in peril, but status uncertain; more information needed.

State Rank Modifiers: B = Breeding status for a migratory species. N = Non-breeding status for a migratory species. Z = Ranking not applicable. Example: S1B,SZN – breeding occurrences for the species are ranked S1 (critically imperiled) in the state, nonbreeding occurrences are not ranked in the state.

State ranks do not confer any official or legal status to a species. These ranks are assigned by the New Hampshire Natural Heritage Inventory to provide information on the population status of species within the State.

[b] Number of observations is the number of individuals encountered in surveys. For plants, this is the relative abundance or estimated size of populations observed. For moths, butterflies, and skippers, this is the number of individuals collected or seen. For amphibians, it is the relative abundance at NBAFS. For birds, this is the number of times individuals of the species were observed, and it is possible that the same individual was seen and counted more than once. For bats, this is the number of individuals captured or recorded with Anabat® detectors.

[c] Some natural communities on NBAFS exhibited characteristics of more than one community type. Where this occurred, the name and rank of both communities are listed separately. Natural communities are not assigned a federal or state status.

[d] NA = not applicable.

[e] Listed as Endangered – those native species whose prospects for survival in New Hampshire are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance, or contamination. Assistance is needed to ensure continued existence as a viable component of the state's wildlife community.

[f] Listed as Threatened – any species that is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range.

[g] Some bird species found on NBAFS that are considered rare in New Hampshire only as breeders are not included in this table because they have not been observed during the breeding season.

grebe, bald eagle, osprey, American bittern, and Cooper's Hawk). Blanding's turtles are typically found in wetland habitats (DeGraaf and Rudis 1986) and have been found regularly in the northeastern portion of the station. They are occasionally found in other habitats as they move between wetlands. The northern leopard frog occurs at many of the wetland and aquatic habitats at NBAFS, while the eastern hognose snake occurs in dry open pine forests, deciduous woods, and old fields (ANL 1999). The eastern pipistrelle has been detected near open fields and the Operations Area, while the small-foot bat was collected from a road and trail opening that are surrounded by mostly wooded habitats (ANL 2002).

No critical habitat for threatened or endangered species has been designated on NBAFS. However, eight natural communities designated by the New Hampshire Natural Heritage Inventory as rare are located on NBAFS (Table 3). Four of the communities are located on or at the base of the southern side of Joe English Hill. The other four communities are wetlands. These eight communities total 21.7 ac (8.8 ha; ANL 1997).

3.6 CULTURAL RESOURCES

Archaeological investigations within the Merrimack River system have documented prehistoric sites dating from the Early Archaic period (8,000 to 5,500 B.C.), with very limited evidence for sites dating from the earlier Paleo-Indian period (10,500 to 8,000 B.C.). The streams and wetlands present at NBAFS and its high natural resource potential made it a suitable location for both temporary single-purpose foraging and possible multi-component campsites (i.e., sites containing evidence of several occupational periods). Two prehistoric sites and four isolated finds were recorded at NBAFS during subsurface testing (PAL 1993).

Twenty-eight historic sites occur on NBAFS (22 rural homesteads, 3 industrial complexes, and 3 civic sites [road, school, and trash dump]; Watford 1988; PAL 1993). In general, these sites are distributed widely throughout NBAFS, although 12 of the 28 sites are clustered along the roads at the base of Joe English Hill. Twenty-six of these sites have been recommended as potentially eligible for listing on the National Register of Historic Places (NRHP) (PAL 1993) because of their potential to contain information important to the history of the area (National Register Eligibility Criterion D, as identified in 36 CFR 60.4). Further evaluation is required before a formal eligibility determination can be made (ANL 1999).

NBAFS is one of the original seven satellite-tracking and communications stations established for the military space program. All activities associated with the satellite-tracking mission of the station take place within the Operations Area. This area contains 17 structures. The State Historic Preservation Officer (SHPO) within the New Hampshire Division of Historical Resources has indicated that seven buildings within the Operations Area may contribute to an historic district that is potentially eligible for listing on the NRHP (Muller 1998).

Although all of the buildings included in the historic district are less than 50 years old, they played an important role during the Cold War (PES 1998).[6]

In recognition of the importance of the historic properties found at the station, NBAFS, in consultation with the New Hampshire SHPO, has developed a Programmatic Agreement (PA) that establishes the guidelines and procedures for NRHP-eligible properties at the station (NBAFS 2002). The PA stipulates that the facilities at the station are scientific and technical in nature and would require routine upgrades or equipment replacements. These activities are deemed to have no effect on the historic significance of the properties because they are eligible under Criterion D, for their potential to provide additional information on the Cold War, rather than under Criterion C, for their architectural merit. The PA also states that, prior to demolition of any eligible property within the proposed Operations Area historic district, the property would receive documentation under the Historic American Building Survey/Historic American Engineering Record programs.

3.7 LAND USE, RECREATION, AND VISUAL RESOURCES

Facilities that support the satellite-tracking operations at NBAFS occupy about 44 ac (17.7 ha) of the 2,826-ac (1,144-ha) site (ANL 1997). Facilities located within the Operations Area (Figure 1) include three enclosed satellite dish antennae, satellite-control buildings, and satellite-tracking and communications buildings. Support facilities include maintenance and administration buildings, a fire station, and storage facilities. Dormitories for enlisted personnel and several home structures are also present. Over the years, NBAFS has been restoring the remainder of the land to a natural state, while maintaining the recreational and military training uses of the station. The unimproved portions of NBAFS are not used to actively support mission operations (ANL 1999).

Recreational use of NBAFS is restricted primarily to active and retired military staff and their families and certain members of the public. Numerous active and passive outdoor recreational opportunities have been made available at NBAFS, including nature watching, fishing, swimming, camping, hiking, rock climbing, hunting, archery, boating, cross-country skiing, ice fishing, ice skating, sledding, and snowmobiling (ANL 1990; Najjar 1998). Recreational activities have been restricted over the past several years for security reasons and because of the presence of UXO in some areas. Military training could be conducted at any location within NBAFS (ANL 1999).

The land immediately surrounding NBAFS is heavily wooded, representing some of the least developed and most rural portions of the towns of New Boston, Amherst, and Mont Vernon. The area is primarily designated for low-density residential use (USAF 2001). Single-family homes on parcels typically over one acre, undeveloped lands, and several active farms (particularly along Chestnut Hill Road and Joe English Road) occur in the immediate vicinity of

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6 The National Historic Preservation Act of 1966, as amended, typically applies to properties older than 50 years; however, if a property is determined to be of exceptional importance under the eligibility criteria for listing on the NRHP (36 CFR 60.4), it is also protected under this act.

NBAFS. A computer software company is located opposite the main entrance to the station (ANL 1999).

Radomes associated with NBAFS antennas constitute the primary obstructions to views on the station. However, most of NBAFS provides a natural setting (e.g., forests, hills, wetlands, and ponds), and visual resources are considered excellent, with scenic vistas evident from the station's higher elevations.

3.8 SOCIOECONOMICS

NBAFS employs about 150 people (15 military and the remainder civilian or civilian contract employees; USAF 2001). Although rural in character, the three communities of New Boston, Amherst, and Mont Vernon that surround NBAFS have experienced population growth and are located within one of the most rapidly expanding residential areas of New England. Accordingly, residential development is expected to continue in the area surrounding NBAFS. The communities that surround NBAFS represent three of the most affluent communities of the state (all three are ranked in the top 25 of 234 communities in terms of median household income; USAF 2001).

4 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVE

Impacts of the proposed action (implementation of the Wildland Fire Management Plan) and the no-action alternative were evaluated and are presented in this section. Consideration is given to impacts to air quality and noise; topography, geology, and soils; water resources; ecology; cultural resources; land use, recreation, and visual resources; socioeconomics; and health and safety. Direct effects (those effects caused by the action and occurring at the same time and place) and indirect effects (those effects caused by the action that occur later in time or at a distance) are considered in this section. Adverse impacts that cannot be avoided if the project is implemented, irreversible and irretrievable commitment of resources, and the relationship between short-term use and long-term productivity are discussed in Sections 4.3, 4.4, and 4.5, respectively. Cumulative impacts are presented in Section 4.6.

4.1 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

As described in Section 2, the proposed action consists of the implementation of the Wildland Fire Management Plan (Bernardy et al. 2003) at NBAFS. On the basis of the assessments provided in the following sections, the proposed action would not have any significant adverse impacts on the environment.

4.1.1 Air Quality and Noise

Localized, short-term air quality impacts that could occur during project implementation include the generation of dust, engine exhaust emissions, and, particularly, smoke. The potential impacts of these emissions on ambient air quality in the vicinity of NBAFS would be minor and of short duration. No violations of applicable federal and state ambient air quality standards are expected. It should be noted that particulate standards are based on 24-hour and annual averages, whereas smoke plumes may degrade air quality for just a few hours before moving on or dispersing. Therefore, there could potentially be short-term, acute effects even though NAAQS standards are not violated (Sandberg et al. 2002). In addition to potential health effects, air quality-related effects of smoke include soiling of structures, public nuisance (interfering with the use or enjoyment of public or private resources), and loss of visibility (Sandberg et al. 2002). Unforeseen weather changes may carry smoke toward sensitive receptors such as residences, highways, and recreational areas. Under the proposed action, there would be a reduction of total smoke emissions because of smaller less-intense fires resulting from reduced fuel loading in the long term. This could result in a long term reduction in air quality impacts.

All vehicles would be required to function properly (e.g., exhaust systems with no leaks). Low noise-emission equipment, as certified by the EPA, would be used to the maximum extent practicable. Section 176 of the Clean Air Act requires federal agencies to assure that their actions conform to applicable implementation plans for achieving and maintaining the NAAQS for criteria pollutants. General air conformity analysis is typically required for projects at NBAFS

due to regional ozone noncompliance. However, prescribed fire management is exempted from general conformity by 40 CFR 93.153 (c)(2) (Bernardy et al. 2003).

All prescribed fire plans at NBAFS would include project-specific smoke management guidelines (Bernardy et al. 2003). Considerations would include climatic conditions and dilution. Climatic considerations include not burning during a period of stable weather, which could restrict smoke movement. Dilution would involve burning small portions of an area with high fuel concentrations or burning when the fuels are saturated, to minimize the amount of fuel consumed. While prescribed fire management is exempted from permitting requirements in New Hampshire, prescribed fire planners at NBAFS would consider guidance in Publication Management System (PMS) 420-2/National Fire Equipment System (NFES)1279, *Prescribed Fire Smoke Management Guide*, when developing burn plans for the site (Bernardy et al. 2003). The fine particulate matter produced during a prescribed fire could stay suspended over an area of several square miles and would be expected to reduce visibility (BLM 1999).

Prescribed fires ignited when fuel moisture conditions reduce total fuel consumption and mixing heights and winds are most favorable for smoke dispersal produce lower levels of particulate matter than wildfires. Thus, while prescribed fires may have a temporary negative impact on air quality, the potential for acute impacts from wildfires should be reduced (BLM 1999). Unforeseen weather changes during a prescribed burn may carry the smoke toward sensitive receptors such as the Operations Area.

Noise impacts would occur from the use of machinery and vehicles during fire suppression activities or prescribed fires. Noise levels would be in compliance with Occupational Safety and Health Administration standards. Prescribed fires would occur mostly during daytime hours; thus, much of the noise would be masked by routine daytime noises. Also, residential areas are mostly located more than 1.0 mi (1.6 km) from prescribed fire areas. Much of the intervening areas are densely wooded, which would attenuate noise levels. Loudest noise levels would occur if helicopters were used to suppress a wildland fire from the air. Nearby local residents who are not accustomed to that kind of noise could be annoyed by helicopter operations, especially at night. However, helicopters would be used only if a wildfire was out of control and hard to suppress (Bernardy et al. 2003). Overall, noise impacts associated with implementation of the Wildland Fire Management Plan would be minor and of short duration.

4.1.2 Topography, Geology, and Soils

The proposed action would not affect the topography or geology of the station. Most impacts to soils (e.g., erosion and compaction) would be localized. Soil compaction could take place through the creation of firebreaks from the use of vegetation removal equipment. Soil protection would be considered during all fire management activities. Prescribed fires would be planned to ensure soils are not intentionally damaged by extreme heat. Preference would be given to using natural and man-made firebreaks. Firebreaks constructed during wildfire and prescribed fires would be rehabilitated to ensure erosion does not occur (Bernardy et al. 2003). Post-fire rainstorms have the potential to severely erode burned hillslopes, depending on fire and storm intensity, time since the fire, and availability of erodible soil (Wondzell 2001). Smaller,

less intense fires would lessen erosion potential over the long term. Following the re-establishment of herbaceous vegetation, wind and water erosion would be reduced.

4.1.3 Water Resources

Immediately after any fire, surface runoff would increase because of the loss of vegetation and surface litter. Intermittent and perennial streams would experience greater peak flows and increases in turbidity and sedimentation. Overland flows would increase until vegetation is re-established. In the long term, there would be an increase in infiltration because of the increase in herbaceous cover, resulting in a reduction of overland flow. Overall, the effects of a prescribed fire to riparian and aquatic systems would be less than those expected from larger wildfires. The greatest risks are posed by ground-disturbing activities, rather than directly from the prescribed burn (Wondzell 2001). Implementation of the Wildland Fire Management Plan would not affect groundwater resources (e.g., change the depth to groundwater, alter groundwater flow direction, affect groundwater recharge, or impact groundwater quality).

4.1.4 Ecological Resources

All fire management on NBAFS would be consistent with management goals outlined in the Integrated Natural Resources Management Plan (Najjar 1998; Bernardy et al. 2003). Prescribed fires would be used to encourage oak or pine regeneration, reduce overstory or understory competition from undesirable tree species, or to thin overstocked forest stands (Bernardy et al. 2003). Within Zone III (undeveloped areas), containment lines would be established and maintained to reduce the effects of wildland fires. Also, shaded fuel breaks[7] would be established and maintained where deemed appropriate. To the extent possible, roads and natural barriers would be used (Bernardy et al. 2003). This would minimize the need to impact vegetation. Construction of permanent firebreaks would require a Section 404 permit if a wetland would be affected. NBAFS would be required to complete a Finding of No Practical Alternative to comply with AFI 32-7061, *Environmental Impact Analysis Process*, before it seeks to obtain a Section 404 permit (Bernardy et al. 2003).

The following discussion presents a generalized summary of fire effects on ecological resources. Species-specific information can be found in the Fire Effects Information System (FEIS) (http://www.fs.fed.us/database/feis). The FEIS provides information on fire effects and related biological, ecological, and management information for hundreds of plant and wildlife species and for plant communities. Information for plant and animal species includes taxonomy, distribution and occurrence, value and use, ecological characteristics, fire ecology, fire effects, and references. The FEIS was originally developed to meet prescribed fire needs, but is now recognized as providing species information for a number of applications (Brown and Smith 2000).

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7 Shaded fuel breaks are areas where portions of the canopy vegetation is maintained to minimize production of shade-intolerant understory plants. Also, vegetation is thinned to remove ladder fuels. These areas are effective for slowing and cooling wildfires.

Fire injury and mortality to plants, and their subsequent recovery, are influenced by fire behavior, fire duration, pattern of fuel consumption, and amount of subsurface heating (Brown and Smith 2000). About 50 to 100 ac (20 to 40 ha) of vegetation would be burned on NBAFS annually by prescribed fires (Bernardy et al. 2003). Most prescribed burns would occur within the high-priority prescribed fire areas listed in Table 1. However, any area of the station other than Zone I (Operations Area) could be subject to prescribed burns. Post-fire species composition is usually an assemblage of many of the species that were growing on the site and represented in the seed bank at the time of the fire. Plant communities in the first few years after a fire are comprised of individuals of plants that survived the fire intact, grow from sprouts or suckers that grow from the base or buried portions of top-killed plants, and establish from seeds (Brown and Smith 2000). New species are likely to be added to areas that were severely burned and receptive to germination of seeds from species dispersed from off the burn site (Brown and Smith 2000).

Animal responses to fire may include injury, mortality, immigration, or emigration. During a burn, most small mammals seek refuge underground or in sheltered places within the burn, while large mammals must find a safe location in unburned patches within the fire perimeter or outside the burn area. Animals with limited mobility are more vulnerable to injury and mortality than more mobile animals (e.g., young are generally more susceptible than mature animals). Animals that are dormant or aestivating underground are generally well protected from direct fire effects (Smith 2000). Most nonburrowing mammals and birds leave their habitat while it is burning, but many return within hours or days. Others emigrate because the food and cover they require are not available in the burned area. Fires can have short-term adverse effects on bats through loss of roosting and foraging habitat that can lead to starvation or increased predation and exposure to the elements (Bat Conservation International 2001). Vulnerability of invertebrates to fire depends on their location (e.g., on plants, soil surface, or burrows) and mobility (Smith 2000).

Season of burning is important to birds in two ways: (1) fire during the nesting season may reduce populations more than during other seasons (mortality would primarily occur to eggs, nestlings, and fledglings); and (2) migratory species may be affected only indirectly, or not at all, by burns that occur before or just after their arrival in spring or after their departure in fall (Smith 2000). Therefore, prescribed fires conducted between mid-April and mid-September would be most likely to adversely impact birds, especially the neotropical migrants that breed on NBAFS. However, the number and diversity of birds and other wildlife on NBAFS suggest that past wildfires and prescribed burns have had minimal adverse impacts on wildlife.

The length of time before these species return depends on how much fire altered the habitat structure and food supply (Smith 2000). Post-fire impacts on wildlife mainly occur through effects on their habitat. Fires often cause short-term increases in wildlife foods that contribute to increases in populations of some animals such as predators and scavengers. However, these increases are moderated by the animals' ability to thrive in the altered, often simplified, structure of the post-fire environment (Smith 2000). Stand-replacing fires reduce habitat quality for species that require dense cover and improve it for species that prefer open sites. Population explosions of wood-boring insects can be associated with fire-killed trees, which provide an important food source for insect predators and insect-eating birds. Woodpecker

populations generally increase after fires if snags are available for nesting. Secondary cavity nesters, both birds and mammals, take advantage of the nest sites prepared by primary excavators (Smith 2000). Fires generally favor raptors by reducing hiding cover and exposing prey. Small carnivores respond to fire effects on small mammal populations (either positive or negative). Large carnivores and omnivores are opportunistic species with large home ranges. Their populations change little in response to fire, but they tend to thrive in areas where their preferred prey is most plentiful – often in recent burns (Smith 2000).

Road kills of wildlife occasionally could result from use of fire suppression vehicles, particularly at night. Individuals of rare species could be killed, as evidenced by the dead eastern hognose snake (*Heterodon platirhinos*) that was collected on a station road (ANL 1997). However, these occasional events would not threaten any populations on NBAFS. Vehicle use could also result in damage to sensitive habitats such as wetlands. For example, ruts could cause localized changes in the hydrologic flow of a wetland. Only negligible impacts to fish and other aquatic biota would be expected from the pumping and removal of water for use in wildland-fire and prescribed-fire suppression.

The association of the fern-leaved false foxglove with sites with known fire histories suggests that fire may play a role in the creation and maintenance of appropriate habitat (Sperduto and Nichols 1999). One of the management goals for five of the eight high-priority prescribed fire areas is to increase or try to develop populations of the fern-leaved false foxglove (Table 1).

There are few reports of fire-caused injury to reptiles and amphibians (Smith 2000). Nevertheless, a fire could kill an individual eastern hognose snake if it were unable to find shelter or escape from the fire. However, habitat management benefits would ensure continued suitable habitat for the species (Bernardy et al. 2003). As mentioned, fire or smoke could potentially impact bats or their habitats. Both the state-endangered small-footed bat (*Myotis leibii*) and state-rare eastern pipistrelle (*Pipistrellus subflavus*) have been collected or observed within areas that would be subject to prescribed burns. However, impacts to these species would be negligible over the long term, as only limited areas would be burned annually in comparison to the amount of suitable habitat available on the station. In addition, habitat conditions for bats would improve as a result of the proposed action (e.g., through the creation of new roosts, opening of foraging areas and travel corridors, and, in some cases, increases in prey diversity and density (Bat Conservation International 2001). This assessment also applies for the state-rare moths, butterflies, and skippers that occur on NBAFS.

All but one of the rare natural communities found on NBAFS (Table 3) are located within the perimeter of a high-priority prescribed burn area. The rare natural communities are rather small, ranging from 0.6 to 6.7 ac (0.3 to 2.7 ha; ANL 1997). The acreage of the high-priority prescribed burn areas within which the rare natural communities occur are mostly 30 ac (12 ha) or larger. Therefore, a prescribed fire could be conducted within these areas and managed in such a way as to avoid significant changes to rare natural communities. In the long-term, habitat improvements within the high-priority prescribed fire areas would benefit the continued existence of the rare natural communities through the maintenance of more natural processes.

4.1.5 Cultural Resources

Past activities at NBAFS have resulted in some impacts to cultural resources. Evidence of looting, erosion, and other damaging activities have been reported at several of the sites potentially eligible for listing on the National Register of Historic Places (PAL 1993; Loflin and Grumet 1996). It is not known if these damages were the result of military use, recreational use, or both. There is also no information indicating when the damage took place.

To date, prescribed fires that have been conducted at NBAFS have avoided all eligible cultural resources (Najjar 2003). Similarly, the proposed action is not expected to impact any known cultural resources. All actions that could impact any site potentially eligible for nomination to the National Historic Register would have to comply with Section 106 requirements of the NHPA (Bernardy et al. 2003). Firebreak construction would avoid known archeological sites at all times. Unanticipated finds would be reported to the installation's Natural Resources Manager. Archeological sites in prescribed fire units would be prepared to ensure no significant jackpot fuels exist that could damage subsurface resources. Procedures outlined in the Integrated Cultural Resources Management Plan would be followed (Bernardy et al. 2003).

Impacts to cultural resources from a prescribed or wildfire can occur from the fire itself and from suppression activities that may result in surface disturbance. Fire is most likely to impact historic structures that have aboveground features susceptible to burning or contain organic materials that might burn even if buried. Suppression activities, such as clearing of fire lines, could disturb sites located on the surface or below the surface (BLM 1999). The greatest risk of impacts on cultural resources from a wildfire would be from damage or destruction of historical structures. Other potential impacts to cultural resources could result from intense burning of the soils near buried artifacts or erosion resulting until re-vegetation of an area occurs after a burn. All historic structures at NBAFS are within the Operations Area. Fuel levels are currently kept very low within the Operations Area. A mowed area is also maintained in proximity of the fence surrounding the Operations Area. If an unexpected discovery is made, work would cease immediately and the NBAFS Natural Resources Manager would be contacted (Bernardy et al. 2003).

4.1.6 Land Use, Recreation, and Visual Resources

The proposed action would not result in any significant long-term adverse impact to natural resources on NBAFS (Sections 4.1.2, 4.1.3, and 4.1.4) and would not conflict with any plans or goals for natural resource management at NBAFS. Impacts to recreation would occur with greater frequency under the plan (e.g. small areas would be inaccessible during prescribed burns every year). The proposed action is consistent with other land use within NBAFS and is considered essential for supporting the NBAFS mission (Bernardy et al. 2003). Prescribed fire and silviculture can go hand in hand for restoration of forest stands and ecosystems (Brown and Smith 2000). The plan would also support habitat restoration activities, increasing the visual aspect of the station. Concerns over air quality, fire control, and costs are the major constraints on prescribed fire use as part of natural resource management (Brown and Smith 2000). The

prescribed fire program at NBAFS would enable station personnel to demonstrate the use and value of fire management, and, in so doing, generate public understanding and support (Bernardy et al. 2003).

No prescribed fires for vegetation management would be allowed in Zone I (Operations Area; Bernardy et al. 2003). However, landscaping management in this area reduces the potential for a wildfire within Zone I that could impact mission operations.

Uncontrolled smoke resulting from a fire could impact satellite operation missions if taken in through air handlers. All prescribed fire projects would consider smoke impacts and would be coordinated with 23 SOPS/DO (Director of Operations). All prescribed fire plans would include smoke management guidelines. Prescribed-fire planners would consider guidance in PMS 420-2/NFES 1279, *Prescribed Fire Smoke Management Guide*, when developing burn plans (Bernardy et al. 2003).

A prescribed fire could adversely affect the quality of a visitor's experience, due to smoke or the presence of burned land. The overall effect on visual resources would be a minor adverse impact. Implementation of the Wildland Fire Management Plan would decrease the likelihood of a large wildfire that could denude portions of the station, disrupt the station's mission, and greatly affect recreational and visual resources. If a wildfire did occur, it would cause a greater visual impact compared to a prescribed fire. Nearby residents would be informed if a prescribed burn could potentially affect them or could be seen (i.e., when a burn would be conducted on Joe English Hill; Najjar 2003).

4.1.7 Socioeconomics

The proposed action would have a negligible effect on the local economy. All prescribed fires would be confined to NBAFS. The proposed action would not result in any significant beneficial or adverse socioeconomic impacts to the local population, labor force, or economy. Because only a small work force would be required and for a short period of time, impacts on the capacities of public services (e.g., schools, police, fire protection) would not occur. Private homes, cabins, and condominiums surrounding NBAFS would be at risk, albeit negligible, from a wildfire that starts on the station. The economic value of these structures is relatively significant (Bernardy et al. 2003). Having to clean structures soiled by smoke would also cause an adverse economic impact (Sandberg et al. 2002).

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (February 11, 1994), requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. No environmental justice impacts would be expected to either minority or low-income populations.

4.1.8 Health and Safety

The first priority in wildland fire suppression is to firefighter and public safety. Prescribed fire management plans would provide some form of risk assessment and follow the principles of AFI 90-901, *Operational Risk Management*. Firefighters would continuously adhere to the principles of operational risk management throughout all tasks (Bernardy et al. 2003). Personnel involved in the NBAFS Wildland Fire Management Program would have to meet the required physical standard for their target position. Participants would also have to adhere to basic safety standards associated with such work, including having the necessary PPE. Two-way radio communication, plus backup communications (e.g., cellular phones) would be required (Bernardy et al. 2003). Managers would ensure that personnel are well rested and ready for work. Also, proper preparation time should be allowed for a thorough understanding of the tactics to be implemented (Bernardy et al. 2003).

Nevertheless, potential health and safety impacts could result from conducting prescribed burns or from fire-suppression activities. Impacts could include injuries from firefighting, equipment accidents, smoke inhalation, or an escaped wildland fire. Proper training and outfitting would lessen the potential for impacts. The main inhalation hazards in smoke to firefighters appear to be from CO, aldehydes, and total suspended particulates, particularly $PM_{2.5}$. Health effects can include eye and respiratory irritation, shortness of breath, headaches, dizziness, and nausea lasting up to several hours. However, smoke exposure to firefighters is not considered to be hazardous (USFS 2003).

The potential for health and safety issues increases with the use of helicopters during fire suppression. The use of aircraft would be undertaken only when all risks are evaluated and mitigated, if possible. Man-made aviation hazards at NBAFS include the four radomes in the Operations Area and the boresight tower located near the southwest corner of the station (Bernardy et al. 2003). Use of prescribed fires would be allowed within the range areas, but provisions for personnel safety during ignition operations would have to be incorporated within the prescribed burn plans (Bernardy et al. 2003). Containment lines would be established and maintained around each range area sufficient to contain an advancing wildland fire. These would be a minimum 6-ft (1.8-m) wide area cleared to mineral soil and a shaded fuel break of 100-ft (30.5-m) wide on either side of the cleared line (Bernardy et al. 2003). Suppression resources would not be allowed to enter range areas, and aerial suppression and observation will be restricted to the airspace outside the containment line boundaries. Firefighters would not be allowed in range areas or within 1,000 ft (305 m) of any actively burning range fire. Mop-up from a Zone II fire would not exceed beyond the shaded fuel break towards the range area (Bernardy et al. 2003). Firefighters finding suspected UXO would be required to report their find to their supervisor or other officer and immediately clear the area of all personnel. Under no circumstances would a firefighter be allowed to handle any UXO (Bernardy et al. 2003).

Natural hazards that firefighters could be exposed to include ticks, bees and wasps, and black bears. Working on the cliff face of Joe English Hill could cause a potentially catastrophic injury to firefighters. No personnel should be allowed near the cliff face during low-light conditions (Bernardy et al. 2003).

Overall, the implementation of the Wildland Fire Management Plan would decrease the potential for impacts to health and property. Fuel management should decrease the potential for serious wildfires.

4.2 ENVIRONMENTAL IMPACTS OF THE NO-ACTION ALTERNATIVE

Under the no-action alternative, impacts to the affected environment would continue from prescribed fires and other management activities conducted under the Integrated Natural Resources Management Plan (Najjar 1998). Natural resource management activities such as timber harvesting and habitat modifications would be continued; however, fuel management would not occur. All wildfires would be suppressed. Taking no action would be equivalent to maintaining the existing environment (as described in Section 3). The no-action alternative would increase the potential for a large, uncontrollable wildfire that could compromise the primary mission and natural resources of NBAFS.

4.2.1 Air Quality and Noise

Under the no-action alternative, there would be fewer short-term, localized air quality impacts due to fewer prescribed fire areas burned annually (i.e., up to 100 ac [40 ha] for the proposed action alternative and 5.0 ac [2.0 ha] for the no-action alternative, Najjar 1998; Bernardy et al. 2003). However, a larger buildup of fuels would occur under the no-action alternative and would increase the potential for a severe wildfire that would require greater efforts to control. Emissions from fire-suppression equipment would be higher under the no-action alternative because of the greater need to control the fire. Smoke and ash emissions would also be greater due to the buildup of fuels. Higher particulate levels would occur during a wildfire than during a prescribed fire (BLM 1999). Therefore, air quality and visibility impairment would be greater if such an accidental wildfire occurred than from prescribed fires.

Noise levels could also be higher under the no-action alternative because of the increased amount of equipment that would be necessary for fire control and suppression of a large accidental wildfire. Without the regular prescribed burning of the proposed action, the buildup of fuels would increase the potential for aircraft use during a wildfire. Higher temperatures could result and would hinder on-the-ground efforts because of the risk to fire fighters, thus increasing the need for aircraft.

4.2.2 Topography, Geology, and Soils

Under the no-action alternative, there would be less potential for localized short-term physical impacts to soils because less acreage would be subject to prescribed fires on a yearly basis. However, continued buildup of fuels could increase the intensity of a wildfire, thus increasing the potential for the complete denuding of portions of the station. Because a wildfire would potentially be larger and burn hotter under the no-action alternative, the re-establishment

of vegetation would take longer. This would result in a potential increase in soil erosion. No impacts are anticipated to the topography and geology under the no-action alternative.

4.2.3 Water Resources

Impacts from the no-action alternative to water resources could be increases in suspended solids and sedimentation resulting from the denuding effects of an intense wildfire and potential stream flow increases resulting from a lack of vegetation. No impacts to groundwater would be expected from the no-action alternative, due to the depth of the groundwater (up to 73 ft [22 m] away from waterbodies).

4.2.4 Ecological Resources

Under the no-action alternative, NBAFS would continue to be managed under the Integrated Natural Resources Management Plan (Najjar 1998). A combination of prescribed fire, mowing, and timber harvesting would still be done to improve at least 5.0 ac (2.0 ha) of land for wildlife each year. This would provide a long-term habitat improvement goal by increasing the acreage of early successional aspen-birch stands and maintaining all of the fields at NBAFS (Najjar 1998). However, these improvements would be much less than under the proposed action to burn from 50 to 100 ac (20 to 40 ha) per year (Bernardy et al. 2003). Also, under the no-action alternative, there would be a greater buildup of non-fire adapted vegetation that would decrease the paucity of wildlife habitat in the NBAFS area. The unmanaged buildup of fuels could lead to more severe wildfires that could disrupt or destroy existing habitats at the station. Wildfire history at NBAFS is not well documented. However, there were nine wildland fires recorded between 1942 and 1999, including three located on the bombing range, two located on Joe English Hill, and one each located at Gardner Pond, Campbell Road, adjacent to the Operations Area, and the installation (specific area not provided; Bernardy et al. 2003). Vegetation within the area of a large, high-severity burn can be slow to recover, depending on available seed sources (Brown and Smith 2000). Also, stress associated with increasing the density of forest stands could make trees more susceptible to mortality from insect infestation and disease. This condition would increase fire hazard, adding to the susceptibility of a stand-replacing wildfire event.

Impacts to wildlife could be greater under the no-action alternative because of the potential for a larger area to be burned by a hotter wildfire. With a larger block of contiguous habitat burned, wildlife would have more difficulty relocating to suitable habitat. In the event of a wildland fire adjacent to or threatening the Operations Area, suppression resources would be assigned structure-protection duties (Bernardy et al. 2003). Thus, natural resources would receive secondary considerations. Therefore, larger habitat areas could be destroyed until the Operations Area was secured.

Large mammal mortality would be more likely from a large wildfire that could occur under the no-action alternative. In a large fire, fire fronts are wide and fast moving, fire actively crowns, and thick ground smoke occurs. This makes escape by large mammals more difficult.

However, because mortality of large mammals would still be low, direct fire-caused mortality would have little effect on populations of the species as a whole (Smith 2000). The potential for increased erosion associated with a severe wildfire could adversely affect fish and other aquatic species.

Burning the entire area of a population of fern-leaved false foxglove at one time could be detrimental, unless buried seeds survive below the burn zone (Sperduto and Nichols 1999). Thus, a large wildfire at Joe English Hill could severely impact the plant species at NBAFS. Similarly, a large wildfire could destroy one or more of the rare natural communities on NBAFS. In particular, four of these communities occur on or at the base of Joe English Hill (ANL 1997). Therefore, an uncontrolled wildfire in this area could adversely affect both the fern-leaved false foxglove and the rare natural communities. Other state-listed and state-rare plant and animal species would be more at risk from a large wildfire. A loss of individuals of these species from a wildfire would not be expected to jeopardize their populations as a whole. However, NBAFS is the largest contiguous area of natural habitats in the region. Therefore, any destruction of rare species or their habitats at NBAFS could be a significant localized impact.

4.2.5 Cultural Resources

Impacts from the no-action alternative could occur if a wildfire burned over a cultural resource, including the altering of subsurface artifacts from an intense fire caused by the buildup of fuel on an archaeological site. Suppression activities in the vicinity of a cultural resource could also result in impacts to the resource. Burning of vegetation could also expose cultural resources to increased water or wind erosion damage, particularly to perishable materials such as bone, charcoal, and shells. Also, artifacts and features previously obscured by vegetation may become exposed, increasing their susceptibility to being collected or damaged. Potentially, a large wildfire could destroy historic structures within the Operations Area.

4.2.6 Land Use, Recreation, and Visual Resources

Impacts to land use, recreation, and visual resources could result from a large uncontrolled wildfire. Impacts could include the restriction of land uses or the disruption of the station's mission during an intense wildfire. The potential for the disruption of station activities increases with the no-action alternative because of increased potential for more intense fires. A severe fire could completely denude portions of the station, affecting the recreational use and visual resources of the station. A large wildfire would remove the visual screen provided by tree cover, making it more difficult for those wanting a remote recreation experience to avoid the sights, sounds, and evidence of other visitors or activities at NBAFS.

4.2.7 Socioeconomics

Impacts from the no-action alternative on socioeconomics could result from the failure to suppress or contain a wildland fire on the station. An intense wildfire that escapes the station

could result in moderate to significant impacts to residential properties. Base equipment or facilities could be impacted by an intense wildfire that escapes into the Operations Area. The potential for a large wildfire that could destroy a large amount of woodland products would be greater than under the proposed action. The potential for a wildfire impacting off-site properties or the Operations Area would be greater than for the proposed action, but would still be minimal.

4.2.8 Health and Safety

Health and safety impacts under the no-action alternative could result from intense wildfire and suppression activities. The need to suppress all wildfires would require additional manpower. Also, the amount of smoke generated by a wildfire could have a greater effect on base personnel and the surrounding communities. Total suppression may also require the increased usage of aircraft, which could result in increased health and safety impacts.

4.3 ADVERSE EFFECTS THAT CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED

Implementation of the Wildland Fire Management Plan could result in some minor, mostly temporary, adverse environmental impacts. Smoke, fugitive dust, and engine exhaust emissions would be produced during prescribed burns. Noise would also be produced by these activities. However, no significant long-term air quality impacts are anticipated. Noise would also be produced by these activities. Some unavoidable increases in soil erosion would result from prescribed burns, especially if heavy rains occur shortly after a burn. Turbidity and suspended solids in nearby surface water bodies could temporarily increase. Wildlife would be affected and some individuals and nests destroyed during a prescribed fire. These losses would be counterbalanced by the improvement of habitats that could lead to an overall increase in populations. Vegetation would also be destroyed during prescribed burns, but regular burning would favor more native, fire-adapted species. The potential would exist, albeit small, for serious injuries or fatalities to personnel conducting prescribed fires or suppressing wildland fires.

4.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Resources that would be committed irreversibly or irretrievably during implementation of the proposed action would include materials that could not be recovered or recycled and materials or resources that would be consumed or reduced to irrecoverable forms. Use of fuel, oil, chemicals, and other materials used during prescribed burns or wildfires would constitute an irreversible and irretrievable commitment of those resources. Archaeological resources are nonrenewable and, once damaged, removed, or excavated, have been irreversibly and irretrievably committed. An escaped prescribed burn or wildfire could cause irreversible damage to cultural resources. Prescribed fires would not be conducted within the Operations Area, so impacts to potential Cold War cultural resources would be possible only from a wildfire.

4.5 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

This section evaluates the effects of the proposed short-term use of the environment for prescribed fires, fuel management, and firebreak projects on the long-term productivity of this same land and its resources. Most adverse impacts to the environment would be short-term (e.g., smoke, erosion). The proposed action would result in long-term improvements in natural resources. There would be short-term impacts to air quality from smoke that could last from several hours to several days, depending on the type and quantity of habitat burned. However, in the long term, there would be a reduction of total smoke emissions because of smaller, less intense fires resulting from reduced fuel loading. This would result in less degradation of air quality.

The proposed action would provide a more stable environment at NBAFS for fire-adapted native plant and animal species. The increased use of prescribed fire would increase localized short-term impacts at the station (Sections 4.1.1–4.1.8), but would lower the potential for a catastrophic wildfire that could greatly reduce the habitats at the station and possibly destroy large numbers of wildlife.

4.6 CUMULATIVE IMPACTS

Cumulative impacts are those impacts to the environment that result from the incremental effect of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. No significant adverse cumulative effects are anticipated from the proposed action.

Cumulative impacts to soil and water resources (e.g., soil erosion or loss and contamination) at NBAFS have primarily been minor and have occurred from bombing and strafing, UXO removal, military troop training, recreational use (particularly climbing), timber management, road construction, past fires and fire-suppression activities, and construction of current mission facilities. Implementation of the Wildland Fire Management Plan would have a negligible short-term cumulative impact to soils and aquatic resources, and would primarily result from firebreak construction and erosion from prescribed burn areas. However, long-term habitat diversification associated with the proposed action would stabilize soil conditions. Minor, localized soil erosion would continue in the future from ongoing mission operations, recreation, military training, natural resource management, and continuation of the proposed action.

The potential impact on ambient air quality from prescribed burns (e.g., smoke, fugitive dust, and engine exhaust emissions) would result in a short-term increase in emissions from NBAFS and within Hillsborough County. Air emissions from fires are dispersed or deposited within a short time period. Also, prescribed fire use would be infrequent and of short duration. Therefore, the cumulative impact of the proposed action on air quality would be negligible. Most noise impacts at NBAFS primarily occur from military training activities. However, other than helicopter use, most noise events are attenuated within NBAFS site boundaries. Aircraft use to

fight a wildfire would be a rare event and would represent a negligible cumulative effect on NBAFS noise events heard by off-site citizens.

The past and current missions at NBAFS, military training and recreation, and natural resource management have resulted in localized minor adverse cumulative impacts and moderate to high widespread beneficial cumulative impacts to the ecological resources of the site. The Operations Area and disturbed lands at NBAFS occupy less than 100 ac (40 ha) of the site. While military training, recreation, and other activities cause short-term, localized adverse impacts, natural resource management has created highly diverse conditions over most of NBAFS. Prescribed fires and other natural resource management activities would improve the biodiversity of NBAFS. While there are no major natural areas or parks located within about 10 mi (16 km) of NBAFS, there are small conservation areas maintained by the local towns, including the 500-ac (200-ha) Joe English Reservation that abuts the southwest portion of the site (Najjar 1998). Therefore, improvements in the natural resources of NBAFS would be a primary contributor to the area's biodiversity.

Evidence of looting, erosion, and other damaging activities associated with either military or recreational activities have been reported at several of the cultural sites potentially eligible for listing on the National Register of Historic Places at NBAFS (PAL 1993; Loflin and Grumet 1996). A wildland fire would potentially impact cultural resources. Procedures outlined in the Integrated Cultural Resources Management Plan would be followed for the proposed action, so impacts to cultural resources associated with prescribed fires would not be expected. Therefore, the proposed action would not contribute to cumulative impacts.

Much of the area surrounding NBAFS is rural, with interspersed farms, forests, and residential areas. Land cover on the station is consistent with the surrounding area, and much of the habitat present on the station is represented elsewhere in the county and region. However, the increase in residential development of the surrounding lands has increased the importance of the natural resources of the undeveloped land on the station grounds. Implementation of the proposed action would make a minor contribution in increasing the high-quality natural resources of the region. However, these increases could be offset by future residential growth in the towns surrounding the station.

As only about 150 people are employed at NBAFS, they make only a minor contribution to the socioeconomic conditions of the region. The residential communities near NBAFS are relatively affluent, and are expected to continue to be so into the future. The proposed action would not contribute to cumulative socioeconomic impacts, other than indirectly by decreasing the potential, albeit negligibly for a large wildland fire that could impact residential properties.

No significant cumulative impacts to health and safety are associated with activities that occur on NBAFS. The potential for physical injury or death to individuals could occur from accidents occurring in military training, recreational activities (particularly climbing), silviculture, and the setting and control of prescribed fires and suppressing wildfires. Increase in prescribed fires under the proposed action would add to the number of activities on NBAFS for which accidental injuries could occur. However, the potential for injury from prescribed fires is far less than that which could occur from firefighters suppressing a large wildfire.

5 REFERENCES

Acoustical Society of America, 1983, *American National Standard Specification for Sound Level Meters,* ANSI S1.4-1983, New York, N.Y., Feb.

Acoustical Society of America, 1985, *American National Standard Specification for Sound Level Meters,* ANSI S1.4A-1985, Amendment to ANSI S1.4-1983, New York, N.Y., June.

ANL: See Argonne National Laboratory.

Argonne National Laboratory, 1990, *Environmental Assessment for the Conduct of Military Training, New Boston Air Force Station, New Hampshire,* Argonne National Laboratory, Environmental Assessment and Information Sciences Division, Argonne, Ill., July.

Argonne National Laboratory, 1997, *Biodiversity Survey of New Boston Air Station, New Hampshire, Final Report,* Argonne National Laboratory, Environmental Assessment Division, Argonne, Ill., Sept.

Argonne National Laboratory, 1999, *Environmental Assessment of Military Training Activities at New Boston Air Station, New Hampshire,* Argonne National Laboratory, Environmental Assessment Division, Argonne, Ill., May.

Argonne National Laboratory, 2000, *Environmental Assessment of Construction of Phase II of an Underground Electrical and Communications Distribution System at New Boston Air Force Station, New Hampshire,* Argonne National Laboratory, Environmental Assessment Division, Argonne, Ill., May.

Argonne National Laboratory, 2002, *A Survey of the Bats of New Boston Air Force Station, New Hampshire,* Argonne National Laboratory, Environmental Assessment Division, Argonne, Ill., Dec.

Bat Conservation International, 2001, *Bats in Eastern Woodlands,* Bat Conservation International, Austin, Texas.

Bernardy, B., N. Phillips, and S. Najjar, 2003, *Final Draft Wildland Fire Management Plan For New Boston Air Force Station, New Hampshire,* U.S. Department of Agriculture, Forest Service, Green Mountain National Forest, Aug.

BLM: See U.S. Bureau of Land Management.

Bond, R.W., and J.F. Handler, 1981, *Soil Survey of Hillsborough County, New Hampshire, Eastern Part,* U.S. Department of Agriculture, Soil Conservation Service, Oct.

Brown, J.K., and J.K. Smith, eds., 2000, *Wildland Fire in Ecosystems: Effects of Fire on Flora*, Gen. Tech. Rep. RMRS-GTR-42-vol. 2, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden, Utah.

DeGraaf, R.M., and D.D. Rudis, 1986, *New England Wildlife: Habitat, Natural History, and Distribution*, General Technical Report NE-108, U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

ENSR: See ENSR Consulting and Engineering.

ENSR Consulting and Engineering, 1993, *Natural Resources Management Plan for New Boston Air Force Station, New Hampshire*, ENSR Consulting and Engineering, Acton, Mass., July.

EPA: See U.S. Environmental Protection Agency.

Liebich, R.E., and M.P. Cristoforo, 1988, "The Use of Audibility Analysis to Minimize Community Noise Impact of Today's Smaller Generation Facilities Located near Residential Areas," presented at American Power Conference 50th Annual Meeting, Chicago, Ill., Apr.

Loflin, B.G., and R.S. Grumet, 1996, *United States Air Force Cultural Resources Servicewide Overview Project: New Boston Air Station, Air Force Space Command, Hillsborough County, New Hampshire,* National Park Service Resource Stewardship and Partners Team, Northeast Field Area, Philadelphia, Penn., and Georgia Trust for Historic Preservation, Feb.

Muller, N.C., 1998, letter from N.C. Muller (State Historic Preservation Officer, New Hampshire Division of Historical Resources, Concord, N.H.) to S. Najjar (Natural Resources Planner, 23 SOPS/MAFCVN, New Boston Air Station, N.H.), Aug. 28.

Najjar, S.J., 1998, *Integrated Natural Resources Management Plan for United States Air Force 23rd Space Operations Squadron New Boston Air Station, New Hampshire*, 23 SOPS/MAFCVN, New Boston Air Force Station, N.H., Apr.

Najjar, S.J., 2000, memo from S.J. Najjar (Natural Resources Planner, 23 SOPS/MAFCVN, New Boston Air Force Station, N.H.) to K.E. LaGory (Environmental Assessment Division, Argonne National Laboratory, Argonne, Ill.), March 16.

Najjar, S.J., 2003, memo from S.J. Najjar (Natural Resources Planner, 23 SOPS/MAFCVN, New Boston Air Force Station, N.H.) to D.J. O'Rouke (Environmental Assessment Division, Argonne National Laboratory, Argonne, Ill.), April 22.

NBAFS: See New Boston Air Force Station.

New Boston Air Force Station, 2002, *Programmatic Agreement among New Boston Air Force Station, the Advisory Council on Historic Preservation, and the New Hampshire Division of Historical Resources Regarding Installation Management Activities at New Boston Air Force Station, New Hampshire*, New Boston Air Force Station, N.H., July.

New Hampshire Natural Heritage Bureau, 2003a, *Animal Tracking List Including Species Listed as Threatened or Endangered under the New Hampshire Endangered Species Conservation Act of 1979*, New Hampshire Natural Heritage Bureau, Department of Resources and Economic Development, Division of Forests & Lands, Concord, N.H., Jan.

New Hampshire Natural Heritage Bureau, 2003b, *Plant Tracking List Including Species Listed as Threatened or Endangered under the New Hampshire Native Plant Protection Act of 1987*, New Hampshire Natural Heritage Bureau, Department of Resources and Economic Development, Division of Forests & Lands, Concord, N.H., Jan.

PAL: See Public Archaeology Laboratory, Inc.

Parsons Engineering Science, Inc., 1995, *Preliminary Final Environmental Assessment for Unexploded Ordnance Clearance at Joe English Pond New Boston Air Force Station, New Hampshire*, Parsons Engineering Science, Inc., Boston, Mass., June.

Parsons Engineering Science, Inc., 1996, *Wetlands Delineation Report*, Parsons Engineering Science, Inc., Boston, Mass., Sept.

Parsons Engineering Science, Inc., 1998, *Survey and Evaluation of Cold War Resources, New Boston Air Station, New Boston, New Hampshire (Draft)*, Parsons Engineering Science, Inc., Boston, Mass., March.

PES: See Parsons Engineering Science, Inc.

Public Archaeology Laboratory, Inc., 1993, *Historic and Archaeological Reconnaissance/ Inventory Survey, Cultural Resources Management Plan, New Boston Air Force Station, New Boston, Mont Vernon, Amherst, New Hampshire*, Public Archaeology Laboratory, Inc., Pawtucket, R.I., June.

Ramsdell, J.V., and G.L. Andrews, 1986, *Tornado Climatology of the Contiguous United States*, NUREG/CR-4461 and PNL-5697, Pacific Northwest Laboratory, Richland, Wash., May.

Ruffner, J.A., ed., 1985, *Climates of the States: National Oceanic and Atmospheric Administration Narrative Summaries*, 3rd ed., Gale Research Company, Detroit, Mich.

Sandberg, D.V., R.D. Ottmar, J.L. Peterson, and J. Core, 2002, *Wildland Fire in Ecosystems: Effects of Fire on Air*, Gen. Tech. Rep. RMRS-GTR-42-vol. 5, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden, Utah.

Sanborn, P., 1998, personal communication from P. Sanborn (Department of Environmental Services, Air Resources Division, Concord, N.H.) to Y.-S. Chang (Environmental Assessment Division, Argonne National Laboratory, Argonne, Ill.), Nov. 19.

Smith, J.K., ed., 2000, *Wildland Fire in Ecosystems: Effects of Fire on Fauna*, Gen. Tech. Rep. RMRS-GTR-42-vol. 1, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden, Utah.

Sperduto, D.D., and W.F. Nichols, 1999, *Fern-leaved False Foxglove (*Aureolaria pedicularia *var*. intercedens*) at the New Boston Air Station, N.H.*, New Hampshire Natural Heritage Inventory, Department Resources and Economic Development, Division of Forests & Lands, Concord, N.H., Jan.

USAF: See U.S. Air Force.

U.S. Air Force, 2001, *Environmental Assessment for Demolition of Buildings 117, 125, and 129 at New Boston Air Station, New Hampshire,* U.S. Air Force, 23 SOPS/MAFCVN, New Boston Air Force Station, N.H., March.

U.S. Bureau of Land Management, 1999, *Environmental Assessment of the Frostfire Prescribed Burn,* U.S. Bureau of Land Management, BLM Northern Field Office, Fairbanks, Alaska, and BLM Alaska Fire Service, Ft. Wainwright, Alaska, No. AK-AFS-EA-99-AA03, April. Accessed at: http://www.fs.fed.us/pnw/fera/frostfire/EA.PDF. April 14, 2003.

U.S. Environmental Protection Agency, 1974, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety,* EPA-550/9-74-004, Office of Noise Abatement and Control, Washington, D.C., Mar.

U.S. Forest Service, 2003, *Prescribed Fire Program Environmental Assessment Wayne National Forest Athens Ranger District Athens and Hocking Counties, Ohio,* U.S. Department of Agriculture, Forest Service, Nelsonville, Ohio, Jan.

USFS: See U.S. Forest Service.

Watford, R., 1988, *Preservation Plan, New Boston Air Force Station, New Hampshire,* prepared by Department of Anthropology, Northern Arizona University, Flagstaff, Ariz., Aug.

Wondzell, S.M., 2001, "The Influence of Forest Health and Protection Treatments on Erosion and Stream Sedimentation in Forested Watersheds of Eastern Oregon and Washington," *Northwest Science* 75:128–140.

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APPENDIX A:

CORRESPONDENCE

DEPARTMENT OF THE AIR FORCE
50TH SPACE WING (AFSPC)

APR 24 2003

MEMORANDUM FOR NEW HAMPSHIRE DEPARTMENT OF FISH AND GAME
ATTENTION: MR. WILLIAM S. BARTLETT, JR.
EXECUTIVE DIRECTOR
2 HAZEN DRIVE
CONCORD NH 03301

FROM: 23 SOPS/CC
317 Chestnut Hill Road
New Boston AFS NH 03070-5125

SUBJECT: Preparation of an Environmental Assessment (EA) for a Fire Management Plan at New Boston Air Force Station (NBAFS), New Hampshire

1. I am requesting information from your office regarding state-listed threatened and endangered plant and animal species that may occur on or in the vicinity of NBAFS, New Hampshire.

2. The U.S. Air Force plans to implement a wildland fire management plan that includes procedures to suppress wildfires and prescribed burning for fuel and natural resources management. Fire suppression activities are specified for three areas on NBAFS: (1) operations area, (2) range areas, and (3) undeveloped areas. Prescribed fire would be used in undeveloped areas to manage fuel levels and natural resources.

3. NBAFS is a satellite tracking station that occupies approximately 2,836 acres in Hillsborough County of south-central New Hampshire (see Atch 1). The station is predominantly undeveloped forest with a mix of deciduous and coniferous trees that varies in species dominance and seral stage across the site. Two surveys for threatened, endangered and rare species have been conducted at NBAFS: a two-year biodiversity survey conducted from 1994 to 1996 (Argonne National Laboratory 1997), and a bat survey conducted in 2002 (Argonne National Laboratory 2002). State-listed species found on NBAFS included: ciliated willow-herb (*Epilobium ciliatum*), fern-leaved false foxglove (*Aureolaria pedicularia* var *intercedens*), prolific knotweed (*Polygonum prolificum*), eastern hognose snake (*Heterodon platirhinos*), pied-billed grebe (*Podilymbus podiceps*), osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperi*), and small-footed bat (*Myotis leibii*). The bald eagle and northern harrier were not observed to use station habitat, but were observed in flight over the site during fall migration. Recently, a bald eagle was observed during the winter feeding on a deer carcass at Joe English Pond in the central portion of the station. Two adult female small-footed bats (one pregnant, the other nonreproductive) were captured near Joe English Hill. The rock slabs and crevices that are abundant on this landscape feature may provide roost areas for this species. See Atch 2 for a complete list of protected and rare species and natural communities found on NBAFS.

4. The Air Force has determined that the project requires preparation of an EA. Based on the information presented above, the Air Force does not expect the proposed action to have any impact on state-listed species. I would appreciate, however, if you could forward any information or concerns you may have regarding impacts on any such species or other ecological resources. The Air Force will use the information you provide in preparing the EA.

5. If you have any questions on this matter, please contact my Natural Resources Planner, Mr. Stephen Najjar, at (603) 471-2426.

STEPHEN F. SOVAIKO, Lt Col, USAF
Commander

Attachments:
1. Location of NBAFS
2. Listed and Rare Species and Communities on NBAFS

DEPARTMENT OF THE AIR FORCE
50TH SPACE WING (AFSPC)

APR 2 : 2003

MEMORANDUM FOR DEPT OF RESOURCES AND ECONOMIC DEVELOPMENT
ATTENTION: MS. SARA J. CAIRNS
NEW HAMPSHIRE NATURAL HERITAGE INVENTORY
PO BOX 1856
CONCORD NH 03302

FROM: 23 SOPS/CC
317 Chestnut Hill Road
New Boston AFS NH 03070-5125

SUBJECT: Preparation of an Environmental Assessment (EA) for a Fire Management Plan at New Boston Air Force Station (NBAFS), New Hampshire

1. I am requesting information from your office regarding federally listed, state-listed, or rare plant and animal species and rare natural communities that may occur on or in the vicinity of NBAFS, New Hampshire.

2. The U.S. Air Force plans to implement a wildland fire management plan that includes procedures to suppress wildfires and prescribed burning for fuel and natural resources management. Fire suppression activities are specified for three areas on NBAFS: (1) operations area, (2) range areas, and (3) undeveloped areas. Prescribed fire would be used in undeveloped areas to manage fuel levels and natural resources.

3. NBAFS is a satellite-tracking station that occupies approximately 2,836 acres in Hillsborough County of south-central New Hampshire (see Atch 1). The station is predominantly undeveloped forest with a mix of deciduous and coniferous trees that varies in species dominance and seral stage across the site. Two surveys for threatened, endangered, and rare species have been conducted at NBAFS: a two-year biodiversity survey conducted from 1994 to 1996 (Argonne National Laboratory 1997) and a bat survey conducted in 2002 (Argonne National Laboratory 2002). Federally listed, state-listed, and rare (rank of S3 or higher) species and natural plant communities found on NBAFS during these surveys are presented in Atch 2.

4. The Air Force has determined that the project requires preparation of an EA. Based on the information presented above, the Air Force does not expect the proposed action to have any impact on federally listed, state-listed, or rare species. I would appreciate, however, if you would forward any information or concerns you may have regarding impacts on any such species or other ecological resources. The Air Force will use the information you provide in preparing the EA.

MASTER OF SPACE

5. If you have any questions on this matter, please contact my Natural Resources Planner, Mr. Stephen Najjar, at (603) 471-2426.

STEPHEN F. SOVAIKO, Lt Col, USAF
Commander

Attachments
1. Location of NBAFS
2. Listed and Rare Species and Communities on NBAFS

DEPARTMENT OF THE AIR FORCE
16TH SPACE WING (AFSPC)

APR 21 2003

MEMORANDUM FOR U.S. FISH AND WILDLIFE SERVICE
ATTENTION: MR. MICHAEL BARTLETT
FIELD SUPERVISOR
NEW ENGLAND FIELD OFFICE
70 COMMERCIAL STREET
CONCORD NH 03301-5087

FROM: 23 SOPS/CC
317 Chestnut Hill Road
New Boston AFS NH 03070-5125

SUBJECT: Preparation of an Environmental Assessment (EA) for a Fire Management Plan at New Boston Air Force Station (NBAFS), New Hampshire

1. I am requesting information from your office regarding federally-listed, proposed, and candidate threatened and endangered plant and animal species that may occur on or in the vicinity of NBAFS, New Hampshire. As the proposed action would involve controlled burns during the spring and summer, I would also appreciate knowing about any concerns that your office may have relative to the Migratory Bird Treaty Act.

2. The U.S. Air Force plans to implement a wildland fire management plan that includes procedures to suppress wildfires and prescribed burning for fuel and natural resources management. Fire suppression activities are specified for three areas on NBAFS: (1) operations area, (2) range areas, and (3) undeveloped areas. Prescribed fire would be used in undeveloped areas to manage fuel levels and natural resources.

3. NBAFS is a satellite tracking station that occupies approximately 2,836 acres in Hillsborough County of south-central New Hampshire (see Atch 1). The station is predominantly undeveloped forest with a mix of deciduous and coniferous trees that varies in species dominance and seral stage across the site. Two surveys for threatened and endangered species have been conducted at NBAFS: a two-year biodiversity survey conducted from 1994 to 1996 (Argonne National Laboratory 1997) and a bat survey conducted in 2002 (Argonne National Laboratory 2002). Only one federally-listed species, the bald eagle, has been found on NBAFS; this species has been observed in flight over the site during fall migration and an individual was observed during the winter, feeding on a deer carcass at Joe English Pond in the central portion of the station. No species that are proposed or candidates for federal-listing have been found during site surveys (see Atch 2).

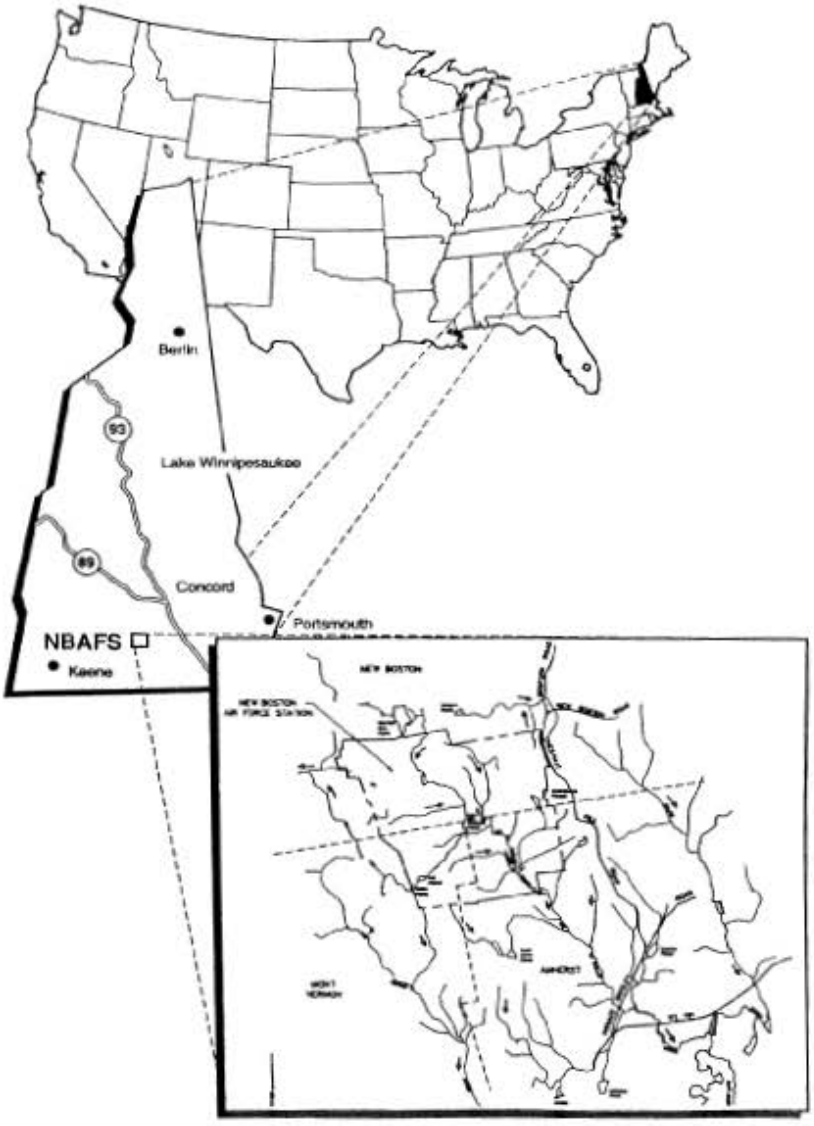
MASTER OF SPACE

4. The Air Force has determined that the project requires preparation of an EA. Based on the information presented above, the Air Force does not expect the proposed action to have any impact on federally-listed, proposed, or candidate species. I would appreciate, however, if you would forward any information or concerns you may have regarding impacts on any such species or other ecological resources. The Air Force will use the information you provide in preparing the EA.

5. If you have any questions on this matter, please contact my Natural Resources Planner, Mr. Stephen Najjar, at (603) 471-2426.

STEPHEN F. SOVAIKO, Lt Col, USAF
Commander

Attachments:
Location of NBAFS
Listed and Rare Species and Communities on NBAFS



Location of New Boston Air Force Station, New Hampshire

Federally Listed, State-Listed, and Rare Species of Plants and Animals and Rare Natural Communities Found on New Boston Air Force Station, New Hampshire[1]

Common Name	Scientific Name	Federal Status[1]	State Status[1]	State Rank[1]	Number of Observations[2]
Natural Communities[3]					
Black Gum - Red Maple Basin Swamp	NA[4]	--	--	S1S2	1
Coastal/Southern Dwarf Shrub Bog and Acidic Fen	NA	--	--	S1/S2	1
Hardwood-Conifer Basin Swamp and Coastal/Southern Dwarf Shrub Bog	NA	--	--	SU/S1	1
Coastal/ Southern Acidic Fen	NA	--	--	S2	1
Transitional/ Appalachian Acidic Talus Woodland	NA	--	--	S3	1
Dry Transitional Oak-White Pine Forest	NA	--	--	S3S4	1
Southern Acidic Rocky Summit Community	NA	--	--	S3S4	1
Oak-Pine Rocky Summit Woodland Community	NA	--	--	SU	1
Plants					
Ciliated willow-herb	*Epilobium ciliatum*	--	LT	S2	Common
Fern-leaved false foxglove	*Aureolaria pedicularia* var *intercedens*	--	LE	S1	>100
Prolific knotweed	*Polygonum prolificum*	--	LT	S2	Common
Moths					
No common name	*Aphareta purpurea*	--	--	S2	1
Orange-spotted idia	*Idia diminuendis*	--	--	S2S4	1
Butterflies and Skippers					
Appalachian brown	*Satyrodes appalachia*	--	--	S1?	7
Delaware skipper	*Anatrytone logan*	--	--	S3S4	1
Mulberry wing	*Poanes massasoit*	--	--	S1S3	4
Little glassywing	*Pompeius verna*	--	--	SU	1
Amphibians					
Northern leopard frog	*Rana pipiens*	--	--	S3	Common
Reptiles					
Blanding's turtle	*Emydoidea blandingii*	--	--	S3	4
Eastern hognose snake	*Heterodon platirhinos*	--	LT	S3	1
Birds[5]					
Pied-billed grebe	*Podilymbus podiceps*	--	LE	S1B,SZN	10
American bittern	*Botaurus lentiginosus*	--	--	S3B	2
Osprey	*Pandion haliaetus*	--	LT	S2B,SZN	57
Bald eagle	*Haliaeetus leucocephalus*	LT	LE	S1	5

Listed and Rare Communities and Species of NBAFS (continued)

Common Name	Scientific Name	Federal Status[1]	State Status[1]	State Rank[1]	Number of Observations[2]
Birds (continued)					
Northern harrier	*Circus cyaneus*	--	LE	S2B,SZN	8
Cooper's hawk	*Accipiter cooperii*	--	LT	S2B,SZN	9
Mammals					
Eastern pipistrelle	*Pipistrellus subflavus*	--	--	S1N,SUB	4
Small-footed bat	*Myotis leibii*	--	LE	S1	2

Sources: *Biodiversity Survey of New Boston Air Station*, Argonne National Laboratory (1997), *A Survey of the Bats of New Boston Air Force Station*, New Hampshire, Argonne National Laboratory (2002).

[1] State ranks do not confer any official or legal status to a species. These ranks are assigned by the New Hampshire Natural Heritage Inventory to provide information on the population status of species within the State.

[2] Number of observations is the number of individuals encountered in surveys. For plants, this is the relative abundance or estimated size of populations observed. For moths, butterflies, and skippers, this is the number of individuals collected or seen. For amphibians it is the relative abundance at NBAFS. For birds, this is the number of times individuals of the species was observed and it is possible that the same individual was seen and counted more than once. For bats, this is the number of individuals captured or recorded with Anabat detectors.

[3] Some natural communities on NBAFS exhibited characteristics of more than one community type. Where this occurred, the name and rank of both communities are listed separately. Natural communities are not assigned a Federal or State status.

[4] NA = not applicable.

[5] Some bird species found on NBAFS that are considered rare in New Hampshire only as breeders are not included in this table because they were not observed during the breeding season.

NEW HAMPSHIRE NATURAL HERITAGE BUREAU
DRED - DIVISION OF FORESTS & LANDS
PO Box 1856 – 172 PEMBROKE ROAD, CONCORD, NH 03302-1856
(603) 271-3623

To: Stephen Najjar, New Boston AFS

From: Sara Cairns, Data Manager/Biologist

Date: 5 May 2003

Subject: Fire Management Plan Environmental Assessment

We have received the consultation letter and 50% draft of the Fire Management Plan that you sent to us on April 21. We appreciate your continuing commitment to including state-listed species in management plans for the New Boston Air Force Station, and affirm that at this time we have no additional information to add to the record you already have on the identify and locations of rare species.

05/16/03 12:04 FAX 8034712213 23 SOPS A* A - NAFC 001

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

May 12, 2003

Lt. Col. Steven Sovaiko
New Boston Air Force Station
23 SOPS/CC
317 Chestnut Hill Road
New Boston AFS, NH 03070-5125

Dear Lt. Col. Sovaiko:

This letter responds to your April 21, 2003 letter requesting information on the presence of federally-listed and proposed endangered or threatened species in relation to a proposed fire management plan for the New Boston Air Force Station in New Boston, New Hampshire. Our comments are provided in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

The draft fire management plan describes procedures to suppress wildfires including the use of controlled burns to reduce fuel loads and for natural resource management needs. Based on information currently available to us, no federally-listed or proposed threatened or endangered species under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area, with the exception of occasional transient bald eagles (*Haliaeetus leucocephalus*). Therefore, we concur with your determination that no federally-listed species will be adversely affected by activities proposed in the fire management plan.

With respect to your request for our comments under the Migratory Bird Treaty Act, we recommend that controlled burns take place in fall and winter, outside of the migratory bird breeding season.

05/16/03 12:04 FAX 8034712213 23 SOPS A* A - MAFC 002

-2-

Thank you for your cooperation and please contact me at 603-223-2541 if we can be of further assistance.

Sincerely yours,

for Kenneth C. Carr

Susanna von Oettingen
Endangered Species Specialist
New England Field Office

DEPARTMENT OF THE AIR FORCE
50TH SPACE WING (AFSPC)

AUG 2 0 2003

MEMORANDUM FOR NH DIVISION OF HISTORICAL RESOURCES
ATTN: JAMES MCCONAHA
STATE HISTORIC PRESERVATION OFFICER
STATE OF NH DEPARTMENT OF CULTURAL AFFAIRS
19 PILLSBURY STREET BOX 2043
CONCORD NH 03302-2043

FROM: 23 SOPS/CC
317 Chestnut Hill Road
New Boston AFS NH 03070-5125

SUBJECT: Concurrence on Proposed Implementation of New Boston Air Force Station (NBAFS) Wildfire Management Plan

1. Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, we are requesting comments from your office regarding the U.S. Air Force proposal to implement a wildfire management plan for NBAFS in Hillsborough County, NH. The purpose of this plan is to efficiently and cost effectively suppress wildfires and to minimize resource loss consistent with the resource management objectives for the values to be protected.

2. The proposed action includes procedures to suppress wildfires and prescribed burning for fuel and natural resource management. Fire suppression activities are specified for three areas on NBAFS: (a) operations area, (b) range areas, and (c) undeveloped areas (see atch map). Prescribed fire would be used in undeveloped areas to manage fuel levels and natural resources. Cultural resources are present in some prescribed fire areas. Prior to a prescribed fire in the vicinity of a known cultural resource, the site will be monitored and all excess fuel will be removed which could cause excessive or concentrated burning on the site that may damage subsurface artifacts. Cultural resource sites will be avoided at all times during the creation of firebreaks. In the event of an unexpected discovery, work will be suspended and the Natural Resources Planner will be contacted.

3. On the basis of the enclosed information, we request your concurrence that the proposed implementation of the NBAFS Wildfire Management Plan activities will result in a finding of "no historic properties adversely affected" (in accordance with 800.5 (d)(1)). If you have any questions regarding this matter, please contact the NBAFS Natural Resources Planner, Mr. Stephen Najjar, at (603) 471-2426.

CHARLES H. CYNAMON, Lt Col, USAF
Commander, 23d Space Operations Squadron

Attachment:
NBAFS Fire Management Zones Map

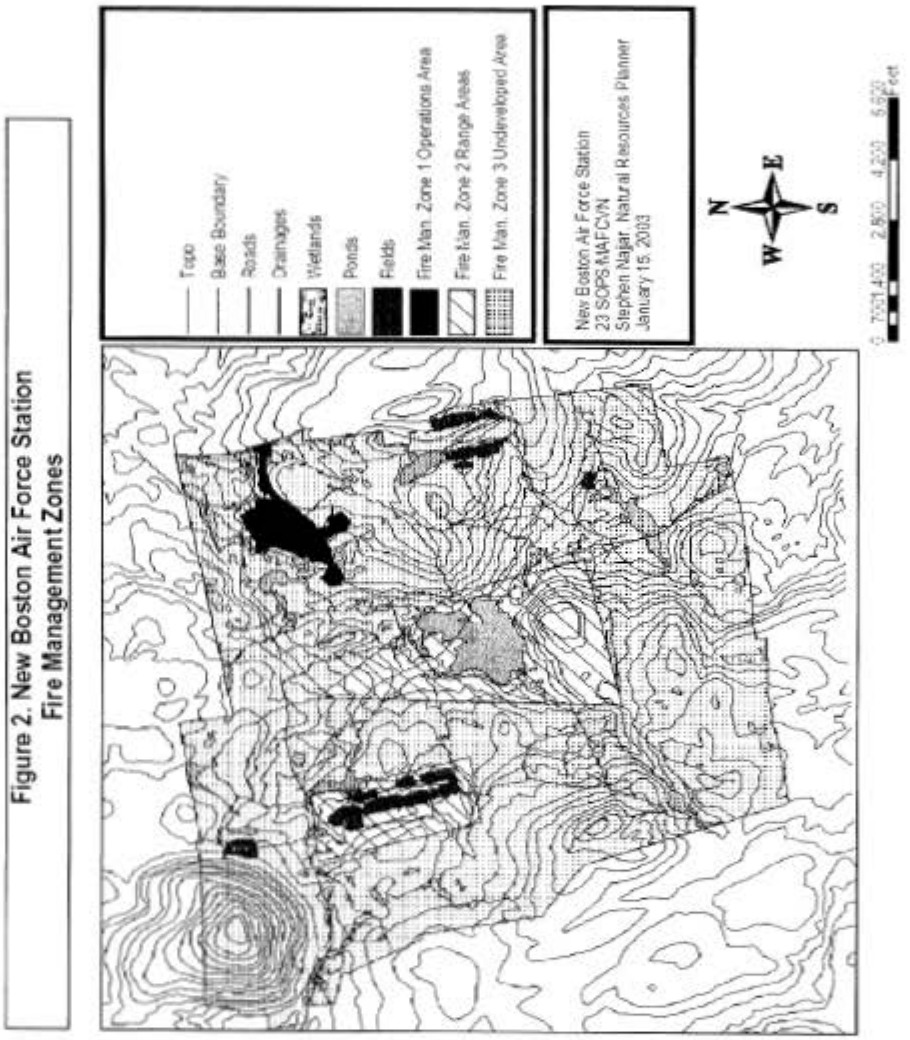


Figure 2. New Boston Air Force Station
Fire Management Zones
Topo
Base Boundary
Roads
Drainages
Wetlands
Ponds
Fields
Fire Man. Zone 1 Operations Area
Fire Man. Zone 2 Range Areas
Fire Man. Zone 3 Undeveloped Area
New Boston Air Force Station
23 SOPS MAFCVN
Stephen Najjar, Natural Resources Planner
January 15, 2003
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NOV 05 2003 15:53 HP LASERJET 3200 P.2

DEPARTMENT OF THE AIR FORCE

50TH SPACE WING (AFSPC)

3 Nov 03

MEMORANDUM FOR 23 SOPS/MAFCVN

FROM: 50 SW/JA

SUBJECT: Legal Review of Environmental Assessment (EA) and Finding Of No Significant Impact (FONSI) For Wildland Fire Management Plan

1. PURPOSE/SUMMARY OF CONCLUSIONS AND RECOMMENDATION: We have been asked to provide a legal review of the proposed EA and FONSI for a Wildland Fire Management Plan at New Boston Air Force Station (NBAFS). We do not find the FONSI legally sufficient. We find the EA legally sufficient. We recommend stating the public comment period in the FONSI. We recommend the commander sign the FONSI, only after the recommended change has been made.

2. BACKGROUND: The EA and FONSI detail the facts; therefore, they are incorporated herein by reference.

3. ISSUES: Whether the FONSI is legally sufficient? Whether the EA is legally sufficient?

4. APPLICABLE LAW: While there are several governing documents concerning the environmental impact analysis process, the Air force mainly relies upon the *National Environmental Policy Act of 1969 (NEPA)* (42 U.S.C. 4321 *et seq.*), as implemented by 32 CFR 989 *et seq.*, the *Council On Environmental* Quality (CEQ) *Regulations* (40 CFR 1500-1508), and AFI 32-7061, *Environmental Impact Analysis Process*, 24 Jan 95.

5. LEGAL ANALYSIS:

a. 32 CFR 989.15 addresses the requirements of a FONSI. A FONSI must summarize the EA or, preferably, have it attached and incorporated by reference, and must note any other environmental documents related to the action. The EPF must make the EA and unsigned FONSI available to the affected public and provide the EA and unsigned FONSI to organizations and individuals requesting them and to whomever the proponent or the EPF has reason to believe is interested in the action. (32 CFR 989.15(e)). Before the FONSI is signed and action is implemented, the EPF should allow sufficient time to receive comments from the public. The current FONSI does not state whether the documents were available for public comment.

b. An EA briefly discusses the need for the proposed action, reasonable alternatives to the proposed action, the affected environment, the environmental impacts of the proposed action and alternatives (including the no-action alternative), and a listing of agencies and persons consulted during preparation. The proposed EA meets these requirements.

c. Under the National Historic Preservation Act (NHPA) (16 U.S.C. 470a, *et seq.*), federal agencies are encouraged to coordinate any compliance with NHPA Section 106 Consultation, with any steps taken to meet the requirements of NEPA. Agencies must consider the potential effects of their undertakings on historic properties as early as possible in the NEPA process, and plan their public participation, analysis, and review in such a way that they can meet the purposes and requirements of both

statutes in a timely and efficient manner. NBAFS has sought section 106 Consultation from the State Historic Preservation Officer.

6. CONCLUSION: We do not find the FONSI legally sufficient. We find the EA legally sufficient.

7. RECOMMENDATIONS: We recommend stating the public comment period in the FONSI. We recommend the commander sign the FONSI, only after the recommended change has been made.

CANDACE L. HUNSTIGER, Capt, USAF
Assistant Staff Judge Advocate

1st Ind, 50 SW/JA

MEMORANDUM FOR 23 SOPS/MAFCVN

I concur. However, I note that the plan includes the use of civilian firefighters. As most recently expressed in the legal review of the New Boston Air Force Station (NBAFS) Wildland Fire Management Plan (WFMP), dated 19 Aug 03, I oppose the use of civilian government employees as extra-duty firefighters.

CARLOS L. MCDADE, Lt Col, USAF
Staff Judge Advocate

APPENDIX B:

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS (AF FORM 813)

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS | Report Control Symbol RCS:

INSTRUCTIONS: *Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).*

SECTION I - PROPONENT INFORMATION

1. TO *(Environmental Planning Function)*	2. FROM *(Proponent organization and functional address symbol)*	2a. TELEPHONE NO.
MAFCVN	MAFCVN	2426

3. TITLE OF PROPOSED ACTION
Develop Wildfire Management Plan for New Boston AFS

4. PURPOSE AND NEED FOR ACTION *(Identify decision to be made and need date)*
Develop wildfire management plan to ensure fire is managed at NBAFS is a way that will protect natural and cultural resources.

5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES *(DOPAA) (Provide sufficient details for evaluation of the total action.)*
Develop wildfire management plan, No Action.

6. PROPONENT APPROVAL *(Name and Grade)*	6a. SIGNATURE	6b. DATE
RAYMOND J. TRAMPOSCH, Capt, USAF Support Officer		1 Dec 03

SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. *(Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)*	+	0	-	U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE *(Noise, accident potential, encroachment, etc.)*		X		
8. AIR QUALITY *(Emissions, attainment status, state implementation plan, etc.)*				X
9. WATER RESOURCES *(Quality, quantity, source, etc.)*		X		
10. SAFETY AND OCCUPATIONAL HEALTH *(Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)*				X
11. HAZARDOUS MATERIALS/WASTE *(Use/storage/generation, solid waste, etc.)*				X
12. BIOLOGICAL RESOURCES *(Wetlands/floodplains, threatened or endangered species, etc.)*		X		
13. CULTURAL RESOURCES *(Native American burial sites, archaeological, historical, etc.)*		X		
14. GEOLOGY AND SOILS *(Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)*		X		
15. SOCIOECONOMIC *(Employment/population projections, school and local fiscal impacts, etc.)*				X
16. OTHER *(Potential impacts not addressed above.)*				

SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION

17. [ ] PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____ ; OR
[X] PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.

18. REMARKS

19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION *(Name and Grade)*	19a. SIGNATURE	19b. DATE
Stephen Noyes		1 Dec 03

AF FORM 813, 19990901 *(EF-V1)* THIS FORM CONSOLIDATES AF FORMS 813 AND 814. PREVIOUS EDITIONS OF BOTH FORMS ARE OBSOLETE. PAGE 1 OF PAGE(S)