FINAL

RANGE 74 TARGET COMPLEXES
ENVIRONMENTAL ASSESSMENT
NEVADA TEST AND TRAINING RANGE, NEVADA

July 2007

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14. ABSTRACT

This EA evaluates the potential environmental impacts of the construction and operation of three target complexes on the Nevada Test and Training Range. Two of the target complex locations, the Saucer Mesa and Limestone Ridge complexes, would consist of reconfigurable target arrays and associated roads and trails with vehicles downed aircraft, and silhouettes located in mountainous terrain at discrete target sites. Targets would be either dragged or hauled into place from existing roads or 2-track trails, and placed along or adjacent to existing roads in and under trees or adjacent to steep slopes to provide natural cover making target identification difficult. Targets at the nine Saucer Mesa sites would employ both large-scale live and inert munitions, and the targets at the 10 Limestone Ridge sites would employ large-scale inert munitions; both the Saucer Mesa and Limestone Ridge target sites would employ small-scale live munitions. The third target complex location, the Cliff Springs target complex, would consist of a single linear 15-acre site with fifteen no-drop targets located north of Cliff Springs in the Belted Range. The no-drop targets would be placed along an existing 2- track trail in and under trees, providing cover for the targets. The targets would be laser and simulated attack targets; no munitions would be used involving these targets. This EA has been prepared in accordance with the National Environmental Policy Act and 32 CFR 989 the Air Force Environmental Impact Analysis Process (EIAP) to analyze the potential environmental consequences of the Proposed Action, the Reduced Target Sites Alternative, and the No-Action Alternative. Under the Reduced Target Sites Alternative, the same types of targets and training operations and munitions as described for the Proposed Action would occur. However instead of utilizing all nine target sites at Saucer Mesa and 10 target sites at Limestone Ridge, only five target sites would be constructed and used for training at each of these target complexes. The Cliff Springs no-drop target complex would be the same as described for the Proposed Action. Under the No-Action Alternative, no target complexes would be constructed and no additional mountainous training would occur on Range 74. The environmental resources potentially affected by the Proposed Action are soils vegetation, and wildlife. Some noise impacts would occur in association with aircraft and munitions during military training missions. However, all of the proposed target sites are within 1 mile of active target sites and there are no sensitive noise receptors on the NTTR. None of the archeological sites are considered eligible for the National Register of Historic Places and therefore, no adverse impacts would occur to cultural resources. Based on the nature of activities associated with the construction and operation of the target complexes, the

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FINDING OF NO SIGNIFICANT IMPACT (FONSI)

1. Name of Action.

RANGE 74 TARGET COMPLEXES, NEVADA TEST AND TRAINING RANGE, NEVADA

2. Description of Proposed Action and Alternatives

The U.S. Air Force (Air Force) proposes to construct and operate three target complexes in mountainous terrain in Range 74 of the Nevada Test and Training Range (NTTR) at Saucer Mesa, Limestone Ridge, and Cliff Springs. The Saucer Mesa target complex is comprised of nine discrete sites totaling approximately 131 acres in the hills and valleys along an existing network of 2-track trails east of Saucer Mesa. The Limestone Ridge target complex includes 10 discrete sites totaling approximately 245 acres along an existing unimproved road network between Limestone Ridge and the Belted Range. The target complexes would consist of reconfigurable target arrays and associated roads and trails with vehicles, downed aircraft, and silhouettes. Targets would be either dragged or hauled into place from existing roads or 2-track trails, and placed along or adjacent to existing roads, under trees or adjacent to steep slopes to provide natural cover for the targets. The Saucer Mesa target array would employ both large-scale live and inert munitions, and the Limestone Ridge sites would employ large-scale inert munitions; both target sites would employ small-scale live munitions. Targets would support air-dropped munitions and ground-fired munitions operations. Operational Detachment Alpha (ODA) teams would be inserted in the area from helicopters and traverse the target areas, employing ground fire on the targets. The ODAs would use all-terrain vehicles (ATV) to access their operational positions to accomplish Special Reconnaissance and Direct Action live fire missions.

The Cliff Springs target complex would consist of fifteen no-drop targets within a linear 15-acre site along an existing 2-track trail in the Belted Range. The no-drop targets would be placed under trees to provide cover for the targets. The targets would be laser and simulated attack targets. No munitions would be used during training missions involving these targets.

The Reduced Target Sites Alternative would include the same types of targets and training operations and munitions as described for the Proposed Action. However instead of utilizing nine sites at Saucer Mesa and 10 sites at Limestone Ridge, only five target sites would be used at each target complex. The Cliff Springs no-drop target complex would be the same as described for the Proposed Action. The lower number of target sites would still provide mountainous terrain training opportunities, but would greatly reduce the ability of the Air Force to reconfigure targets to provide multiple challenges to ODA teams.

3. Summary of Environmental Resources and Impacts

The placement and training operations associated with the Proposed Action would impact up to 391 acres of soils, undisturbed Great Basin desert vegetation, and wildlife habitat. However, the impact to these resources would be minor because these resources are common both locally and regionally and surveys would be conducted for rare plants at the Cliff Springs target complex prior to target placement. Thus, the viability of any plant or animal species or population would not be impaired. There would be no impacts to land use, socioeconomics, safety, or air quality from the implementation of the Proposed Action. Some temporary noise impacts would occur in association with construction. However, proposed target sites are within 1 mile of other active target sites, so there would be no net increase in noise levels in the project vicinity. Furthermore, there are no sensitive noise receptors on the NTTR.

4. Conclusions

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, the Council of Environmental Quality regulations implementing the procedural provisions of NEPA (40 CFR Parts 1500-1580), and 32 CFR Part 989, Air Force Environmental Impact Analysis Process (EIAP), the U.S. Air Force, Nellis AFB evaluated the potential impacts of constructing a series of target complexes on Range 74, NTTR, Nye County, Nevada and documented this evaluation in the attached EA. Based on the findings and conclusions in the EA, an Environmental Impact Statement is not required for this action.

Kenneth Keskel

Kenneth Keskel
Colonel, USAF
Vice Commander, 99th Air Base Wing

24 Sep 07

Date

FINAL

RANGE 74 TARGET COMPLEXES
ENVIRONMENTAL ASSESSMENT
NEVADA TEST AND TRAINING RANGE, NEVADA

July 2007

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COVER SHEET
ENVIRONMENTAL ASSESSMENT
RANGE 74 TARGET COMPLEXES
NEVADA TEST AND TRAINING RANGE, NEVADA

a. Responsible Agency: U.S. Air Force

b. Proposed Action: Construct and operate a series of mountainous terrain target complexes at three locations (Limestone Ridge, Saucer Mesa, and Cliff Springs) on Range 74 of the Nevada Test and Training Range. Targets would support live and inert air-dropped munitions, live ground-fired munitions, and laser simulated attacks.

c. Written comments and inquiries regarding this document should be directed to: Mr. Mike Estrada, 99 ABW/PA, 4430 Grissom Avenue, Suite 107, Nellis AFB NV 89191; telephone (702) 652-2753.

d. Report Designation: Environmental Assessment (EA)

e. Abstract: This EA evaluates the potential environmental impacts of the construction and operation of three target complexes on the Nevada Test and Training Range. Two of the target complex locations, the Saucer Mesa and Limestone Ridge complexes, would consist of reconfigurable target arrays and associated roads and trails with vehicles, downed aircraft, and silhouettes located in mountainous terrain at discrete target sites. Targets would be either dragged or hauled into place from existing roads or 2-track trails, and placed along or adjacent to existing roads in and under trees or adjacent to steep slopes to provide natural cover making target identification difficult. Targets at the nine Saucer Mesa sites would employ both large-scale live and inert munitions, and the targets at the 10 Limestone Ridge sites would employ large-scale inert munitions; both the Saucer Mesa and Limestone Ridge target sites would employ small-scale live munitions. The third target complex location, the Cliff Springs target complex, would consist of a single linear 15-acre site with fifteen no-drop targets located north of Cliff Springs in the Belted Range. The no-drop targets would be placed along an existing 2-track trail in and under trees, providing cover for the targets. The targets would be laser and simulated attack targets; no munitions would be used involving these targets.

This EA has been prepared in accordance with the National Environmental Policy Act and 32 CFR 989 the Air Force Environmental Impact Analysis Process (EIAP) to analyze the potential environmental consequences of the Proposed Action, the Reduced Target Sites Alternative, and the No-Action Alternative. Under the Reduced Target Sites Alternative, the same types of targets and training operations and munitions as described for the Proposed Action would occur. However instead of utilizing all nine target sites at Saucer Mesa and 10 target sites at Limestone Ridge, only five target sites would be constructed and used for training at each of these target complexes. The Cliff Springs no-drop target complex would be the same as described for the Proposed Action. Under the No-Action Alternative, no target complexes would be constructed and no additional mountainous training would occur on Range 74.

The environmental resources potentially affected by the Proposed Action are soils, vegetation, and wildlife. Some noise impacts would occur in association with aircraft and munitions during military training missions. However, all of the proposed target sites are within 1 mile of active target sites and there are no sensitive noise receptors

on the NTTR. None of the archeological sites are considered eligible for the National Register of Historic Places and therefore, no adverse impacts would occur to cultural resources. Based on the nature of activities associated with the construction and operation of the target complexes, the Air Force has determined that impacts associated with these resources would not be significant.

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ACRONYMS AND ABBREVIATIONS

98 MSG	98th Missions Support Group
98 OG	98th Operations Group
98 RANW	98th Range Wing
AAA	anti-aircraft artillery
ACHP	Advisory Council on Historic Preservation
AFB	Air Force Base
AFOSH	Air Force Occupational Safety and Health
AICUZ	Air Installation Compatible Use Zone
AIMT	American Indian Monitoring Team
APE	area of potential effect
ATV	all-terrain vehicle
BAQ	Bureau of Air Quality
bgs	below ground surface
BLM	Bureau of Land Management
BMP	best management practice
CAA	Clean Air Act
CAAP	Clean Air Action Plan
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
DA	direct action
DCNR	Department of Conservation and Natural Resources
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GPS	global positioning system
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
JDAM	Joint Direct Attack Munitions
mg/m^3	milligrams per cubic meter
MSL	mean sea level
MOU	memorandum of understanding
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDEP	Nevada Department of Environmental Protection
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NTTR	Nevada Test and Training Range
NO2	Nitrogen dioxide
O_3	Ozone

ODA	Operational Detachment Alpha
Pb	Lead
PL	Public Law
PM-2.5	particulate matter equal or less than 2.5 microns in diameter
PM-10	particulate matter equal or less than 10 microns in diameter
ppm	parts per million
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO2	sulfur dioxide
SR	special reconnaissance
SWPPP	Storm Water Pollution Prevention Plan
THPO	Tribal Historic Preservation Officer
$\mu g/m^3$	micrograms per cubic meter
USC	United States Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

SECTION 1.0
PURPOSE OF AND NEED FOR ACTION

1.0 PURPOSE OF AND NEED FOR ACTION

This Environmental Assessment (EA) has been prepared to comply with the *National Environmental Policy Act* (NEPA) of 1969 (Public Law [PL] 91-190; 42 United States Code [USC] 4321-4347), as amended. Preparation of this EA followed regulations and instructions established in 32 Code of Federal Regulations [CFR] Part 989, *Environmental Impact Analysis Process (EIAP)* for the United States (U.S.) Air Force (Air Force), and 40 CFR 1500 – 1508, *Council on Environmental Quality* (CEQ) Regulations for the Implementation of NEPA. This EA evaluates the potential environmental impacts of activities associated with the proposed construction and use of target complexes at the Nevada Test and Training Range (NTTR), Nevada.

1.1 PURPOSE AND NEED

The U.S. military forces have participated in numerous deployments to theaters involving mountainous terrain. Mountainous terrain presents unique military challenges not experienced at or near-sea level or in relatively level terrains. Furthermore, locating and engaging rural infrastructure within mountainous terrain presents special operational requirements. The military must address training, preparedness, and modernization issues associated with combat in this type of terrain. Lessons learned from military conflicts in Bosnia-Herzegovina, Kosovo, and Afghanistan should be applied to present and future conflict situations in mountainous areas.

The purpose of the target complexes is to ensure that the Air Force can adequately train, prepare, and deploy personnel for combat in remote, mountainous locations in order to reduce casualties in real conflict situations.

The proposed action is needed to meet the combat training requirements for the 98th Range Wing (98 RANW). The 98 RANW provides command and control of the NTTR, and the 98th Operations Group (98 OG) and 98th Missions Support Group (98 MSG) oversee support and range squadrons that coordinate and provide training opportunities for the Air Force and joint and multinational aircrews. Providing training opportunities for modern warfare requires the 98 RANW to replicate real-world combat environments, provide reconfigurable target situations, simulate rural and small village outposts in mountainous areas, and support air-dropped, ground

fired, and laser-simulated munitions. Tactics, techniques, procedures, technologies, and training must be developed and evaluated for implementation in this landscape.

1.2 LOCATION OF THE PROPOSED ACTION

Nellis Air Force Base (AFB), located in the northern Las Vegas Valley, Nevada is the center for testing and training activities at the NTTR, and provides organizational support for the NTTR (Figure 1-1). The NTTR comprises approximately 3 million acres of southern Nevada, and consists of two main functional areas, the North Range and the South Range. The Air Force proposes to construct and operate a series of target complexes at three locations in the North Range of the NTTR to simulate conditions in mountainous terrain. The three target complexes (Figure 1-1) are located 1) between Limestone Ridge and the Belted Range (Limestone Ridge), 2) just east of Saucer Mesa (Saucer Mesa), and 3) along an existing road north of Cliff Springs within the Belted Range (Cliff Springs).

1.3 SCOPE OF ENVIRONMENTAL REVIEW

The EA describes and analyzes the potential environmental impacts of the activities associated with the Proposed Action and viable alternatives that meet the stated purpose and need. Consistent with the CEQ regulations, the scope of analysis presented in this EA is defined by the potential range of environmental impacts that would result from implementation of these alternatives. Resources that would not be affected by implementation of any of the alternatives are not addressed.

Resources that have a potential for impact were considered in more detail in order to provide the Air Force decision maker with sufficient evidence and analysis to determine whether or not additional analysis is required pursuant to 40 CFR Part 1508.9. The resources analyzed in more detail are socioeconomics, land use, aesthetics, hazardous substances, soils, water resources, air quality, noise, biological resources, cultural resources, safety, and environmental justice. The affected environment and the potential environmental consequences relative to these resources are described in Sections 3.0 and 4.0, respectively.

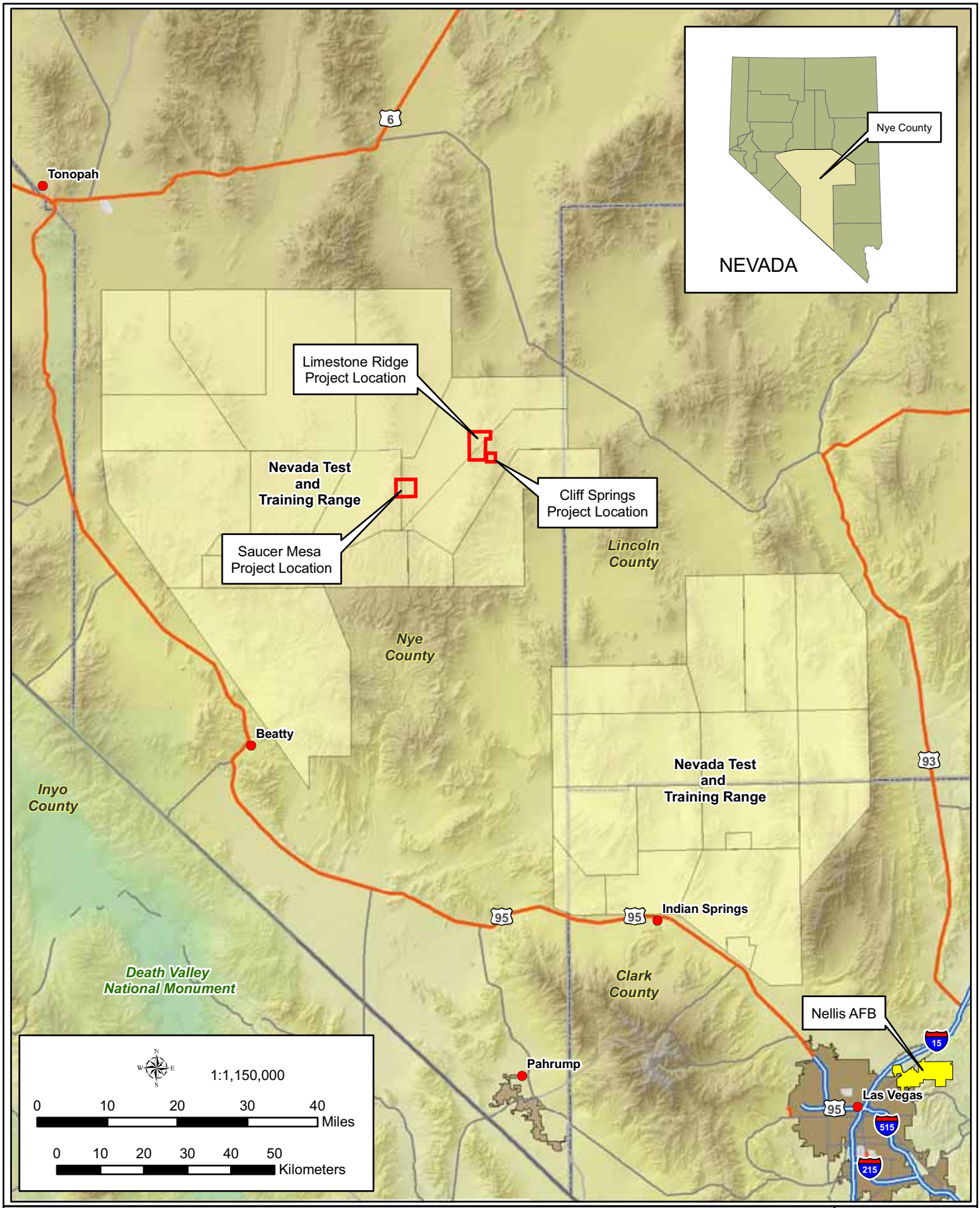

Figure 1-1: Vicinity Map

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1.4 FEDERAL, STATE, AND LOCAL PERMITS, LICENSES, AND FEES

No additional Federal, state or local permits would be required for construction.

1.5 RELATED ENVIRONMENTAL DOCUMENTS

The documents listed below have been prepared for Nellis AFB and the NTTR. These documents provided supporting information for the environmental analysis contained within this EA.

- Nellis AFB Integrated Natural Resources Management Plan (INRMP 2001)
- Nellis AFB Integrated Cultural Resources Management Plan (ICRMP 2007)
- NTTR Air Emissions Inventory Report (2004)
- Renewal of the Nellis Air Force Range Land Withdrawal Legislative Environmental Impact Statement (1999)
- Wing Infrastructure Development Outlook (WINDO) EA (2006)

SECTION 2.0
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Proposed Action includes the construction of reconfigurable target arrays, consisting of vehicles, downed aircraft, and silhouettes, along roads and trails at Saucer Mesa and Limestone Ridge target complexes on Range 74, NTTR; the use of inert large-scale and live small-scale munitions at Limestone Ridge; the use of inert and live large-scale, and live small-scale munitions at Saucer Mesa; and the placement of no-drop targets along an existing road north of Cliff Springs on Range 74, NTTR.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The Air Force proposes to construct mountainous terrain target complexes at three locations within Range 74: Limestone Ridge, Saucer Mesa, and Cliff Springs (Figure 2-1). The Saucer Mesa target complex comprises nine discrete sites totaling approximately 131 acres in the hills and valleys along an existing network of 2-track trails east of Saucer Mesa. The Limestone Ridge target complex includes 10 discrete sites totaling approximately 245 acres along an existing unimproved road network between Limestone Ridge and the Belted Range. The Cliff Springs target complex comprises one linear site situated in a 15-acre corridor along an existing road.

The Saucer Mesa and Limestone Ridge target complexes would consist of reconfigurable target arrays representing rural infrastructure in mountainous terrain. The targets would include associated roads and trails with vehicles, downed aircraft, and silhouettes; and representations of small villages and outposts with support structures, border crossing facilities with support structures, a gas station, a surface-to-air weapons complex, and anti-aircraft artillery (AAA) weapons. Targets would be either dragged or hauled into place from existing roads or 2-track trails, and placed along or adjacent to existing roads in and under trees or adjacent to steep slopes to provide natural cover.

Targets at the 10 Limestone Ridge sites would be constructed to support inert large-scale (Joint Direct Attack Munitions [JDAM], Mk82/84) (Photograph 2-1) munitions and small-scale (2.75, 50 cal, 7.62) (Photograph 2-2) live munitions. Targets at the nine Saucer Mesa sites would be constructed to support “smart” live and inert large-scale (JDAM, Mk82/84) munitions and small-scale live munitions (2.75, 50 cal, 7.62). Targets would receive air-dropped munitions and

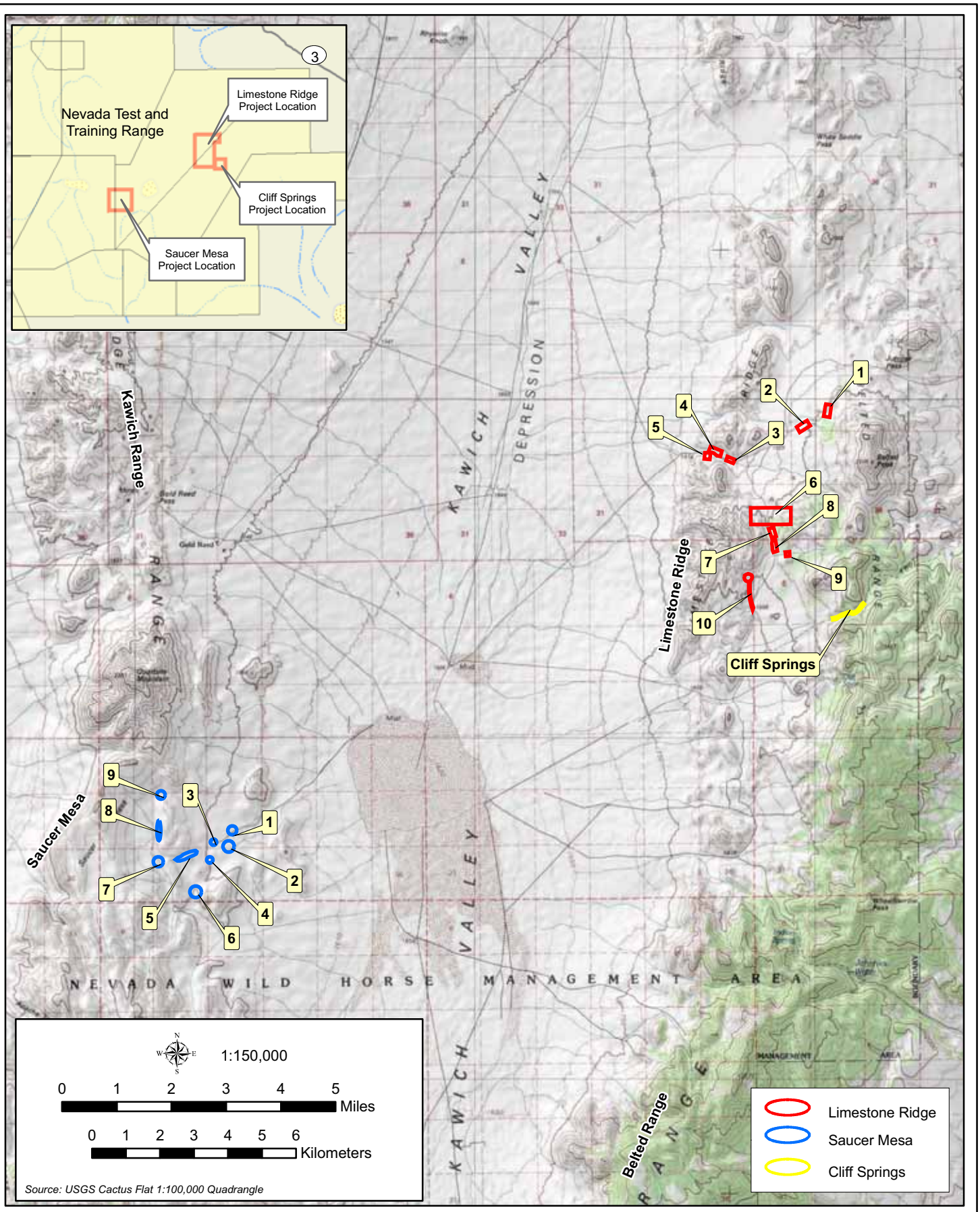

Figure 2-1: Proposed Action Locations

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ground-fired munitions operations. Operational Detachment Alpha (ODA) teams would be inserted in the area from helicopters, and traverse the target areas, employing ground fire on the targets. The ODAs would conduct Special Reconnaissance (SR) and Direct Action (DA) live fire missions. The ODAs would use all-terrain vehicles (ATV) to access their operational positions to accomplish SR and DA missions. ATV routes would follow existing roads, trails, and washes.

Photograph 2-1: Joint Direct Attack Munitions, Mk 84

Photograph 2-2: .50 Caliber Ammunition

The Cliff Springs target complex would consist of fifteen no-drop targets located within a single 15-acre corridor along an existing road north of Cliff Springs in the Belted Range. The no-drop targets located north of Cliff Springs would be placed along an existing 2-track trail in and under trees, providing cover for the targets. The targets would consist of vehicles, huts, and silhouettes, and include representations of scattered outposts. The targets would be laser and simulated attack targets; no munitions would be used during training missions involving these targets.

2.2 ALTERNATIVES TO THE PROPOSED ACTION

2.2.1 Introduction

Alternatives to the proposed action have been examined relative to the total number of target sites at a location, the types of targets to be placed at a location, the types of munitions and

operations to be used during training, and the siting of the target complexes. These alternatives and the No Action Alternative are described below.

2.2.2 Reduced Target Sites Alternative

The Reduced Target Sites Alternative would include the same types of targets and training operations and munitions as described for the Proposed Action Alternative. However, instead of utilizing all nine target sites at Saucer Mesa and 10 target sites at Limestone Ridge, only five target sites would be constructed and used for training at each of these target complexes. The Cliff Springs no-drop target complex would be the same as described for the Proposed Action Alternative. The five target sites located in the Saucer Mesa area and the five target sites located in the Limestone Ridge area, as well as the Cliff Springs target complex that would be constructed and utilized for the training in this alternative, are shown in Figure 2-2. The five target sites at Saucer Mesa and five target sites at Limestone Ridge would still provide mountainous terrain training opportunities, but would greatly reduce the ability of the Air Force to reconfigure targets to provide multiple challenges to ODA teams.

2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

2.3.1 Alternate Munitions and Operations

The purpose of the project is to provide simulated training exercises utilizing specific equipment, munitions, and operations similar to real conflict situations. Therefore, alternatives using munitions or insertion operations that are considerably different from those that would be utilized in real conflict situations were deemed to be impracticable, and thus have been eliminated.

2.3.2 Alternate Siting of Target Complexes

The option to site the target complexes in a different location on the NTTR was initially considered. There are several other locations on the North Range of the NTTR with similar terrain and habitats that are physically suitable for these types of target complexes and training. However, these remaining locations are being utilized for other types of critical training and testing purposes that are incompatible with the proposed training mission or are proposed to be used for other types of training missions in the future. For these reasons, this alternative was eliminated from further consideration.

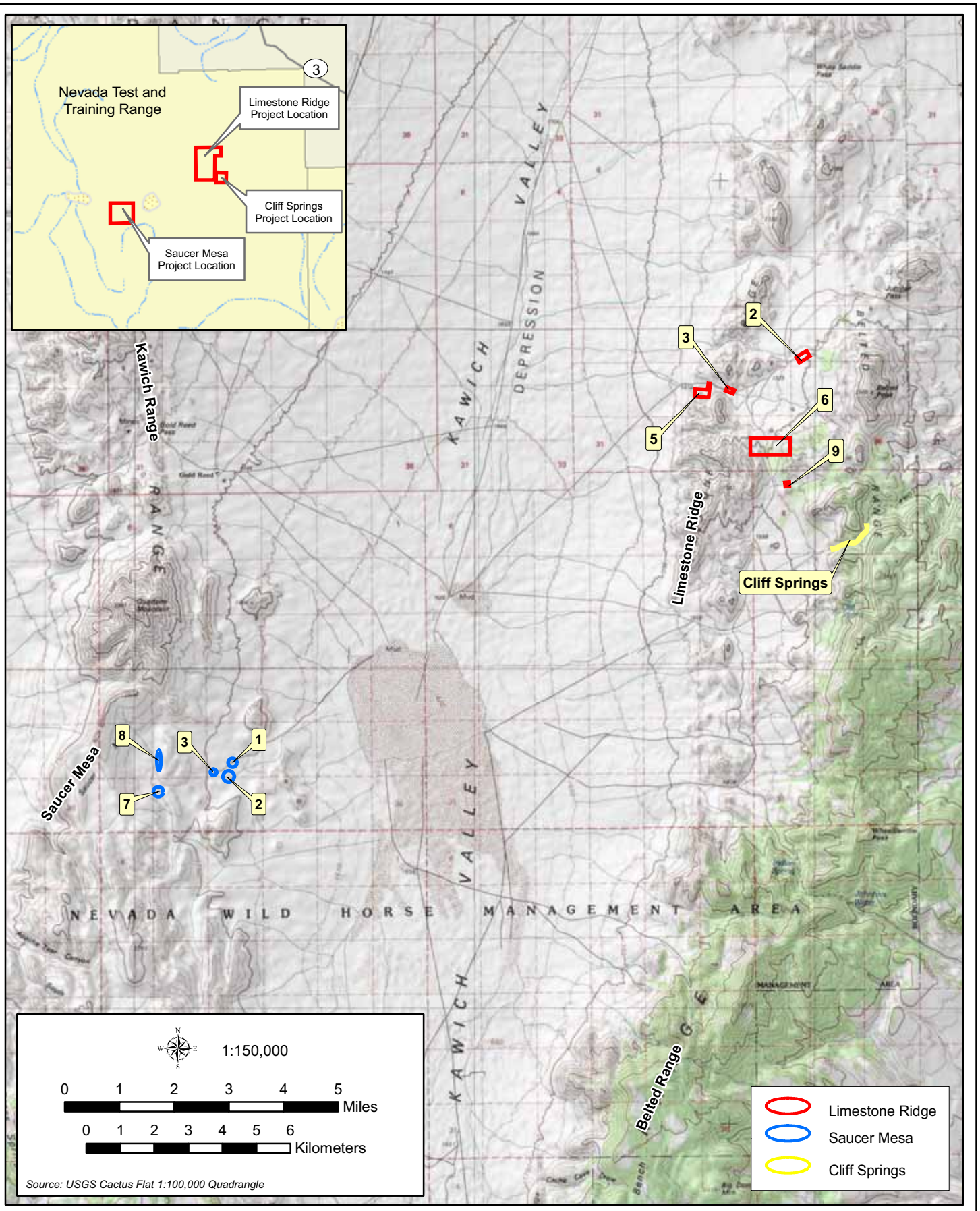

Figure 2-2: Reduced Target Sites Alternative Locations

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2.4 NO ACTION ALTERNATIVE

CEQ regulations require an analysis of a No Action Alternative. Under the No Action Alternative, the target complexes would not be constructed, and no air-dropped or ground-fired munitions would be employed. Additionally, helicopter insertions of ODA teams would not occur under the No Action Alternative. Although the No Action Alternative does not meet the project's purpose and need, the No Action Alternative will serve as a baseline against which the impacts of the proposed action and alternatives can be evaluated.

SECTION 3.0
AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the existing environmental conditions at and surrounding the target complex locations at the NTTR. It provides information to serve as a baseline from which to identify and evaluate environmental changes resulting from the proposed construction and use of the target complexes.

Only those resources that have a potential to be affected are discussed, as per CEQ guidance (40 CFR 1501.7[3]). Therefore, climate, geology, wetlands, and transportation will not be discussed for the following reasons:

- Climate – the project would not affect, or be affected by, climate
- Geology – the project would not disturb geologic resources nor be affected by geologic activities such as seismicity; however, soils would be disturbed from the implementation of the proposed project and are discussed below.
- Wetlands and Waters of the U.S. - there are no hydric soils on the project sites and no potential jurisdictional wetlands were identified. Furthermore, all ephemeral washes identified at the target complex sites are isolated from interstate or navigable waters, and are therefore not jurisdictional waters of the U.S.
- Transportation – the project would not require any long-term public road closures or affect other modes of public transportation.

3.2 LAND USE

The NTTR encompasses approximately 3 million acres in southern Nevada. However, only a small portion (approximately 16 percent) of the NTTR complex is actually used by the Air Force for training activities (Nellis AFB 1999). The NTTR is managed by Nellis AFB and has been withdrawn from public use since the 1940s. The two functional areas of NTTR are the North Range and the South Range. The North Range complex includes cantonment areas, targets, electronic combat ranges (radar, emitter sites, and scoring sites), paved and unpaved roads, and large tracts of open space. Approximately 1,025 individual targets within 131 target complexes are currently located on the North Range. The proposed target complex sites are located at approximately 6,000 feet above sea level, and are currently used for military training, including, but not limited to military training routes in restricted airspace and ordnance impact

areas. Additional uses within the NTTR include portions of the U.S. Fish and Wildlife Service's (USFWS) Desert National Wildlife Range, and the Bureau of Land Management's (BLM) National Wild Horse Range.

3.3 SOILS

Soils on the NTTR have not been mapped and only general descriptions of soil series are available. The NTTR is located within the Basin and Range province which is dominated by isolated mountain ranges rising abruptly from broad, alluvium-filled desert basins. Many of the basins are internally drained, with large playas in the lowest part. The Paleozoic bedrock section consists of carbonate rich dolomite and limestone with inter-bedded layers of sandstone, siltstone, and shale. Strongly developed carbonate soil morphologies occur where major washes are entrenched into alluvial fans. In the northern portion of the NTTR, soils at lower elevations are typically entisols (soils that do not show any profile development) and aridisols (soils that develop in an arid or semi-arid environment). Entisols are most common where sand sheets have been deposited above playa landforms. Mollisols (formed in semi-arid and semi-humid conditions) are common in the mountains, at higher elevations. The presence of volcanic parent materials often results in greater clay content. The alluvial soils that dominate the fans and basins, in conjunction with the fine soil particles from lacustrine sources (lakes), are subject to excessive wind erosion. These fined-grained materials are often entrained into the air stream and can result in fugitive dust migration (Nellis AFB 1997).

The main soil types share the following attributes:

- moderately slow permeability;
- slight potential for water erosion;
- high potential for wind erosion; and
- shallow hardpan layer.

3.4 AESTHETICS

The NTTR is used for military training and is subject to combat simulation. Much of the approximately 3 million acres of the NTTR is undeveloped. This undeveloped Great Basin Desert region is characterized by a series of basins and mountain ranges (National Park Service [NPS] 2006a). The Great Basin Desert is dominated by sagebrush vegetation where

small to medium scrub vegetation is found in the basins, and juniper-pinon woodlands at higher elevations. The visual effect is wide-open areas with few defining features except rolling to steeply sloping topography (Photograph 3-1). The NTTR is inaccessible to civilians without special permission, and would not be considered an aesthetic or visual resource to the general public.

Photograph 3-1. The visual resources of the NTTR are characterized by wide open spaces.

3.5 AIR QUALITY

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. The significance of the pollutant concentration is determined by comparing local ambient conditions to the Federal and state ambient air quality standards. The Clean Air Act (CAA) and its subsequent amendments (CAAA) established the National Ambient Air Quality Standards (NAAQS) for seven "criteria" pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 and 2.5 microns (PM-10 and PM-2.5), and lead (Pb). These standards (see Table 3-1) represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. The Nevada Department of Environmental Protection (NDEP), Bureau of Air Quality (BAQ) has adopted the NAAQS, with some exceptions and additions.

The CAA requires each state to develop a State Implementation Plan (SIP), which is its primary mechanism for ensuring that the NAAQS are achieved and maintained within that state. According to plans outlined in the SIP, designated state and local agencies implement regulations to control sources of criteria pollutants. The CAA provides that Federal actions in non-attainment and maintenance areas do not hinder future attainment with the NAAQS and conform with the applicable SIP (*i.e.*, Nevada SIP). There are no specific requirements for Federal actions in unclassified or attainment areas.

The Prevention of Significant Deterioration Program (PSD) establishes a mandatory Class I designation for pristine or wilderness areas and require more stringent safeguards to prevent the deterioration of pristine air quality. The CAA establishes a goal of the prevention of

Table 3-1. National and Nevada Ambient Air Quality Standards

Pollutant	Nevada(a)(b)	National(a)(b)	Standard Type(c)(d)
Carbon Monoxide(CO)			
8-hour average	9 ppm (10 mg/m^3) 6 ppm (6.67 mg/m^3)([e])	9 ppm (10 µg/m^3)	Primary
1-hour average	35 ppm (40 mg/m^3)	35 ppm (40 mg/m^3)	Primary
Nitrogen Dioxide(NO_2)			
Ann. Arithmetic Mean	0.053 ppm (100 µg/m^3)	0.053 ppm (100 µg/m^3)	Primary & Secondary
Ozone(O_3)			
8-hour Average(f)	- - -	0.08 ppm (157 µg/m^3)	Primary & Secondary
Sulfur Dioxide(SO_2)			
Ann. Arithmetic Mean	0.03 ppm (80 µg/m^3)	0.03 ppm (80 µg/m^3)	Primary
24-hour Average	0.14 (365 µg/m^3)	0.14 ppm (365 µg/m^3)	Primary
3-hour Average	0.50 ppm (1,300 µg/m^3)	0.50 ppm (1,300 µg/m^3)	Secondary
Lead (Pb)			
Quarterly Average	1.5 µg/m^3	1.5 µg/m^3	Primary & Secondary
PM_{10}			
Ann. Arithmetic Mean(f)	50 µg/m^3	50 µg/m^3	Primary & Secondary
24-hour Average	150 µg/m^3	150 µg/m^3	Primary & Secondary
$PM_{2.5}$ (f)			
Ann. Arithmetic Mean(f)	---	15 µg/m^3	Primary & Secondary
24-hour Average(f)	---	65 µg/m^3	Primary & Secondary
Hydrogen sulfide(H_2S)			
1-hour	112 µg/m^3	- - -	
Visibility Observation	In sufficient amount to reduce the prevailing visibility to less than 30 miles when the humidity is less than 70 percent	- - -	

Notes:

a) Standards other than for ozone and those based upon annual averages are not to be exceeded more than once per year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

b) Concentrations are expressed first in units in which they are promulgated. Equivalent units are given in parentheses.

c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by USEPA

d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the USEPA approves the implementation plan.

e) First standard applies at elevations less than 5,000 feet above MSL. The second standard applies at elevations equal to or greater than 5,000 feet above MSL.

f) The ozone 8-hour standard and the $PM_{2.5}$ standard are included for information only. A 1999 Federal court ruling that blocked implementation of these standards has since been approved, but has yet to be implemented.

µg/m^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
$PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter
PM_{10} = particulate matter equal to or less than 10 microns in diameter
Ppm = parts per million

Source: NDEP 2004

impairment or degradation to any Class I area. The Jarbridge Wilderness Area (in northern Elko County) is the only Class I area in the state of Nevada. The remainder of the state of Nevada is

designated as Class II. Stationary sources such as large industrial complexes (*e.g.*, large mines, power plants, chemical plants), are typically an issue for PSD, and no such stationary sources are present in the project area.

The proposed project is located in Nye County. Because the proposed project is located 71 miles to the north of the nearest non-attainment area in Nye County, non-attainment regulations would not apply. Figure 3-1 illustrates the location of the nearest PM-10 non-attainment area in Nye County relative to the NTTR.

3.6 NOISE

Noise is usually defined as unwanted sound, and is recognized as an environmental pollutant that can produce physiological or psychological damage and interfere with communication, work, rest, recreation, and sleep. The target complexes are located far from any population centers. The closest town is Rachel, Nevada, which is approximately 20 miles east of the eastern edge of the Limestone Ridge and Cliff Springs sites. Rachel has a population of less than 100 citizens and is located on Nevada Highway 375 in a region called Sand Springs Valley, which is primarily an agricultural area.

Current military training activities involve low level flights by military aircraft over the project area. This includes substantial jet over-flight subsonic noise, the potential for sonic booms, detonation of explosives associated with live munitions deliveries, and detonation of explosives during ordnance clean up and disposal activities. All proposed target sites are near or within 1 mile of other active target sites. However, because of the remoteness of the NTTR, the short-term sound events associated with subsonic and supersonic over-flights, and the lack of human receptors in the vicinity of the North Range, an Air Installation Compatibility Use Zone (AICUZ) study has not been conducted.

3.7 WATER RESOURCES

The water resources sections in this document encompass the surface and groundwater features in the project area.

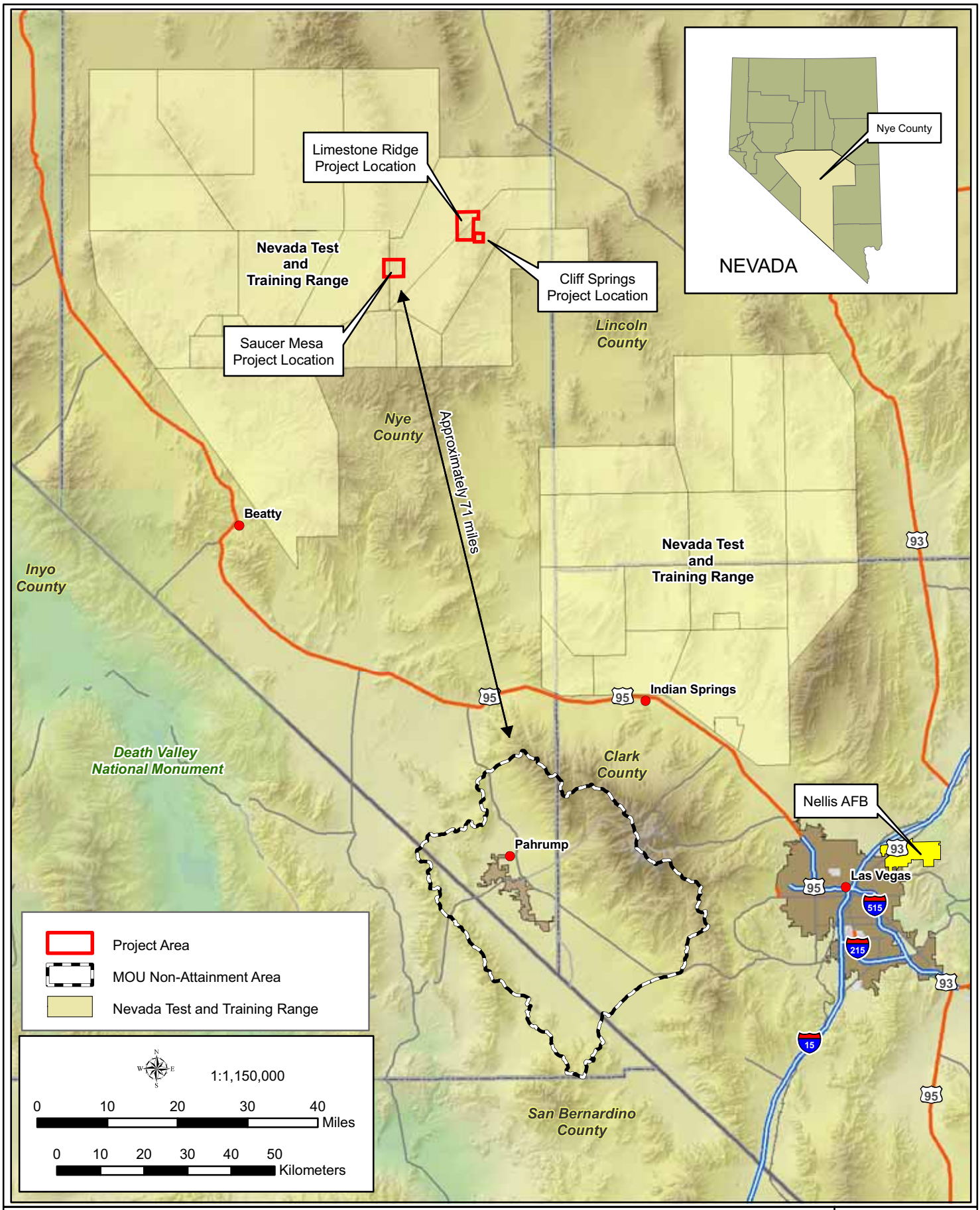

Figure 3-1: Location of PM-10 Non-Attainment Area

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3.7.1 Surface Water

Surface water in the Great Basin desert is scarce. The southern portion of the NTTR receives an average rainfall of 4.7 inches of precipitation per year while the mountains and northern portion of the NTTR receives an average of 9 inches of precipitation per year. Strong winds in combination with low relative humidity make the annual evaporation rate throughout the region 10 times greater than precipitation (Nellis AFB 2006a). The only perennial surface water sites on the NTTR come from approximately 50 separate springs on the installation. The springs flow for short distances on the ground surface, which is underlain by bedrock (Nellis AFB 2006c).

A number of ephemeral streams have been located on the target complex sites. Saucer Mesa sites #2, #3, #4, #6, #7, and #9 and Limestone Ridge site #10 (see Figure 2-1) contain portions of washes with defined beds and bank. When a major rain event occurs, dry washes carry water that eventually runs into playas (dry lake basin), where stormwater gradually evaporates or percolates through the subsurface. The playas are not major ground water recharge zones due to the low infiltration potential of the soils. Most surface water that reaches the playas is lost through evaporation (Nellis AFB 2006b).

3.7.2 Hydrogeology/Groundwater

Groundwater below the proposed project area resides in a closed basin. The gradient of the upper surface of the primary aquifer (the water table) generally slopes downward toward the east. The nature of the current climate (arid) and the composition of the underlying sediments (from carbonate rock sources) combine to promote the formation of a shallow hardpan layer within depths of up to 20 feet below ground surface (bgs). A shallow (10-20 feet bgs) hardpan layer in the calcareous soils has developed that limits surface water percolation to the normal groundwater table of 100-120 feet bgs (Nellis AFB 2006b).

3.8 BIOLOGICAL RESOURCES

The biological resources report for the Range 74 target complexes provides additional detail concerning the biological resources for each of the target complex sites. A copy of the biological resources report is located in Appendix B.

3.8.1 Vegetation

The dominant Great Basin Desert vegetation communities observed at the survey sites were the shadscale community in arid areas, the sagebrush-grass community in the lower basin valleys and the juniper-pinon community at higher mountainous elevations (Mac *et al.* 1998). There is often a gradual transition between these zones where the vegetation from any of these communities is present (Mac *et al.* 1998).

Shadscale Community

The shadscale community (Photograph 3-2) is dominated by shadscale (*Atriplex confertifolia*), and occurs in arid climates. Other drought tolerant plants, such as white sage (*Krascheninnikovia lanata*) and greasewood (*Sarcobatus vermiculatus*), are common associates in this community (Utah State University 2002). This community is most often present on saline soils associated with ancient lake beds (Mac *et al.* 1998).

Photograph 3-2. Shadscale Community at NTTR.

Sagebrush-Grass Community

The sagebrush-grass community (Photograph 3-3) is primarily dominated by big sagebrush (*Artemisia tridentata*), but other sagebrush species, such as black sagebrush (*Artemisia nova*) can also be dominant. This community is often located in areas with greater precipitation and a variety of grasses, shrubs, and forbs are normally present. Invasive species, such as broomrape (*Orobanche* sp.) and brome grasses (*Andropogon* sp.) are often found in this vegetation community.

Photograph 3-3 Sagebrush-Grass Community at NTTR.

Juniper-Pinon Woodland Community

The juniper-pinon woodlands community (Photograph 3-4) is dominated by Utah juniper (*Juniperus osteosperma*) and singleleaf pinon (*Pinus monophylla*) at the higher elevations and on rocky soils found within mountain ranges (Mac *et al.* 1998).

Photograph 3-4 Juniper-Pinon Woodland Community at NTTR.

Photograph 3-5. Nipple cactus at NTTR.

Most of the proposed sites in the Limestone Ridge and Saucer Mesa complexes were composed of shadscale vegetation, sagebrush-grass vegetation, or a transitional combination of both communities. The Cliff Springs site was dominated by juniper-pinon woodland vegetation. Additional plant species occurring throughout the sites in varying densities were fluffgrass (*Dasyochloa pulchella*), ricegrass (*Oryzopsis hymenoides*), ephedra (*Ephedra viridis*), rubber rabbitbrush (*Ericameria nauseosa*), saltbush (*Atriplex* sp.), white sage (*Krascheninnikovia lanata*), cliff rose (*Purshia mexicana*), desert cabbage (*Kalanchoe thyrsiflora*), London rocket (*Sisymbrium irio*), agave (*Agave americana*), cholla cacti (*Opuntia* sp.) and nipple cacti (*Mammillaria* sp.) (Photograph 3-5).

3.8.2 Wildlife

Mammals

Large mammals present in the Great Basin Desert include the desert mule deer (*Odocoileus hemionus*), mountain lion (*Felis concolor*), desert bighorn sheep (*Ovis canadensis nelsoni*) and American pronghorn (*Antilocapra americana*) (NPS 2006b). Additionally, wild horses (*Equus caballus*), a non-native species, are also found on the NTTR. Smaller mammals such as coyote (*Canis latrans*), desert kit fox (*Vulpes macrotis*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), bobcat (*Felis rufus*), kangaroo rats (*Dipodomys* sp.) and packrats (*Neotoma* sp.) occur within the Great Basin Desert and on the NTTR.

Desert cottontail and black-tailed jackrabbit were observed during surveys. Evidence of packrats, coyote, desert mule deer, desert bighorn sheep, and wild horses were also noted. Small burrows were observed at several sites during field surveys. Based on observations of the size and nearby soil disturbance, the burrows were likely created by small mammals.

Fish, Reptiles, and Amphibians

Due to a lack of suitable aquatic habitats located on the NTTR, fish populations do not occur and amphibians are rare. The most common amphibian found in the NTTR is the Great Basin spade-foot toad (*Scaphiopus intermountaus*). Reptiles common in the Great Basin Desert

include the side-blotched lizard (*Uta sansburiana*), desert horned lizard (*Phyrnosoma platyrhinos*), sagebrush lizard (*Sceloporus graciosus*), leopard lizard (*Gambelia wislizenii*), Great Basin rattlesnake (*Crotalus viridis luteosus*) and zebra-tailed lizard (*Callisaurus draconoides*).

Photograph 3-6 Desert horned lizard at NTTR.

Desert horned lizards (Photograph 3-6) were observed at several sites during field surveys. Other lizards were observed but not identified.

Birds

A diversity of bird species can be found on the NTTR because of the variety of vegetation communities found there. Bird species associated with the sagebrush communities include sage thrasher (*Oreoscoptes montanus*), sage sparrow (*Amphispiza belli*) and horned lark (*Eremophila alpestris*). The juniper–pinon vegetation community supports pinon jays (*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus ridgwayi*), mountain chickadee (*Poecile gambeli*), rock wren (*Salpinctes obsoletus*), Townsend's solitare (*Myadestes townsendi*) and black-throated gray warblers (*Dendroica nigrescens*). Common species throughout the NTTR include house finches (*Carpodacus mexicanus*), common raven (*Corvus corax*), turkey vulture (*Cathartes aura*) and red-tailed hawks (*Buteo jamaicensis*).

Bird species density was low during field surveys. Most bird observations occurred at the higher elevation sites located in the juniper-pinon vegetation community. Bird species observed at these sites included pinon jay, juniper titmouse, red-tailed hawk, turkey vulture, common raven, rock wren and mountain chickadee. At lower elevations, an unidentified hummingbird species (Family *Trochilidae*) and another small bird, possibly from the sparrow family (Family *Emberizidae*), were observed but not identified.

3.8.3 Sensitive Species

The U.S. Fish and Wildlife Service's (USFWS) responsibilities under the Endangered Species Act (ESA) include: (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and

recovery efforts for, these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which the USFWS has sufficient information on hand to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. Candidate species and Species of Concern currently have no legal protection under the ESA. However, they may be protected under other Federal or state laws. Table 3-2 describes the Federally listed species potentially occurring in Nye County.

Table 3-2. Federally Listed Species Potentially Occurring Within Nye County, Nevada

Common/Scientific Name	Federal Status	Habitat	Potential to occur within Project Area
BIRDS			
Southwestern willow flycatcher *Empidonax traillii extimus*	Endangered	Thickets, scrubby and brushy areas, open second growth, and riparian woodland. Limited in Nevada to the southern tip of the state, along the Colorado River and its tributaries.	No – Project area not located near the Colorado River.
Bald eagle *Haliaeetus leucocephalus*	Threatened Proposed for delisting	Few scattered breeding occurrences in northern Nevada, winters in low numbers across state. Winter night roosts can be found from 5,000 to 9,000 ft. Winter roost sites vary in their proximity to food resources.	No – Low probability due to lack of food resources.
REPTILES AND AMPHIBIANS			
Desert tortoise (Mojave population) *Gopherus agassizii*	Threatened	Occurrences typically are between 1,000 and 4,000 ft in elevation. Requires firm, but not hard, ground for construction of burrows in banks of washes or compacted sand.	No – Known populations occur south of project area in Mojave Desert habitat
Columbia spotted frog (Great Basin Distinct Population Segment) *Rana luteiventris*	Candidate	Usually occurs at the grassy/sedgy margins of streams, lakes, ponds, springs, and marshes.	No – Known isolated populations occur in northwestern Nye County.
FISHES			
Railroad Valley springfish *Crenichthys nevadae*	Threatened	Springs and springbrooks. Endemic to thermal springs and outflows in Railroad Valley, Nye County, Nevada.	No – Project area is south of Railroad Valley.

Table 3-2, continued

Common/Scientific Name	Federal Status	Habitat	Potential to occur within Project Area
Devils Hole pupfish *Cyprinodon diabolis*	Endangered	Endemic to a deep limestone pool occuring only in Devil's Hole, Ash Meadows area, Death Valley National Park, Nevada.	No – Project area located northeast of Death Valley National Park.
Ash Meadows Amargosa pupfish *Cyprinodon nevadensis mionectes*	Endangered	Springs and associated springbrooks, outflow stream systems and terminal marshes within Ash Meadows National Wildlife Refuge, Nye Co., Nevada.	No – Project area located northeast of Ash Meadows National Wildlife Refuge
Warm Springs pupfish *Cyprinodon nevadensis pectoralis*	Endangered	Habitats are small with source pools within a complex of 7 small thermal springs within Ash Meadows National Wildlife Refuge, Nye County Nevada.	No – Project area located northeast of Ash Meadows National Wildlife Refuge
White River spinedace *Lepidomeda albivallis*	Endangered	Occurs in cool, clear springs and their outflow systems, over sand and gravel substrate. Presently occurs only within a single spring and outflow system at Kirch Wildlife Management Area, Nye County Nevada	No – Project area located southwest of Kirch Wildlife Management Area.
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*	Threatened	Lakes and streams; requires cool, well-oxygenated water. In streams, uses rocky areas, riffles, deep pools, and areas under logs and overhanging banks.	No – Suitable habitat does not occur within the project area.
Ash Meadows speckled dace *Rhinichthys osculus nevadensis*	Endangered	Springs and associated springbrooks, outflow stream systems and terminal marshes within Ash Meadows National Wildlife Refuge, Nye County, Nevada.	No – Project area located northeast of Ash Meadows National Wildlife Refuge
INVERTEBRATES			
Ash Meadows naucorid *Ambrysus amargosus*	Threatened	Flowing water in Rocks Springs in east-central Ash Meadows National Wildlife Refuge, Nye County, Nevada..	No – Project area located northeast of Ash Meadows National Wildlife Refuge
PLANTS			
Ash Meadows milkvetch *Astragalus phoenix*	Threatened	Dry, hard, seasonally moist, white, barren flats, washes, and knolls of calcareous alkaline soils. Endemic to the Ash Meadows area.	No – Project area located northeast of Ash Meadows National Wildlife Refuge

Table 3-2, continued

Common/Scientific Name	Federal Status	Habitat	Potential to occur within Project Area
Spring-loving centaury *Centaurium namophilum*	Threatened	Open, moist to wet, alkali-crusted clay soils of seeps, springs, outflow drainages, meadows, and hummocks. Endemic to the Ash Meadows area.	No – Project area located northeast of Ash Meadows National Wildlife Refuge
Ash Meadows sunray *Enceliopsis nudicaulis var. corrugata*	Threatened	Dry to somewhat moist, open, hard, whitish, strongly alkaline silty to clay soils, often on or near low calcareous outcrops, in spring and seep areas in the creosote-bursage and shadscale zones. Endemic to the Ash Meadows area, with a few intermediate populations found beyond.	No – Project area located northeast of Ash Meadows National Wildlife Refuge
Ash Meadows gumplant *Grindelia fraxinopratensis*	Threatened	Open, flat, whitish, strongly alkaline, moist and hard to sometimes dry and powdery clay soils in or bordering meadows and shallow drainages near springs and seeps, sometimes in disturbed areas and somewhat weedy, in the creosote-bursage and shadscale zones in ash-mesquite woodlands, shadscale scrub, or saltgrass meadows. Endemic to the Ash Meadows area.	No – Project area located northeast of Ash Meadows National Wildlife Refuge
Ash Meadows ivesia (mousetail) *Ivesia eremica* (= *I. kingii* var. *eremica*)	Threatened	Open, moist to saturated, whitish, heavy to chalky alkaline clay soils in meadows on flats, drainages, and bluffs near springs and seeps, in saltgrass meadow, shadscale, and ash-mesquite vegetation. Endemic to the Ash Meadows area.	No – Project area located northeast of Ash Meadows National Wildlife Refuge
Ash Meadows blazing star *Mentzelia leucophylla*	Threatened	Open, generally dry, hard, salt-crusted alkaline clay or sandy-clay soils on low bluffs, swales, flats, and drainages in shadscale vegetation surrounding spring and seep areas. Endemic to the Ash Meadows area.	No – Project area located northeast of Ash Meadows National Wildlife Refuge

Table 3-2, continued

Common/Scientific Name	Federal Status	Habitat	Potential to occur within Project Area
Amargosa niterwort *Nitrophila mohavensis*	Endangered	Open, moist, heavily alkaline and salt-crusted, otherwise nearly barren clay flats in low drainage and seepage areas surrounded by shadscale and saltgrass vegetation. Aquatic or wetland-dependent in Nevada. Known only from the Carson Slough - Ash Meadows area.	No – Project area located northeast of Ash Meadows National Wildlife Refuge

Source: Nevada Department of Wildlife (NDOW) 2005, USFWS 2005

Of the 19 Federally listed species known to occur in Nye County, Nevada, none of these species are found within the project areas. Seven species of fish, seven species of plants, one invertebrate and one amphibian are aquatic-specific species, and their known habitat occurs outside of the NTTR. Additionally, the Federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*) is normally associated with riparian habitats which are absent in the project areas. The bald eagle (*Haliaeetus leucocephalus*) has the potential to winter within the NTTR, but lacks suitable food sources, as there are no perennial water bodies, except springs, present on the NTTR. The desert tortoise (*Gopherus agassizii*) is known to occur within the Mojave Desert in the southern portion of the NTTR. There is no critical habitat designated for threatened or endangered species located near the target sites or on the north NTTR.

The Nevada Department of Conservation and Natural Resources (DCNR) maintains the Natural Heritage Program. This program lists endangered, threatened, rare, and sensitive species in Nevada. This list includes flora and fauna whose occurrence in Nevada is or may be in jeopardy, or with known or perceived threats or population declines. Approximately 80 species of plants are considered at-risk, and an additional 30 plant species are on the watch-list for Nye County. A total of 23 invertebrates, 20 fish species, two amphibians, two reptiles, 10 mammals and 15 bird species are at-risk in Nye County. An additional three invertebrates and 41 vertebrate species are on the watch list (Appendix B). Many of these species are protected by Nevada State laws; Nevada Administrative Code [NAC] 503 outlines wildlife species that are protected, and Nevada Revised Statutes [NRS] 527 summarizes the native flora protected in Nevada.

Although suitable habitat is present in the project areas for a number of the state at-risk plant and animal species, none of these species were observed during site surveys. However, the

Clokey eggvetch (*Astragalus oophorus* var. *clokeyanus*) and cliff needlegrass (*Stipa shoshoneana*) are known to occur in the Belted Range in the vicinity of the Cliff Springs target complex. Additionally, there are no habitats present in the project sites that are known to support fully-protected state species. A small number of watch-list species, such as the pinon jay and juniper titmouse, was observed within the juniper-pinon vegetation community sites.

3.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The region of influence for the proposed project is Nye County. The majority of people working in facilities on Range 74 and the North Range of the NTTR live in Nye County and commute from the communities of Tonopah, Beatty, and Rachel. The estimated population in Nye County in 2000 was 32,485 with a population density of 1.8 persons per square mile (compared to 18.2 persons per square mile for the state of Nevada). The 2004 racial mix is comprised of Caucasian (93.2 percent), African American (1.5 percent), Native American (2.0 percent), Asian American (1.0 percent), Pacific Island (0.5 percent) and people reporting two or more races (1.8 percent). Persons of Hispanic origin comprised 9.9 percent of the population of Nye County (U.S. Census Bureau 2006).

The 1999 per capita personal income of Nye County was $17,962, which compared to $21,989 for the state of Nevada. The 2003 median household income for Nye County was $38,276 and for the state of Nevada was $45,249 (U.S. Census Bureau 2006). In 2003, it was estimated that 12.3 percent of the Nye County population lived below the poverty level, which is slightly higher than the state of Nevada average (11 percent).

3.9.1 Environmental Justice

EO 12898, Environmental Justice, was issued by the President on February 11, 1994. Objectives of the EO, as it pertains to this EA, include development of Federal agency implementation strategies and the identification of low-income and minority populations potentially affected because of proposed Federal actions. Accompanying EO 12898 was a Presidential Transmittal Memorandum referencing existing Federal statutes and regulations to be used in conjunction with EO 12898. One of the items in this memorandum was the use of the policies and procedures of NEPA. Specifically, the memorandum indicates that:

"each Federal agency shall analyze the environmental effects, including human health, economic, and social effects, of federal actions, including effects on minority communities and low-income communities,"

when such analysis is required by the NEPA 42 U.S.C. section 4321 *et. seq*. Although an environmental justice analysis is not mandated by NEPA, Department of Defense (DoD) has directed that NEPA will be used as the primary mechanism to implement the provision of the EO.

3.10 CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) of 1966 establishes the Federal government's policy to provide leadership in the preservation of historic properties and to administer Federally-owned or controlled historic properties in a spirit of stewardship. The NHPA established the Advisory Council on Historic Preservation (ACHP) to advocate full consideration of historic values in Federal decision-making; review Federal programs and policies to promote effectiveness, coordination, and consistency with National preservation policies; and recommend administrative and legislative improvements for protecting our Nation's heritage with due recognition of other National needs and priorities. In addition, the NHPA also established State Historic Preservation Officers (SHPO) to administer National historic preservation programs on the state level and Tribal Historic Preservation Officers (THPO) on tribal lands, where appropriate. The NHPA also established the National Register of Historic Places (NRHP). The NRHP is the Nation's official list of cultural resources worthy of preservation and protection. Properties listed in the NRHP include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The NPS administers the NRHP.

Section 106 of the NHPA, as amended, requires Federal agencies to identify and assess the effects of their undertakings on cultural properties included in or eligible for nomination to the NRHP, and to afford the ACHP a reasonable opportunity to comment on such undertakings. Federal agencies must consult with the appropriate state and local officials, Indian tribes, applicants for Federal assistance and members of the public and consider their views and concerns about historic preservation issues. The ACHP is authorized to promulgate such rules and regulations as it deems necessary to govern the implementation of Section 106 in its

entirety. Those regulations are contained in 36 CFR Part 800, "Protection of Historic Properties."

Under Federal regulation, only significant cultural resources warrant consideration with regard to adverse impacts resulting from a Federal undertaking. Significant cultural resources include those that are eligible or recommended as eligible for nomination to the NRHP. The significance of Native American and Euroamerican archeological resources is evaluated according to the criteria for eligibility to or inclusion to the NRHP as defined in regulation "National Register Criteria for Evaluation" (36 CFR 60.4) and in consultation with the SHPO.

3.10.1 Affected Environment

Prior to conducting archaeological surveys of the proposed target complex sites, a data review and records search was conducted at Nellis AFB. A total of 20 previously recorded archaeological sites were located within 1 mile (mi) of the proposed target locations. These sites consisted predominantly of lithic scatters (N=12); mining camps, cairns or prospect pits (N=5); quarry sites (N=2); and one isolated rock alignment.

A Class III intensive cultural resources survey was conducted at each of the target locations. Each of the target sites were traversed with pedestrian transects spaced no more than 100 feet apart. The survey of the target complexes was conducted by four archaeologists. This survey team was accompanied by a team of biologists, a Native American monitor, and a security escort. Some areas were excluded from the pedestrian survey, such as extremely steep slopes, canyon walls, and ordnance zones. Such areas were observed at their base or from a safe distance in order to identify any possible rock features, petroglyphs, pictographs or other possible cultural items or features. All archaeological sites located in the field were mapped using a sub-meter accurate Global Positioning System (GPS). Photographs of prominent archaeological features and diagnostic artifacts were taken in the field by the security escort assigned to the project. Section 106 consultation with the Nevada SHPO is in process. Seven new archaeological sites were recorded and one site was relocated and reevaluated.

3.11 HAZARDOUS AND TOXIC SUBSTANCES

The target complex sites are currently undeveloped and consist of open land with a vegetative cover of high desert plant species. There are currently no structures at the target complex sites

and no evidence of present or past exposure to hazardous or toxic substances. There are no Environmental Restoration Program sites located in the vicinity of the target complex sites.

3.12 SAFETY

The project area is located far from any population centers and restricted from public access. The closest town is Rachel, Nevada, which is approximately 20 miles east from the eastern edge of the Limestone Ridge and Cliff Springs sites. Military operations and construction activities conducted at the NTTR are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements.

SECTION 4.0
ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section of the EA addresses potential impacts to the environmental resources within the project site for the Proposed Action and alternatives. An impact (consequence or effect) is defined as a modification to the human or natural environment that would result from the implementation of an action. The impacts can be either beneficial or adverse, and can be either directly related to the action or indirectly caused by the action. Direct impacts are those effects that are caused by the action and occur at the same time and place (40 CFR 1508.8[a]). Indirect impacts are those effects that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR 1508.8[b]). The effects can be temporary, short in duration (short-term), long lasting (long-term), or permanent. For purposes of this EA, temporary effects are defined as those that would last for the duration of the construction period; short-term impacts would last from the completion of construction to 3 years. Long-term impacts are defined as those impacts that would occur from 3 to 10 years after construction, while permanent impacts indicate an irretrievable loss or alteration.

Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. Significant impacts are those effects that would result in substantial changes to the environment (40 CFR 1508.27) and should receive the greatest attention in the decision-making process. Insignificant impacts are those that would result in minimal changes to the environment. The significance of the impacts presented in this EA is based upon existing regulatory standards, scientific and environmental knowledge and best professional opinions.

4.2 LAND USE

4.2.1 Proposed Action

Land use within the proposed project area would not change. The proposed land use as a target complex for training is the same as the area's current land use as a bombing range as prescribed by the Military Lands Withdrawal Act of 1999 (PL 106-65, October 5, 1999). With the installation of additional targets and increased training in the area, including foot, ATV and helicopter traffic, the proposed project area would receive more intensive use than currently

occurs. However, the Proposed Action would not impact the designated land uses on the NTTR.

4.2.2 Reduced Target Sites Alternative

The land use for the Reduced Target Sites Alternative is similar to that described for the Proposed Action except that the project area would only encompass a total of approximately 263 acres. Because the proposed target complex sites would continue to be used for military training, no impacts to land use are anticipated.

4.2.3 No Action Alternative

The project area is currently used as a bombing range for military training purposes. Under the No Action Alternative, the land use would not change.

4.3 SOILS

4.3.1 Proposed Action

The short-term impacts to soils from the placement of the targets would be minimal. Assembly of the target complexes would take place offsite. The targets would be transported to the target complex sites via existing roads (Photograph 4-1) which would cause some minor soil disturbance. They would then be either installed by the use of heavy equipment or dragged into place. Some temporary disturbance to undisturbed soil surfaces may occur during the installation of the target complexes. Construction would employ methods to reduce soil erosion as practical.

Photograph 4-1. Example of existing dirt road that would be used to transport targets to the target complex sites.

The installation of the target components would increase the amount of impervious surfaces in the area, having long-term impacts to soils. Impervious surfaces reduce the amount of rainwater infiltration and percolation. Impervious surfaces increase the flow of migrating rainwater which has the potential to disturb adjacent exposed soils. Construction BMPs would reduce the migration of soils into the local stream network during rainfall events.

At the Limestone Ridge Village and Saucer Mesa Border Crossing target complexes, the proposed operational activities are anticipated to disturb soils during ODA SR activities from foot traffic, ATV transport, and prop-wash from helicopter deployments. Precision guided live and inert large-scale munitions dropped on the target complex would not create significant ground disturbance. Live fire ammunition would include small caliber discharges and would not create significant ground disturbances.

The operational activities for Cliff Springs No-Drop target complex would involve simulated attacks from airborne laser guidance systems. No ground disturbances or long-term impacts to soils would be anticipated after the targets were installed.

In conclusion, up to 391 acres of soils would be disturbed from the construction and operation of the target complexes. However, because all of the disturbed soils are regionally and locally common, would not be removed from biological production, and construction would employ methods to reduce soil erosion as practical, only minor impacts to soils are expected.

4.3.2 Reduced Target Sites Alternative

The impacts to soils from the construction and operation of the target complexes under the Reduced Target Sites Alternative would be similar in nature as those described for the Proposed Action. However, under the Reduced Target Sites Alternative, fewer acres of soils (approximately 263 acres) would be disturbed from the construction of the target complexes and training operations.

4.3.3 No Action Alternative

Under the No Action Alternative, the target complex sites would continue to experience miscellaneous large and small scale munitions training causing some minor, periodic soil disturbance. However, the target complexes would not be constructed and no airdropped or ground fire munitions would be employed. Additionally, soil disturbance from ATVs or prop-wash associated with helicopter insertions of ODA teams would not occur under the No Action Alternative.

4.4 AESTHETICS

4.4.1 Proposed Action

With the implementation of the Proposed Action, minor changes to aesthetic and visual resources would occur in the immediate vicinity of the target complexes, as target vehicles and structures would be placed within relatively undisturbed landscapes. The operational use of the targets would further reduce the visual aesthetics of the immediate target complex area because shrapnel and unexploded munitions would be located adjacent to the targets. The NTTR however, is inaccessible to the general public, contains approximately 3 million acres, and the target complexes can not be viewed from any publicly-accessible areas.

4.4.2 Reduced Target Sites Alternative

Impacts to aesthetics from the implementation of the Reduced Target Sites Alternative would be the same as for the Proposed Action.

4.4.3 No Action Alternative

Under the No Action Alternative, no impacts to the aesthetics and visual resources would occur because no new target complexes would be constructed or utilized.

4.5 AIR QUALITY

4.5.1 Proposed Action

Minor and temporary increases in air pollution would result from the use of heavy equipment to transport materials and install the target complexes. Atmospheric dust arises from the mechanical disturbance of soils exposed to the air. The dust generated from these open sources is termed "fugitive" because it is not discharged to the atmosphere in a confined flow stream. The sources of fugitive dust, defined as PM-10, associated with the placement of the target complexes include traveling on unpaved roads, heavy construction operations, and emissions from combustion engines. Combustion emissions from construction equipment and fugitive dust from soil disturbances are expected to temporarily increase PM-10 emissions; however, the installation of the target complexes would not significantly impair air quality in the region.

The Limestone Ridge and Saucer Mesa target complexes would be subjected to military training activities that would have minor, periodic impacts on air quality. Operational activities that disturb soils during ODA SR activities, such as foot traffic, ATV transport, and prop-wash from helicopter deployments, are not expected to create a significant impact on air quality because of their short duration, remote location, and good air dispersion in the region. A small number of precision guided live and inert large-scale munitions would be dropped on the target complexes; however, they would have a negligible impact on air quality. The live fire ammunition would include small weapon discharges and would not create substantial ground disturbances.

Operational activities at the Cliff Springs No-Drop site would involve simulated attacks from airborne laser guidance systems. No ground disturbances to the Cliff Springs target complex are anticipated after the targets are installed. Outside of combustible emissions of passing aircraft, no air emissions would occur at this site after the deployment of the targets.

4.5.2 Reduced Target Sites Alternative

Relative to the Proposed Action, the Reduced Target Sites Alternative has fewer target complex sites and, therefore, reduces the amount of soil disturbances and combustible emissions during construction. Ground disturbances and fugitive dust would be temporarily affected during training operations in the same manner as described under the Proposed Action. Similar to the Proposed Action, the Reduced Target Sites Alternative would not have a significant impact to air quality because of the short duration of construction, temporary nature of operational activities, and good air dispersion in the region.

4.5.3 No Action Alternative

Under the No Action Alternative, the target complexes would not be constructed, and no additional airdropped or ground-fired munitions would be employed. Additionally, helicopter insertions of ODA teams would not occur under the No Action Alternative. Therefore, there would be no increase in air emissions under the No Action Alternative.

4.6 NOISE

4.6.1 Proposed Action

The noise generated from the construction and placement of the target complexes would come primarily from the use of heavy equipment. Noise from the construction of the NTTR target complexes would be contained within the NTTR, be intermittent in nature and of short duration.

ODA SR activities, including the use of ATVs, helicopters, and other aircraft, would generate noise but would be confined to the NTTR. Noise studies have not been prepared for the NTTR because of its status as a bombing range, remote location, and distance from any communities. Large-scale live munitions would be dropped on the Saucer Mesa target complex; however, large-scale live munitions are currently used in the vicinity of Saucer Mesa and no substantial change in noise generated from live munitions would occur. Live fire ammunition would include small weapons discharges, but the noise generated from the live fire ammunition would be limited to the immediate vicinity of the target complex sites. All proposed target sites are within 1 mile of other active target sites, so there would be no net increase in noise levels in the project vicinity.

Because all noise associated with the construction and training operations at the target complexes would occur at remote locations on the NTTR where no public access is permitted, and 20 miles from any population centers, there would be no sensitive receptors in the project area.

4.6.2 Reduced Target Sites Alternative

The noise impacts from the Reduced Target Sites Alternative would be the same as described for the Proposed Action.

4.6.3 No Action Alternative

The training complex sites currently experience noise disturbances from nearby bombing training, including the use of aircraft for training exercises. Under the No Action Alternative, the target complexes would not be constructed and no air-dropped or ground-fired munitions would be concentrated at those specific sites. Additionally, helicopter insertions of ODA teams would not occur under the No Action Alternative.

4.7 WATER RESOURCES

4.7.1 Proposed Action

The components (*i.e.*, vehicles, downed aircraft) used for the target complexes would be transported to the target complex sites and either dragged or placed in the appropriate locations. Some temporary surface water quality impairments may occur if there were a major rain event during or soon after the installation of the target complexes. Disturbed soils from access roads and the target complex sites could migrate during rain events. The installation of the target complexes would increase the amount of impervious surfaces in the area. Although the area of impervious surface would be small and most of the surface area of the target complex sites remains natural, impervious surfaces reduce the amount of rainwater infiltration and percolation. Impervious surfaces increase the flow of migrating rainwater, and sheet and rill erosion of adjacent exposed soils can occur. In addition, stream bed and bank scouring and erosion are often associated with impervious surfaces. Methods to reduce soil erosion during construction as practical, however, would reduce the migration of soils from the target complex sites into nearby ephemeral washes. Because of the relatively small area of disturbance associated with the target complexes, the impacts to surface water quality from construction activities would be insignificant.

Operational activities are anticipated to disturb soils during ODA SR activities from foot traffic, ATV transport and prop-wash from helicopter deployments. The disturbed soils could have minor impacts to local surface water quality. Because these activities would be limited to the immediate vicinity of the already disturbed target complex sites, and the nearby ephemeral washes are part of small closed drainage basins, there would be no impact to regional surface water quality. Large-scale live and inert munitions would be dropped on the target complexes; however, the small number of live munitions would be precision guided and only cause minimal disturbance in watershed areas already subject to bombing. Live fire ammunition would include small weapon discharges and would not create significant ground disturbances.

Under the Proposed Action, there would be no potential for direct contamination of groundwater. Activities associated with the construction would not introduce any contaminants with the potential to affect groundwater because all target vehicles and aircraft would be drained of all fluids prior to being transported to the NTTR. No groundwater would be used for target complex construction and placement or training operations.

4.7.2 Reduced Target Sites Alternative

The impacts to surface and ground water from the implementation of the Reduced Target Sites Alternative would be the same as those described for the Proposed Action.

4.7.3 No Action Alternative

There would be no construction or operation of additional target complexes under the No Action Alternative; therefore, there would be no impacts to water resources.

4.8 BIOLOGICAL RESOURCES

4.8.1 Vegetation

4.8.1.1 Proposed Action

With the implementation of the Proposed Action, approximately 391 acres of Great Basin Desert vegetation would be disturbed by the installation and use of the proposed target complexes. Although only a very small area of vegetation would be directly removed during target complex development and training operations, vegetation within much of the target complex sites would be periodically disturbed by training activities causing the permanent loss of individual plant species. However, the NTTR encompasses almost 3 million acres of land in Nye, Lincoln, and Clark counties, and the vegetation observed at the project sites during field surveys is locally and regionally common and abundant both on the NTTR and within the Great Basin Desert. Minor, periodic disturbance to portions of 391 acres of common Great Basin Desert vegetation on the NTTR would be insignificant.

4.8.1.2 Reduced Target Sites Alternative

Impacts under the Reduced Target Site Alternative would be similar in nature (*i.e.*, construction and operation related) to the Proposed Action. However, fewer target complex sites would be utilized and minor disturbance to portions of 263 acres of vegetation would occur.

4.8.1.3 No Action Alternative

Under the No Action Alternative, no impacts to vegetation would occur because vegetation at the project sites would not be disturbed by the installation and operation of the target complexes.

4.8.2 Wildlife

4.8.2.1 Proposed Action

With the implementation of the Proposed Action, there would be the potential for the loss of some small mammals and reptiles during target complex installation activities and from the use of the target complexes for military training operations. However, the NTTR is vast in size, is surrounded primarily by undeveloped Federal lands, and is currently used for military training including bombing exercises. Therefore, these target complex sites represent a small portion of the available wildlife habitat that typically supports wildlife species that are common to the Great Basin Desert. The loss of a few individuals of relatively common wildlife species from target complex installation and training operations would not impair the viability of any given species. Birds and larger mammals, such as mule deer, desert bighorn sheep and American pronghorn that could potentially be disturbed by noise from military operations have the potential to flee the area and populate similar habitats locally and, therefore, would not be impacted by the Proposed Action. During times when the target complexes are not being used, these animals would be expected to return to the target areas for foraging and resting purposes.

4.8.2.2 Reduced Target Sites Alternative

Impacts from the Reduced Target Sites Alternative would be similar in nature to those described for the Proposed Action; however, only 263 acres of wildlife habitat would potentially be impacted, likely resulting in the loss of fewer individual species.

4.8.2.3 No Action Alternative

Under the No Action Alternative, no wildlife would be impacted from the installation and utilization of the new target complexes.

4.8.3 Sensitive Species

4.8.3.1 Proposed Action

Under the Proposed Action, no Federally listed species would be impacted because none were observed during biological field surveys and none are known to occur in the proposed project areas. The pinon jay and juniper titmouse, species on the Nevada watch-list and potentially Nevada at-risk species, were observed at the Cliff Springs site. However, the juniper-pinon habitat that provides nesting and foraging habitat for these birds is abundant locally and regionally. Nesting surveys for pinon jay, juniper titmouse, and other migratory bird species would be conducted in the project area immediately prior to construction to ensure that any

nesting areas are avoided. Additionally, surveys would be conducted in the Cliff Springs target complex for Clokey eggvetch and cliff needlegrass. Surveys would be conducted during the blooming period of these two species by qualified plant biologists prior to the placement of no-drop targets in the Cliff Springs target complex. If individuals of Clokey eggvetch or cliff needlegrass are found in the vicinity of the locations of the proposed no-drop targets during surveys, the locations for the no-drop targets will be modified to avoid impacting any individuals of these two species.

4.8.3.2 Reduced Target Sites Alternative

Impacts to sensitive species from the Reduced Target Sites Alternative would be similar in nature to the Proposed Action, though on a smaller scale due to the reduction in project footprint associated with this alternative.

4.8.3.3 No Action Alternative

Under the No Action Alternative, no sensitive species would be impacted because no target complexes would be installed or utilized.

4.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.9.1 Proposed Action

The NTTR is a secure military training complex located more than 20 miles from the nearest community. No children are located at the NTTR. The town of Rachel currently has less than 100 residents. Due to the distance to the nearest community, no disproportionate impacts to people of any ethnicity, income level, or age are anticipated from the Proposed Action. Additionally, all of the labor for the Proposed Action would be provided by military personnel and private contractors all of whom are currently employed on the NTTR, resulting in no increase in the population of Nye County. When possible, materials and other project expenditures would be obtained through merchants in the local communities, similar to other construction projects on the NTTR.

4.9.2 Reduced Target Sites Alternative

The socioeconomic impacts of the Reduced Target Sites Alternative would be the same as described for the Proposed Action.

4.9.3 No Action Alternative

Under the No Action Alternative, impacts would be the same as for the Proposed and Alternative actions.

4.10 CULTURAL RESOURCES

4.10.1 Proposed Action

None of the seven newly recorded archaeological sites nor the previously recorded archaeological sites have been recommended for nomination or nominated to the NRHP. As a result, no adverse impacts to historic properties as defined by the NHPA would occur from the implementation of the Proposed Action.

4.10.2 Reduced Target Sites Alternative

The impacts to cultural resources from the Reduced Target Sites Alternative would be the same as described for the Proposed Action.

4.10.3 No Action Alternative

Under the No Action Alternative, impacts to cultural resources would be the same as for the Proposed an Alternative actions.

4.11 HAZARDOUS AND TOXIC SUBSTANCES

4.11.1 Proposed Action

Materials used for targets would not contain any hazardous materials because all fluids would be drained from aircraft and vehicle targets before being transported to the NTTR, and there would be no risk of hazardous substance release associated with the targets. Although, large-scale live munitions would be used at Saucer Mesa, there would be no increase in the overall amount of live munitions used on the NTTR.

During construction of targets and during training operations, NTTR personnel would ensure that temporary secondary containment equipment is used, where practicable, to ensure accidental releases of hazardous substances (*i.e.*, anti-freeze, petroleum, oils, and lubricants) are prevented or limited in scope. Portable catch basins, portable containment berms, and other similar equipment would be used where feasible. Personnel overseeing and developing

the target sites would have spill kits in proximity to the proposed project areas to provide expeditious response and cleanup should a spill occur. Personnel would be trained on spill notification procedures and cognizant of the NTTR pollution prevention requirements to reduce the potential for accidental spills.

4.11.2 Reduced Target Sites Alternative

The impacts from the Reduced Target Sites Alternative would be the same as described for the Proposed Action.

4.11.3 No Action Alternative

Because no new target complexes would be installed on the NTTR, there would be no impacts from hazardous and toxic substances.

4.12 SAFETY

4.12.1 Proposed Action

All current construction and military training operations on the NTTR have established safety guidelines and procedures which would be observed during construction and operation of the proposed target complexes. These activities are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by AFOSH requirements. No incompatible projects would occur within safety zones. No change in current safety conditions would occur under the Proposed Action.

4.12.2 Reduced Target Sites Alternative

Under the Reduced Target Sites Alternative safety conditions would be the same as the Proposed Action.

4.12.3 No Action Alternative

Under the No Action Alternative, no changes to civilian and military safety would occur.

Table 4-1 presents a summary of the impacts anticipated under the Proposed Action, Reduced Target Sites Alternative, and No Action Alternative.

Table 4-1. Summary of Environmental Impact Assessments

Effected Resource	Proposed Action	Reduced Target Sites Alternative	No Action
Land Use	No change in land use would occur.	No change in land use would occur.	No change in land use would occur.
Soils	Up to 391 acres of soils would be disturbed.	Up to 263 acres of soils would be disturbed.	No soil disturbance would occur.
Aesthetics	Although a reduction in visual resources would occur in the vicinity of the target complexes, the NTTR is inaccessible to the public and the target complexes can not be viewed from any publicly-accessible areas.	Impacts would be the same as the Proposed Action.	No impacts would occur.
Air Quality	Short-term and minor impacts to air quality would occur during construction and periodically during training operations.	Impacts similar to those for the Proposed Action would occur.	No impacts would occur.
Noise	Noise would be generated during the installation, placement, and use of the target complexes, but it would be short-term and no sensitive receptors are present.	Impacts would be the same as those described for the Proposed Action.	No impacts would occur.
Water Resources	Impacts to surface waters would be short-term and no impacts to groundwater would occur.	Impacts would be similar to those of the Proposed Action.	No impacts would occur.
Biological Resources	About 391 acres of habitat would be disturbed. Some plant, small mammal, and reptile individuals could be lost during construction and exercises but all species in the proposed project area are both locally and regionally common. Rare plants surveys would be conducted in the Cliff Springs Target Complex area to avoid impacts to Clokey eggvetch and cliff needlegrass.	Approximately 263 acres of habitat would be disturbed. Impacts would be the same as the Proposed Action, but would affect approximately 33 percent less area.	No impacts would occur.
Socioeconomics and Environmental Justice	Because the NTTR is a secure facility and established bombing range, current NTTR personnel would construct and use the targets, and land use would not change; there would be no impact to socioeconomics or environmental justice.	Impacts would be the same as for the Proposed Action.	Impacts would be the same as for the Proposed and Alternative actions.
Cultural Resources	No impacts would occur. Nevada SHPO consultation for concurrence is underway.	No impacts would occur. Nevada SHPO consultation for concurrence is underway	No impacts would occur.
Hazardous Material	No hazardous materials are located in the project area. Existing Hazardous Materials Management and Spill and Pollution Prevention Plans would be implemented during target complex installation and use.	Impacts would be the same as described for the Proposed Action.	No impacts would occur.
Safety	All of the proposed actions are currently conducted on the NTTR, thus safety impacts would remain at current levels.	Effects would be similar to those described for the Proposed Action.	Safety impacts would be the same as for the Proposed and Alternative actions.

4.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Any target complex construction associated with the Proposed Action, including the preparation of targets for transport to the NTTR and the placement of target complexes would be a commitment of various resources, including labor, capital, energy and land resources. The short-term commitment of resources would result from target preparation, transport and placement, and all services necessary to support those three activities. Maintenance of target complexes, including reconfiguration of targets, and all training operations would be a long-term commitment of resources.

The Proposed and Alternative actions are within baselines established by the Legislative Environmental Impact Statement (LEIS) "Renewal of the Nellis Air Force Range Land Withdrawal", March 1999. PL 106-65, Military Lands Withdrawal Act of 1999, Section 3011(b)(1) states that "Subject to valid existing rights and except as otherwise provided…the [NTTR] lands…are hereby withdrawn from all forms of appropriation under the public land laws…are reserved for use by the Secretary of the Air Force – (A) as an armament and high hazard testing area; (B) for training for aerial gunnery, rocketry, electronic warfare, and tactical maneuvering and air support; (C) for equipment and tactics development and testing; and (D) for other defense-related purposes…". The Proposed and Alternative actions are consistent with PL 106-65.

4.14 CUMULATIVE IMPACTS

A cumulative impact is defined in 40 CFR 1508.7 as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." By Memorandum dated June 24, 2005, from the Chairman of the CEQ to the Heads of Federal Agencies, entitled "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis", CEQ made clear its interpretation that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions" and that the "CEQ regulations do not require agencies to catalogue or exhaustively list and analyze all individual past actions."

Because of the remote location of the NTTR and the lack of nearby infrastructure, there are no substantial past, present, or future projects being implemented by other agencies in the vicinity of the proposed project area. The Air Force has implemented some past facility construction and upgrades associated with recent mission and training requirements on the NTTR. However, these actions have been well below the baseline established in the LEIS "Renewal of the Nellis Air Force Range Land Withdrawal", March 1999. The Proposed Action, when combined with the impacts of other past, present, and anticipated future actions at the NTTR, would remain below the 3 percent (about 9,000 acres) established baseline.

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SECTION 5.0
REFERENCES

5.0 REFERENCES

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SECTION 6.0
LIST OF PREPARERS

6.0 LIST OF PREPARERS

The following people were primarily responsible for preparing this Environmental Assessment.

Name	Agency/Organization	Discipline/Expertise	Experience	Role In Preparing EA
Chris Ingram	Gulf South Research Corporation	Biology/Ecology	30 years NEPA and related studies	QA/QC
Eric Webb, Ph.D.	Gulf South Research Corporation	Ecology/Wetlands	15 years experience in Natural Resources and NEPA Studies	Project manager and field surveys
Howard Nass	Gulf South Research Corporation	Endangered Species and Wildlife	15 years of environmental, natural resource, and NEPA studies	Field surveys; report review
Michael Hodson	Gulf South Research Corporation	Ecology/Botany	5 years botanical surveys and natural resources	Field surveys
Steve Oivanki	Gulf South Research Corporation	Geology	31 years environmental planning studies	Geology and hazardous waste
John Lindemuth	Gulf South Research Corporation	Cultural Resources	12 years experience in cultural resources studies	Principal Investigator and cultural resources evaluation
David Alford	Gulf South Research Corporation	GIS/Graphics	3 years GIS analysis	GIS and graphics
Steve Kolian	Gulf South Research Corporation	Water quality	10 years environmental planning studies	Water and air quality
Joanna Cezniak	Gulf South Research Corporation	Wildlife Biology	8 years of natural resources and NEPA studies	Biology, aesthetics and field surveys

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APPENDIX A
COORDINATION LIST

IICEP and Repository Distribution List

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Las Vegas, NV 89130

Mr. Gary Hollis, Chairman
Nye County Board of Commissioners
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Pahrump, NV 89060

Ms. Joni Eastley, Vice-Chairperson
Nye County Board of Commissioners
P.O. Box 1729
Tonopah, NV 89049

Clark County Library
1401 East Flamingo Road
Las Vegas, NV 89119

Sunrise Library
5400 Harris Avenue
Las Vegas, NV, 89110

Beatty Library District
Fourth and Ward
Beatty, NV 89003-0129

Indian Springs Library
715 W. Gretta Lane
Indian Springs, NV 89018

Tonopah Library District
P.O. Box 449
Tonopah, NV 89049

Caliente Branch Library
P.O. Box 306
Caliente, NV 89008

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APPENDIX B
FINAL BIOLOGICAL REPORT

FINAL

RANGE 74 TARGET COMPLEXES
BIOLOGICAL REPORT
NEVADA TEST AND TRAINING RANGE, NEVADA

December 2006

FINAL

RANGE 74 TARGET COMPLEXES
BIOLOGICAL REPORT
NEVADA TEST AND TRAINING RANGE, NEVADA

December 2006

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1.0 INTRODUCTION

Biological surveys were conducted in a portion of Range 74 on the Nevada Test and Training Range (NTTR) in support of an Environmental Assessment for the placement of new target complexes and associated military training. The NTTR covers approximately 3 million acres in Clark, Lincoln and Nye counties in southern Nevada (Figure 1-1). A total of 20 sites were surveyed in the Limestone Ridge/Juniper Pass/Belted Range area, east of the Kawich Valley, and near Saucer Mesa (Figure 1-2). Ten sites were located on ridges, side slopes, and drainages adjacent to existing roads located on the east side of Limestone Ridge and are referred to as the Limestone Ridge sites. An additional nine sites located along 2-track roads in the hills adjacent to Saucer Mesa were surveyed. A single linear site, designated the Cliff Springs site, located in the western foothills of the Belted Range approximately 1 mile north of Cliff Springs was also surveyed. All of the sites were located in the northwestern portion of the NTTR.

2.0 METHODS

Prior to conducting field surveys, Federal and state rare, protected, and sensitive species lists were gathered for Nye County, Nevada (Appendix A). These lists were reviewed for those species that could potentially occur in the project area or for which suitable habitat was present. Other relevant resources such as the Nellis Integrated Natural Resources Management Plan were also reviewed.

Surveys along line transects at each of the 20 sites were conducted by Howard Nass, Joanna Cezniak, Michael Hodson, and Eric Webb of Gulf South Research Corporation from 2 September 2006 through 4 September 2006. These survey personnel were accompanied by a team of four archaeologists, a Native American monitor, and a security escort. Plant species were classified on their rate of occurrence as dominant, common, scattered, and rare. Any wildlife species or evidence of wildlife occurrence was noted. Ephemeral drainages were also noted.

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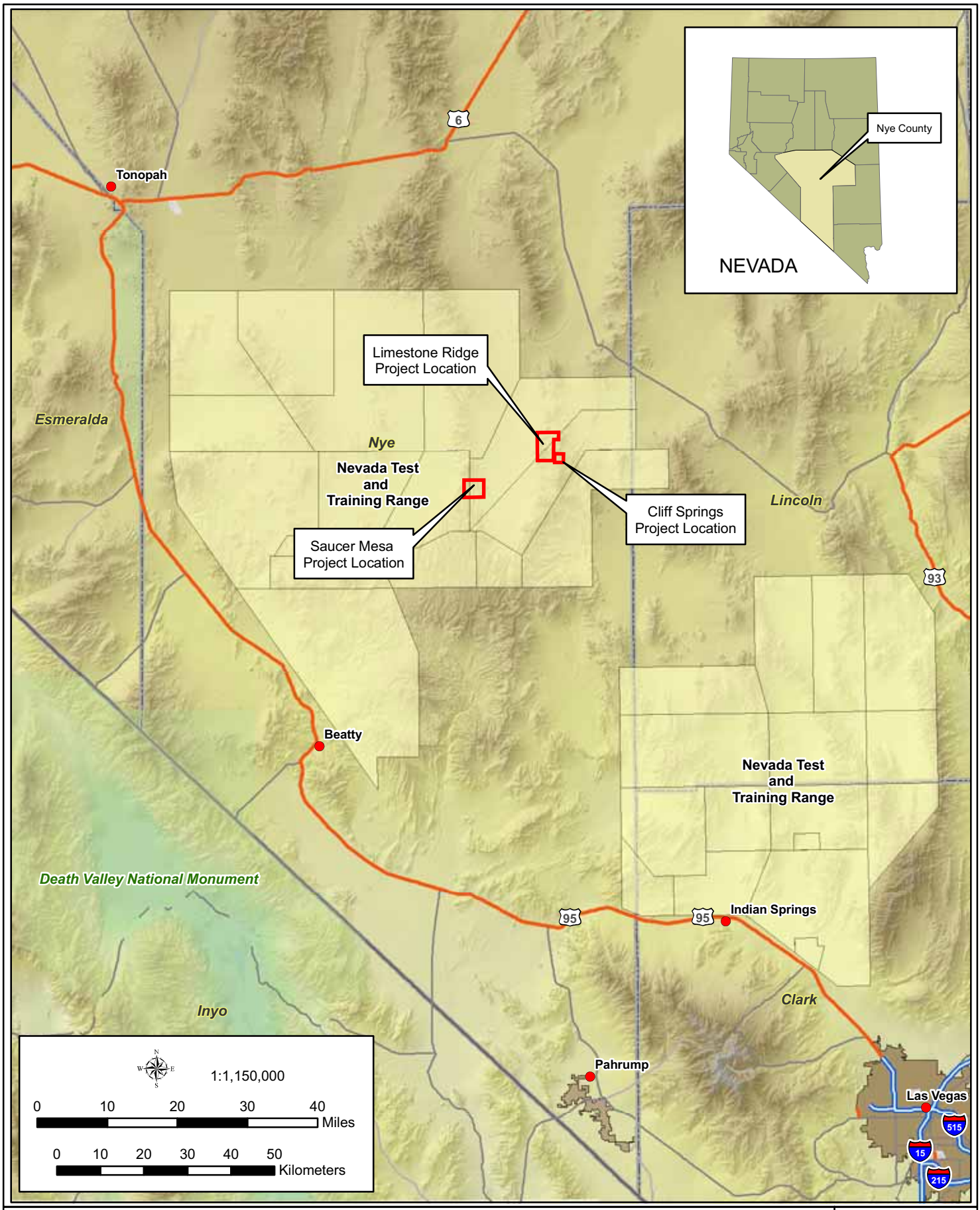

Figure 1-1: Vicinity Map

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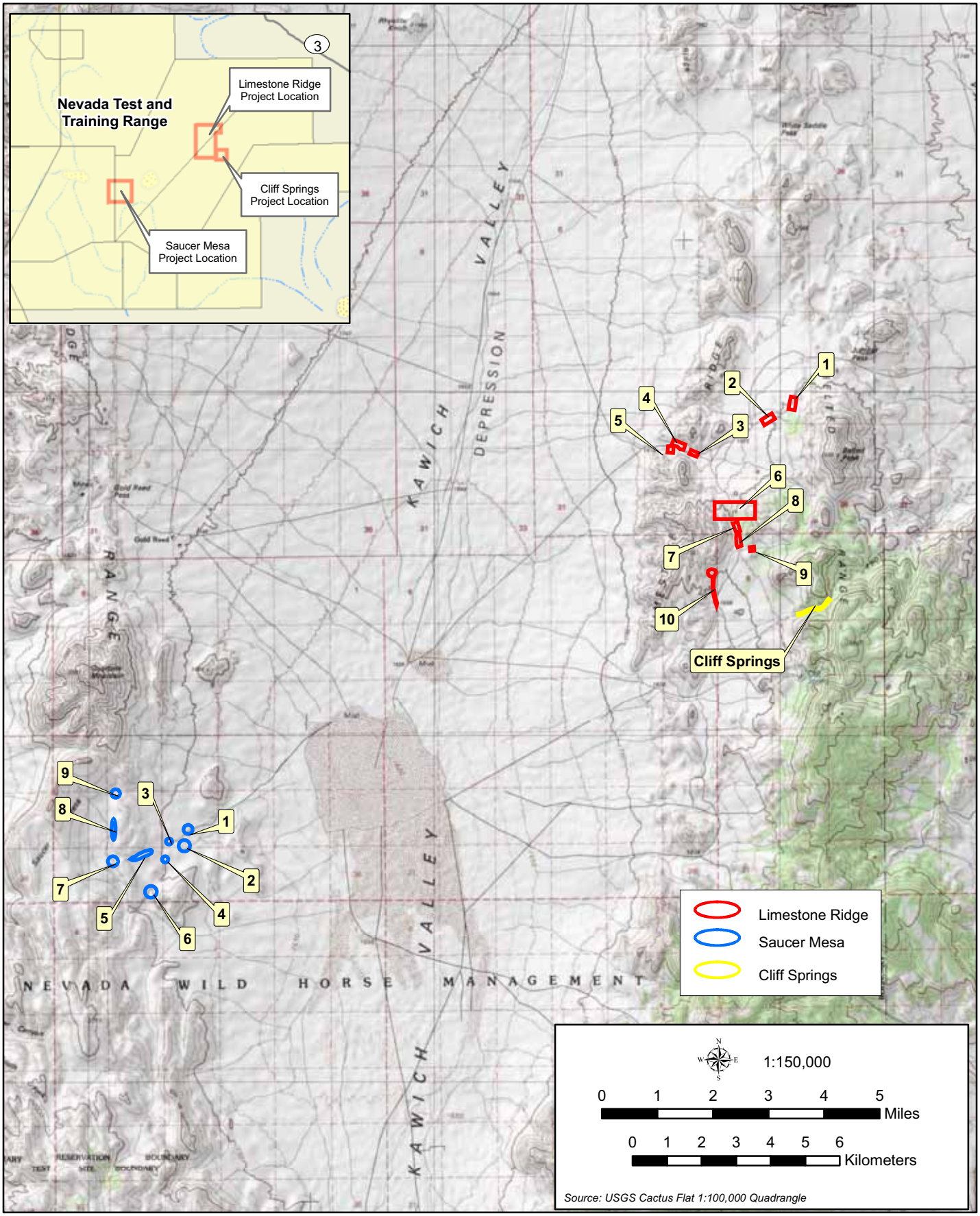

Figure 1-2: Proposed Action Locations

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3.0 BIOLOGICAL RESOURCES OVERVIEW

The NTTR is located in the Great Basin Desert. This desert is located between the Sierra Nevada and Cascade Mountains to the west and Rocky Mountains to the east (National Parks Service 2006). The Great Basin is the northernmost desert in North America and consists of a series of high altitude basins and mountains (Mac *et al.* 1998). It is considered a cold desert, receiving most of its precipitation as snow because of the high altitude.

3.1 Vegetation

The three dominant Great Basin Desert vegetation communities observed at the surveys sites were the shadscale community in more arid areas, the sagebrush-grass community in the lower basin valleys, and the juniper-pinon community at higher mountainous elevations (Mac *et al.* 1998). There is often a gradual transition between these zones where the vegetation from any of these communities is present (Mac *et al.* 1998).

3.1.1 Shadscale Community

The shadscale community (Photograph 1) is dominated by shadscale (*Atriplex confertifolia*) and occurs in arid climates. Other drought tolerant plants, such as white sage (*Krascheninnikovia lanata*), and greasewood (*Sarcobatus vermiculatus*) are common associates in this community (Utah State University 2002). This vegetation community is often present on saline soils associated with ancient lake beds (Mac *et al.* 1998).

Photograph 1. Shadscale Community at NTTR.

3.1.2 Sagebrush-Grass Community

Photograph 2. Sagebrush- grass Coummunity at NTTR.

The sagebrush-grass community is primarily dominated by big sagebrush (*Artemisia tridentata*), but other sagebrush species, such as black sagebrush (*Artemisia nova*) can be dominant (Photograph 2). This community is often located in areas with greater precipitation and a variety of grasses, shrubs, and forbs are normally present. Often invasive species, such as broomrape (*Orobanche* sp.) and brome grasses (*Andropogon* sp.) are found in this vegetation community.

3.1.3 Juniper-Pinon Woodland Community

The juniper-pinon woodland community (Photograph 3) is dominated by Utah juniper (*Juniperus osteosperma*) and singleleaf pinon (*Pinus monophylla*) at the higher elevations and rocky soils found within mountain ranges (Mac *et al.* 1998).

Photograph 3. Juniper-Pinon Woodland Community at NTTR.

3.2 Wildlife

Wildlife of the Great Basin Desert is characterized by a diverse assemblage of mammalian, avian, and reptilian species while having relative rare animal groups such as amphibians and fishes.

3.2.1 Mammals

Large mammals present in the Great Basin desert include the desert mule deer (*Odocoileus hemionus*), mountain lion (*Felis concolor*), desert bighorn sheep (*Ovis canadensis nelsoni*), and American pronghorn (*Antilocapra americana*) (NPS 2006). Additionally, smaller mammals such as coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*), desert kit fox (*Vulpes macrotis*), desert cottontail (*Sylvilagus audubonnii*), bobcat (*Felis rufus*), kangaroo rats (*Dipodomys* sp.), and packrats (*Neotoma* sp.) occur within the Great Basin Desert and on the NTTR. Wild horses (*Equus caballus*), a non-native species, are also found on the NTTR.

3.2.2 Fish, Reptiles and Amphibians

Due to a lack of suitable aquatic habitats located on the NTTR, fish populations do not occur and amphibians are rare. The most common amphibian found in the NTTR is the Great Basin spade-foot toad (*Scaphiopus intermountaus*). Reptiles common in the Great Basin Desert include the side-blotched lizard (*Uta sansburiana*), sagebrush lizard (*Sceloporus graciosus*), leopard lizard (*Gambelia wisilenii*), Great Basin rattlesnake (*Crotalus viridis luteosus*), and zebra-tailed lizard (*Callisaurus draconoides*).

3.2.3 Birds

A diversity of bird species can be found on the NTTR because of the variety of vegetation communities found there. Bird species associated with the sagebrush communities include sage thrasher (*Oreoscoptes montanus*), sage sparrow (*Amphispiza belli*), and horned lark (*Eremophila alpestris*). The juniper–pinon woodland community supports pinon jay

(*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus ridgwayi*), Townsend's solitare (*Myadestes townsendi*), and black-throated gray warblers (*Dendroica nigrescens*). Common avian species throughout the NTTR include house finches (*Carpodacus mexicanus*) and red-tailed hawks (*Buteo jamaicensis*).

3.3 Federally Protected Species

The Endangered Species Act (ESA) was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All Federal agencies are required to implement protection programs for designated species and to use their authorities to further the purposes of the ESA. Responsibility for the identification of a threatened or endangered species and development of any potential recovery plan lies with the Secretary of the Interior and the Secretary of Commerce.

The U.S. Fish and Wildlife Service (USFWS) is the primary agency responsible for implementing the ESA, and responsible for birds and other terrestrial and freshwater species. The USFWS's responsibilities under the ESA include: (1) identification of threatened and endangered species; (2) identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to the Secretary of the Interior for official listing as threatened or endangered. Species may be considered endangered or threatened when any of the five following criteria occurs: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affect continued existence. In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which the USFWS has sufficient information to support proposals to list as endangered or

threatened under the ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

According to the USFWS, there are 15 Federally threatened or endangered species known to occur within Nye County, Nevada (USFWS 2005; Appendix A). Table 1 lists these species, their habitat, and the potential for the species to occur within the project sites.

Table 1. Federally Listed Species Within Nye County, Nevada

Common/Scientific Name	Federal Status	Habitat	Potential to occur within Project Area
BIRDS			
Southwestern willow flycatcher *Empidonax traillii extimus*	Endangered	Thickets, scrubby and brushy areas, open second growth, and riparian woodland. Limited in Nevada to the southern tip of the state, along the Colorado River and its tributaries.	**No** – Project area not located near the Colorado River. Also, no riparian habitats in project area.
Bald eagle *Haliaeetus leucocephalus*	Threatened Proposed for delisting	Few scattered breeding occurrences in northern Nevada, winters in low numbers across state. Winter night roosts can be found from 5,000 to 9,000 ft. Winter roost sites vary in their proximity to food resources.	**No** – Low probability due to lack of food resources.
REPTILES AND AMPHIBIANS			
Desert tortoise (Mojave population) *Gopherus agassizii*	Threatened	Occurrences typically are between 1,000-4,000 ft elevations. Requires firm, but not hard, ground for construction of burrows in banks of washes or compacted sand.	**No** – Known populations occur south of project area in Mojave Desert habitat.
Columbia spotted frog (Great Basin Distinct Population Segment) *Rana luteiventris*	Candidate	Usually occurs at the grass or sedge-covered margins of streams, lakes, ponds, springs, and marshes.	**No** – Known isolated populations occur in northwestern Nye County.
FISHES			
Railroad Valley springfish *Crenichthys nevadae*	Threatened	Springs and springbrooks. Endemic to thermal springs and outflows in Railroad Valley, Nye County, Nevada.	**No** – Project area is south of Railroad Valley.
Devils Hole pupfish *Cyprinodon diabolis*	Endangered	Endemic to a deep limestone pools occurring only in Devil's Hole, Ash Meadows area, Death Valley National Park, Nevada.	**No** – Project area located northeast of Death Valley National Park.

Table 1, continued

Ash Meadows Amargosa pupfish *Cyprinodon nevadensis mionectes*	Endangered	Springs and associated springbrooks, outflow stream systems and terminal marshes within Ash Meadows National Wildlife Refuge, Nye County, Nevada.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
Warm Springs pupfish *Cyprinodon nevadensis pectoralis*	Endangered	Habitats are small with source pools within a complex of seven small thermal springs within Ash Meadows National Wildlife Refuge, Nye County Nevada.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
White River spinedace *Lepidomeda albivallis*	Endangered	Occurs in cool, clear springs and their outflow systems, over sand and gravel substrate. Presently occurs only within a single spring and outflow system at Kirch Wildlife Management Area, Nye County, Nevada.	**No** – Project area located southwest of Kirch Wildlife Management Area.
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*	Threatened	Lakes and streams; requires cool, well-oxygenated water. In streams, uses rocky areas, riffles, deep pools, and areas under logs and overhanging banks.	**No** – Suitable habitat does not occur within the project area.
Ash Meadows speckled dace *Rhinichthys osculus nevadensis*	Endangered	Springs and associated springbrooks, outflow stream systems and terminal marshes within Ash Meadows National Wildlife Refuge, Nye County, Nevada.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
INVERTEBRATES			
Ash Meadows naucorid *Ambrysus amargosus*	Threatened	Flowing water in Rocks Springs in east-central Ash Meadows.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
PLANTS			
Ash Meadows milkvetch *Astragalus phoenix*	Threatened	Dry, hard, seasonally moist, white, barren flats, washes, and knolls of calcareous alkaline soils. Endemic to the Ash Meadows area.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
Spring-loving centaury *Centaurium namophilum*	Threatened	Open, moist to wet, alkali-crusted clay soils of seeps, springs, outflow drainages, meadows, and hummocks. Endemic to the Ash Meadows area.	**No** – Project area located north of Ash Meadows National Wildlife Refuge

Table 1, continued

Ash Meadows sunray *Enceliopsis nudicaulis* var. *corrugata*	Threatened	Dry to somewhat moist, open, hard, whitish, strongly alkaline silty to clay soils, often on or near low calcareous outcrops, in spring and seep areas in the creosote-bursage and shadscale zones. Endemic to the Ash Meadows area, with a few intermediate populations found beyond.	**No** – Project area located north of Ash Meadows National Wildlife Refuge; project area not located near any springs or seeps.
Ash Meadows gumplant *Grindelia fraxinopratensis*	Threatened	Open, flat, whitish, strongly alkaline, moist and hard to sometimes dry and powdery clay soils in or bordering meadows and shallow drainages near springs and seeps, sometimes in disturbed areas and somewhat weedy, in the creosote-bursage and shadscale zones in ash-mesquite woodlands, shadscale scrub, or saltgrass meadows. Endemic to the Ash Meadows area.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
Ash Meadows ivesia (mousetail) *Ivesia eremica* (= *I. kingii* var. *eremica*)	Threatened	Open, moist to saturated, whitish, heavy to chalky alkaline clay soils in meadows on flats, drainages, and bluffs near springs and seeps, in saltgrass meadow, shadscale, and ash-mesquite vegetation. Endemic to the Ash Meadows area.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
Ash Meadows blazing star *Mentzelia leucophylla*	Threatened	Open, generally dry, hard, salt-crusted alkaline clay or sandy-clay soils on low bluffs, swales, flats, and drainages in shadscale vegetation surrounding spring and seep areas. Endemic to the Ash Meadows area.	**No** – Project area located north of Ash Meadows National Wildlife Refuge
Amargosa niterwort *Nitrophila mohavensis*	Endangered	Open, moist, heavily alkaline and salt-crusted, otherwise nearly barren clay flats in low drainage and seepage areas surrounded by shadscale and saltgrass vegetation. Aquatic or wetland-dependent in Nevada. Known only from the Carson Slough - Ash Meadows area.	**No** – Project area located north of Ash Meadows National Wildlife Refuge

Source: Nevada Department of Wildlife (NDOW) 2005, USFWS 2005

Seven species of fish, seven species of plants, one invertebrate and one amphibian are aquatic-specific species and their known habitat occurs outside of the NTTR. Additionally, the Federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*) is normally associated

with riparian habitats which are absent in the project area. The bald eagle (*Haliaeetus leucocephalus*) has the potential to winter within the NTTR, but lacks suitable food sources, as there is no perennial water bodies present on the NTTR. The desert tortoise (*Gopherus agassizii*) is known to occur within the Mojave Desert in the southern portion of the NTTR, south of the project area.

3.4 State Protected Species

The Nevada Department of Conservation and Natural Resources (DCNR) maintains the Natural Heritage Program. This program lists endangered, threatened, rare, and sensitive species in Nevada. This list includes flora and fauna whose occurrence in Nevada is or may be in jeopardy, or with known or perceived threats or population declines. Approximately 80 species of plants are considered at-risk and an additional 30 plant species are on the watch-list for Nye County. Twenty-three invertebrates, 20 fish species, two amphibians, two reptiles, 10 mammals, and 15 bird species are at-risk in Nye County. An additional three invertebrates and 41 vertebrate species are on the watch list (Appendix B). Many of these species are protected by Nevada State laws; Nevada Administrative Code [NAC] 503 outlines wildlife species that are protected, and Nevada Revised Statutes [NRS] 527 summarizes the native flora protected in Nevada.

Although suitable habitat is present in the project area for a number of the state-listed plant and animal species, none of these species were observed during site surveys and the likelihood that any of these species are present at the project sites is low. Additionally, no habitat is present within the project area for any fully-protected state species known to occur in Nye County.

4.0 SURVEY RESULTS

The description of the results of the surveys for all 20 sites follows. The descriptions are provided in subsections describing the Limestone Ridge sites, the Saucer Mesa sites, and the Cliff Springs site.

4.1 Limestone Ridge

The following is a description of the survey results for the 10 Limestone Ridge target complex sites. The location of each site is shown on Figure 1-2.

4.1.1 Limestone Ridge #1

The Limestone Ridge #1 site is the northernmost site surveyed. The site is a rectangular site, approximately 1,200 feet by 570 feet. The approximately 16-acre site is located immediately adjacent to Juniper Pass Road. Limestone Ridge #1 is dominated by sagebrush with juniper-pinon woodland along the higher slopes. Ricegrass (*Oryzopsis hymenoides*), and black sage were the dominant species observed during these surveys with shadscale also commonly occurring. Evidence of wild horses was observed.

4.1.2 Limestone Ridge #2

The Limestone Ridge #2 site is located west of Limestone Ridge #1 along Juniper Pass Road. The site is approximately 1,200 feet by 610 feet and encompasses approximately 17 acres. Limestone Ridge #2 is dominated by big sagebrush; rubber rabbitbrush (*Ericameria nauseosa*) and Mormon tea (*Ephedra viridis*) were also commonly observed during the surveys. Juniper and pinon were observed on the southern slopes. Rice grass, desert cabbage (*Kalanchoe thyrsiflora*), and agave (*Agave americana*) were also observed on the slopes. A desert cottontail and a black-tailed jackrabbit were observed during the surveys.

4.1.3 Limestone Ridge #3

The Limestone Ridge #3 site is a small rectangular area, 700 feet by 400 feet (approximately 7 acres), located between two hills. A natural draw was created in this area by run-off from these hills. Mormon tea, and cliff rose (*Purshia Mexicana*) are dominant along the draw and black sage is common on the remainder of the site. An unidentified lizard was observed during surveys.

4.1.4 Limestone Ridge #4

The Limestone Ridge #4 site is located in the same draw as Limestone Ridge #3. The site is 1,250 feet by 520 feet and encompasses approximately 15 acres. Mormon tea and cliff rose were observed to be the most dominant species. Ricegrass, shadscale, sagebrush, and rubber rabbitbrush were also commonly observed throughout the site.

4.1.5 Limestone Ridge #5

The Limestone Ridge #5 site is also located along the same draw as sites Limestone Ridge #3 and Limestone Ridge #4, but at a slightly higher elevation. Limestone Ridge #5 is 1,000 feet by

340 feet with a total area of approximately 8 acres. The sagebrush-grass community, with white sage (*Krascheninnikovia lanata*), is dominant. Ricegrass, Mormon tea, and cliff rose were also commonly observed. Small burrows were noted (Photograph 4) during the surveys. It is unknown what created the burrows; however, kit fox (*Vulpes velos*) or yellow-bellied marmots (*Marmota flaviventris*) are common burrowing species in the Great Basin Desert ecosystem and could have generated the observed burrows.

Photograph 4. Burrow observed at Limestone Ridge Site #5.

4.1.6 Limestone Ridge #6

The Limestone Ridge #6 site is 3,850 feet by 1,600 feet, totaling approximately 142 acres. Limestone Ridge #6 has rolling topography, due to the higher elevation. The Limestone Ridge #6 site is predominantly a sagebrush-grass vegetation community with a transition to the juniper-pinon woodland community on the slopes. Big sagebrush and ricegrass were commonly observed during surveys. The site is sparsely vegetated, with most of the vegetation such as white sage, and cliff rose limited to the wash.

4.1.7 Limestone Ridge #7

The Limestone Ridge #7 site is located directly south of Limestone Ridge #6 and is mostly a ridge and wash complex. The Limestone Ridge #7 is 910 feet by 450 feet and encompasses approximately 10 acres. The dominant vegetation community is juniper-pinon woodland. Cliff rose and Mormon tea were commonly observed in the wash.

4.1.8 Limestone Ridge #8

The Limestone Ridge #8 site is located southeast of Limestone Ridge #7 along the same wash. Limestone Ridge #8 is 1,200 feet by 400 feet and covers approximately 12 acres. The sagebrush-grass community is common in the lower portion of the site, with juniper-pinon woodland transitioning up the side slopes. Unidentified species' burrows were observed during surveys.

4.1.9 Limestone Ridge #9

The Limestone Ridge #9 site is located along a draw and narrow road. The approximately 4 acre site is the smallest of the sites surveyed, measuring 400 feet by 400 feet. The juniper-pinon woodland dominates the steep slopes on this site, and cliff rose, Mormon tea, and broom rape were commonly observed along the banks of the wash. Evidence of packrats was observed, as were a black-tailed jackrabbit and an unidentified lizard.

4.1.10 Limestone Ridge #10

The Limestone Ridge #10 site is the southernmost area surveyed and is approximately 13 acres in size. Limestone Ridge #10 is irregularly shaped and located along a wash and a bowl-shaped area drained by the wash. Pinon pine, Mormon tea, cliff rose, and big sagebrush are common throughout.

4.2 Saucer Mesa

The following is a description of the survey results for the Saucer Mesa target complex sites. The location of each site is shown on Figure 1-2.

4.2.1 Saucer Mesa #1

The Saucer Mesa #1 site is a circular site with a 425-foot radius, encompassing approximately 13 acres. The access road to the site intersects a wash within the southern portion of the site. The wash appears to be created from run-off from the road. The site is dominated by shadscale and invasive brome grass (*Bromus* sp.). Cholla cacti (*Opuntia* sp.), Mormon tea, and *Mammillaria* cacti are also scattered throughout the site. Several unidentified lizards were observed at this site during the surveys.

4.2.2 Saucer Mesa #2

The Saucer Mesa #2 site is a circular site with a 510-foot radius, encompassing approximately 21 acres. The eastern portion of the site sloped uphill and a wash with well defined banks and channel bed was present along the northern portion of the site. Fluffgrass (*Dasyochloa pulchella*) and Mormon tea are the dominant plant species. Sagebrush, ricegrass, and saltbush (*Atriplex* sp.) are common. Desert horned lizard (*Phyrnosoma platyhinos*) was observed during the surveys.

4.2.3 Sauces Mesa #3

The Saucer Mesa #3 site is a circular site with a 300- foot radius, encompassing approximately 6 acres. The site ran parallel to the access road and a 10 foot wide wash with a well defined channel bed intersected the site trending east-west. Mormon tea, brome grass, and shadscale are the dominant plant species on this site. Desert horned lizard and an unidentified lizard were observed during the surveys.

4.2.4 Saucer Mesa #4

The Saucer Mesa #4 site is a circular site with a 300-foot radius, encompassing approximately 7 acres. A wash with well defined channel bed and banks intersects the site. Brome grass is the dominant vegetation. Big sagebrush, fluffgrass, and Mormon tea are also common species observed at the site.

4.2.5 Saucer Mesa #5

The Saucer Mesa #5 site is an oblong site, 2,000 feet long by 200 feet wide. The site is approximately 20 acres. The site is located on both sides of a 2-track road. Mormon tea and sagebrush are dominant species, and fluffgrass, white sage, and London rocket (*Sisymbrium irio*) are common. A desert horned lizard was observed. Evidence of wild horses and pronghorn or bighorn sheep were also present.

4.2.6 Saucer Mesa #6

The Saucer Mesa #6 site is a circular site with a 510-foot radius, encompassing approximately 23 acres. A wash trending north-south intersected the eastern portion of the site. Sagebrush, brome grass and Mormon tea are the dominant plant species. London rocket and cholla were also observed scattered throughout the Saucer Mesa #6 site during field surveys.

4.2.7 Saucer Mesa #7

The Saucer Mesa #7 site is a circular site with a 510-foot radius, encompassing approximately 17 acres. Two washes trending north-south intersected the site. Sagebrush, brome grass and Mormon tea are the dominant vegetation Saucer Mesa #7.

4.2.8 Saucer Mesa #8

The Saucer Mesa #8 site is an oblong site that is approximately 13 acres in size. Saucer Mesa #8 is located on a hill between Saucer Mesa #7 and Saucer Mesa #9. Sagebush, Mormon tea

and brome grass are the dominant plant species. Shadscale, ricegrass, and fluffgrass are also common throughout the site. Various cacti species (*e.g.*, *Opuntia* sp.) were also observed during surveys but were not common.

4.2.9 Saucer Mesa #9

The Saucer Mesa #9 site is a circular site with a 510-foot radius, encompassing approximately 12 acres. A wash trending south from the northern portion of the site divides into two washes mid-way through the site. Mormon tea, brome grass, and white sage are the dominant vegetation. Evidence of packrats was observed in the rock outcrops in the northern portion of the site.

4.3 Cliff Springs

The Cliff Springs site is a long, linear site that follows a road that traverses the Belted Range (see Figure 1-2). The site is approximately 3,500 feet in length and 180 feet wide. The total area of the Cliff Springs site is approximately 15 acres. The existing road that is the centerline of the site is an overgrown two-track road located in an ephemeral wash. The Cliff Springs site is dominated by a juniper-pinon woodland community. A scattered understory of rubber rabbitbrush (*Ericameria nauseosa*), Mormon tea (*Ephedra viridis*), and prickly pear cactus (*Opuntia* sp.) were observed during the survey. Pinon jay, juniper titmouse, red-tailed hawk, common raven (*Corvus corax*), mountain chickadee (*Poecile gambeli*), turkey vulture (*Cathartes aura*), rock wren (*Salpinctes obsoletus*), an unidentified lizard, and evidence of desert cottontail (*Sylvilagus audubonii*) were observed during the surveys.

5.0 CONCLUSION

All 20 sites surveyed had locally common vegetation. All of the species observed during the surveys are abundant on the NTTR and are also regionally common within the Great Basin Desert. Unique or sensitive plant species were not observed during field surveys. Use of these sites for a target complex would not substantially alter the local plant community composition or adversely impact wildlife communities or the habitats that support them.

There is the potential for the loss of some small mammals and reptiles from the use of these sites for military training operations. Although little is known of the distribution and abundance of animal species on the NTTR, the NTTR is comprised of over 3 million acres, and the total

area of these 20 sites (approximately 391 acres) represents a small portion of the available wildlife habitat. The loss of a few individuals of a species from the placement of a target complex and use of the targets would not impair the viability of any given species. Birds and larger mammals that could potentially be disturbed by military operations have the potential to flee the area and populate similar habitat locally.

Pinon Jay and juniper titmouse were observed at the Cliff Spring site. These are species on the Nevada watch-list. These species have the potential to become Nevada at-risk species. However, the juniper-pinon habitat these birds use is abundant locally. Individuals of these species would be avoided by conducting nesting surveys for migratory bird species prior to construction, if targets were constructed during the nesting season (March – September).

Numerous washes are present in the proposed target sites at Saucer Mesa and Limestone Ridge. However, these drainages are isolated from interstate or navigable waters. Therefore they are not jurisdictional Waters of the U.S.

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APPENDIX A
FEDERAL SPECIES LIST

U.S. FISH AND WILDLIFE SERVICE
NEVADA FISH AND WILDLIFE OFFICE

NEVADA'S ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES BY COUNTY
(Updated March 7, 2005)

CARSON CITY RURAL AREA

Bird		
T	Bald eagle ♦	*Haliaeetus leucocephalus*
Amphibian		
C	Mountain yellow-legged frog (Sierra Nevada Distinct Population Segment)	*Rana muscosa*
Fish		
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*
Invertebrate		
E	Carson wandering skipper	*Pseudocopaeodes eunus obscurus*
Plant		
C	Tahoe yellowcress	*Rorippa subumbellata*

CHURCHILL COUNTY

Birds		
C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*
Fish		
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

CLARK COUNTY

Birds		
C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
E	Southwestern willow flycatcher	*Empidonax traillii extimus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*
E	Yuma clapper rail	*Rallus longirostris yumanensis*
Reptile		
T	Desert tortoise (Mojave population) ●	*Gopherus agassizii*
Amphibian		
C	Relict leopard frog	*Rana onca*
Fishes		
E	Devil's Hole pupfish	*Cyprinodon diabolis*
E	Pahrump poolfish	*Empetrichthys latos*
E	Humpback chub *	*Gila cypha*
E	Bonytail chub ●	*Gila elegans*
E	Virgin River chub + ●	*Gila seminuda*
E	Moapa dace	*Moapa coriacea*
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*
E	Woundfin ●	*Plagopterus argentissimus*
E	Colorado pikeminnow *	*Ptychocheilus lucius*
E	Razorback sucker ●	*Xyrauchen texanus*

E = Endangered T = Threatened C = Candidate ♦ = Proposed for delisting ● = Designated Critical Habitat in County
* = Believed extirpated from Nevada + = Endangered only in the Virgin River, Muddy River population is a sensitive species.

U.S. FISH AND WILDLIFE SERVICE
NEVADA FISH AND WILDLIFE OFFICE

NEVADA'S ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES BY COUNTY
(Updated March 7, 2005)

DOUGLAS COUNTY

Bird

T	Bald eagle ♦	*Haliaeetus leucocephalus*

Amphibian

C	Mountain yellow-legged frog (Sierra Nevada Distinct Population Segment)	*Rana muscosa*

Fish

T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

Plants

C	Webber ivesia	*Ivesia webberi*
C	Tahoe yellowcress	*Rorippa subumbellata*

ELKO COUNTY

Birds

C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*

Amphibian

C	Columbia spotted frog (Great Basin Distinct Population Segment)	*Rana luteiventris*

Fishes

T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*
E	Independence Valley speckled dace	*Rhinichthys osculus lethoporus*
E	Clover Valley speckled dace	*Rhinichthys osculus oligoporus*
T	Bull trout (Jarbridge River Distinct Population Segment)	*Salvelinus confluentus*

ESMERALDA COUNTY

Bird

T	Bald eagle ♦	*Haliaeetus leucocephalus*

Reptile

T	Desert tortoise (Mojave population) ●	*Gopherus agassizii*

EUREKA COUNTY

Birds

C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*

Amphibian

C	Columbia spotted frog (Great Basin Distinct Population Segment)	*Rana luteiventris*

Fish

T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

E = Endangered T = Threatened C = Candidate ♦ = Proposed for delisting ● = Designated Critical Habitat in County
* = Believed extirpated from Nevada + = Endangered only in the Virgin River, Muddy River population is a sensitive species.

U.S. FISH AND WILDLIFE SERVICE
NEVADA FISH AND WILDLIFE OFFICE

NEVADA'S ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES BY COUNTY
(Updated March 7, 2005)

HUMBOLDT COUNTY

Birds

C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*

Fishes

T	Desert dace ●	*Eremichthys acros*
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

Invertebrate

C	Elongate mud meadows pyrg	*Pyrugulopsis notidicola*

Plant

C	Soldier Meadow cinquefoil	*Potentilla basaltica*

LANDER COUNTY

Bird

T	Bald eagle ♦	*Haliaeetus leucocephalus*

Fish

T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

LINCOLN COUNTY

Birds

C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
E	Southwestern willow flycatcher	*Empidonax traillii extimus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*

Reptile

T	Desert tortoise (Mojave population) ●	*Gopherus agassizii*

Fishes

E	White River springfish ●	*Crenichthys baileyi baileyi*
E	Hiko White River springfish ●	*Crenichthys baileyi grandis*
E	Pahranagat roundtail chub	*Gila robusta jordani*
T	Big Spring spinedace ●	*Lepidomeda mollispinis pratensis*

Plant

T	Ute lady's tresses *	*Spiranthes diluvialis*

LYON COUNTY

Birds

C	Yellow-billed cuckoo (Western U.S. Distinct Population Segment)	*Coccyzus americanus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*

Fish

T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

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NEVADA'S ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES BY COUNTY
(Updated March 7, 2005)

Plant

C	Churchill Narrows buckwheat	*Eriogonum diatomaceum*

MINERAL COUNTY

Bird

T	Bald eagle ♦	*Haliaeetus leucocephalus*

Fishes

E	Hiko White River springfish	*Crenichthys baileyi grandis*
T	Railroad Valley springfish	*Crenichthys nevadae*
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

NYE COUNTY

Birds

E	Southwestern willow flycatcher	*Empidonax traillii extimus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*

Reptile

T	Desert tortoise (Mojave population) ●	*Gopherus agassizii*

Amphibian

C	Columbia spotted frog (Great Basin Distinct Population Segment)	*Rana luteiventris*

Fishes

T	Railroad Valley springfish ●	*Crenichthys nevadae*
E	Devils Hole pupfish	*Cyprinodon diabolis*
E	Ash Meadows Amargosa pupfish ●	*Cyprinodon nevadensis mionectes*
E	Warm Springs pupfish	*Cyprinodon nevadensis pectoralis*
E	White River spinedace ●	*Lepidomeda albivallis*
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*
E	Ash Meadows speckled dace ●	*Rhinichthys osculus nevadensis*

Invertebrate

T	Ash Meadows naucorid ●	*Ambrysus amargosus*

Plants

T	Ash Meadows milkvetch ●	*Astragalus phoenix*
T	Spring-loving centaury ●	*Centaurium namophilum*
T	Ash Meadows sunray ●	*Enceliopsis nudicaulis* var. *corrugata*
T	Ash Meadows gumplant ●	*Grindelia fraxinopratensis*
T	Ash Meadows ivesia (mousetail) ●	*Ivesia eremica* (= *I. kingii* var. *eremica*)
T	Ash Meadows blazing star ●	*Mentzelia leucophylla*
E	Amargosa niterwort	*Nitrophila mohavensis*

PERSHING COUNTY

Bird

T	Bald eagle ♦	*Haliaeetus leucocephalus*

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U.S. FISH AND WILDLIFE SERVICE
NEVADA FISH AND WILDLIFE OFFICE

NEVADA'S ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES BY COUNTY
(Updated March 7, 2005)

STOREY COUNTY

Bird

T	Bald eagle ♦	*Haliaeetus leucocephalus*

Fishes

E	Cui-ui	*Chasmistes cujus*
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

WASHOE COUNTY

Birds

C	Yellow-billed cuckoo (Sierra Nevada DPS)	*Coccyzus americanus*
T	Bald eagle ♦	*Haliaeetus leucocephalus*

Amphibian

C	Mountain yellow-legged frog (Sierra Nevada Distinct Population Segment)	*Rana muscosa*

Fishes

T	Warner sucker	*Catostomus warnerensis*
E	Cui-ui	*Chasmistes cujus*
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

Invertebrate

E	Carson wandering skipper	*Pseudocopaeodes eunus obscurus*

Plants

E	Steamboat buckwheat	*Eriogonum ovalifolium* var. *williamsiae*
C	Webber ivesia	*Ivesia webberi*
C	Tahoe yellowcress	*Rorippa subumbellata*

WHITE PINE COUNTY

Bird

T	Bald eagle ♦	*Haliaeetus leucocephalus*

Fishes

E	Pahrump poolfish	*Empetrichthys latos*
E	White River spinedace	*Lepidomeda albivallis*

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APPENDIX B
STATE SPECIES LIST

State of Nevada
Department of Conservation & Natural Resources
Natural Heritage Program

901 South Stewart Street, suite 5002 • Carson City, Nevada 89701-5245, U.S.A.
tel: (775) 684-2900 • fax: (775) 684-2715 • http://heritage.nv.gov

NYE COUNTY RARE SPECIES LIST

(18 March 2004)

As of the date above, this list provides information for the 270 Nye County plants and animals included on the Nevada At-risk Animal and At-risk Plant and Lichen tracking lists and on the Nevada Plant and Animal Watch List. These data reflect **only what was entered in our computer databases** as of the above date; additional information for some species may await processing in paper files, or may have been entered subsequently.

Information provided for each taxon in the columns below include the various agency status and rank designations, sand and wetland habitat indicators, and endemic status within Nevada. **A new Occurrence Status (OCC) column has been added to the left side of the list to show any special status within the county: ?=possible or predicted in the county but not yet confirmed, e=endemic in-state (known in Nevada only from this county), E=endemic (known worldwide only from this county), and I=only introduced or re-introduced occurrence(s) present in this county.**

More detailed state-wide information for these taxa is available in our Detailed Rare Plant and Lichen and Detailed Rare Animal lists, and in the **Nevada Rare Plant Atlas**, which provides comprehensive information on **habitat, life-history, description, threats, survey status, literature sources, and known locations** for most plant taxa. **Further information** may be available on-line for some taxa in other lists or reports, or as maps or images, and **general information** is available for nearly all taxa on the **NatureServe Explorer** web site.

Click on a column heading for an explanation of that column. You may need to **scroll horizontally** in your browser to see all columns. You may also jump to the at-risk taxa or the watch-list taxa.

OCC	RANKS	ESA	BLM	FS	TAXON NAME AND (VERNACULAR NAME)	NV	2N	HAB	END
					AT-RISK TAXA TRACKED				
					********** Plants - Bryophytes (moss allies)				
e	G2? S1				Entosthodon planoconvexus (planoconvex cordmoss)	W			
					********** Plants - Pteridophytes (fern allies)				
?	G3 S1?		xC2	n si	Botrychium crenulatum (dainty moonwort)	W		W	
					********** Plants - Flowering Dicots				
	G1G2 S1S2		xC2	s	Arabis ophira (Ophir rockcress)	W			Y

	G3	xC2	n	s	Arctomecon merriamii			W		
	S3				(white bearpoppy)					
?	T2?G5				Arenaria congesta var. charlestonensis			W		
	S2?				(Mount Charleston sandwort)					
	G2Q	xC2	n	s	Asclepias eastwoodiana			W		Y
	S2				(Eastwood milkweed)					
E	G2			s	Astragalus beatleyae			W		Y
	S2				(Beatley milkvetch)					
	T2QG5				Astragalus calycosus var. monophyllidius			W		
	S2				(one-leaflet Torrey milkvetch)					
	T2G2				Astragalus cimae var. cimae			W		
	S2				(Cima milkvetch)					
	G2	xC2	n		Astragalus eurylobus			W		
	S2				(Needle Mountains milkvetch)					
	G2	xC2	nc	s	Astragalus funereus			W		
	S2				(black woollypod)					
	T1G5	RA	s		Astragalus lentiginosus var. sesquimetralis	CE	T		W	
	S1				(Sodaville milkvetch)					
	T2T3G3	xC2	sc	s	Astragalus mohavensis var. hemigyrus	CE	E			Y
	S2S3				(halfring milkvetch)					
	G3				Astragalus nyensis			D		
	S3				(Nye milkvetch)					
	T2G4	RA	s	s	Astragalus oophorus var. clokeyanus			W		Y
	S2				(Clokey eggvetch)					
E	G2	LT	s		Astragalus phoenix	CE	T			Y
	S2				(Ash Meadows milkvetch)					
	G2Q		c	w	Astragalus pseudiodanthus			D	S	
	S2				(Tonopah milkvetch)					
E	G2		n	s	Astragalus toquimanus			W		Y
	S2				(Toquima milkvetch)					
e	G2	xC2	n	s	Astragalus uncialis			W		
	S1				(Currant milkvetch)					
e	T1T2G5				Atriplex argentea var. longitrichoma			W		
	S1				(Pahrump silverscale)					
	G3Q	xC2	n		Camissonia megalantha			W		Y
	S3				(Cane Spring suncup)					
E	G2Q	LT	s		Centaurium namophilum	CE	T		W	Y
	S2				(spring-loving centaury)					
	G2	xC2	nc		Cordylanthus tecopensis			T	w	
	S2				(Tecopa birdbeak)					
	G3	xC2	n		Cryptantha welshii			W		Y
	S3				(White River catseye)					
	G1	xC2	n	s	Cymopterus goodrichii			W		Y
	S1				(Goodrich biscuitroot)					
	T3QG3G4	xC2	nc		Cymopterus ripleyi var. saniculoides			W		
	S3				(sanicle biscuitroot)					
	G2	xC2		s	Draba arida			W		Y
	S2				(desert whitlowcress)					

E	T2G5 S2	LT	s		Enceliopsis nudicaulis var. corrugata (Ash Meadows sunray)	CE	T			P
	G2Q S2				Eriogonum beatleyae (Beatley buckwheat)		D			
	G2 S2	xC2	nc		Eriogonum bifurcatum (Pahrump Valley buckwheat)		T			
E	G2 S2				Eriogonum concinnum (Darin buckwheat)		W		s	Y
	T2G4 S2			s	Eriogonum esmeraldense var. toiyabense (Toiyabe buckwheat)		W			Y
	T2G5 S2		n	s	Eriogonum heermannii var. clokeyi (Clokey buckwheat)		W			Y
	G1 S1	xC2	s		Frasera gypsicola (Sunnyside green gentian)	CE	W			
E	G3 S3	xC2			Frasera pahutensis (Pahute green gentian)		W			Y
e	T2G4 S1	xC2	nc		Galium hilendiae ssp. kingstonense (Kingston Mountains bedstraw)		T			
	T2QG2G3 S2		n		Glossopetalon pungens var. pungens (rough dwarf greasebush)		W			Y
e	G2 S2	LT	s		Grindelia fraxinopratensis (Ash Meadows gumplant)	CE	T		W	
e	T2T3QG5 S2			w	Hulsea vestita ssp. inyoensis (Inyo hulsea)		W			
	T1G5 S1				Ipomopsis congesta var. nevadensis (Toiyabe gilia)		W			Y
	T1G3G4 S1		n		Ivesia arizonica var. saxosa (rock purpusia)		W			Y
E	T1T2G3 S1S2	LT	s		Ivesia kingii var. eremica (Ash Meadows mousetails)	CE	T		W	Y
	G2 S2	xC2	n	s	Jamesia tetrapetala (waxflower)		W			
e	G2 S2				Lathyrus hitchcockianus (Bullfrog Hills sweetpea)		W			
	G2? S2?				Lesquerella pendula (hanging bladderpod)		W			Y
E	G1 S1	xC2		s	Lewisia maguirei (Maguire bitterroot)		W			Y
	G3?Q S2		n		Lupinus holmgrenianus (Holmgren lupine)		D			
E	G1Q S1	LT	s		Mentzelia leucophylla (Ash Meadows blazingstar)	CE	T			Y
	G1G2 S1S2		n		Mentzelia tiehmii (Tiehm blazingstar)		W			Y
e	G1 S1	LE	s		Nitrophila mohavensis (Amargosa niterwort)	CE	E		W	
	G4 S2S3				Opuntia pulchella (sand cholla)	CY	D		S	
	G2	xC2	nc		Penstemon albomarginatus		T		S	

	S2				(white-margined beardtongue)					
	G2G3	xC2	n	s	Penstemon arenarius		W	S		Y
	S2S3				(Nevada dune beardtongue)					
	T3QG3	xC2	n	s	Penstemon bicolor ssp. roseus		W			
	S3				(rosy twotone beardtongue)					
	T3G4	xC2	nc	s	Penstemon fruticiformis ssp. amargosae		T			
	S2				(Death Valley beardtongue)					
	T2G3				Penstemon leiophyllus var. francisci-pennellii		W			
	S2				(Pennell beardtongue)					
	G3	xC2	n		Penstemon pahutensis		W			
	S3				(Pahute Mesa beardtongue)					
	T2?G4G5		n		Penstemon palmeri var. macranthus		W			Y
	S2?				(Lahontan beardtongue)					
E	G1	xC2	n		Penstemon pudicus		T			Y
	S1				(bashful beardtongue)					
	G3	xC2	n		Phacelia beatleyae		W			Y
	S3				(Beatley scorpionflower)					
	G2		n		Phacelia filiae		W			Y
	S2				(Clarke phacelia)					
e	G2G3		c	w	Phacelia mustelina		W			
	S2				(weasel phacelia)					
	G2G3	xC2	nc		Phacelia parishii		W	W		
	S2S3				(Parish phacelia)					
	G2Q		sc	i	Polyctenium williamsiae	CE	T	W		
	S2				(Williams combleaf)					
E	G1				Polygonaceae sp. (unnamed)					Y
	S1				(Lunar Crater buckwheat)					
	T2G4	xC2		s	Primula cusickiana var. nevadensis		W			Y
	S2				(Nevada primrose)					
e	G3				Salvia funerea		W			
	S1				(Death Valley sage)					
E	G1G2Q	xC2	n		Sclerocactus blainei	CY	W			P
	S1				(Blaine pincushion)					
	G1Q		n		Sclerocactus nyensis	CY	W			Y
	S1				(Tonopah pincushion)					
	G4			w	Sclerocactus polyancistrus	CY	D			
	S2S3				(hermit cactus)					
	G2	xC2	n	s	Silene nachlingerae		W			Y
	S2				(Nachlinger catchfly)					
	G2G3				Smelowskia holmgrenii		D			Y
	S2S3				(Holmgren smelowskia)					
E	T2G2		n	s	Sphaeralcea caespitosa var. williamsiae		W			Y
	S2				(Railroad Valley globemallow)					
	G2	xC2		s	Tonestus alpinus		W			Y
	S2				(alpine goldenhead)					
	T3G4	xC2	n	s	Townsendia jonesii var. tumulosa		W			Y
	S3				(Charleston grounddaisy)					
	T1G3	xC2	n	s	Trifolium andinum var. podocephalum		W			Y
	S1				(Currant Summit clover)					

	G2G3Q S2S3	xC2		s	Trifolium rollinsii (Rollins clover)	W		Y
	G1 S1	xC2	n	s	Viola lithion (rock violet)	W		
********** Plants - Flowering Monocots								
	G2 S1	xC2	nc	c	Calochortus striatus (alkali mariposa lily)	W		
e	G2G3Q S1				Sisyrinchium funereum (Death Valley blue-eyed grass)	T	W	
	G2?Q S1S2				Sisyrinchium radicatum (St. George blue-eyed grass)	W	W	
E	G1 S1	xC2			Spiranthes infernalis (Ash Meadows lady's tresses)	T	W	Y
********** Mollusks								
E	G1 S1		n		Pyrgulopsis aloba (Duckwater pyrg)		W	Y
E	G1 S1		n		Pyrgulopsis anatina (southern Duckwater pyrg)		W	Y
	G1 S1				Pyrgulopsis breviloba (Flag springsnail)		W	Y
E	G1 S1	xC2			Pyrgulopsis crystalis (Crystal Spring springsnail)		W	Y
E	G1 S1	xC2			Pyrgulopsis erythropoma (Ash Meadows pebblesnail)		W	Y
E	G1 S1	xC2			Pyrgulopsis fairbanksensis (Fairbanks springsnail)		W	Y
E	G1 S1				Pyrgulopsis gracilis (Emigrant springsnail)		W	Y
E	G1 S1	xC2			Pyrgulopsis isolata (elongate-gland springsnail)		W	Y
E	G1 S1				Pyrgulopsis lata (Butterfield springsnail)		W	Y
E	G1 S1				Pyrgulopsis lockensis (Lockes springsnail)		W	Y
	G1 S1				Pyrgulopsis marcida (Hardy springsnail)		W	Y
	G1 S1	xC2			Pyrgulopsis merriami (Pahranagat pebblesnail)		W	Y
e	G3 S2	xC2	n		Pyrgulopsis micrococcus (Oasis Valley pyrg)		W	
E	G1 S1	xC2			Pyrgulopsis nanus (distal-gland springsnail)		W	Y
E	G1 S1		n		Pyrgulopsis papillata (Big Warm Spring pyrg)		W	Y
E	G1 S1	xC2			Pyrgulopsis pisteri (median-gland Nevada springsnail)		W	Y

	G1			Pyrgulopsis sathos	W	Y
	S1			(White River Valley springsnail)		
E	G1			Pyrgulopsis sterilis	W	Y
	S1			(sterile basin springsnail)		
	G2			Pyrgulopsis turbatrix	W	
	S2			(southeast Nevada springsnail)		
E	G1		n	Pyrgulopsis villacampae	W	Y
	S1			(Duckwater warm springs pyrg)		
E	G1	xC2		Tryonia angulata	W	Y
	S1			(sportinggoods tryonia)		
	G2	xC2	n	Tryonia clathrata	W	Y
	S2			(grated tryonia)		
E	G1	xC2		Tryonia elata	W	Y
	S1			(Point of Rocks tryonia)		
E	G1	xC2		Tryonia ericae	W	Y
	S1			(minute tryonia)		
E	G1			Tryonia monitorae		Y
	S1			(Monitor Tryonia)		
e	G2	xC2	n	Tryonia variegata	W	
	S2			(Amargosa tryonia)		

********** Insects

E	G1	xC2	n	Aegialia crescenta	S	Y
	S1			(Crescent Dunes aegialian scarab)		
E	G1	xC2	n	Aegialia magnifica	S	Y
	S1			(large aegialian scarab)		
E	G1	LT	s	Ambrysus amargosus	W	Y
	S1			(Ash Meadows naucorid)		
E	T1G5		n	Cercyonis oetus alkalorum		Y
	S1			(Big Smoky wood nymph)		
	T2G5	xC2	n	Cercyonis pegala pluvialis		
	S2			(White River wood nymph)		
	T1G4G5		n	Chlosyne acastus robusta		Y
	S1			(Spring Mountains acastus checkerspot)		
e	T1T2G5		n	Euphilotes ancilla giulianii		
	S1			(Giuliani's blue)		
	T2G5			Euphilotes ancilla purpura		Y
	S1S2			(Spring Mountains dark blue)		
e	T3G3G4			Euphilotes bernardino inyomontana		
	S2			(Bret's blue (Spring Mtns phenotype))		
	T3G5	xC2		Hesperia colorado mojavensis		Y
	S3			(Spring Mountains comma skipper)		
E	T1G5	xC2	n	Hesperia uncas fulvapalla		Y
	S1			(Railroad Valley skipper)		
	T2T3G5	xC2		Limenitis weidemeyerii nevadae		Y
	S2S3			(Nevada admiral)		
E	G1	xC2	n	Miloderes sp. (unnamed)	S	Y
	S1			(Big Dune miloderes weevil)		
E	G1?			Neivamyrmex nyensis		Y

	S1				(endemic ant)				
e	T1G1G3				Pelocoris shoshone amargosus			W	
	S1				(Amargosa naucorid)				
	T3G5				Polites sabuleti nigrescens				Y
	S3				(dark sandhill skipper)				
e	T1G2G3		n		Pseudocopaeodes eunus alinea				
	S1				(Ash Meadows alkali skipper)				
E	G1	xC2	n		Pseudocotalpa giulianii			S	Y
	S1				(Giuliani's dune scarab)				
E	G1	xC2	n		Serica ammomenisco			S	Y
	S1				(Crescent Dunes serican scarab)				
E	T1G?	xC2	n		Stenelmis calida calida			W	Y
	S1				(Devils Hole warm spring riffle beetle)				
********** Fishes									
E	T1T2QG3G4	xC2	n		Catostomus clarki intermedius		yes	W	Y
	S1S2				(White River desert sucker)				
E	G1				Cottus sp. (unnamed)			W	Y
	S1				(White River sculpin)				
E	T1G2	xC2	n		Crenichthys baileyi thermophilus		yes	W	Y
	S1				(Moorman White River springfish)				
	G2	LT	s	t	Crenichthys nevadae		yes	W	Y
	S2				(Railroad Valley springfish)				
E	G1	LE	s		Cyprinodon diabolis		yes	W	Y
	S1				(Devils Hole pupfish)				
E	T2G2	LE	s		Cyprinodon nevadensis mionectes		yes	W	Y
	S2				(Ash Meadows Amargosa pupfish)				
E	T1G2	LE	s		Cyprinodon nevadensis pectoralis		yes	W	Y
	S1				(Warm Springs Amargosa pupfish)				
E	T1G4	xC2	n		Gila bicolor ssp. (unnamed)		yes	W	Y
	S1				(Big Smoky Valley tui chub)				
E	T1QG4				Gila bicolor ssp. (unnamed)			W	Y
	S1				(Charnock Springs tui chub)				
E	T1G4	xC2			Gila bicolor ssp. (unnamed)			W	Y
	S1				(Duckwater Creek tui chub)				
E	T1QG4	xC2	n		Gila bicolor ssp. (unnamed)		yes	W	Y
	S1				(Hot Creek Valley tui chub)				
E	T1G4				Gila bicolor ssp. (unnamed)		yes	W	Y
	S1				(Little Fish Lake Valley tui chub)				
	T1QG4	xC2	n		Gila bicolor ssp. (unnamed)		yes	W	Y
	S1				(Railroad Valley tui chub)				
E	G1	LE	s		Lepidomeda albivallis		yes	W	Y
	S1				(White River spinedace)				
	T3G4	LT	s	t	Oncorhynchus clarki henshawi		yes	W	
	S3				(Lahontan cutthroat trout)				
E	T1G5		n		Rhinichthys osculus lariversi		yes	W	Y
	S1				(Big Smoky Valley speckled dace)				
E	T1G5	LE	s		Rhinichthys osculus nevadensis		yes	W	Y
	S1				(Ash Meadows speckled dace)				

E	T1G5 S1	xC2	n		Rhinichthys osculus ssp. (unnamed) (Monitor Valley speckled dace)		W	Y
E	T1G5 S1	xC2	n		Rhinichthys osculus ssp. (unnamed) (Oasis Valley speckled dace)		W	Y
	T2T3QG5 S2S3	xC2	n		Rhinichthys osculus ssp. (unnamed) (White River speckled dace)		W	Y
********** Amphibians								
E	G1G2 S1S2		n		Bufo nelsoni (Amargosa toad)	yes	W	Y
	T?QG4 S2S3	C	s	s	Rana luteiventris pop (Columbia spotted frog (Great Basin pop))		W	
********** Reptiles								
	G4 S3	LTNL	s	t	Gopherus agassizii (desert tortoise (Mojave Desert pop.))	yes		
	T4G4 S2	xC2N L	nc		Heloderma suspectum cinctum (banded Gila monster)	yes		
********** Mammals								
	G4 S3?	xC2	n		Brachylagus idahoensis (pygmy rabbit)	yes		
	G4 S3B		nc	si	Corynorhinus townsendii (Townsend's big-eared bat)			
	G4 S1S2	xC2	s	s	Euderma maculatum (spotted bat)	yes		
E	THG5 SH	xC2	n		Microtus montanus nevadensis (Ash Meadows montane vole)		W	Y
	G5 S3B		n		Myotis californicus (California myotis)			
	G5 S3B	xC2	nc		Myotis ciliolabrum (western small-footed myotis)			
	G5 S1S2		n		Myotis lucifugus (little brown myotis)			
	G4G5 S2B	xC2	nc		Myotis thysanodes (fringed myotis)			
E	THG5 SH	xC2	n		Thomomys bottae abstrusus (Fish Spring pocket gopher)			Y
E	THG5 SH	xC2	n		Thomomys bottae curtatus (San Antonio pocket gopher)			Y
********** Birds								
	G5 S3	xC2	n	si	Accipiter gentilis (Northern Goshawk)	yes		
	TUG4 S3B	xC2	nc		Athene cunicularia hypugaea (Western Burrowing Owl)	yes		
	G4 S3	xC2	n		Buteo regalis (Ferruginous Hawk)	yes		

	G5 S2B		n	i	Buteo swainsoni (Swainson's Hawk)	yes		
	G4 S3S4B		nc		Centrocercus urophasianus (Sage Grouse)	yes		
	T3G4 S1B	LTNL	n		Charadrius alexandrinus nivosus (Western Snowy Plover)	yes	W	
	G4 S2S3B	xC2	n		Chlidonias niger (Black Tern)	yes	W	
	T3G5 S1B	C	s	i	Coccyzus americanus occidentalis (Western Yellow-billed Cuckoo)	yes	W	
	T1T2G5 S1B	LE	s	e	Empidonax traillii extimus (Southwestern Willow Flycatcher)	yes	W	
	T2T3G5 S2N	xC2	n		Ixobrychus exilis hesperis (Western Least Bittern)	yes	W	
	G5 S3		n	s	Oreortyx pictus (Mountain Quail)	yes		
	G4 S4?B		n	s	Otus flammeolus (Flammulated Owl)	yes		
	G5 S2B		n		Phainopepla nitens (Phainopepla)	yes		
	G5 S3B	xC2	p		Plegadis chihi (White-faced Ibis)	yes	W	
?	T?G5 S1	LE			Rallus longirostris yumanensis (Yuma Clapper Rail)	yes	W	

WATCH-LIST TAXA

********** Plants - Gymnosperms (conifers)

	G3 S2				Ephedra funerea (Death Valley Mormon tea)		D	

********** Plants - Flowering Dicots

	G3G4 S2				Agastache cusickii (Cusick hyssop)		D	
	G3 S1S2			w	Arabis dispar (pinyon rockcress)		D	
	T3T4G3G4 S3?				Arabis fernaldiana var. fernaldiana (Fernald rockcress)			
	T3G3G4 S3			w	Arabis fernaldiana var. stylosa (stylose rockcress)			P
	G3 S3			ci	Arabis shockleyi (Shockley rockcress)		D	
	G3 S3				Astragalus callithrix (Callaway milkvetch)		D	
	T3?G5 S3?	xC2		s	Astragalus lentiginosus var. scorpionis (scorpion milkvetch)		D	
	T3?G3 S2S3				Astragalus mohavensis var. mohavensis (Mojave milkvetch)			
	T2G4				Astragalus serenoi var. sordescens		D	Y

	S2		(squalid milkvetch)				
	T3QG3Q		Castilleja martinii var. clokeyi		D		
	S3		(Clokey paintbrush)				
	G4?	s	Cryptantha tumulosa		W		
	S2		(New York Mountains catseye)				
	G5	s	Cymopterus nivalis		D		
	S1		(snow wavewing)				
	T2?QG3G4		Cymopterus ripleyi var. ripleyi			S	Y
	S2?		(Ripley biscuitroot)				
	G3?		Draba pedicellata				Y
	S3?		(stalked whitlowcress)				
	T4T5G4G5		Dudleya pulverulenta ssp. arizonica				
	S3		(chalk liveforever)				
e	T2?QG5		Echinocereus engelmannii var. armatus	CY			
	S1?		(armored hedgehog cactus)				
	G3G4		Ericameria watsonii		D		
	S3		(Watson goldenbush)				
	T3?G3G4		Erigeron uncialis var. conjugans		D		Y
	S3?		(Charleston fleabane)				
	T2?G3G4	si	Erigeron uncialis var. uncialis		D		
	S2?		(limestone daisy)				
	G2?		Eriogonum contiguum		D		
	S1		(Amargosa buckwheat)				
	G2		Eriogonum darrovii		D		
	S1		(Darrow buckwheat)				
	T2T3G5		Eriogonum ovalifolium var. caelestinum		D		
	S2S3		(heavenly buckwheat)				
	G3		Eriogonum rubricaule		D		Y
	S3		(Lahontan Basin buckwheat)				
	T4?QG5	s	Ferocactus cylindraceus var. lecontei	CY			
	S4		(Mojave barrel cactus)				
e	T2G4		Galium hilendiae ssp. carneum		M		
	S1		(Panamint Mountains bedstraw)				
E	G3G4		Gilia heterostyla			s	Y
	S3S4		(Cochrane gilia)				
	G3		Gilia nyensis		D	s	Y
	S3		(Nye gilia)				
	G3		Gilia ripleyi		D		
	S3		(Ripley gilia)				
	G3	w	Hackelia sharsmithii		D		
	S2		(Sharsmith stickseed)				
	G3		Lepidium nanum		D		
	S3		(dwarf peppercress)				
?	G2G3Q		Lesquerella goodrichii				
	S1?		(Goodrich bladderpod)				
	G3		Lesquerella hitchcockii		D		Y
	S3		(Hitchcock bladderpod)				
	G3?		Linanthus arenicola		D	S	
	S3		(dune linanthus)				

	T3T4G5			Machaeranthera grindelioides var. depressa	D		
	S3			(rayless tansy aster)			
	G3?Q			Mentzelia candelariae	D		Y
	S3?			(Candelaria blazingstar)			
	G3			Mirabilis pudica	D		Y
	S3			(bashful four-o'clock)			
	G3?			Oxytheca watsonii	D		
	S3?			(Watson spinecup)			
	G3Q			Perityle intricata	D		P
	S3			(desert rockdaisy)			
	G2G3			Phacelia anelsonii	D		
	S1S2			(Aven Nelson phacelia)			
	T3T4G5			Phacelia hastata var. charlestonensis			Y
	S3S4			(Spring Mountains phacelia)			
e	G5			Pilostyles thurberi	D		
	S1			(Thurber pilostyles)			
	G3			Plagiobothrys salsus	W	W	
	S2S3			(salt marsh allocarya)			
	G3Q			Polygala heterorhyncha	W		
	S3			(notch-beak milkwort)			
	G3G4			Sphaeromeria argentea	M		
	S1?			(chickensage)			
********** Plants - Flowering Monocots							
	T3QG4			Agave utahensis var. eborispina	D		
	S3			(ivory-spined agave)			
?	T3QG4			Agave utahensis var. nevadensis	D		
	S3			(Clark Mountain agave)			
e	G3			Calochortus panamintensis			
	S1			(Panamint mariposa Lily)			
e	G2G3			Stipa shoshoneana	M		
	S1			(cliff needlegrass)			
********** Insects							
E	G1?Q	xC2	n	Aphodius sp. (unnamed)		S	Y
	S1?			(Big Dune aphodius scarab)			
E	G1?Q	xC2	n	Aphodius sp. (unnamed)		S	Y
	S1?			(Crescent Dunes aphodius scarab)			
	T2G5			Polites sabuleti basinensis			Y
	S2			(pallid skipper)			
********** Amphibians							
	G5		n il	Rana pipiens		W	
	S2S3			(northern leopard frog)			
********** Reptiles							
	G5			Charina bottae			
	S4			(rubber boa)			

	G5		n		Phrynosoma douglasii		
	S?				(short-horned lizard)		
	G5		xC2	n	Sauromalus obesus		
	S3S4				(common chuckwalla)		

********** Mammals

	G5			nc	i	Antrozous pallidus	
	S3B					(pallid bat)	
	G5					Chaetodipus penicillatus	
	S2					(desert pocket mouse)	
	G5			n		Lasionycteris noctivagans	
	S3N					(silver-haired bat)	
	G5			n		Lasiurus cinereus	
	S3?					(hoary bat)	
	G3					Microdipodops pallidus	s
	S2					(pale kangaroo mouse)	
	G5		xC2	nc		Myotis evotis	
	S4B					(long-eared myotis)	
	G5		xC2	n		Myotis volans	
	S4B					(long-legged myotis)	
	G5		xC2	nc		Myotis yumanensis	
	S4B					(Yuma myotis)	
e	G5					Notiosorex crawfordi	
	S3					(Crawford's desert shrew)	
	G5					Ochotona princeps	yes
	S3					(American pika)	
	G5			n		Pipistrellus hesperus	
	S4					(western pipistrelle)	
	T5G5					Sorex merriami leucogenys	
	S3					(Merriam's shrew)	
	G3G4					Sorex tenellus	
	S2					(Inyo shrew)	
	G5			n		Tadarida brasiliensis	
	S4B					(Brazilian free-tailed bat)	
	T4G5					Zapus princeps oregonus	
	S3					(western jumping mouse)	

********** Birds

	G5			n		Aquila chrysaetos	yes
	S4					(Golden Eagle)	
	G5			n		Asio otus	yes
	S4					(Long-eared Owl)	
	G5			n		Baeolophus griseus	yes
	S5B					(Juniper Titmouse)	
	G2		PT	s		Charadrius montanus	yes
	SZN					(Mountain Plover)	
	G5			p		Dendroica petechia	yes W
	S3B					(Yellow Warbler)	
	G5			n		Falco mexicanus	yes

S4			(Prairie Falcon)		
G5		p	Geothlypis trichas	yes	W
S3B			(Common Yellowthroat)		
T4G5		n	Grus canadensis tabida	yes	
S3B			(Greater Sandhill Crane)		
G5		n	Gymnorhinus cyanocephalus	yes	
S4			(Pinyon Jay)		
G5		n	Icteria virens	yes	
S3B			(Yellow-breasted Chat)		
G4	xC2N	n	Lanius ludovicianus	yes	
S3	L		(Loggerhead Shrike)		
G4		n	Leucosticte atrata		
S4			(Black Rosy-finch)		
G4		n	Melanerpes lewis	yes	
S4			(Lewis' Woodpecker)		
G5		n	Numenius americanus	yes	W
S3?B			(Long-billed Curlew)		
G5		p	Oporornis tolmiei	yes	
S4B			(Macgillivray's Warbler)		
G5		p	Pandion haliaetus	yes	W
S2B			(Osprey)		
G5		n	Pooecetes gramineus	yes	
S4B			(Vesper Sparrow)		
G5		n	Sphyrapicus nuchalis	yes	
S4S5B			(Red-naped Sapsucker)		
G5		n	Toxostoma crissale	yes	
S3S4			(Crissal Thrasher)		
G5		p	Vermivora celata	yes	
S4B			(Orange-crowned Warbler)		
G5		n	Vermivora luciae	yes	
S3B			(Lucy's Warbler)		
G4		nc	Vireo vicinior	yes	
S3S4B			(Gray Vireo)		

Last updated on 03/18/2004

Return to Nevada Natural Heritage Program home page

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APPENDIX C
COMMENTS AND RESPONSES

COVN

JIM GIBBONS
Governor

STATE OF NEVADA

ANDREW K. CLINGER
Director

DEPARTMENT OF ADMINISTRATION
209 E. Musser Street, Room 200
Carson City, Nevada 89701-4298
(775) 684-0222
Fax (775) 684-0260
http://www.budget.state.nv.us/

May 1, 2007

Eloisa Hopper
99 CES/CEV
4349 Duffer Dr, Suite 1601
Nellis AFB, NV 89191-7007

Re: SAI NV # **E2007-297** Reference:

Project: **Range 74 Target Complexes EA, NV Test Range**

Dear Eloisa Hopper:

Enclosed are comments from the agencies listed below regarding the above referenced document. Please address these comments or concerns in your final decision.

Division of State Lands

Division of Water Resources

Natural Heritage Program

The following agencies support the above referenced document as written:

Division of Water Resources

State Historic Preservation Office

This constitutes the State Clearinghouse review of this proposal as per Executive Order 12372. If you have questions, please contact me at (775) 684-0209.

Sincerely,

for Gosia Sylwestrzak
Nevada State Clearinghouse

Enclosure

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0209 Fax (775) 684-0260
DATE: April 11, 2007

Division of Water Resources

Nevada SAI # E2007-297
Project: Range 74 Target Complexs EA, NV Test Range

____No comment on this project __X__Proposal supported as written

AGENCY COMMENTS:

In the EA, the Applicant states: "No groundwater would be used for target complex construction and placement or training operations." Additionally, no mention is made of utilizing the springs in the UTTR area for the project. Thus if no surface or ground water is required to be used on this project, other than those sources and points of diversion which may already be permitted by this office and appropriately in use, there is no further comment on the proposal.

Respectfully Submitted,

Mark Sivazlian, Staff Engineer, Nevada Division of Water Resources

Signature: //s// Mark Sivazlian Date: April 25, 2007

Response to Nevada Division of Water Resources Comments:

The U.S. Air Force (USAF) and Nellis Air Force Base (AFB) appreciate the Nevada Division of Water Resources comments regarding the environmental assessment of the proposed actions. Nellis AFB assures the Division that only waters from sources or points of diversion already permitted by the Nevada Division of Water Resources would be used for this project. No waters drawn from springs located on the NTTR would be utilized.

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4/25

Rebecca Palmer

From: Clearinghouse [clearinghouse@budget.state.nv.us]
Sent: Wednesday, April 11, 2007 4:14 PM
To: Rebecca Palmer
Subject: E2007-297 Range 74 Target Complexs EA, NV Test Range - 99 CES/CEV

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0209 Fax (775) 684-0260
DATE: April 11, 2007

RECEIVED
APR 23 2007
DEPARTMENT OF ADMINISTRATION
OFFICE OF THE DIRECTOR
BUDGET AND PLANNING DIVISION

State Historic Preservation Office

Nevada SAI # E2007-297
Project: Range 74 Target Complexs EA, NV Test Range

Follow the link below to download an Adobe PDF document concerning the above-mentioned project for your review and comment.

http://www.nellis.af.mil/shared/media/document/AFD-070406-023.pdf

Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than Tuesday, May 1, 2007.

Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Gosia Sylwestrzak, (775) 684-0209 or mailto:clearinghouse@budget.state.nv.us.

___No comment on this project ✓ Proposal supported as written

AGENCY COMMENTS:

Signature: Rebecca Palmer Date: 4/19/07

Distribution:
Sandy Quilici, Department of Conservation & Natural Resources Stephanie Martensen, Division of Emergency Management Alan Di Stefano, Economic Development Kathy Dow, Economic Development Chad Hastings, Fire Marshal Stan Marshall, State Health Division Skip Canfield, AICP, Division of State Lands Michael J. Stewart, Legislative Counsel Bureau John Walker, Nevada Division of Environmental Protection Anthony Grossman, Department of Wildlife, Director's Office D. Bradford Hardenbrook, Department of Wildlife, Las Vegas Robert Martinez, Division of Water Resources Lynn Haarklau, Nellis Air Force Base Eloisa Hopper, Nellis Air Force Base Deborah Stockdale, Nellis Air Force Base James D. Morefield, Natural Heritage Program Joseph C. Strolin, Agency for Nuclear Projects Steve Weaver, Division of State Parks Mark Harris, PE, Public Utilities Commission Pete Konesky, State Energy Office Rebecca Palmer, State Historic Preservation Office Alisa Huckle, UNR Library Gosia Sylwestrzak, zzClearinghouse Reese Tietje, zzClearinghouse -Reese Maud Naroll, zzClearinghouse-Maud Gosia Sylwestrzak, zzClearinghouse -Gosia

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Response to Nevada State Historic Preservation Office Comments:

The U.S. Air Force (USAF) and Nellis Air Force Base (AFB) appreciate the Nevada State Historic Preservation Office review of the environmental assessment and support of the proposed actions.

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The Nevada Division of State Lands has no comment on this proposal.

Skip Canfield, AICP

-----Original Message-----
From: Clearinghouse [mailto:clearinghouse@budget.state.nv.us]
Sent: Wednesday, April 11, 2007 4:14 PM
To: Skip Canfield
Subject: E2007-297 Range 74 Target Complexs EA, NV Test Range - 99 CES/CEV

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0209 Fax (775) 684-0260
DATE: April 11, 2007

Division of State Lands

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Project: Range 74 Target Complexs EA, NV Test Range

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Please submit your comments no later than Tuesday, May 1, 2007.

Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Gosia Sylwestrzak, (775) 684-0209 or mailto:clearinghouse@budget.state.nv.us.

____No comment on this project ____Proposal supported as written

AGENCY COMMENTS:

Signature: Date:

Distribution:
Sandy Quilici, Department of Conservation & Natural Resources
Stephanie Martensen, Division of Emergency Management
Alan Di Stefano, Economic Development
Kathy Dow, Economic Development

Chad Hastings, Fire Marshal
Stan Marshall, State Health Division
Skip Canfield, AICP, Division of State Lands
Michael J. Stewart, Legislative Counsel Bureau
John Walker, Nevada Division of Environmental Protection
Anthony Grossman, Department of Wildlife, Director's Office
D. Bradford Hardenbrook, Department of Wildlife, Las Vegas
Robert Martinez, Division of Water Resources
Lynn Haarklau, Nellis Air Force Base
Eloisa Hopper, Nellis Air Force Base
Deborah Stockdale, Nellis Air Force Base
James D. Morefield, Natural Heritage Program
Joseph C. Strolin, Agency for Nuclear Projects
Steve Weaver, Division of State Parks
Mark Harris, PE, Public Utilities Commission
Pete Konesky, State Energy Office
Rebecca Palmer, State Historic Preservation Office
Alisa Huckle, UNR Library
Gosia Sylwestrzak, zzClearinghouse
Reese Tietje, zzClearinghouse -Reese
Maud Naroll, zzClearinghouse-Maud
Gosia Sylwestrzak, zzClearinghouse -Gosia

Response to Nevada Division of State Lands Comments:

The U.S. Air Force (USAF) and Nellis Air Force Base (AFB) appreciate the Nevada Division of State Lands review of the environmental assessment of the proposed actions.

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The comments of the Nevada Natural Heritage Program on this project have been inserted under Agency Comments in the original message below.

-----Original Message-----
From: Clearinghouse [mailto:clearinghouse@budget.state.nv.us]
Sent: 11 April 2007 16:14
To: jdmore@heritage.nv.gov
Subject: E2007-297 Range 74 Target Complexs EA, NV Test Range - 99 CES/CEV

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0209 Fax (775) 684-0260
DATE: April 11, 2007

Natural Heritage Program

Nevada SAI # E2007-297
Project: Range 74 Target Complexs EA, NV Test Range

Follow the link below to download an Adobe PDF document concerning the above-mentioned project for your review and comment.

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Please submit your comments no later than Tuesday, May 1, 2007.

Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. Questions? Gosia Sylwestrzak, (775) 684-0209 or mailto:clearinghouse@budget.state.nv.us.

____No comment on this project ____Proposal supported as written

AGENCY COMMENTS:

The footprint of the Cliff Springs target complex includes a known population of Clokey eggvetch (Astragalus oophorus var. clokeyanus) mapped by Frank Smith in 1997. Clokey eggvetch is a former Candidate for listing under the Endangered Species Act, and remains a species of concern to the U.S. Fish and Wildlife Service. It is also on the sensitive species lists of the Bureau of Land Management and of the U.S. Forest Service. Since the Cliff Springs target complex consists entirely of no-drop targets, impacts to Clokey eggvetch should be easy to avoid with pre-activity surveys (preferably by Mr. Smith, to take advantage of his familiarity with the site and population) and appropriate target placement. The EA should be revised to include analysis of impacts to, and avoidance measures for, Clokey eggvetch at the Cliff Springs target complex.

Signature: Date:

James D. Morefield 16
April 2007

Distribution:
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Response to Nevada Natural Heritage Program Comments:

The U.S. Air Force (USAF) and Nellis Air Force Base (AFB) understand and appreciate Nevada Natural Heritage Program concerns regarding the potential presence of Clokey eggvetch (*Astragulus oophorus* var. *clokeyanus*) in the Cliff Springs target complex footprint. Under supervision of the Nellis AFB Natural Resources manager, qualified plant biologists familiar with the species attempted rare plants surveys in April 2007. However, due to drought conditions in the area, the presence of any flowering plants was low. Thus, rare plants surveys were re-scheduled for Spring 2008.

Prior to placement of no-drop targets in the Cliff Springs target complex, surveys will be conducted during the flowering period by qualified plant biologists. If Clokey eggvetch individuals are found during surveys, specimen locations will be marked and the target locations within the Cliff Springs target complex modified as necessary to avoid disturbing any individuals. The FONSI, Section 4.8.3, and Table 4-1 of the Final EA were revised to include this survey requirement.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
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Reno, Nevada 89502
Ph: (775) 861-6300 ~ Fax: (775) 861-6301

May 3, 2007
File No. AF-9

Ms. Eloisa V. Hopper
99 CES/CEV
4349 Duffer Drive, Ste.1601
Nellis Air Force Base, Nevada 89191-7007

Dear Ms. Hopper:

Subject: Comments on the Draft Environmental Assessment for the Construction of Target Complexes on the Nevada Test and Training Range, Nye County, Nevada

Thank you for the opportunity to comment on the Draft Environmental Assessment (EA) for the Construction of Target Complexes on the Nevada Test and Training Range (NTTR) in Nye County. On April 9, 2007, we received your request for input on the Draft EA. This letter has been prepared under the authority of and in accordance with provisions of the National Environmental Policy Act of 1969 [42 U.S.C. 4321 *et seq.*; 83 Stat. 852], as amended, the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et. seq.*), and other authorities mandating U.S. Fish and Wildlife Service (Service) concern for environmental values. Based on these authorities, the Service offers the following comments for your consideration.

We understand that the preferred alternative is to construct mountainous terrain target complexes at three locations within Range 74: Limestone Ridge, Saucer Mesa, and Cliff Springs. The Limestone Ridge target complex would include 10 discrete sites totaling approximately 245 acres along an existing road network between Limestone Ridge and the Belted Range. The Saucer Mesa target complex would comprise of nine discrete sites totaling approximately 131 acres in the hills and valleys along an existing network of trails east of Saucer Mesa. The Cliff Springs target complex would comprise of one linear site within a 15-acre corridor on an existing road. Depending on the target complex, targets would be constructed to support live and inert large-scale munitions and/or laser attacks.

We are concern about potential project impacts to the Clokey eggvetch (*Astragalus oophorus* var. *clokeyanus)*, a species considered rare under the State of Nevada Natural Heritage Program (NNHP). Two of the 23 known Clokey eggvetch populations occur within the Belted Range and in the vicinity of the proposed Cliff Springs target complex in the NTTR. Because populations are typically small in number and area, the Clokey eggvetch is highly vulnerable to human disturbance and stochastic events including drought, fire, flooding and invasion by nonnative

species. Populations in the Spring Mountains, the only other known location for this species, have been greatly impacted by disturbance from recreational activity. We strongly encourage you to conduct a sensitive plant survey for the Clokey eggvetch in the project area and that your EA include an analysis of possible direct and indirect impacts to this rare species as a result of implementation of the preferred alternative. Furthermore, if Clokey eggvetch is found to occur within or adjacent to the project area, we ask that you include in the final EA, measures to avoid potential impacts to Clokey eggvetch populations.

We are also concerned about potential project impacts to cliff needlegrass (*Stipa shoshoneana*), a species listed on NNHP's watch list. Species listed under NNHP's watch list are species that could be declining in Nevada or across a large portion of their range and/or less common than currently thought and, as a result, could become at-risk in the future. We recommend that the sensitive plant survey also include cliff needlegrass, and if cliff needlegrass occurs within the project area, we ask that you include in the final EA measures to avoid, minimize or offset potential impacts to this species.

We understand that NNHP watch-list species such as the pinyon jay (*Gymnorhinus cyanocephalus*) and juniper titmouse (*Baeolophus ridgwayi*), were observed within the project area. As a reminder, under the MBTA, nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Such destruction may be in violation of the MBTA. Therefore, we recommend land clearing, or other surface disturbance associated with the construction of the proposed project, be conducted outside the avian breeding season to avoid potential destruction of bird nests or young, or birds that breed in the area. If this is not feasible, we recommend a qualified biologist survey the area prior to land clearing for construction activity. If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

We appreciate the opportunity to comment on the Draft EA for the proposed Construction of Target Complexes on the NTTR. If you have any questions regarding these comments, please contact Leilani Takano at (702) 515-5230.

Sincerely,

for Robert D. Williams
Field Supervisor

Response to U. S. Fish and Wildlife Service Comments:

The U.S. Air Force (USAF) and Nellis Air Force Base (AFB) understand and appreciate U.S. Fish and Wildlife Service (USFWS) concerns regarding the potential presence of Clokey eggvetch (*Astragulus oophorus* var. *clokeyanus*) and cliff needlegrass (*Stipa shoshoneana*) in the Cliff Springs target complex footprint. Under supervision of the Nellis AFB Natural Resources manager, qualified plant biologists familiar with the species attempted rare plants surveys in April 2007. However, due to drought conditions in the area, the presence of any flowering plants was low. Thus, rare plants surveys were re-scheduled for Spring 2008.

Prior to placement of no-drop targets in the Cliff Springs target complex, surveys will be conducted during the flowering period by qualified plant biologists. If Clokey eggvetch or cliff needlegrass individuals are found during surveys, specimen locations will be marked and the target locations within the Cliff Springs target complex modified as necessary to avoid disturbing any individuals. The FONSI, Section 4.8.3, and Table 4-1 of the Final EA were revised to include this survey requirement.

Also appreciated are USFWS concerns regarding potential impacts to migratory birds observed during biological survey of the Cliff Springs target complex area. If the no-drop targets would be placed during nesting season, then nesting surveys would be conducted immediately prior to target placement to ensure that any nesting areas are avoided, as described in Section 4.8.3.