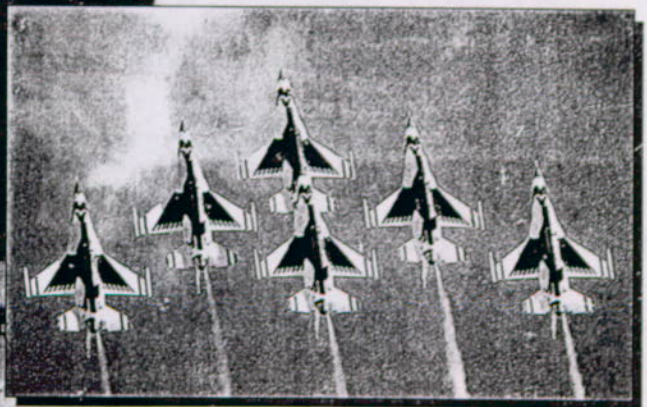
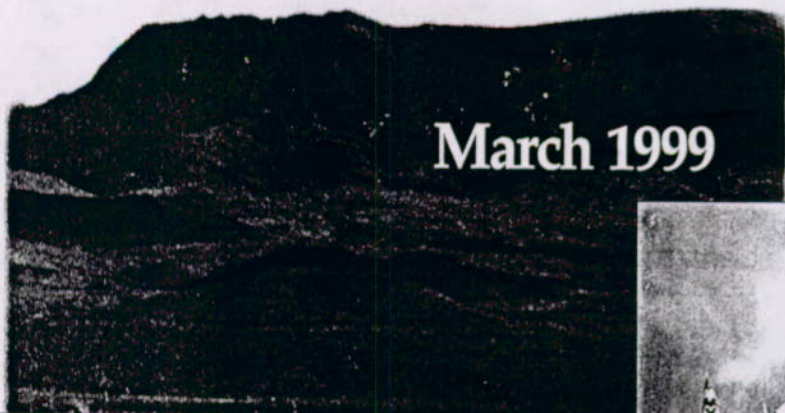


MOL.20010726.0068

# RENEWAL OF THE NELLIS AIR FORCE RANGE LAND WITHDRAWAL

Department of the Air Force  
Legislative Environmental Impact Statement



NELLIS RANGE RENEWAL

VOLUME 1

*Legislative Environmental Impact Statement (LEIS)  
Frequently Referenced Information*

***LEIS Purpose***

This LEIS responds to the November 6, 1986 Military Lands Withdrawal Act (Public Law [PL] 99-606).

The Air Force proposes to continue the use of Nellis Air Force Range (NAFR) for test and training. The Air Force does not propose to add any lands not currently withdrawn for defense use nor to add any airspace.

***Lead Agency & Cooperating Agencies***

The lead agency is the Department of the Air Force (Air Force). Cooperating agencies are the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and the Department of Energy (DOE).

***Frequently Referenced Figures***

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***Text Changes From Draft LEIS***

This LEIS contains vertical lines in the right or left margin on certain pages. These vertical lines are used to indicate text changes made from the Draft LEIS to this version in response to agency and public comments.

***LEIS Contents***

- **Executive Summary** provides a concise synopsis of the LEIS's analysis and conclusions.
- **Chapter 1.0** discusses the purpose and need for NAFR.
- **Chapter 2.0** describes the four action alternatives that would permit continuation of NAFR test and training missions. The No-Action Alternative is also described. Chapter 2.0 also discusses alternatives considered but not carried forward.
- **Chapter 3.0** provides an overview of the baseline environmental conditions of NAFR and the potentially affected environment.
- **Chapter 4.0** addresses the potential environmental consequences of implementing the alternatives (from Chapter 2.0), within the baseline (from Chapter 3.0).
- **Chapter 5.0** summarizes cumulative effects and irreversible and irretrievable commitment of resources associated with the alternatives.
- **Chapters 6.0, 7.0, 8.0, 9.0, 10.0, and 11.0** present references, persons and agencies contacted, a list of preparers and contributors, consultation information, a list of repositories, and an index.
- **Volume 2** provides comments on the Draft LEIS, responses to the comments, and additional technical support data in the form of appendices.

***Acronyms***

Acronyms are provided on the last several pages of this volume.

## COVER SHEET

### Legislative Environmental Impact Statement Renewal of the Nellis Air Force Range Land Withdrawal

- a. *Responsible Agency:* U.S. Air Force
- b. *Cooperating Agencies:* Bureau of Land Management, Department of Energy, and U.S. Fish and Wildlife Service
- c. *Proposals and Actions:* This Legislative Environmental Impact Statement (LEIS) addresses the potential environmental consequences of the Air Force proposal to continue Nellis Air Force Range (NAFR) land withdrawal for use as a national test and training facility for military equipment and personnel. NAFR is located in southern Nevada and is a key component of the Nellis Range Complex (NRC), which comprises airspace, land, and infrastructure that allows for realistic, secure simulation of a battle area with surface and air defenses, command and control systems, realistic targets, and comprehensive test and training feedback. NAFR enhances national security by preparing air crews for increasingly complex military operations in an exclusive use area that ensures national security and public safety. There are four LEIS action alternatives. Alternative 1A consists of renewal of currently withdrawn military lands as NAFR for an indefinite period. Alternative 1B consists of indefinite renewal of the currently withdrawn military lands, except a portion of the Clarkdale and Wagner Mining Districts; possible jurisdictional adjustments; co-use recreational access to portions of Mud Lake, Kawich Range, and Electronic Combat (EC) South Range; and the administrative realignment of land described in Public Land Order (PLO) 1662, Pahute Mesa, and/or portions of the Desert National Wildlife Range (DNWR). Alternative 2A consists of renewal of currently withdrawn military lands as NAFR for a 25-year period. Alternative 2B consists of renewal for 25 years of the lands as described in 1B. No-Action means no renewal of NAFR. Ground-based military equipment and materials potentially hazardous to the public would be removed to the extent feasible or as required by law. Military overflights would continue to use the NRC airspace.
- d. *For Additional Information:* 99<sup>th</sup> AWFC/Public Affairs, c/o Mike Estrada, 4370 North Washington Blvd., Suite 223, Nellis Air Force Base, NV 89191-7078, (702) 652-2750 or Ms. Sheryl Parker, LEIS Project Manager, HQ ACC/CEVP, 129 Andrews St., Suite 102, Langley AFB, VA 23665-2769, (757) 764-9334.
- e. *Designation:* Legislative Environmental Impact Statement.
- f. *Abstract:* This LEIS responds to the November 6, 1986, Military Lands Withdrawal Act (Public Law (PL) 99-606 as amended). This LEIS complies with the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA). Potential environmental consequences are addressed for environmental resources identified during public and agency scoping. These resources are: airspace, noise, safety, hazardous materials, earth, water, air quality, biology, cultural and traditional, land use and transportation, wilderness, recreation and visual, socioeconomics, and environmental justice. Findings indicate that any of the action alternatives would result in continuation of ground disturbance at targets and facilities, and continuation of noise from aircraft and ground training. Ground disturbance activities directly affect approximately 3 percent of NAFR; the majority of NAFR land is a buffer to protect both public safety and national security. Biological, cultural, and traditional resources within NAFR have received little or no impact from recreational or commercial activities that have affected these resources in public lands outside the exclusive-use area. Although limited access can be arranged, American Indians and others have expressed concern that exclusive use prevents regular access for traditional uses as well as for recreation and mining. The No-Action Alternative would return exclusive-use lands to multiple use management and improve opportunities for recreation and mining but increase potential impacts to biological, cultural, traditional, water, earth, and socioeconomic resources. Alternatives 1A and 1B provide for an indefinite withdrawal with scheduled Congressional review and Air Force accountability. Alternatives 1B or 2B provide for increased multiple use of portions of former exclusive-use military areas and respond to some public, agency, and tribal concerns. Alternatives 1B or 2B potentially have slightly increased environmental impacts than do Alternatives 1A or 2A. Analysis of environmental information and public and agency input determined that selection of any action alternative would have lower potential for consequences to most environmental resources than the No-Action Alternative. The Air Force preferred alternative is Alternative 1B.

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# EXECUTIVE SUMMARY

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## INTRODUCTION

This Legislative Environmental Impact Statement (LEIS) addresses the potential environmental consequences of the proposed renewal of Nellis Air Force Range (NAFR) land withdrawal for use as a national test and training facility for military equipment and personnel. Land withdrawn for NAFR provides a secure, flexible range for large-scale military testing and training. A flexible range can be rapidly adjusted to accurately simulate complex military operations required by the dynamics of world-wide threats to our national security interests. NAFR can be configured to simulate the potential battle area that aircrews would expect to encounter.

NAFR is a key component of the Nellis Range Complex (NRC) also known as the Nevada Test and Training Range (NTTR). The NAFR battlespace environment allows for realistic, secure simulation of a battle area, complete with surface and air defense systems, command and control systems, realistic targets, and defensive threats, as well as training systems and instructional aids that provide almost instantaneous test and training feedback. The testing and training supported by NAFR enhances national security by preparing aircrews for increasingly complex military operations. These test and training activities need to be performed in an exclusive use area to ensure national security and public safety.

This LEIS has been prepared in response to Congressional direction through the

November 6, 1986 Military Lands Withdrawal Act (MLWA) (Public Law [PL] 99-606). An LEIS is an environmental evaluation in compliance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) guidelines. This LEIS supports legislation for renewal of land withdrawal to be proposed to Congress.

The U.S. Department of the Air Force (Air Force) is the lead agency for the preparation of the LEIS. Cooperating agencies are the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and the Department of Energy (DOE).

### Land Withdrawal Renewal Process

The Air Force provides this LEIS and other supporting documentation to the Department of the Interior (DOI). This LEIS includes a classified annex that addresses classified activities within the proposed area of withdrawal. The classified annex will be made available to persons with the appropriate security clearances, a need to know, and in accordance with 40 Code of Federal Regulations (CFR) 1507.3.

The BLM is responsible for the land withdrawal application and is preparing a case file for the DOI to submit to Congress under PL 99-606 as amended by the Groom Mountain Withdrawal (Public Land Order [PLO] 100-338) and the White Sides Safety and Security Buffer (PLO 7131), the Engle Act of 1958, and the Federal Land Policy and Management Act (FLPMA) of 1976. The rules and procedures implementing the

Secretary of the Interior's authority to process federal land withdrawal applications under FLPMA are described in 43 CFR Chapter II, Part 2300. The initial land withdrawal process includes preapplication consultations; application and publication of the application within the *Federal Register*; preparation of a case file, as described in 43 CFR 2310.3-2, to include this LEIS and recommendations; transmittal of the case file to the Director of

the BLM and Secretary of the Interior; transmittal of draft legislation and the case file to Congress; and legislative action by Congress.

### Nellis Air Force Range

NAFR is located in southern Nevada (see Figure 1). It includes approximately 3 million acres of federal land bounded by U.S. Highway 95 on the west, southwest, and

south; the urbanized area of Las Vegas to the southeast; U.S. Highway 93 on the east; Nevada State Highway 375 on the northeast; and U.S. Highway 6 on the north. Approximately 90,000 of the 3 million acres have been disturbed by Air Force activities.

NAFR was originally established by Executive Order (EO) 8578 in 1940 as the Las Vegas Bombing and Gunnery Range. The range operated through numerous EOs and PLOs until 1958 when operating authority was established in compliance with the Engle Act under PL 87-310. The Secretary of the Air Force was given authority for exclusive military use by enactment of the

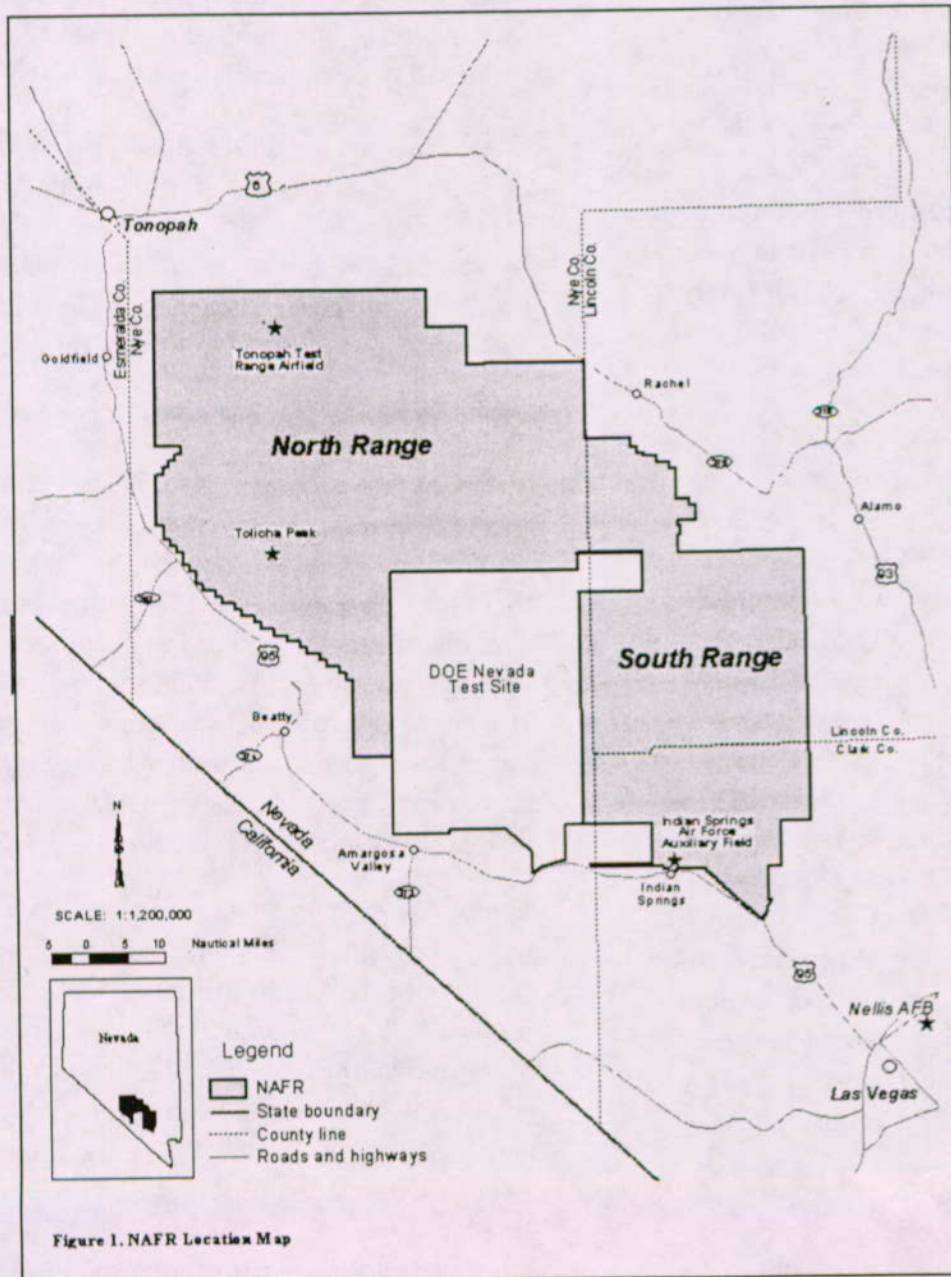


Figure 1. NAFR Location Map

MLWA of 1986, PL 99-606. This land withdrawal for exclusive military use ends if not renewed by Congress.

The NRC is comprised of airspace, land, and infrastructure designated for military uses. The lands dedicated to military uses within the NRC are the withdrawn lands of the NAFR. The airspace of the NRC is comprised of Federal Aviation Administration (FAA)-designated Restricted Areas and Military Operations Areas (MOAs). The infrastructure includes airfields at Indian Springs and Tonopah Test Range (TTR) and simulated targets and threats throughout NAFR, as well as roads, radar installations, communications facilities, electrical power transmission, water supply, and water treatment systems.

NAFR currently includes 163 tactical target complexes containing more than 1,300 simulated targets. Many of these target complexes are defended by threat simulators to provide a realistic arena for operational training and testing of weapons systems, tactics, and combat readiness. Live munitions are delivered on designated targets on the range. NAFR ground equipment includes multiple radar and communications jamming equipment designed to test and improve the quality of aircrew combat training. Many of the threat simulators are equipped with instruments to collect data that can be used to evaluate and score engagements. Extensive monitoring and tracking equipment is deployed throughout NAFR to support testing and training. Data collected on the range and in the supporting airspace are processed by computers located in the Range Control Center at Nellis Air Force Base (AFB).

NAFR is divided into two functional areas: the North Range and the South Range, both of which accommodate live and inert ordnance. The ranges are split to facilitate overall management of Air Force operations and test and training opportunities. This includes operating and maintaining range equipment, safety of personnel, material resources within the boundaries of the range, the range electromagnetic environment, and efficient airspace use through effective scheduling.

#### **NORTH RANGE**

The North Range is comprised of approximately 1.8 million acres of withdrawn land. This includes land withdrawn for exclusive military use by PL 99-606 and its amendment (PLO 100-338) of June 17, 1988, which added approximately 89,000 acres to the North Range. An additional withdrawal of approximately 3,972 acres of the Safety and Security Buffer (PLO 7131) along the eastern edge of NAFR was completed in 1995.

The North Range contains the TTR air base and four unmanned weapons delivery subranges (see Figure 2). The four subranges contain approximately 1,025 targets within 129 tactical target complexes. These, along with scoring and tracking systems, simulate tactical targets representing airfields, surface-to-air missile (SAM) sites, truck convoys, missile storage sites, artillery batteries, and other targets. Three Electronic Combat Ranges (ECRs) provide a range of high-to-low electronic threat environments as part of the North Range.

Training and testing on North Range include operations on the TTR, which lie completely within NAFR. Activities on the



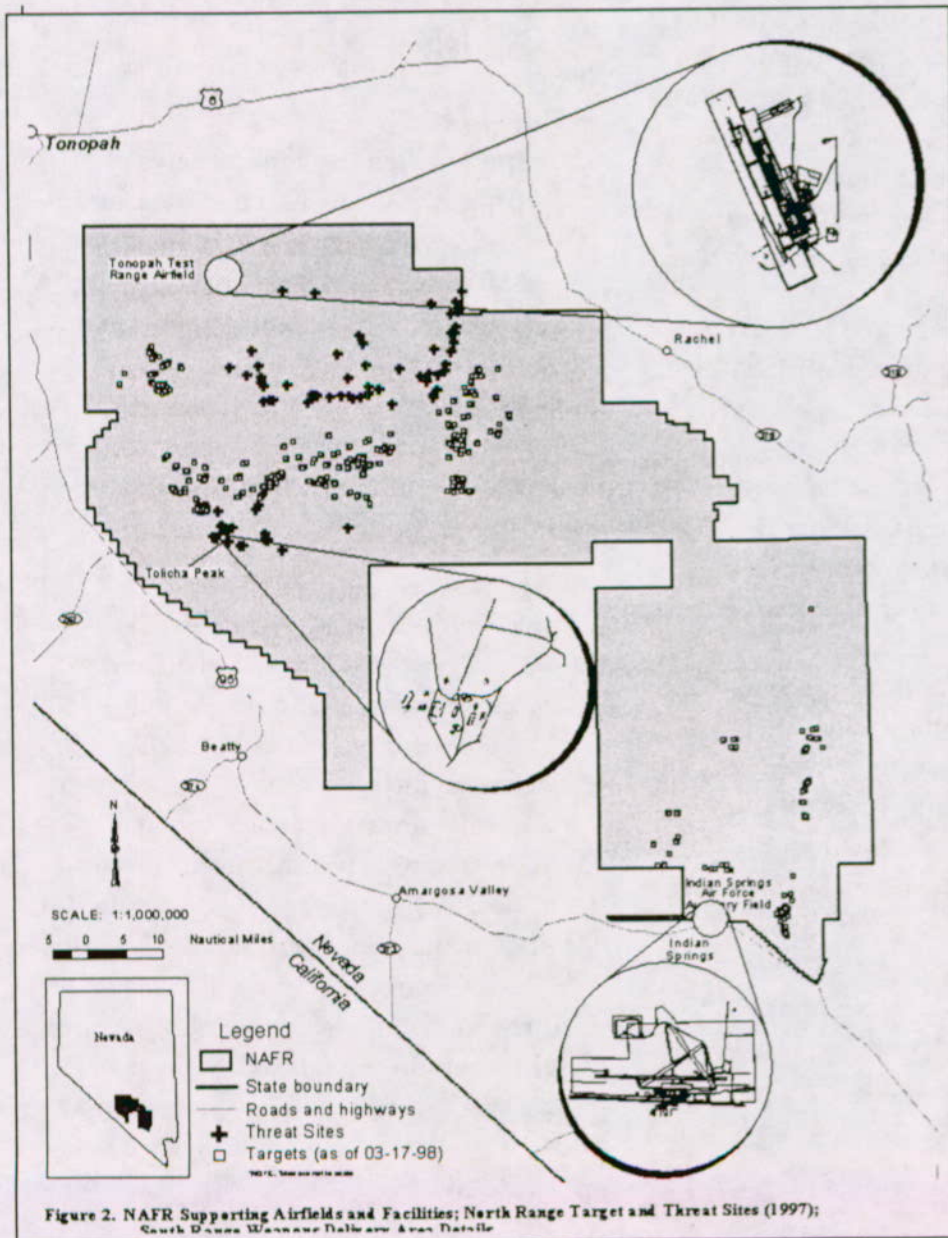
TTR include projectile firings, ground-launched rockets, air-launched rockets, explosion effects tests, earth penetration tests, cruise missile flights, and many miscellaneous activities requiring a remote location for non-nuclear research and development projects or for other safety or security reasons. The North Range includes Pahute Mesa and other areas, which are used by DOE through mutual agreement.

### SOUTH RANGE

The South Range is comprised of approximately 1.2 million acres of withdrawn land located in the southeastern portion of NAFR. All the South Range lands were withdrawn for military use by PL 99-606. The South Range contains Indian Springs Air Force Auxiliary Field (ISAFAF) and five weapons-delivery areas, which are subdivided into 34 target complexes containing approximately 280

targets (see Figure 2). These areas include two manned subranges and three unmanned subranges. There are also three air-to-air subranges.

Lands within PLO 1662, adjacent to the South Range, are withdrawn for the Nevada Test Site (NTS) by DOE and used through a classified Memorandum of Agreement by the Air Force. Portions of the South Range overlap a portion of the Desert National Wildlife Range (DNWR), which was established in 1936 for the protection and preservation of desert bighorn sheep. Agreements between the Air Force and USFWS have been updated and amended, as necessary, to ensure proper management by the respective agencies.



## **PURPOSE AND NEED FOR NAFR**

The purpose for renewing the land withdrawal for NAFR is to provide a safe and secure location to test equipment and train military personnel to meet nationally directed missions. The missions are to (1) ensure and protect national security; (2) train for the full and integrated spectrum of military operations; and (3) ensure the continued protection of public safety. The following sections describe each of these mission requirements.

### **National Security**

Air Force personnel must protect the technology, information, and equipment entrusted to them and limit the flow of military technology and information to those who could potentially cause harm to the nation. The military must have a secure place to test new systems, and train with existing ones, free from exploitation by potential adversaries. On NAFR, security is accomplished by various means, including a sufficient buffer zone between publicly accessible areas and sensitive military operations.

### **Military Operations and Training**

The purpose of military activity on NAFR is to enhance U.S. defense capability. Military operations include all activities and infrastructure necessary to keep U.S. forces prepared for confrontation with any military force the United States might reasonably expect to oppose in the future. Military activities on NAFR support training and testing combat tactics, aircraft, their associated weapons systems, and all the activities that support those primary

missions. The supporting infrastructure must be able to produce a simulated combat environment that can be securely restructured to resemble anticipated threats to U.S. interests.

### **Public Safety**

Public safety at NAFR is ensured by preventing public access near hazardous weapons detonation areas and from any areas exposed to risks from weapon system malfunction. Public safety includes (1) prevention of public straying into dangerous areas, (2) identification of hazardous areas, and (3) risk minimization through management of potential hazards of military activities. Exclusion of the public from NAFR ensures the public is protected from the dangers of an integrated battlespace environment and of weapons testing and training range activities such as exploding ordnance, unexploded ordnance, unintentional ordnance releases, dropped objects, and electromagnetic radiation.

## **PROJECT ALTERNATIVES**

### **Alternatives Identified and Evaluated for this LEIS**

Numerous agency and public comments have been received regarding alternatives to be addressed as part of this LEIS. The process for receiving input includes the following:

- Six public scoping meetings in communities surrounding NAFR.
- Discussions with American Indian tribes, organizations, and individuals.

- Consultations and informational discussions with BLM, USFWS, DOE State of Nevada, potentially affected counties, interested non-governmental organizations, American Indian tribes and organizations, and others.
- Specific DOI requirements that are part of the land withdrawal application to Congress under PL 99-606, as amended.
- Identification of the current and reasonably foreseeable future military requirements of NAFR lands.
- Desire to allocate funding to enhance environmental resources on NAFR and expand public interaction programs.

The input, with special emphasis on the LEIS scoping process, identified issues and concerns of other federal agencies, state agencies, county and local governments, and the public. A summary of these issues and concerns includes:

- Co-use access for recreation and other non-consumptive uses.
- Access for consumptive economic activities, specifically mining.
- Review of administration of selected areas of the range where overlap exists between the Air Force and DOE or between the Air Force and the USFWS.
- Increased access to NAFR by the public, American Indian tribal members, and other agency personnel.

- Expanded outside review of NAFR environmental activities by the public, American Indian tribal organizations, and other agencies.

These public, government, and agency concerns were evaluated in view of Air Force requirements to ensure national security, mission test and training requirements, and public safety.

The result of this evaluation is the set of alternatives presented in Table ES-1. These alternatives, identified as part of the NEPA process, are designed to address public, state, county, and other federal agency concerns while concurrently permitting Air Force training and test activities within critical safety/security parameters.

### **Range Renewal**

The alternatives for renewal of NAFR land address a range of potential actions. It is anticipated that Air Force activities at NAFR throughout the duration of the proposed withdrawal would continue at approximately the same level and type as at present. The environmental consequences of the No-Action, or non-renewal of NAFR, are also addressed.

### **ALTERNATIVE 1A**

#### ***DURATION***

Congress would withdraw the NAFR for an indefinite period of time and would not formally revisit the land withdrawal issues until the national need for NAFR lands changes. This would not be a permanent land withdrawal. Congress would retain the ability to review the withdrawal at their discretion any time during its duration. The Air Force would comply with NEPA,

*Nellis Air Force Range Renewal LEIS*

<b>Table ES-1. Summary of NAFR Alternatives</b>				
<i>Duration</i>	<i>Withdrawal Area</i>	<i>Access</i>	<i>Administration</i>	<i>Environmental Procedures &amp; Funding</i>
<b>ALTERNATIVE 1A</b>				
Indefinite	Approximately 3.035 million acres	Same as under PL 99-606 as amended	Same as under PL 99-606 as amended Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Future resources would be requested for environmental stewardship and public interaction programs rather than for reoccurring legislative withdrawal procedures; periodic report to Congress
<b>ALTERNATIVE 1B</b>				
Indefinite	Approximately 2.911 million acres	Specific permitted co-use activities, based on specific mission requirements; priority scheduling (see text) Non-renewal of approximately 30,000 to 35,000 acres along western border of NAFR	PL 99-606 with: Revision of land management responsibilities with DOE Revision of land management responsibilities with USFWS Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Same as 1A
<b>ALTERNATIVE 2A</b>				
25 years	Approximately 3.035 million acres	Same as under PL 99-606 as amended	Same as under PL 99-606 as amended Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Future resources will be requested for compliance with future FLPMA rules and renewal procedures (see section 1.2.4)
<b>ALTERNATIVE 2B</b>				
25 years	Approximately 2.911 million acres	Specific permitted co-use activities, based on specific mission requirements; priority scheduling (see text) Non-renewal of approximately 30,000 to 35,000 acres along western border of NAFR	PL 99-606 with: Revision of land management responsibilities with DOE Revision of land management responsibilities with USFWS Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Same as 2A
<b>NO-ACTION ALTERNATIVE</b>				
Indefinite	None; no public access to some health and safety areas	BLM multiple use; Specific permitted activities on DNWR	BLM USFWS	BLM USFWS

and other applicable regulations, during the duration of the withdrawal by completing project-specific evaluations of proposals that would use NAFR resources or lands. The Air Force would periodically report (e.g., every 15 years) to Congress regarding the need for the lands, management of natural and cultural resources, and public informational programs. Indefinite withdrawal would substantially reduce administrative costs of periodically reproducing the information required for a FLPMA case file and an LEIS. Public oversight of ongoing environmental management activities on NAFR would continue to be available via each of the applicable laws, regulations and policies (i.e., NEPA, Integrated Natural Resource Management Program, Resources Conservation and Recovery Act [RCRA]). Further, the Five-Party Cooperative Agreement, used for purposes of exchanging ideas and information between the Air Force, DOE, BLM, USFWS, and State of Nevada, would also provide public oversight opportunities.

#### ***LAND AREA***

The Air Force would seek to renew a withdrawal of approximately 3 million acres of land currently withdrawn for defense use. This withdrawal would include all lands currently withdrawn by PL 99-606 as amended, and PLO 7131. Overlapping withdrawals of NAFR and DNWR lands would remain.

#### ***LAND ACCESS***

There would be no change in the process to gain access to NAFR. Access to NAFR would be subject to the same safety and security requirements as it has through the duration of PL 99-606 as amended.

#### ***ADMINISTRATION***

The Air Force, in association with the other Five-Party Cooperative Agreement signator agencies, would exchange information on NAFR environmental management with special emphasis on management for ecosystem biodiversity. The agencies would meet periodically and include an annual public participation meeting.

No changes to the administration would be considered. Memoranda of Understanding (MOUs) regarding the use of lands by other federal agencies would continue. The public and other agencies would continue to have review of Air Force activities and stewardship programs via the existing Cultural Resources and Natural Resources Management programs and NEPA documents on new weapons systems or other mission modifications.

#### ***ALTERNATIVE 1B***

##### ***DURATION***

The duration would be the same as for Alternative 1A, indefinite withdrawal.

##### ***LAND AREA***

The Air Force would seek a withdrawal of approximately 3 million acres. The Air Force would not renew portions of the Clarkdale and Wagner Mining Districts (as defined in the Nevada Senate Joint Resolution 25, 1995) and additional land along the western border of NAFR not supported by special use airspace. This withdrawal would include all lands currently withdrawn by PLO-1662. Air Force and DOE lands, such as Pahute Mesa, currently withdrawn by one agency but used by the other, would have jurisdictional

adjustments to reflect the using agency (see Figure 3).

**LAND ACCESS**

Non-renewed lands would be subject to BLM management. Potential co-use portions of Mud Lake, Kawich Range, or Electronic Combat (EC) South Range could be made available for mission-compatible environmental resource management, American Indian religious or cultural activities, and recreation (see Figure 4). With Air Force approval, based on the range schedule, safety, and security requirements, each of these activities would be managed by the BLM following their normal processes and procedures for these types of uses. Those activities that conflict with Air Force mission, security, and/or safety requirements would not be approved.

Future unknown or undefined changes to Air Force mission, security, and/or safety requirements could negatively or positively affect the amount of land available for co-use. Should future Air Force requirements change, co-use of some or all of the three potential co-use areas may become

inconsistent with Air Force mission, security, and/or safety requirements. Should that occur, co-use of that particular area could be further restricted or terminated. Changes to future Air Force requirements could also increase the size of the three potential co-use areas and/or make other locations of the range available for possible co-use.

BLM and USFWS resource management activities on other portions of NAFR would

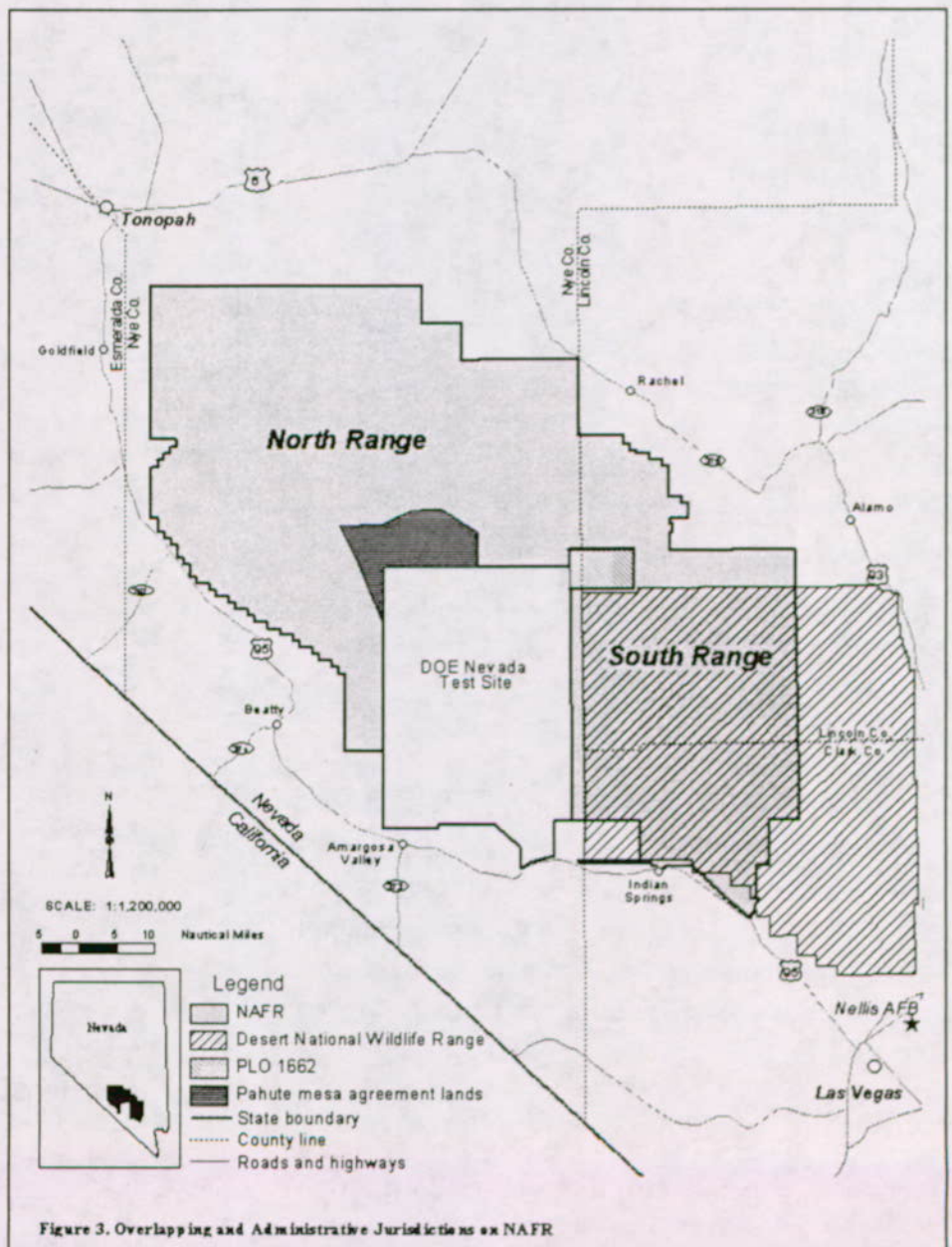


Figure 3. Overlapping and Administrative Jurisdictions on NAFR

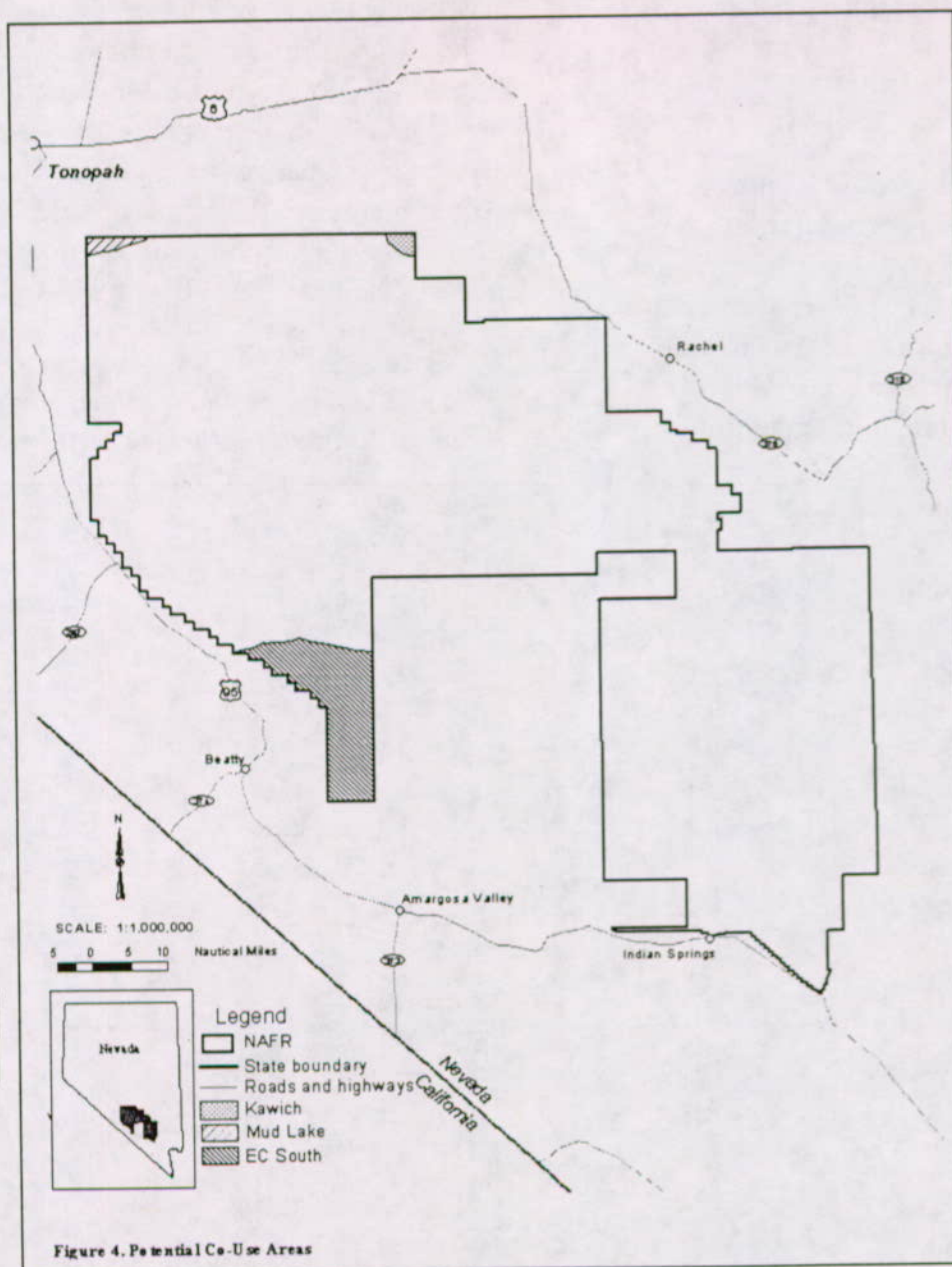


Figure 4. Potential Co-Use Areas

continue as at present. This would include the continuation of annual hunting under the direction of the State of Nevada, wild horse management, wildlife and habitat enhancement activities, and other forms of natural and cultural resource management.

**ADMINISTRATION**

Agencies signing the Five-Party Cooperative Agreement would meet

periodically and include an annual public participation meeting.

A series of administrative changes would be implemented to facilitate co-use. Withdrawn lands described as Pahute Mesa, and other lands immediately adjacent to the NTS, including lands withdrawn by PLO 1662, and controlled by the DOE, would be administratively realigned. Further, lands associated with Pahute Mesa would be administratively realigned from the Air Force to DOE (see Figure 5).

Portions of the NAFR South Range actively used by the Air Force with facilities and targets would

continue to be managed by the Air Force for military use. South Range lands required by the Air Force for public safety and national security would remain withdrawn by both the Air Force for NAFR and the USFWS for the DNWR.

**ALTERNATIVE 2A**

This alternative consists of a land withdrawal renewal of NAFR for 25 years. Subsequent FLPMA land renewal

## Nellis Air Force Range Renewal LEIS

administrative procedures would be followed assuming a continuing military test and training requirement for NAFR. The land area, access, and administration of this alternative would be the same as described under Alternative 1A.

### ALTERNATIVE 2B

This alternative is a land withdrawal renewal of NAFR for 25 years. Subsequent FLPMA land renewal administrative procedures would be followed assuming a continuing military test and training requirement for NAFR. Except for duration, Alternative 2B would have the same elements as Alternative 1B.

### NO-ACTION ALTERNATIVE

The No-Action Alternative means no renewal of NAFR land withdrawal for military use. All military actions on the ground would cease. There would be no test or training missions that depend on ground-based targets, threats, or scoring systems. All ground-based military equipment and other assets would be removed, and materials potentially hazardous to the public would be removed to the extent feasible.

The No-Action Alternative does not mean the

end of military aircraft overflights throughout the special use airspace scheduled by Nellis AFB. High-performance military aircraft would continue to use the airspace for air-to-air training, aircraft checkout, supersonic flights, and limited training.

Approximately 3 million acres of what has been NAFR would be returned to DOI management in accordance with PL 99-606 as amended. If DOI determines that the withdrawn land is contaminated, the Air

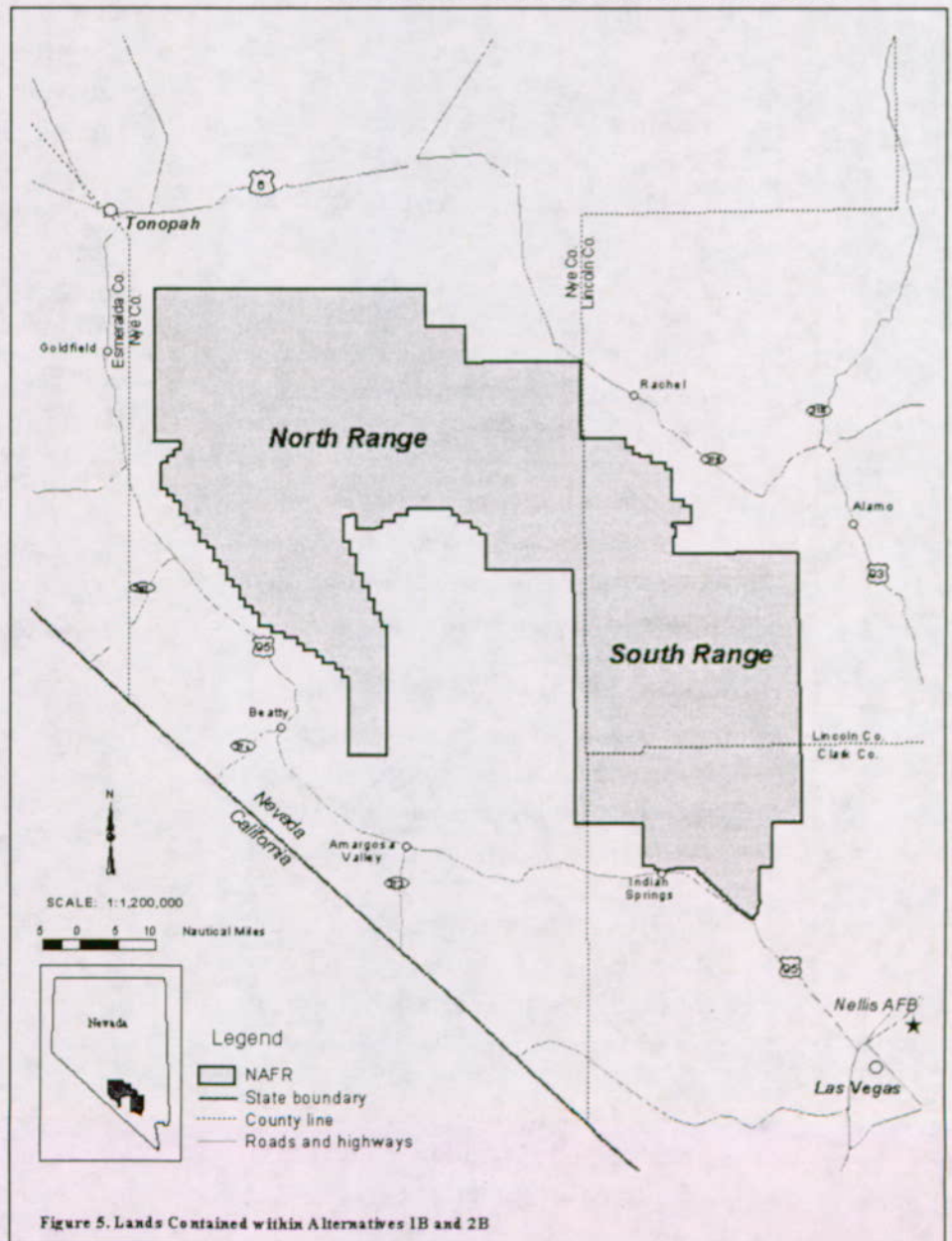


Figure 5. Lands Contained within Alternatives 1B and 2B



Force or DOE may not be able to undertake any activities on the land except decontamination. Lands that would not pose a risk to people would be managed under the DOI lands and resource policies.

Activities, facilities, and capabilities that would be eliminated by the No-Action Alternative include the following:

- Indian Springs and TTR airfields and associated facilities would be closed, all assets removed, and all operations terminated.
- Air Force management of land resources would be terminated. Some MOUs related to cleanup would continue under the No-Action Alternative.
- The Tonopah ECR, the Tolicha Peak ECR, and the EC South Range would be closed, all assets removed, and all operations terminated.
- All ground-based measuring and debriefing systems and aircraft testing requiring any NAFR ground facility would be terminated.
- Operational test and training for all air-to-ground weapons systems or for any air-to-air weapons systems that require ground-based infrastructure would be terminated.
- Weapons systems tactics and training for single-aircraft weapons delivery or multiple-target attack training would be terminated.
- Large-force training exercises that include Red Flag and Green Flag would be terminated.

- Test or training activities that require a secure location would be terminated.
- Other specialized training events that require NAFR lands, including Desert Warfare Training, Combat Rescue School, Air Rescue Squadron, and the 11th and 15th Reconnaissance Squadrons, would be terminated.

The No-Action Alternative would terminate all ground operations on NAFR, reduce aircraft missions in the airspace, and substantially reduce current activities and capabilities as described above. The expected overall effect of no action would be to reduce Nellis AFB missions and personnel by at least 50 percent. The subsequent consequences to Nellis AFB would involve new Air Force planning, mission reassignments, and specific environmental documentation.

#### **AIR FORCE PREFERRED ALTERNATIVE**

The Air Force's preferred alternative is Alternative 1B. This alternative would renew NAFR land for an indefinite period of time; not renew approximately 30,000 to 35,000 acres of land on the western portion of the range; establish co-use in specified areas; and execute an administrative realignment that would transfer lands referred to as Pahute Mesa to the DOE, and include the lands withdrawn by PLO 1662 as part of NAFR.

**ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD**

NAFR is a unique national asset that provides a secure area, excellent weather conditions for year-round operation, natural terrain characteristics, and extensive infrastructure that accommodates specialized training and testing requirements. Relocation of these assets could not be accomplished at any other existing Air Force or Department of Defense (DOD) range.

The following alternatives were identified during public and agency scoping and during the evaluation of mission requirements by the Air Force. Each was evaluated in light of military operations, national security, and public safety. Elements of these suggested alternatives that were determined to be operationally feasible were included in the alternatives carried forward for analysis. The alternative actions considered but not carried forward include:

- Full and unlimited access by BLM and USFWS personnel.
- Full and unlimited access for American Indian religious ceremonies.
- Nonrenewal of areas with high to moderate mineral potential.
- Full and unlimited access for non-consumptive or consumptive uses.
- Non-renewal of all of the Clarksdale and Wagner Mining Districts.
- Stonewall Mountain and additional lands.

- Expansion of NAFR to fully meet the existing and projected military operations requirements.
- Combination of NAFR activities with Naval Air Station (NAS) Fallon at either NAFR or NAS Fallon.
- Reduction in the withdrawn area to infrastructure, target, and health risk locations only.
- Relocation of NAFR.

**EXISTING ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

Alternatives 1A, 1B, 2A, 2B, and No-Action from the LEIS Chapter 2.0 were overlaid on the existing environment, Chapter 3.0, to produce the environmental consequences in Chapter 4.0. The environmental baseline conditions and environmental consequences for each environmental resource are briefly summarized below.

**Airspace**

The FAA regulates and manages air traffic control procedures and separation criteria, flight rules, and airspace designations. The FAA worked with the Air Force to design the NRC to meet both civilian and military use requirements. The current airspace designations have been able to accommodate civilian air traffic and military flight training and testing activities in southern Nevada without prompting the FAA to impose any significant restrictions or limitations on either types of activities.

No changes in overall airspace boundaries are anticipated for any of the action alternatives. Airspace boundaries under

the No-Action Alternative would remain as at present. The No-Action Alternative could result in the redesignation of restricted airspace.

### **Noise**

Noise from aircraft operations is one of the most identifiable concerns of the public. Cumulative noise levels associated with the historic and projected 200,000 to 300,000 annual aircraft sortie-operations were calculated for the 21 airspace subunits of the NRC. The noise levels on all lands under the NRC were calculated to be 61 decibels (dB) or below. The renewal of the NAFR withdrawal would result in no noticeable change to existing noise levels. Sonic booms would continue similar to current operations. The anticipated reduction in aircraft operations under the No-Action Alternative is calculated to produce a 4-dB reduction in noise within the airspace subunits.

### **Safety**

This LEIS addresses fire, ground, flight, and explosive safety issues. Safety policies for fire, ground, and flight operations would remain in place in each of the action alternatives. Testing and training with more sophisticated ordnance may require expanded safety zones within the NAFR exclusive use area but would not affect areas outside of NAFR.

Potential safety risks would become issues under the No-Action Alternative in areas opened to the public. Unrestricted access to all areas could result in a safety hazard due to 50 years of use as a test and training range. Substantial cleanup would have to precede safe public access to disturbed areas. Some areas may not become

accessible to all uses normally permitted on BLM-managed lands.

### **Hazardous Materials and Solid Waste Management**

Military activities use hazardous fuels, oils, and cleaning solvents. The great majority of the non-weapon hazardous materials used by Air Force and contractor personnel on NAFR are controlled through an Air Force pollution prevention process.

Testing of some nuclear devices has caused contamination of NAFR land. The State of Nevada, DOE, and DOD have entered into a Federal Facility Agreement and Consent Order (FFACO) for DOE environmental restoration activities in Nevada (signed in 1996).

Environmental restoration of previously contaminated sites is part of the Air Force Installation Restoration Program (IRP). Ninety-eight IRP sites have been identified on NAFR. Seventy-four of these sites were recommended for no further action. Site investigations were done for the remaining 24 sites. Two sites, a fire training area at Indian Springs and a septic tank at Range 65N, required remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). These actions were completed in 1993. Two landfill sites were recommended for long-term monitoring. Decision Documents (DD) have been accepted and signed by the Nevada Division of Environmental Protection (NDEP).

Use of hazardous materials and wastes would continue within NAFR disturbed areas as a result of land withdrawal renewal. NAFR would continue the cleanup

and maintenance of target areas and recycling of materials. DOE procedures, cleanup, and monitoring processes would also continue under applicable regulations.

Selection of Alternatives 1B or 2B would result in the non-renewal of lands including part of the Clarkdale and Wagner Mining Districts. Any future use of this land would undergo DOI/BLM environmental review and permitting.

Under the No-Action Alternative, Air Force hazardous materials and ordnance use would stop. Hazardous materials would be removed from public access parts of NAFR under agreement with DOE and DOI. Any operational activity that would occur in the range after a No-Action decision would be administered by the appropriate DOI agency, and hazardous wastes from these activities would be regulated under the applicable local, state, and federal control rules.

### **Earth Resources**

NAFR is located within the southern part of the Great Basin. Earth resources on NAFR include mineral deposits, soils, significant landforms, tectonic features, and paleontologic (fossil) remains, any of which can have scientific, economic, and recreational value. Mining has occurred on NAFR since the 1860s. Most of the known gold and silver deposits were discovered by the early 1900s. Although mining decreased substantially after these initial discoveries, it continued sporadically until 1942 when NAFR was closed to mining. Minerals discovered at NAFR include gold, silver, copper, lead, zinc, mercury, tungsten, and turquoise. Fossils are present within many sedimentary rock formations at NAFR.

Renewal of the land withdrawal would continue the disturbance of approximately 3 percent of the NAFR exclusive use land. This would result in no change in impacts to geology from Air Force actions. Should Alternatives 1B or 2B be selected, additional acreage could be disturbed in areas opened for recreational co-use and in non-renewal areas. Potential impacts to geology and soils could result if BLM were to permit mining operations on non-renewed lands.

Under the No-Action Alternative, the Air Force disturbance to soils would end except for cleanup activities. Access for mining, off-highway recreation, or agriculture could impact earth resources. Environmental permitting and safeguards would be the responsibility of BLM and the appropriate state and federal agencies.

### **Water Resources**

NAFR water resources include surface water and groundwater. Due to the temporary nature of surface water within this arid region, there are no surface waters designated for specific beneficial uses. With the exception of man-made ponds, the only perennial surface water comes from springs where the groundwater table intersects the surface. A total of 946.37 acre-feet per year (AFY) of surface water on NAFR is currently appropriated for stock, wildlife, domestic, and irrigation purposes. The Air Force is working with BLM to reduce surface water impacts from wild horses on the North Range. This would continue under any action alternative but the Air Force would be expected to cease its participation in this relationship under the No-Action Alternative.

The 21 hydrographic basins entirely or partly included on NAFR represent a water

resource potential of over 49 million acre-feet of groundwater storage with a potential perennial yield of 93,000 AFY.

Groundwater is appropriated from 25 wells located within the boundaries of NAFR, totaling 1,851.9 AFY. The total average annual groundwater use in these areas is approximately 207 AFY.

Implementation of the land withdrawal renewal alternatives would result in the continuation of existing water usage. Selection of Alternatives 1B or 2B could result in disturbances to the playa at Mud Lake from recreation and to surface and groundwater resources should mining operations on nonrenewed lands be permitted by BLM.

Selection of the No-Action Alternative would end military operations on NAFR. New land uses (mining, recreation, or agriculture) permitted by BLM after a No-Action decision could impact surface or groundwater.

### **Air Quality**

Air quality is defined by the concentration of various pollutants in the atmosphere. The majority of NAFR is on lands that have been designated as "unclassified with reference to state and federal standards for criteria pollutants." However, a small portion of the southeast corner of NAFR is in "serious" nonattainment for carbon monoxide (CO) and particulate matter (PM<sub>10</sub>).

Short-term air quality impacts from particulates would continue from construction, maintenance, operations, and other sources on NAFR if any renewal alternative were selected. Selection of Alternative 1B or 2B could permit increased

particulates from off-highway vehicle (OHV) recreation on Mud Lake. If permitted by the state and BLM, mining impacts on non-renewed land could produce measurable air quality impacts.

Air quality impacts from ground-based Air Force activities would cease under the No-Action Alternative. Any BLM-permitted recreation or mining development would need to be regulated by applicable local, state, or federal air pollution rules.

### **Biological Resources**

Biological resources include native and naturalized plants and animals and the habitats in which they occur. NAFR is situated along the zone of transition between the Mojave and Great Basin deserts. The Basin-and-Range topography of NAFR includes low-to mid-elevation mountain ranges and valleys that allow plant and animal dispersal between the two deserts. The scarcity of roads across NAFR contributes to a high degree of continuity between habitats. NAFR contains diverse plant and animal communities. The biological importance of NAFR is increased by its isolation from livestock grazing and land development and by the limited extent of land disturbance from military activities. Impacts from wild horses are substantial on the North Range.

As a result of implementation of any renewal alternative, loss of habitat resulting from NAFR-associated activities would be expected to continue but not increase. Native vegetation and species would be expected to continue to dominate on existing NAFR land. Beneficial impacts from exclusive military use would continue for sensitive species, wetlands, and natural habitats within NAFR.

Some new impacts could occur under Alternatives 1B and 2B in local areas of soil and vegetation impact if currently withdrawn lands were permitted by BLM to allow mining, agriculture, or consumptive recreation.

The No-Action Alternative would produce both positive and negative impacts. Ground military activities would end, and noise impacts from military training and disturbance would decrease. Multiple use and public access, including mining, grazing, recreation, and opening of areas for utility corridors, if permitted by DOI/BLM, could have long-term widespread negative impacts that may exceed any short-term benefits of reduced military activity.

### **Cultural Resources**

Cultural resources are any historic district, site, building, structure or object considered to be important to a culture, subculture, or community for scientific, traditional, religious, or any other reason. Potential sources of impacts to cultural resources include ground disturbance, noise, vibrations, visual intrusions and access-related effects. Over 1,800 cultural resources have been identified and recorded on NAFR, including early American Indian village sites, historic mining towns, smaller sites, and isolated artifacts.

Implementation of any renewal alternative would continue NAFR access restrictions. This would protect cultural resources from unauthorized use but could impact researchers and American Indian groups desiring access. Impacts to NAFR disturbed areas and visual and noise intrusions from overflights would continue. Alternatives 1B and 2B could result in

additional impacts if BLM opened areas to public or commercial use on non-renewed lands. Increased access has the potential for impacts from vandalism, new ground disturbance, or reduced protection.

Potential significant impacts could occur under the No-Action Alternative to cultural resources preserved under exclusive use. Access-related impacts potentially include unauthorized collecting or vandalism. Multiple use management could inadvertently expose cultural resources to impacts from both consumptive and nonconsumptive uses.

### **Land Use & Transportation**

Human land uses include residential, commercial, industrial, agricultural, and recreational uses. The majority of NAFR is designated exclusively for military use. The exception to this is portions of the South Range which overlap portions of the DNWR. Prior to the establishment of NAFR, land uses included mining and grazing.

Outside of NAFR, land use consists primarily of federal land managed by BLM for multiple use. Sections of privately owned land that occur outside NAFR boundaries include the northern portions of the Las Vegas metropolitan area and near the small towns that surround NAFR.

Public access onto the range is prohibited. Transportation resources around NAFR consist primarily of Interstate 15 (I-15), oriented in a northeast-southwest direction through Las Vegas. Three U.S. Highways and one state highway surround NAFR.

As a result of implementation of any renewal alternative, land status, land management, transportation, and land use

would remain unchanged. Alternatives 1B and 2B would permit short-term mission compatible co-use and site-specific access for recreation and American Indian cultural activities. Potential administrative changes in overlapping DOE and DNWR lands are not expected to impact land access or land uses. Potential land use changes could be approved by BLM for mining or agriculture in non-renewed areas.

Under the No-Action Alternative, land status and land use could be substantially altered. Approximately 3 million acres of NAFR land would be returned to BLM. BLM would be expected to implement multiple-use management including grazing, mining, recreation, and other land uses. These changes to land status and land use could impact natural and cultural resources essentially isolated for 50 years.

### **Wilderness & Wilderness Study Areas**

BLM, U.S. Forest Service (USFS), and USFWS lands under the NRC have been surveyed to determine whether they potentially qualify as Wilderness Areas. Two USFS Wilderness Areas, the majority of the USFWS managed DNWR, and 20 BLM-designated Wilderness Study Areas (WSAs) are wholly or partially under the NRC airspace.

These WSAs are managed to generally prohibit use of mechanized vehicles, landing of aircraft, or construction of structures or roads. WSAs are managed as *de facto* wilderness areas until Congress determines whether the areas should be left unimpaired for future use and enjoyment as wilderness.

The proposed NAFR land withdrawal renewal alternatives are not expected to

change from normal military testing or training on NAFR. This will result in no change in the Air Force agreements with USFWS to recognize management goals for the DNWR and for NAFR. Transitory military and general aviation overflights were not considered a basis for BLM to preclude an area from being proposed as a wilderness. No change is anticipated that could affect wilderness designations of lands under the NRC.

The No-Action Alternative is projected to reduce the number of overflights within the NRC. Neither existing nor a reduction in overflights would change wilderness or WSA designations. Mining exploration, OHV use, transportation corridors, or other forms of intrusive activities could affect future wilderness values on what was essentially protected NAFR land.

### **Recreation & Visual Resources**

The diverse landscape adjacent to NAFR provides a variety of outdoor recreation opportunities ranging from hiking, camping, and nature viewing to OHV use, recreational mining, and hunting. State parks, recreation areas, national forests, and wildlife refuges also provide destinations for visitors. Visual resources consist of natural and man-made features.

As a result of implementation of any renewal alternative, current access restrictions would remain. Limited hunting on NAFR would continue. Little increase in recreation on lands adjacent to NAFR would be expected. No change in visual intrusions would be anticipated. Alternatives 1B and 2B would be expected to have some recreational co-use of selected areas. These enhanced recreation

opportunities could include land sailing, hiking, nature viewing, and rockhounding.

The No-Action Alternative would open lands not currently available for recreation to multiple use. Increased non-consumptive recreation could be beneficial to the public. Increased recreation also has the potential for impacts from increased vandalism, OHV damage, conflicts between visitors seeking isolated areas and those who operate vehicles as a recreational activity, and competition with consumptive uses such as mining.

### **Socioeconomics**

Socioeconomics addresses selected characteristics of the social and economic environment in the geographical areas affected by NAFR. The characteristics evaluated include economic development (comprised of employment and earning, with special attention given to the agricultural and mining sectors of the economy), population, housing, public services and facilities (comprised of health care, public schools, law enforcement, and fire protection), and public finance.

No discernible change in socioeconomic activity would result from each of the renewal alternatives. Alternatives 1B and 2B would be expected to have some potential for increased employment if private mining development or limited agriculture were permitted.

The No-Action Alternative is calculated to result in a loss of approximately 7,100 jobs in Clark County and approximately 300 jobs in Nye County by the year 2003. This could be partially offset by approximately 720 new mining jobs, primarily in Lincoln County by 2011 if gold prices returned to

their historic levels, and BLM permitted mining and agriculture in former exclusive use areas of NAFR.

### **Environmental Justice**

Presidential EO 12898 provides that each federal agency makes achieving environmental justice part of its mission by identifying and addressing any disproportionately high and adverse human health or environmental effects of an action on minority or low-income populations. The Air Force has developed an implementation strategy for EO 12898. This is described in the *Interim Guide for Environmental Justice Analysis* with the Environmental Impact Analysis Process (U.S. Air Force 1997h).

In Nye County, 10.3 percent of the population is living below the poverty level. The comparable figures for Lincoln and Clark counties are 13.1 percent and 10.3 percent, respectively. Clark and Nye counties do not have a measurably greater percent of low-income persons than the general population potentially affected by the land withdrawal. Lincoln County has a slightly higher percentage of persons living below the poverty level.

There would not be disproportionately high environmental effects on low-income populations in Nye or Lincoln counties from renewal of NAFR. Neither residents of Lincoln County nor residents of the Moapa Reservation would receive disproportionately high noise effects under the No-Action or action alternatives when compared to other areas within the NRC. Communities under the NRC airspace are protected by no-fly zones that reduce noise to acceptable levels.



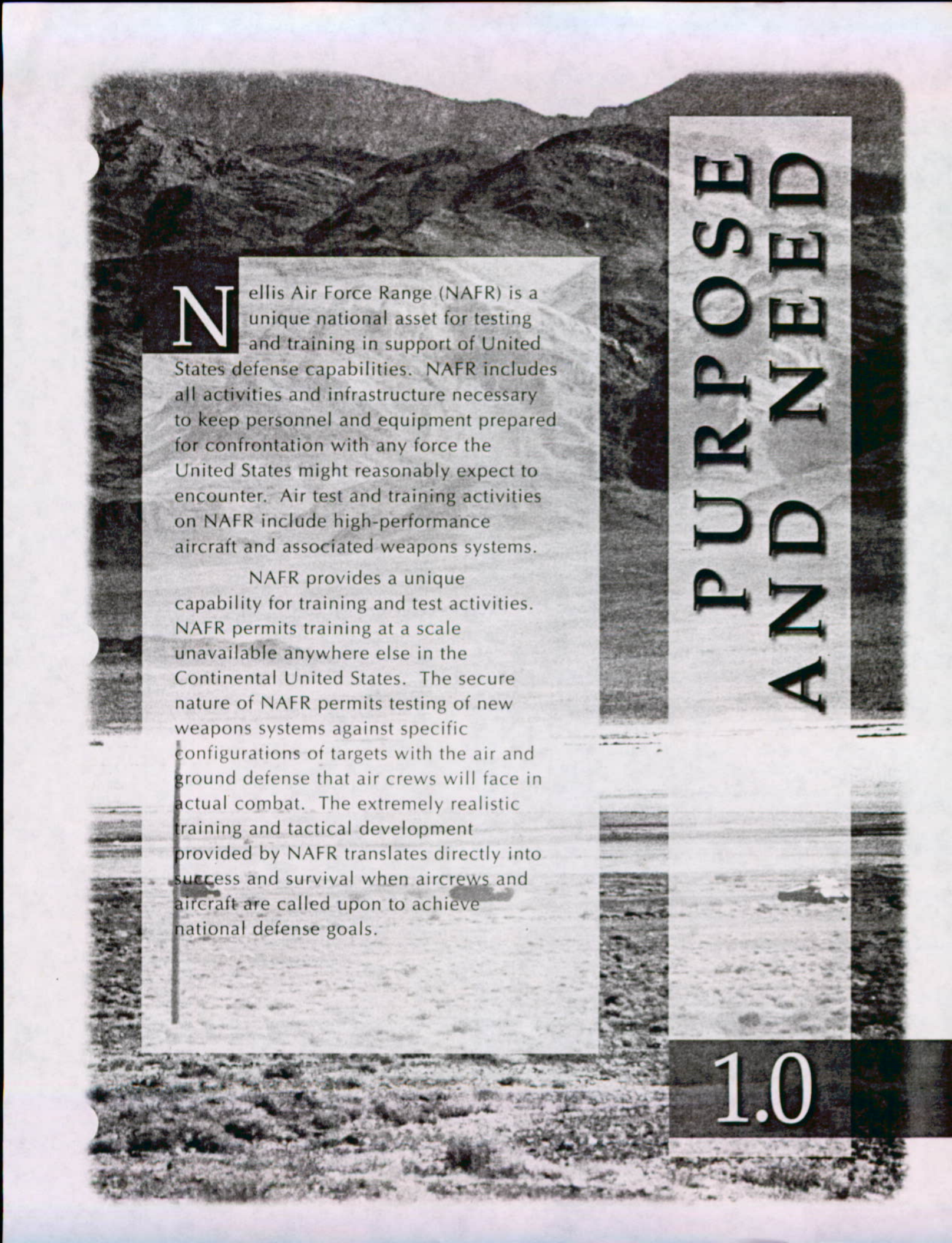
The No-Action Alternative would be expected to have a measurable impact on minority populations in Clark County, although the total impacts are low relative to the employment base. Assuming that the labor force has ethnic characteristics that mirror those of the population at large, implementation of the No-Action Alternative could result in a net loss of approximately 1,700 minority jobs.

American Indians expressed concern that continued restricted access to NAFR results in sacred land violations and cultural survival violations. The Air Force is working with affected tribes and bands to respond to their concerns within operational safety and security requirements.

## **CUMULATIVE ENVIRONMENTAL CONSEQUENCES**

The range of aircraft overflight sorties considered in this LEIS incorporates the environmental consequences of continuing to test and train over NAFR with high performance military equipment.

Also, this LEIS considers the cumulative impacts of anticipated future federal and non-federal projects, specifically F-22 aircraft programs, which may increase noise levels over the NRC and NAFR. Cumulative effects of continued population growth in the Las Vegas Valley may have an additional impact on regional air quality, water resources, transportation, and socioeconomics.



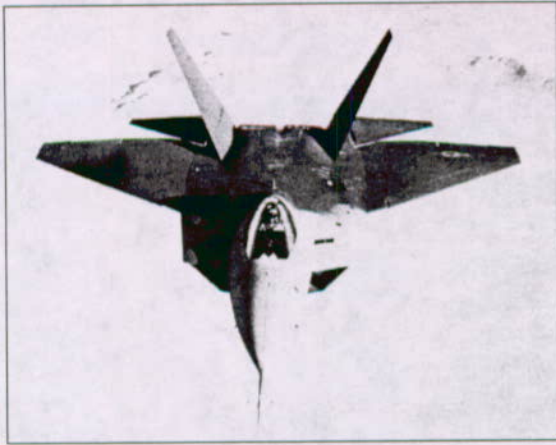
**N**ellis Air Force Range (NAFR) is a unique national asset for testing and training in support of United States defense capabilities. NAFR includes all activities and infrastructure necessary to keep personnel and equipment prepared for confrontation with any force the United States might reasonably expect to encounter. Air test and training activities on NAFR include high-performance aircraft and associated weapons systems.

NAFR provides a unique capability for training and test activities. NAFR permits training at a scale unavailable anywhere else in the Continental United States. The secure nature of NAFR permits testing of new weapons systems against specific configurations of targets with the air and ground defense that air crews will face in actual combat. The extremely realistic training and tactical development provided by NAFR translates directly into success and survival when aircrews and aircraft are called upon to achieve national defense goals.

**PURPOSE  
AND  
NEED**

**1.0**

## PURPOSE AND NEED



*NAFR provides the security to test new weapons systems.*

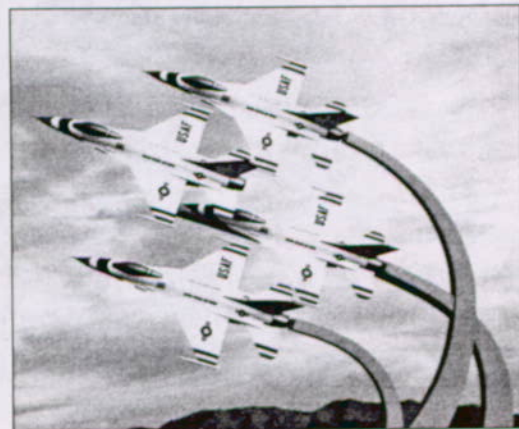


*NAFR provides for public safety by excluding access to areas of potential danger.*



The Air Force must safeguard the technology, information, and equipment entrusted to it and limit the flow of military technology and information to those that could potentially cause harm to the nation. NAFR provides a secure place to test new systems and train with existing ones, free from exploitation by potential adversaries. On NAFR, safety and security are accomplished by various means, including providing a sufficient buffer zone between military operations and the public.

Operational security and public safety can be best achieved by isolating military activities. This ensures the integrity of classified and essential elements of operations as well as protection for the public.



*The Air Force Thunderbirds, depicted in this display at Nellis AFB, use NAFR for safe training in aerial maneuvers.*

*NAFR military operations and testing include ample multiple-aircraft battlefield engagements. NAFR is the primary Air Force post-graduate combat teaching and training range.*

# **1.0 PURPOSE AND NEED FOR RENEWAL OF THE NELLIS AIR FORCE RANGE LAND WITHDRAWAL**

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The U.S. Congress faces a decision that will dramatically affect the ability of the U.S. Air Force (Air Force) and the other armed services to train military aircrews how to fly, fight, and survive in combat. The pending Congressional decision is whether or not to reauthorize any or all of six military reservations authorized by the Military Lands Withdrawal Act (MLWA) of 1986 (Public Law [PL] 99-606 as amended).

As specified in PL 99-606 as amended, authority for each of the six military reservations will expire on November 6, 2001 unless Congress acts to renew the land withdrawal applicable to each reservation. PL 99-606 as amended, also directs that the secretary of the military department concerned shall publish a draft environmental impact statement by November 6, 1998 addressing the proposed renewal of any portion of any of the military reservations authorized by the act for which there is a continuing military need beyond November 6, 2001.

The Nellis Air Force Range (NAFR) is essential to the continuing ability of the Air Force to meet its national defense responsibilities. The Secretary of the Air Force has determined that there is a continuing need for NAFR. NAFR, which is administered by the Air Force, provides a location to:

- ensure and protect national security;
- train for the full and integrated spectrum of military operations; and
- ensure the continued protection of public safety.

## **1.1 INTRODUCTION**

The Air Force is tasked with the primary responsibility for projecting long-range military air power needs. The Air Force is the only branch of the Department of Defense (DOD) with long-range fighters, bombers, tankers, electronic warfare and intelligence aircraft, airlifters, and stealth capabilities that provide the ability to quickly deliver a powerful strike at an enemy over great distances. Air Force missions include space surveillance, tactical battlefield surveillance, aerial transport of troops and materiel, close air support of land forces, all-weather strike, nuclear deterrence, maritime strike, and air superiority. The Air Force works in close concert with other U.S. military services, as well as those of our allies, to carry out missions efficiently.

The Air Force is committed to maintaining a force that is second to none. The important elements of this force structure include the following:

- highly trained and motivated aircrews and ground support personnel;
- state-of-the-art tested aircraft, avionics, and weapons;

- an advanced command, control, electronic warfare, surveillance, and intelligence capability;
- maintenance and logistics (including infrastructure) required by the aircraft, avionics, and weapons systems; and
- the resources and access to airspace and ranges to train aircrews in modern air combat tactics.

Realistic, stressful, and challenging operational training and weapons system testing are the primary means to ensure readiness and prepare the Air Force to apply personnel and assets to meet national policies. This training is central to the way America's Armed Services fight. Training consists of a careful progression of activities and threat complexity, including a balance of programs directed at individuals, crews, and larger organizational units (including multi-national forces) and performance assessments. Whether training is accomplished as an individual-level mission activity or as a full-scale, multi-force field exercise, realistically evaluated training is critical to maintaining military proficiency. Joint coalition and combined training exercises further improve U.S. military operations and understanding of the strengths of each military service, as well as those of allies and coalition partners.

These interests and policies include ensuring strong relationships with our allies, protecting our rights of trade and travel, and deterring aggression. As a key element of U.S. military power, the Air Force has the mission to train for and, when necessary, successfully engage competing military activities of hostile nations and organizations. In addition, the Air Force is currently expected to train for and participate in a broad range of conflict prevention, peacekeeping, and humanitarian activities.

NAFR is a unique national asset that provides the opportunity for weapons system testing combined with the highest level of training available for military personnel. NAFR is the only location in the United States where both individual and large multi-force training is provided in highly sophisticated training exercises that simulate full-scale battlefield scenarios. Such training exercises test tactics, equipment, and personnel. The advanced level of training and testing that NAFR offers is crucial to the survival of U.S. and allied military personnel and the success of the Air Force mission to defend the United States and to secure and enhance U.S. interests and policies around the world.

NAFR provides both efficient testing and training time and realistic opportunities that include threats, operational space, topographic complexity, security, and public safety buffers that ensure U.S. forces are always prepared. U.S. military forces require NAFR to continue to be prepared for known and emerging threats to the nation and its interests and to test and refine innovative concepts, aircraft, weapon systems, and new strategies to deter, compel and, if required, fight and win wars well into the 21st century.

This high level of cost-effective testing and training is performed at NAFR and supported by the people of the United States through investment in NAFR's infrastructure. This

infrastructure includes airfields at the Tonopah Test Range (TTR) and Indian Springs, as well as buildings, roads, communications, tracking equipment, targets, and threats necessary to evaluate the performance of aircrews and larger warfighting units training on NAFR. The Air Force is committed to using this unique testing and training asset efficiently while continuing to be a good steward of the land and its environmental resources.

NAFR is administered by the Air Force, Air Combat Command (ACC), through units of the U.S. Air Warfare Center (AWFC), Range Management Office located at Nellis Air Force Base (AFB). Nellis AFB is the command, communications, and operations center for units using NAFR. Nellis AFB controls restricted areas or numbered ranges and also provides personnel and logistics support for the aircraft and crews using NAFR.

NAFR occupies land withdrawn from public use for the purposes of military testing and training. The original NAFR land withdrawal consisted of approximately 2,945,726 acres of land located between Tonopah and Las Vegas in southwestern Nevada. NAFR today, through Congressional changes in its boundaries, consists of approximately 3,038,698 acres and is divided into two functional areas, the North Range and the South Range.

### **1.1.1 Intent and Organization of this LEIS**

This Legislative Environmental Impact Statement (LEIS) and a classified annex provide input regarding the potential environmental consequences of the proposed continuation of NAFR as the Air Force's premier operational test and training range. This LEIS has been prepared in response to Congressional direction through the November 6, 1986 MLWA PL 99-606 as amended by the Groom Mountain Withdrawal (Public Land Order [PLO] 100-338) and the White Sides Safety and Security Buffer (PLO 7131). An LEIS is an environmental evaluation (in compliance with the National Environmental Policy Act [NEPA] and the Council on Environmental Quality [CEQ] Guidelines) in support of legislation proposed to Congress. An LEIS normally does not include scoping, the preparation of a Final EIS, and the preparation of a Record of Decision (ROD). However, the Air Force has elected to include public scoping and the preparation of a final environmental document in the NAFR Renewal LEIS process.

To meet the need for Congressional decisionmaking, this LEIS is organized as follows:

- Chapter 1.0 discusses the purpose and need for NAFR.
- Chapter 2.0 describes the four action alternatives that would permit continuation of NAFR test and training missions. The No-Action Alternative is described. Chapter 2.0 also discusses alternatives considered but not carried forward and the Air Force's preferred alternative.
- Chapter 3.0 provides an overview of the baseline environmental conditions of NAFR and the potentially affected environment.
- Chapter 4.0 addresses the potential impacts of implementing the alternatives described in Chapter 2.0, when compared to baseline conditions presented in Chapter 3.0.

- Chapter 5.0 summarizes the cumulative effects and the irreversible and irretrievable commitment of resources associated with the alternatives.
- Chapters 6.0, 7.0, 8.0, 9.0, 10.0, and 11.0 present the references, persons and agencies contacted, a list of preparers and contributors, consultation information, a list of document repositories, index, and a list of acronyms (at the back of Volume 1) respectively.
- Volume 2 of the LEIS contains the comments on the Draft LEIS, responses to those comments and appendices providing additional technical support data. Volume 2 also contains letters with comments on the BLM application.

The lead agency for the preparation of the LEIS is the Department of the Air Force. Cooperating agencies are the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and the U.S. Department of Energy (DOE).

### **1.1.2 Decision to be Made**

The decision to be made by Congress is whether to renew the land withdrawal<sup>1</sup> for NAFR or allow authorization for the range to expire. The Secretary of the Air Force has identified a continuing military need for NAFR and has prepared this LEIS as one of the required components in the application to Congress to renew the range. An Act of Congress is the anticipated necessary step for renewing authorization for the range. A new act would allow Congress to redefine the size, duration, and terms of the NAFR land withdrawal to fit the current and projected need for the military reservation. Congress could extend the duration of the NAFR land withdrawal by passing a resolution to continue the land withdrawal and reservation terms of PL 99-606 as amended.

Non-renewal of NAFR would occur if Congress elects to allow the land withdrawal to expire as specified in PL 99-606 as amended. In this event, decommissioning NAFR would likely require a period of several years in order to identify training missions to be retained, realigned, or canceled; relocate training missions performed on the range that are to be realigned to other military installations; remove aerial bombing and gunnery targets and other range infrastructure; clean up and restore target sites and other use areas as necessary; and decontaminate the range to the extent possible by removing unexploded live ordnance and toxic and hazardous materials. There would likely be a need to use NAFR to support some continuing testing training missions during this decommissioning period until those missions were canceled or realigned to other training facilities.

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<sup>1</sup> "Withdrawing" federal lands means to withhold them by executive or legislative action from settlement, sale, location, or entry under some or all of the general land, mining, and mineral laws in order to limit or prohibit activities normally permitted under those laws. The Defense Withdrawal Act of 1958 (PL 85-337) requires an Act of Congress for land withdrawals for military purposes that are more than 5,000 acres in aggregate.

## 1.2 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The Environmental Impact Analysis Process (EIAP) for the proposal to renew the withdrawal of NAFR addresses separate but related requirements.

- NEPA requires federal agencies to consider the environmental consequences of their proposals in deciding whether to proceed with those proposals.
- Federal Land Policy and Management Act (FLPMA) governs administration of public lands by the BLM, including land withdrawals as specified under the Engle Act (refer to Appendix C).
- This LEIS has been prepared to meet the requirements of NEPA and the requirements of FLPMA with respect to documenting the environmental consequences associated with the proposed land withdrawal.

This LEIS provides fundamental information for Congress, BLM, and the Air Force.

The *Air Force* intends to make a recommendation regarding NAFR:

- Propose an action from the alternatives described in section 2.2 and evaluated in this LEIS.

If the Air Force recommends renewal of NAFR, this LEIS will be used by the following agencies or government bodies:

The *Department of Interior (DOI)*, *BLM* to make recommendations regarding:

- Withdrawal renewal of public lands for the purposes of implementing the proposed action.

*Congress* to make decisions concerning:

- The content and enactment of legislation withdrawing those specific public lands associated with the proposed action.

The major milestones in this EIAP include the following:

- publication of a Notice of Intent (NOI) to prepare a LEIS by the Air Force;
- publication of a NOI for Proposed Withdrawal and Opportunity for Public Meeting by BLM and the Air Force;
- scoping by inviting public and agency input to determine and define the significant issues to be addressed in the LEIS;



- collecting information on the existing environment, including field studies, to provide a baseline for analyzing the effects of the alternatives;
- assessing the potential impacts of the proposed action and alternatives on the environment;
- preparation and distribution of a LEIS for public review and comment, not later than November 6, 1998;
- a public review period (90 days for FLPMA), including public hearings, to solicit comments on the analysis presented in the LEIS; and
- preparation of comment responses and distribution of an EIS, including comments received and responses to substantive issues raised during the public and agency review.

### **1.2.1 Requirements of NEPA**

NEPA (PL 91-190, 42 United States Code [USC] 4321-4347, as amended) was enacted to establish a national environmental policy. It also established the CEQ to implement the provisions of NEPA and review and appraise federal programs and activities in light of NEPA policy. CEQ promulgated regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508). These regulations outline the responsibilities of federal agencies under NEPA and provide specific procedures for preparing EISs to comply with NEPA. Air Force Instruction (AFI) 32-7061, which implements the CEQ regulations with regard to Air Force actions, defines the steps and milestones in the EIAP. Part 2300 of 43 CFR 1600 (DOI's NEPA implementing regulations) specifies requirements for land withdrawal, as well as the requirement for environmental analysis.

### **1.2.2 Lead Agency and Cooperating Agencies**

The Air Force is the proponent for the proposal to renew the withdrawal of NAFR and is the lead agency for the preparation of the LEIS, as well as for the FLPMA documentation.

As defined in 40 CFR §1508.5, a cooperating agency

means any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment . . . . A State or local agency of similar qualification . . . may by agreement with the lead agency become a cooperating agency.

The following federal agencies are identified as cooperating agencies in this project:

- *Bureau of Land Management.* The BLM administers most of the public lands within the proposed range alternatives. The BLM is responsible for processing the land withdrawal application and prepares a case file for the DOI to submit to Congress under the Engle Act of 1958 and the FLPMA of 1976.
- *Department of Energy.* DOE is responsible for the Nevada Test Site (NTS). These lands are withdrawn and adjacent to NAFR. The DOE administers (under a classified Memorandum of Agreement with the Air Force) non-nuclear DOE Research and Development projects on the TTR. By a separate agreement with the Air Force, the DOE administers the Pahute Mesa portion of NAFR.
- *U.S. Fish and Wildlife Service.* The USFWS administers the DNWR through a land withdrawal from public lands status.

### **1.2.3 Public Involvement Process**

AFI 32-7061 and CEQ regulations require an early and open process for identifying significant issues related to a proposed action and obtaining input from agencies and the affected public prior to making a decision that could significantly affect the environment. In the spirit of full public and agency input to the EIAP, the Air Force initiated a public involvement process, including public scoping prior to the preparation of the LEIS, and close coordination with cooperating agencies prior to public review of the LEIS.

Several laws and regulations address the requirement of federal agencies to notify or consult with American Indian groups or otherwise consider their interests when planning and implementing federal undertakings.

In particular, on April 29, 1994, the President issued the Memorandum on Government-to-Government Relations with Native American Tribal Governments, which specifies a commitment to developing more effective day-to-day working relationships with sovereign tribal governments. Among the provisions of this memorandum are the following requirements:

- The head of each executive department and agency shall be responsible for ensuring that the department or agency operates within a government-to-government relationship with federally recognized tribal governments.
- Each executive department and agency shall consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments prior to taking actions that affect federally recognized tribal governments. All such consultations are to be open and candid so that all interested parties may evaluate for themselves the potential impact of relevant proposals.
- Each executive department and agency shall assess the impact of federal government plans, projects, programs, and activities on tribal trust resources and assure that tribal

government rights and concerns are considered during their development of such plans, projects, and activities.

- Each executive department and agency shall take appropriate steps to remove any procedural impediments to working directly and effectively with tribal governments on activities that affect the trust property and/or governmental rights of the tribes.

As part of the NEPA process, 18 tribes with historical ties to the land in the NRC vicinity were notified at the initiation of the project, with discussions and consultations among a variety of tribes occurring during the process. A list of the tribes is presented in section 3.9.3.

#### 1.2.3.1 PUBLIC AND AGENCY SCOPING

Extensive public scoping was held in six locations in Nevada from June 17 through June 26, 1996. Scoping for potentially affected American Indian tribes was held on June 28, 1996. Public and agency scoping comments and American Indian perspectives were incorporated into the LEIS and led to the development of two of the four alternatives. The process by which alternatives were developed is discussed in section 2.1. A summary of resource-specific issues identified during scoping is presented in Chapter 4.0.

#### 1.2.3.2 PUBLIC HEARINGS

A 90-day Congressional and public review process began with the publication of the Notice of Availability of the Draft LEIS renewal in the *Federal Register*. The Notice of Availability was also posted on the Internet at <http://www.nellis.af.mil/range/renewal>. The public review process included public hearings at various locations throughout Nevada. The purpose of the public hearings was to solicit comments relevant to the environmental consequences of the proposal to renew the NAFR land withdrawal or to select no action. Comments on the Draft LEIS were requested from government agencies, Tribal Governments, Tribal organizations, private organizations, and the public.

Local media was used to notify the public of the hearings. An advertisement of the public hearings was published in several local newspapers. Appendix B provides a summary of the public participation efforts associated with the NAFR renewal EIAP.

#### 1.2.4 Requirements of the Federal Land Policy and Management Act

The BLM is responsible for the land withdrawal application and is preparing a case file for the DOI to submit to Congress under PL 99-606 as amended, the Engle Act of 1958, and FLPMA of 1976. The rules and procedures implementing the Secretary of the Interior's authority to process federal land withdrawal applications under FLPMA are described in 43 CFR Chapter II, Part 2300. The initial land withdrawal process includes preapplication consultations; application and publication of the application in the *Federal Register*; preparation of a case file, including this LEIS and recommendations; transmittal of the case file to the Director of the BLM and Secretary of the Interior; transmittal of draft legislation and the case file to Congress; and legislative action by Congress.

## Nellis Air Force Range Renewal LEIS

The FLPMA case file, as described in 43 CFR Section 2310.3-2, includes the items listed below. Information on the availability of these items is also provided for each case file requirement. These separate reports are available at libraries listed in Chapter 10.0.

- **LAND USES.** The current and proposed land use of the existing NAFR are identified in a separate report – *Land Use Study, Nellis Air Force Range*. This report:
  - provides a general description of current land uses at NAFR and shows the authorization for land use as per the MLWA of 1986;
  - provides a legal description of NAFR and shows changes in withdrawn lands since the 1986 withdrawal;
  - describes the Memoranda of Understanding (MOUs) and Rights-of-Way (ROW) as they determine land uses and agency or government jurisdiction;
  - describes the land users and their primary jurisdictions within NAFR;
  - describes areas that qualify for special land status such as wilderness study areas, cultural resource/protection areas, biological habitat areas, etc.;
  - describes land rights and/or uses that have been eliminated, bought-out, or need to be acquired by the Air Force;
  - describes land management practices within NAFR; and
  - maps land uses as an overlay to NAFR.
- **WATER REQUIREMENTS.** The current and proposed water requirements of NAFR are identified in a separate report – *Water Requirements Study of the Nellis Air Force Range*. This report:
  - provides an overview of the hydrogeologic setting within NAFR;
  - provides a summary and evaluation of all known sources, uses, and users of surface and groundwater;
  - summarizes all water rights; and
  - evaluates the future water requirements of activities supported by the renewal of the NAFR land withdrawal.
- **NEPA COMPLIANCE.** The *Renewal of the Nellis Air Force Range Land Withdrawal LEIS* is submitted in compliance with this requirement. The following items are referenced in this LEIS:

- *Public Participation Process.* Included in Appendix B of this LEIS.
- *Contamination Report.* Study of the existing known and potential sources of contamination within the proposed withdrawn lands. This is a separate report – *Nellis Range Final Contamination Study.*
- *Range Final Contamination Study.* Compilation of information about contamination investigations, environmental compliance procedures and material records storage, and potential receptors. It summarizes information from :
  - the Air Force Installation Restoration Program (IRP);
  - the Department of Energy Environmental Restoration Program (ERP);
  - the Resource Conservation and Recovery Act (RCRA) Facility Assessment Report on NAFR;
  - the depleted uranium target assessment;
  - spills and aircraft mishaps records;
  - the recent surface soil sampling investigation of representative bombing targets;
  - explosive ordnance disposal;
  - spills prevention plans;
  - emergency response plans;
  - waste management plans; and
  - other environmental data relating to NAFR.
- *Minerals Resource Analysis.* Potential energy and mineral resources within NAFR are identified in a separate report – *Minerals and Energy Resource Assessment of the Nellis Air Force Range.* The assessment portion of this report reviewed available data on geologic setting, metallic and industrial minerals, gemstones, uranium, geothermal resources, and oil and gas resources on the NAFR lands. From these data, areas of mineral potential were defined and estimates of the types of known and undiscovered mineral and energy resources that may be present within the project area were made.
- *Biological Assessment.* Evaluation of current Air Force operations with respect to protected species is presented in a separate report – *Biological Assessment of the Nellis Air Force Range.*

- *Cultural Resources Report.* Compliance with this requirement is met by two references – sections 3.9 and 4.9 of this LEIS, and the *NAFR Cultural Resource Management Plan*. The latter is a separate report.
- *Roadless Areas.* These areas are discussed in the *Land Use Study*.
- *Economic Impact Report.* Included in sections 3.13 and 4.13 of this LEIS and as a separate report – *Economic Impact Report of the Nellis Air Force Range*. The Economic Impact Report includes:
  - a brief history of NAFR;
  - the existing uses of NAFR;
  - the projected economic consequences of continued withdrawal of NAFR as it is currently configured;
  - the economic consequences of potential changes to the NAFR land withdrawal in response to public and agency comments received during the process implemented for the NAFR Legislative Environmental Impact Statement (LEIS) required by PL 99-606;
  - potential economic consequences of not renewing the NAFR land withdrawal;
  - the cost of nonrenewal to the nation and provides a summary comparison of economic consequences of renewal, renewal with changes, or non-renewal of NAFR.
- **WETLANDS AND FLOODPLAINS.** These resources are identified in separate reports – *Floodplain Inventory Report of the Nellis Air Force Range* and *Nellis Air Force Range Wetlands Survey Report*. The *Floodplain Inventory Report of the Nellis Air force Range* includes:
  - a general description of NAFR and its climate, geology, and surface water hydrology;
  - the methods used to delineate watersheds and hydrographic methods to estimate peak flows and runoff volumes; and
  - floodplain delineation and floodzones.

The Nellis Air Force Range Wetlands Survey Report provides an inventory for surface water resources, principally springs and intermittent water courses, on NAFR. As part of this inventory, the report provides mapping data and physical parameter data for each resource, a damage assessment, a qualitative assessment of its value to wildlife and potential management strategies for conservation.

- **CONSULTATIONS.** Consultations are included as Chapter 9.0 of this LEIS; persons and agencies contacted are in Chapter 7.0.
- The FLPMA requirements for the NAFR renewal are summarized in Table 1.2-1.

### **1.2.5 Overview and History of NAFR**

NAFR was originally established by Executive Order (EO) in 1940 as the Las Vegas Bombing and Gunnery Range. A training camp was established in 1942 at Indian Springs, Nevada to facilitate air-to-air gunnery training for aircrews. The camp was designated as Indian Springs Auxiliary Air Field on April 1, 1964. This airfield has since been named Indian Springs Air Force Auxiliary Field (ISAFAF), and provides support and maintenance for the NAFR Complex (BLM 1981).

A portion of the NAFR South Range overlaps the DNWR, which was established in 1936 for the protection and preservation of desert bighorn sheep. The Air Force, USFWS, and BLM entered into MOUs in 1951, 1962, and 1997 related to the protection of bighorn sheep. The MOUs have been updated and amended, as necessary, to ensure proper management by the respective agencies.

In 1952, 1958, and 1961, PLOs transferred portions of NAFR to the Atomic Energy Commission (AEC), which later became the U.S. DOE, for the development of the NTS. Pahute Mesa was delegated to DOE through an MOU with the Air Force for the testing of nuclear weapons. In addition, the Air Force permitted 336,665 acres in November 1956 to the Albuquerque Operations Office of the DOE for use as a fully instrumented ballistic test range. This area is now referred to as the TTR (BLM 1981). Table 1.2-2 provides a brief history of land transaction at NAFR.

From 1940 until 1959, co-use of the range was granted to ranchers and farmers. Air Force requirements to test advanced weapons and tactics eventually needed increased security for the range, now called NAFR. The Secretary of the Air Force was given authority for military use by enactment of PL 99-606 as amended, and the MLWA of 1986. The PL 99-606 withdrawal, as amended, terminates on November 6, 2001. In accordance with PL 99-606 as amended, the LEIS addressing the renewal of the withdrawal for continued military use must be published no later than November 6, 1998.

## **1.3 NELLIS AIR FORCE RANGE**

NAFR is located in southern Nevada. It is bounded by U.S. Highway 95 on the west, southwest, and south; the urbanized area of Las Vegas to the southeast; U.S. Highway 93 on the east; Nevada State Highway 375 on the northeast; and U.S. Highway 6 on the north (see Figure 1-1).

**Table 1.2-1. FLPMA Requirements as Applied to the NAFR Renewal**

<i>FLPMA Requirement</i>	<i>Documentation Prepared for NAFR Renewal</i>	<i>Location of Documentation</i>
A report on present land uses and the effects of withdrawal on those uses	Land Use Study	Separate report
A statement concerning the requirements for water use and the presence of water rights within the withdrawal area	Water Requirements Study	Separate report
Preparation of an LEIS or EA on the proposed withdrawal area	NAFR Renewal LEIS	NAFR Renewal LEIS
A statement as to the extent and manner in which the public participated in the environmental review process	Statement of Public Participation	NAFR Renewal LEIS Appendix B
Study of the existing known and potential sources of contamination within the proposed withdrawn lands <sup>1</sup>	Contamination Report	Separate report
Analysis of the known and estimated mineral potential and market demands for lands within the proposed withdrawal area	Mineral & Energy Resources Report and Economic Impact Report	Separate reports
A Biological Assessment of threatened or endangered species and their critical habitat within the withdrawal area or in its vicinity	Biological Assessment	Separate report
Identification of cultural resources within the withdrawal area	Nellis AFB Cultural Resources Management Plan	Separate report
Identification of roadless areas or roadless islands within the withdrawal area	Land Use Study	Separate report
Analysis of the associated economic impacts of the proposed uses of the withdrawal area	Economic Impact Report	Separate report
Determination if the proposed withdrawal area includes floodplains or wetlands	Wetlands and Floodplains Report	Separate report
Evidence of consultation with federal, state, and local agencies; nongovernmental groups; and individuals	Persons and Agencies Contacted, Statement of Public Participation, and Consultation Information	Chapters 7.0 and 9.0, LEIS

*Note: 1. Required under Engle Act of 1958 and PL 99-606 as amended.*



**Table 1.2-2. NAFR History**

<i>Land Space Designation</i>	<i>Land Transaction</i>	<i>Date</i>	<i>Affected Area (Acres)</i>	<i>Responsible Agency</i>
DNWR	PLO 7373	1936	1,588,818	DOI
Las Vegas Bombing Range	EO 8578	1940	N/A	Air Force
Las Vegas Bombing Range	EO 9019	1942	3,200,000	Air Force
ISAFAF	Developed by DOD (Air Force)	1942	N/A	Air Force
DNWR/Air Force Agreement	Air Force, USFWS, BLM - 1951/1962 (as updated by PL 94-223)	1951/1962	826,000	Air Force/USFWS
NTS, PLO 805, PLO 1662, PLO 2568	Segregated from Las Vegas Bombing Range	1952/1958/1961	435,000 38,400 318,000	DOE
TTR	Air Force Permitted to DOE	1956	336,665	Air Force
Pahute Mesa	Air Force and DOE MOU	1967	106,240	Air Force
NAFR Withdrawal	PL 99-606	1986	2,945,726	Air Force
Groom Mountain Withdrawal	Withdrawal PLO 100-338	1988	89,000	Air Force
White Sides Safety & Security Buffer	Administrative Withdrawal PLO 7131	1995	3,972	Air Force

NAFR is a key component of the Nellis Range Complex (NRC). The NRC (also known as the Nevada Test and Training Range) includes airspace, land, and infrastructure dedicated to military uses. The lands dedicated to military uses within the NRC are the withdrawn lands of NAFR. The airspace of the NRC includes Federal Aviation Administration (FAA)-designated Restricted Areas and Military Operations Areas (MOAs). The NRC infrastructure includes simulated targets and threats on NAFR, as well as roads, radar installations, communications facilities, electrical power transmission lines, and water supply and treatment systems.

**1.3.1 NAFR Ground Equipment**

NAFR currently includes 174 tactical target complexes containing more than 1,300 simulated targets. Many of these target complexes are defended by threat simulators to provide a realistic arena for operational testing of weapons systems, tactics, and combat readiness. Live munitions are delivered on designated portions of the range. To improve target complex realism, targets are enhanced with actual or simulated military assets, including a tank

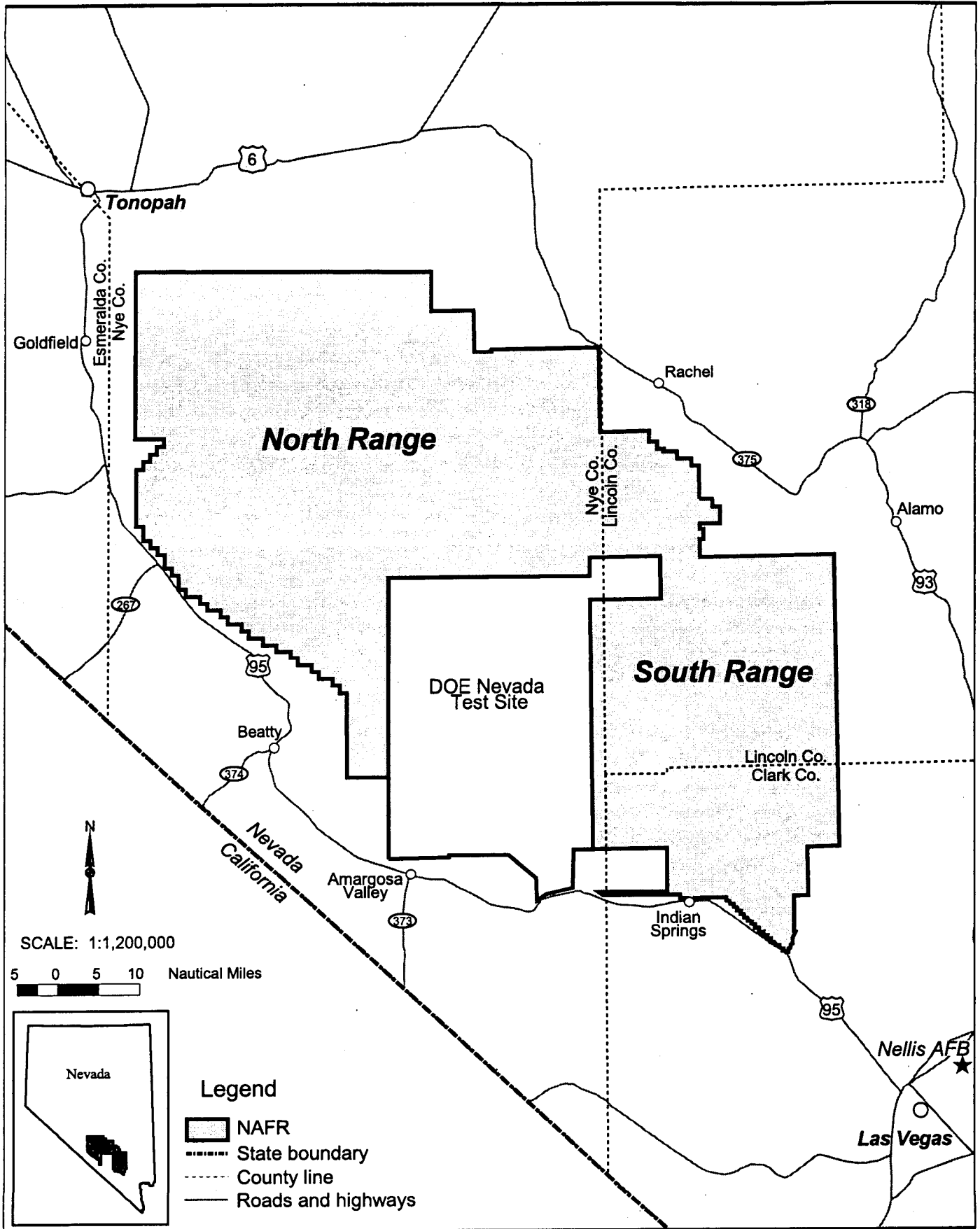


Figure 1-1. NAFR Location Map

battlefront, truck convoys, airfields, industrial complexes, surface-to-air missile sites, and a railroad complete with marshaling yards and a railroad tunnel. Threat simulators are electronically and, in many cases, visually similar to equipment likely to be encountered in actual combat. Radar units simulate early warning, ground control intercept, target acquisition, and surface-to-air and anti-aircraft artillery defenses and guidance.

NAFR ground equipment includes multiple radar and electronic jamming equipment designed to test and improve the quality of aircrew combat training. Many of the threat simulators are equipped with instruments to collect data that can be used to evaluate and score surface-to-air engagements. Extensive monitoring and tracking equipment is deployed throughout NAFR to support testing and training. Data collected on the range and in the supporting airspace are processed by computers located in the Range Control Center at Nellis AFB. The Range Control Center can track a multi-force engagement or a single aircraft's entire mission. Several different kinds of two- and three-dimensional graphic displays from different perspectives are produced for evaluation of performance and rapid feedback for tests and training.

The Air Force has developed other infrastructure to support its use of NAFR withdrawn lands. The three major facilities at Indian Springs, Tolicha Peak, and on the TTR include the two airfields shown in Figure 1-2. Facilities also include roads (see Figure 1-3), radar sites, other communication systems, and range electronic measuring devices. The locations of the radar and communication sites are shown in Figure 1-4.

### **1.3.2 Range Structure**

NAFR is divided into two functional areas, the North Range and the South Range, both of which accommodate live and inert ordnance. The ranges are split to facilitate overall management of Air Force operations and test and training opportunities on the range. Management responsibilities includes operating and maintaining range equipment, safety of personnel, material resources within the boundaries of the range, the range electromagnetic environment, and efficient airspace use through effective scheduling.

#### **NORTH RANGE**

The North Range is approximately 1.8 million acres of withdrawn land (see Figure 1-5). This includes land withdrawn for exclusive military use by PL 99-606 and its amendment (PLO 100-338) of June 17, 1988, which added approximately 89,000 acres to the North Range. An additional withdrawal of about 3,972 acres of the Safety and Security Buffer (PLO 7131) along the eastern edge of NAFR was completed in 1995.

The North Range contains four unmanned weapons delivery subranges. The four subranges contain approximately 1,025 targets within 134 tactical target complexes. These impact areas are maintained by NAFR personnel to simulate tactical targets representing airfields, surface-to-air missile (SAM) sites, truck convoys, missile storage sites, artillery batteries and other targets, along with scoring and tracking systems. The type of weapons authorized for delivery

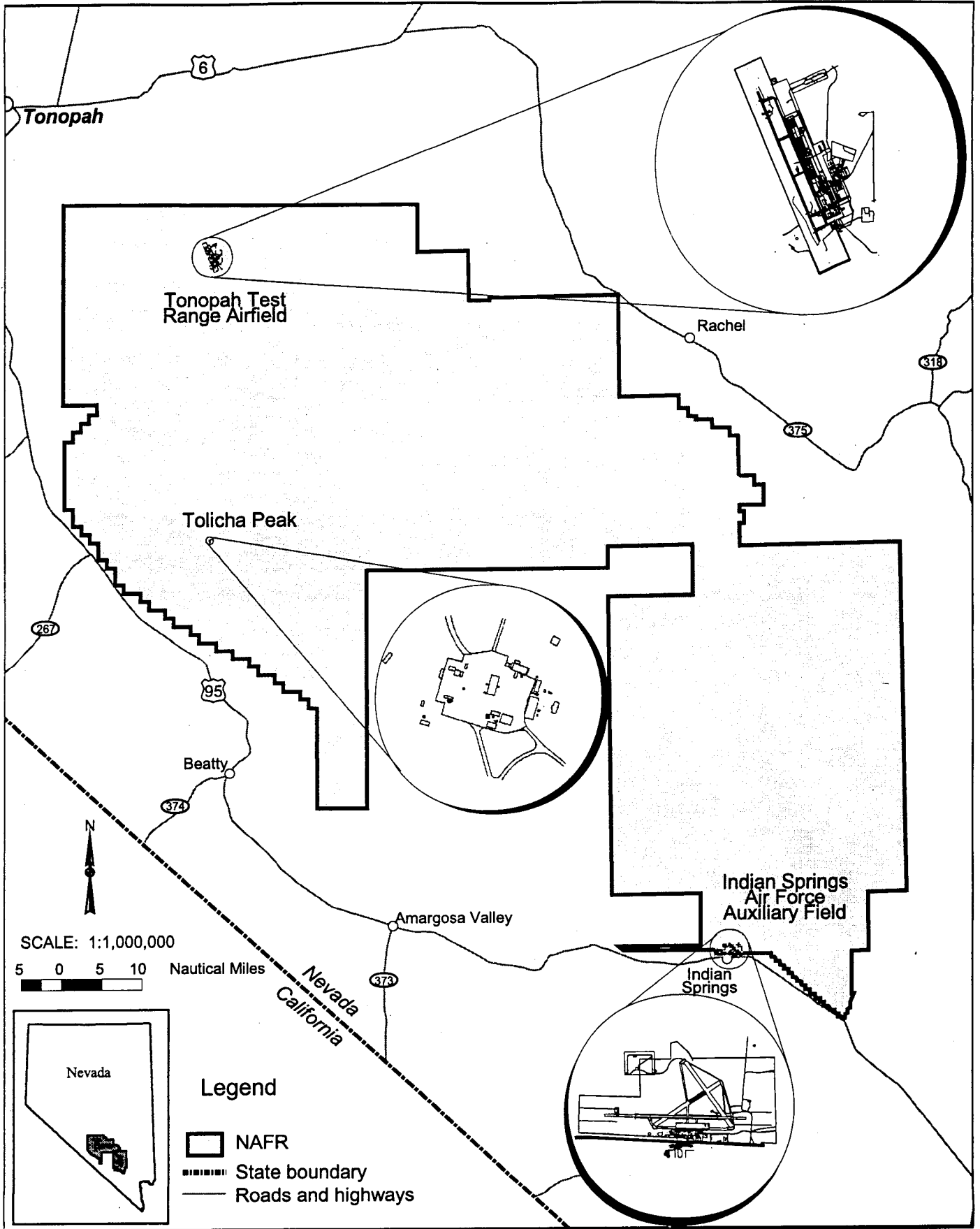
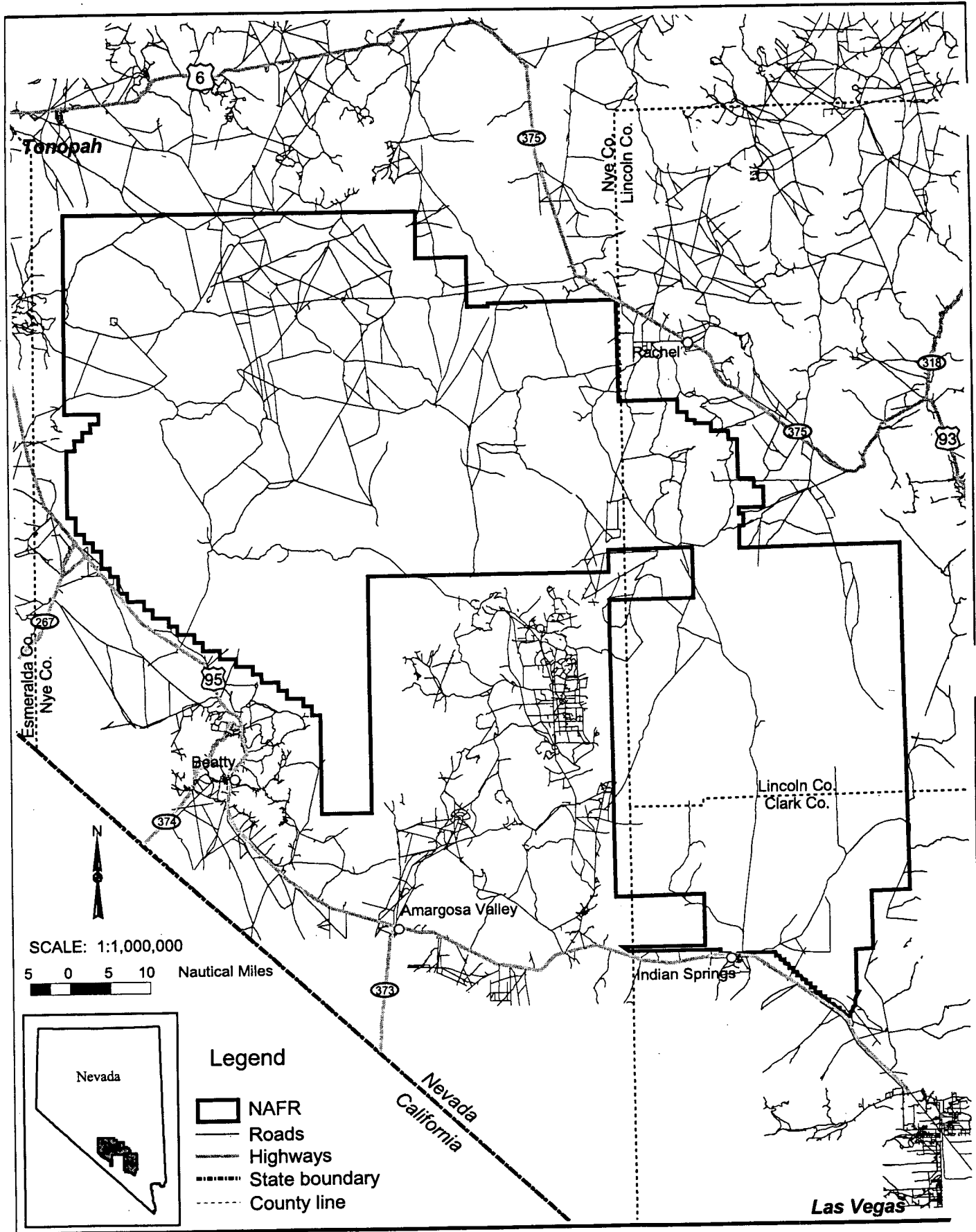
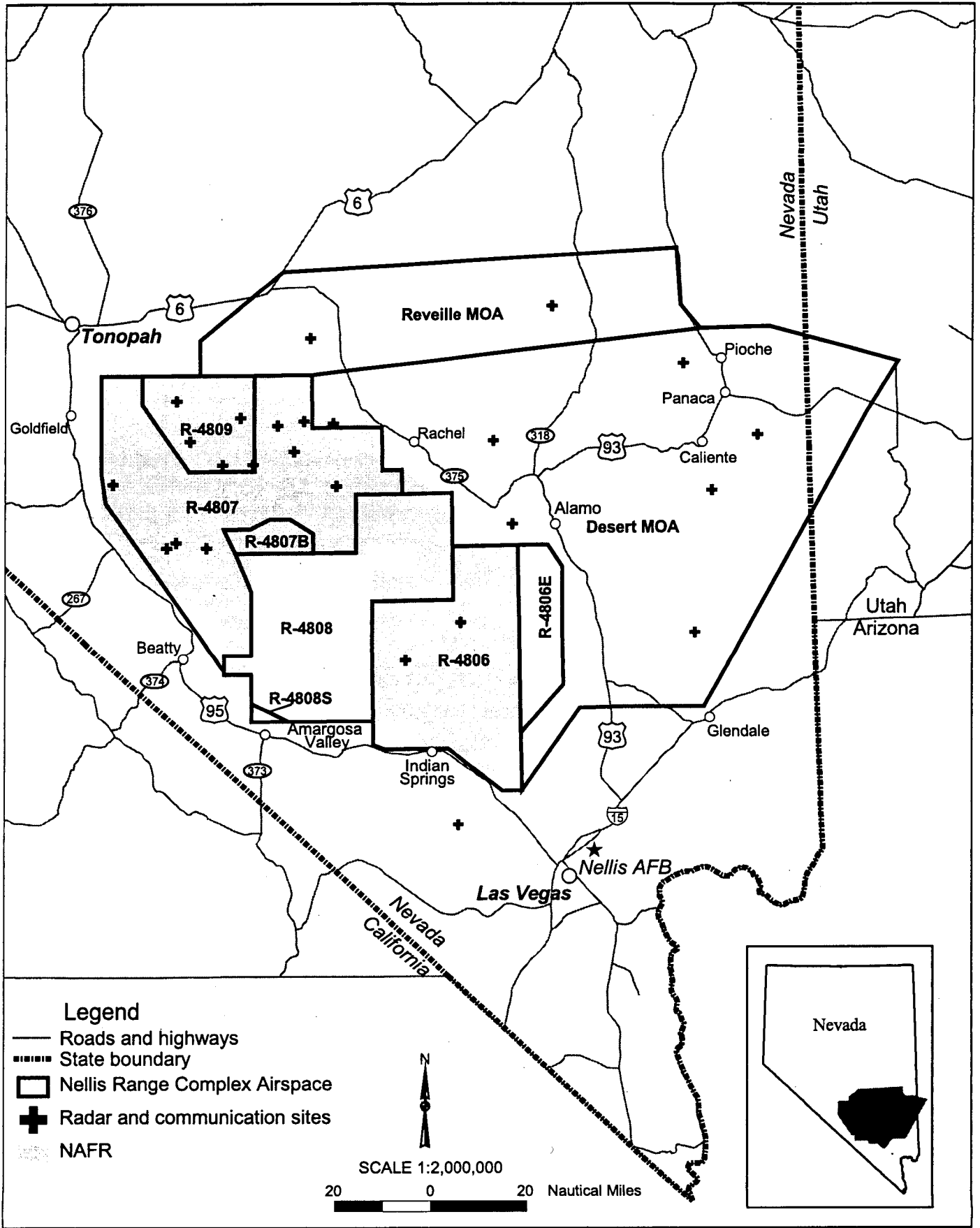


Figure 1-2. NAFR Supporting Airfields and Facilities



**Figure 1-3. Roads on the Nellis Air Force Range and Vicinity**



**Figure 1-4. Radar and Communication Sites**

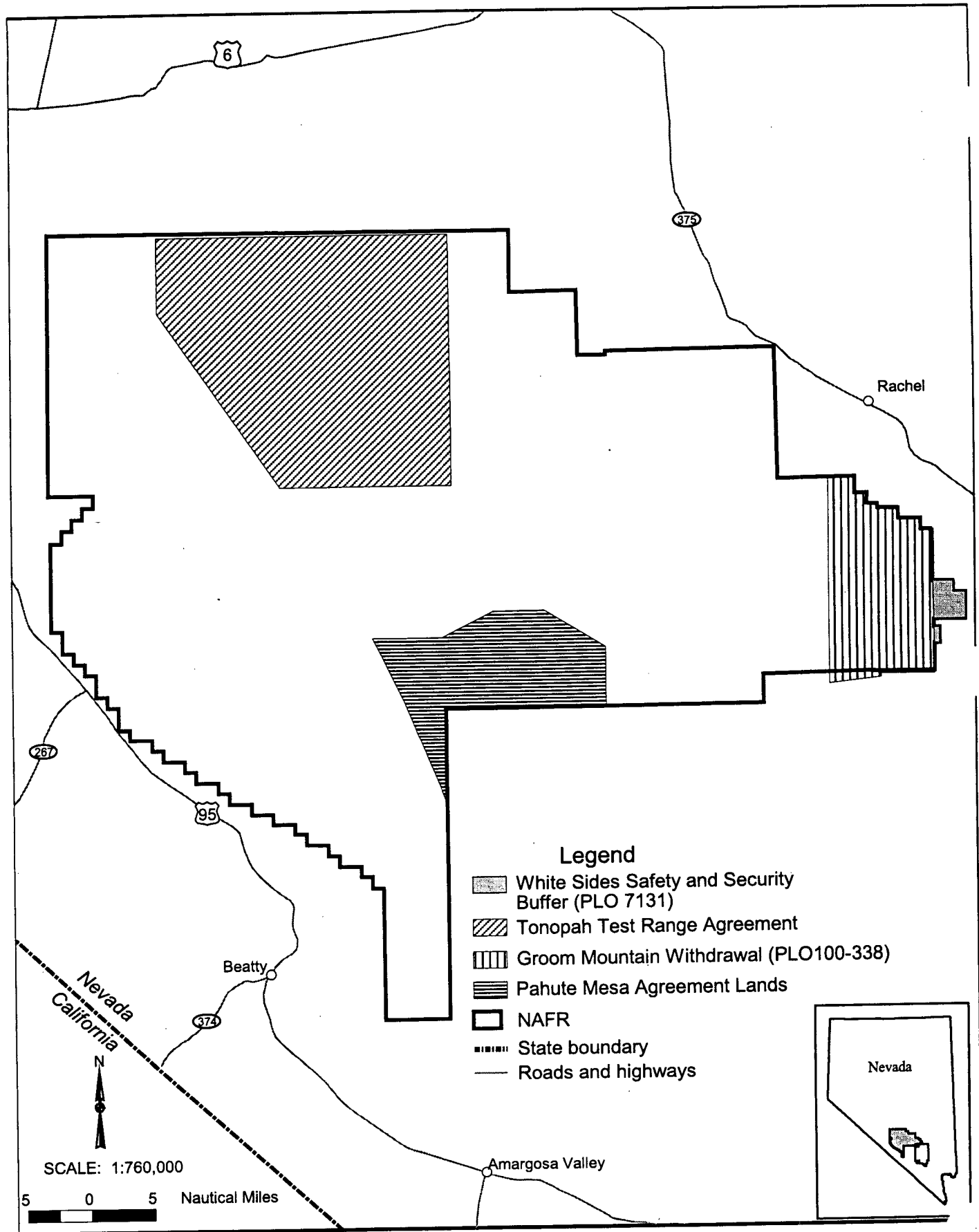


Figure 1-5. North Range and Sub-Areas

depends on the target selected. Figure 1-6 shows the North Range target and simulated threat site locations.

Operating as part of the North Range of NAFR, multiple and dispersed facilities support three Electronic Combat Ranges (ECRs). These ECRs provide a range of high-to-low electronic threat environments: Tonopah ECR (TECR), Tolicha Peak ECR (TPECR), and Electronic Combat (EC) South Range. Training and testing on NAFR include operations on the TTR, which lies entirely within NAFR. The TTR consists of approximately 336,665 acres. Activities on the TTR include projectile firings, ground-launched rockets (both high altitude and low altitude), air-launched rockets, explosion effects tests, earth penetration tests, cruise missile flights, and many miscellaneous activities requiring a remote location for non-nuclear DOE Research and Development projects or for other safety or security reasons. The North Range includes Pahute Mesa, which is used by DOE through mutual agreement (Figure 1-5).

### **SOUTH RANGE**

The South Range is approximately 1.2 million acres of withdrawn land located in the southeastern portion of NAFR. All the South Range lands were withdrawn for military use by PL 99-606. The South Range contains five weapons-delivery areas, which are subdivided into 43 target complexes containing approximately 280 targets. These areas include two manned subranges and three unmanned subranges. There are also three air-to-air subranges. Figure 1-7 shows the South Range weapons delivery areas.

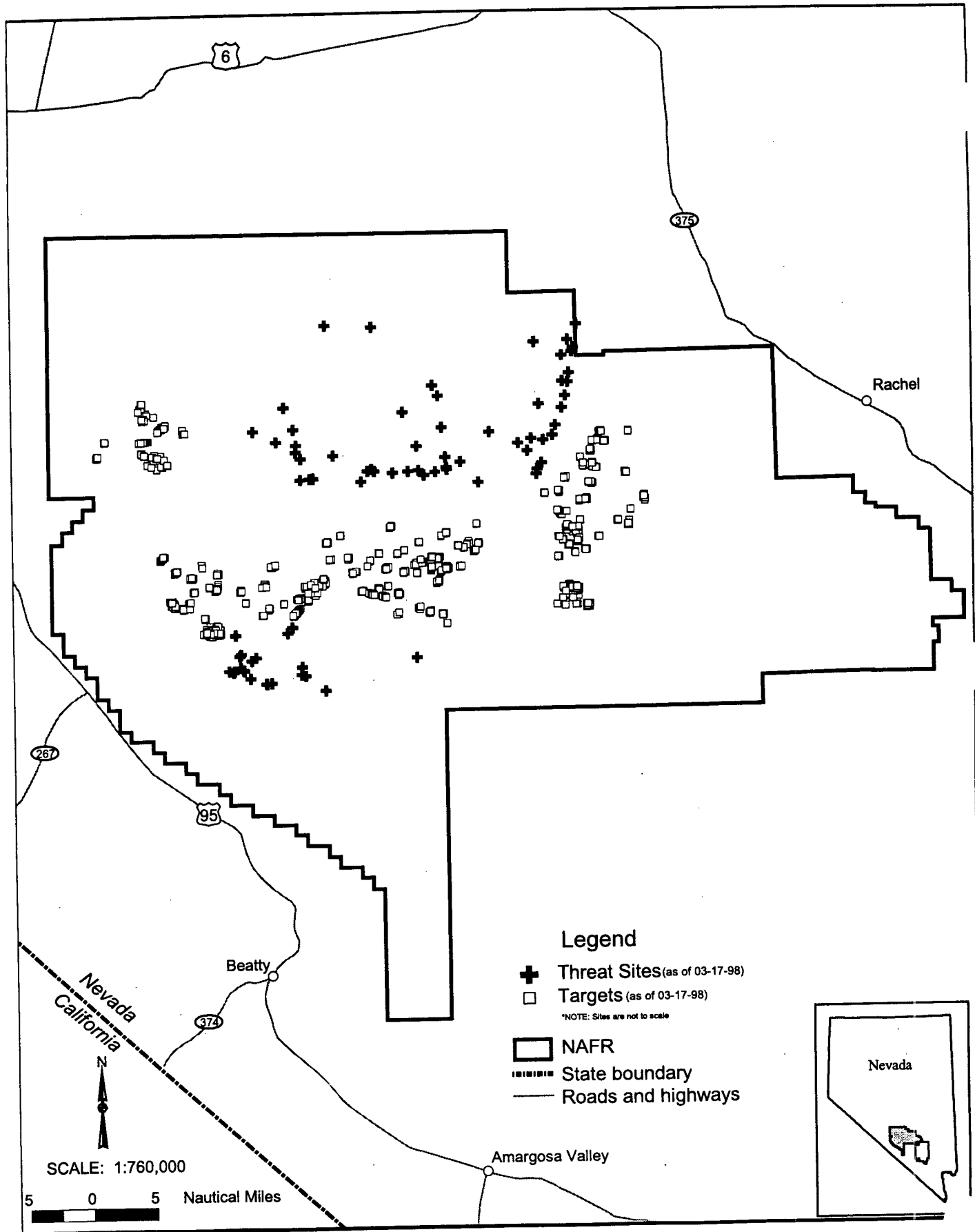
The Air Force has submitted the required documentation for relinquishment of the Cactus Springs "Finger" to BLM. The Air Force and BLM are currently working to complete the relinquishment of this approximately 3,056-acre parcel. This area will not be part of the renewal (Figure 1-8).

The South Range overlaps a portion of the DNWR, which was established in 1936 for the protection and preservation of desert bighorn sheep (Figure 1-9). The MOU between the Air Force and USFWS regarding this "overlap" has been updated and amended, as necessary, to ensure proper management by the respective agencies. The DOE lands segregated by PLO 1662 are adjacent to the northwest corner of the South Range.

### **1.3.3 NAFR Environmental Programs**

The Nellis AFB environmental stewardship program is a priority mission objective in all operations. The Environmental Management Directorate at Nellis AFB conducts an extensive environmental education and protection program on NAFR. Air Force Policy Directive 32-70 states that achieving and maintaining environmental quality is an essential part of the Air Force mission. To meet this mission requirement the Air Force has established a series of programs that:





**Figure 1-6. North Range Targets and Threat Sites (1997)**

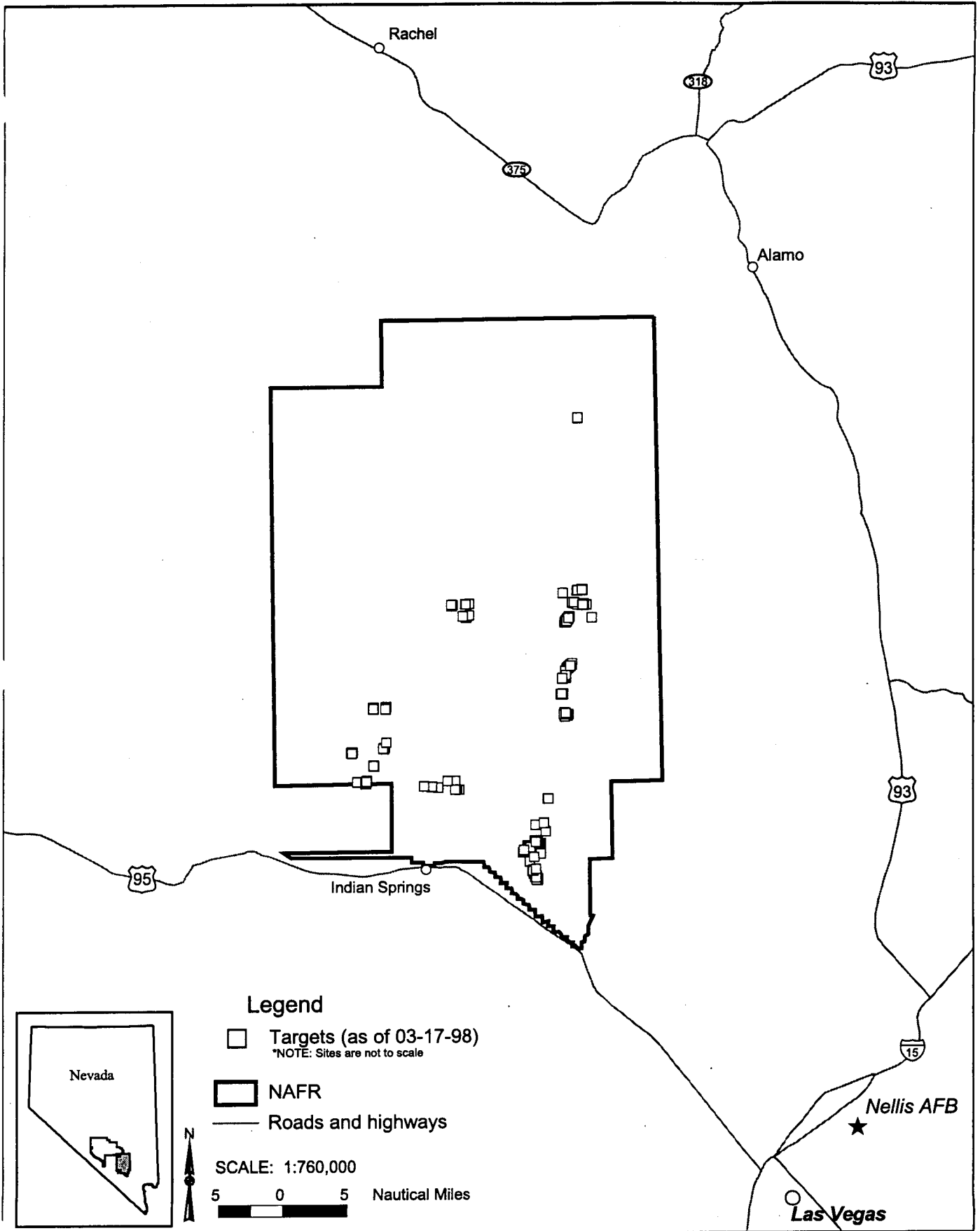
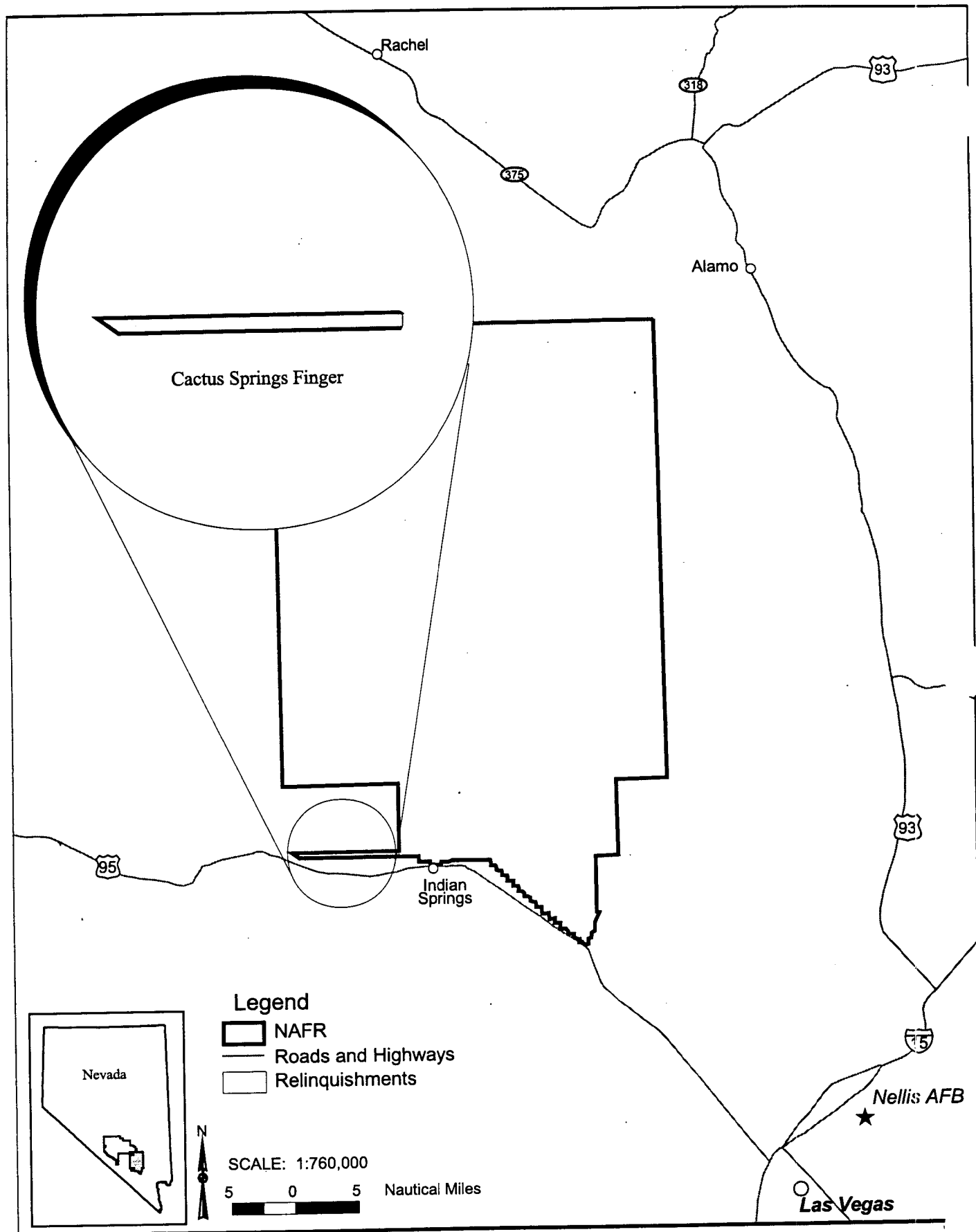


Figure 1-7. South Range Weapons Delivery Area Details



**Figure 1-8. Location of the Proposed Cactus Springs "Finger" Relinquishment**

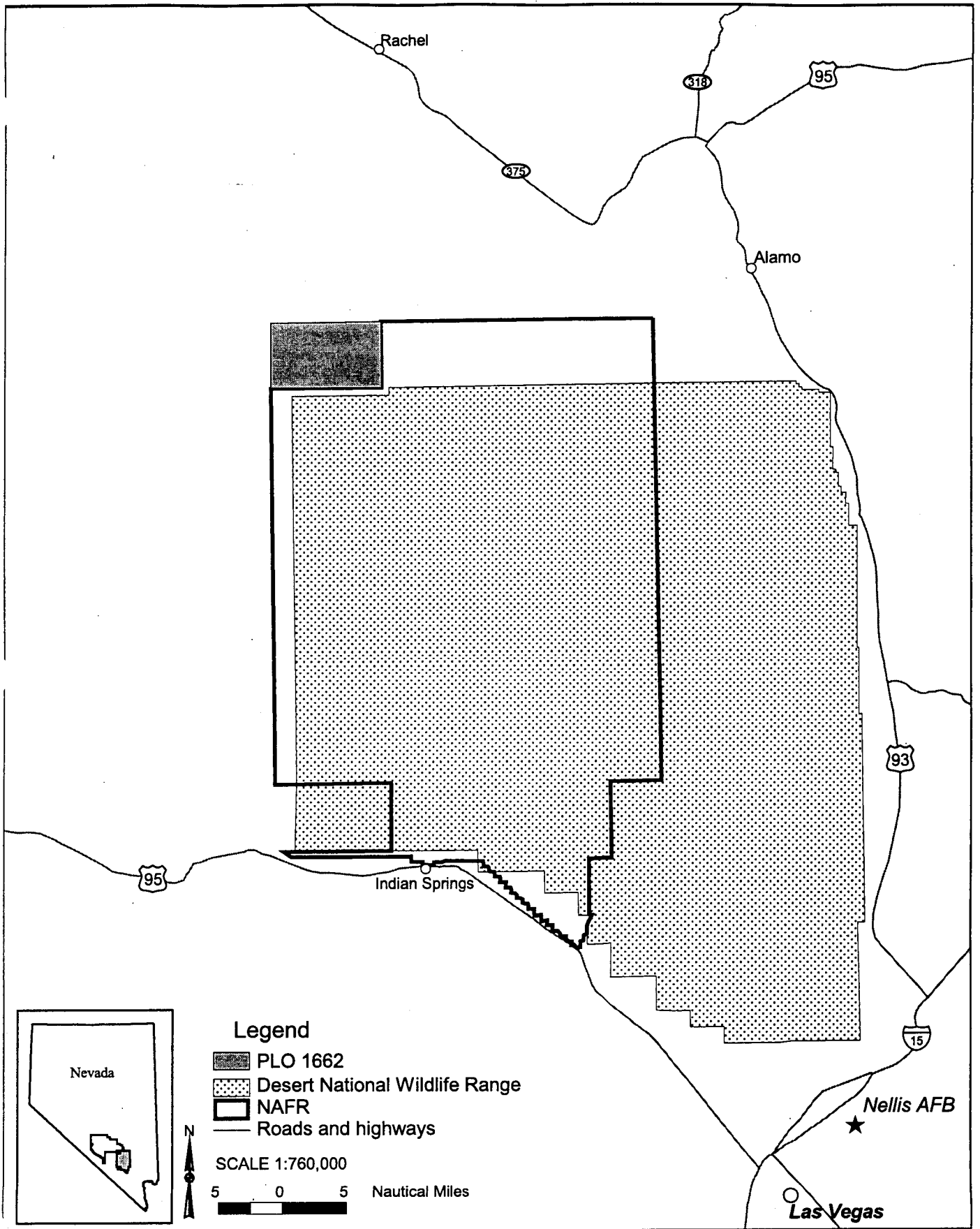


Figure 1-9. NAFR South Range: Desert National Wildlife Range and PLO 1662

- clean up environmental damage from past activities;
- comply with all environmental standards applicable to present operations;
- plan future activities to minimize impacts to the environment while meeting other mission objectives;
- responsibly manage natural and cultural resources on Air Force controlled lands; and
- eliminate pollution from Air Force activities wherever possible.

Within the bounds of available funding, each of these programs has been, or is being, completed on NAFR. The Installation Restoration Program (IRP) has identified and remediated locations of environmental contamination from past practices. Natural resource planning is occurring as part of the Integrated Natural Resource Management Plan (INRMP). Likewise, irreplaceable cultural resources on NAFR are being managed through the Cultural Resources Management Plan (CRMP). The Air Force Pollution Prevention program reduces the use of hazardous materials and the release of pollutants into the environment. Pollution prevention management plans and activities executing these plans address ozone-depleting chemicals, industrial toxics, municipal solid waste, material procurement programs, energy conservation and air and water pollutant reduction. The Air Force also maintains active environmental compliance activities with specific programs for air quality, water quality, solid and hazardous wastes, storage tanks and environmental compliance assessment and management (ECAMP).

Each of these programs is presented below and further described, as applicable in the relevant resources sections of Chapter 3.0.

#### **CULTURAL RESOURCE MANAGEMENT PLAN**

DoDI 4715.3 and AFI 32-7065 require the Air Force to prepare a Cultural Resources Management Plan (CRMP), update it annually and submit for approval at least every five years. The Nellis AFB CRMP concisely summarizes NAFR, its physical characteristics, mission, and mission impacts; the history, prehistory, and environment of the region and base locality; cultural resources identified to date; responsibilities of base personnel; standard procedures for each law and regulation; and plans for projects in the near future. Information on sites and other resources is reported separately for confidentiality reasons and only cited in the plan. The CRMP forms part of the composite constraints and opportunities database used to assess each project-specific proposal on NAFR.

#### **INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**

AFI 32-7064 requires the Air Force to prepare an Integrated Natural Resources Management Plan (INRMP). This instruction provides detailed guidance on how to implement the broader policies of those regulations. The INRMP, was developed with the participation of all

stakeholders: individuals and organizations, both military and civilian, who have an interest in the management of NAFR natural resources. The final draft reflects the mutual agreement of state and federal natural resources management agencies, and is made available to the public for comments. The INRMP describes the natural resources found on NAFR and the applicable laws such as the Endangered Species Act and the Clean Water Act (Section 404) which may be applicable to overall natural resource management. The Sikes Act Improvement Amendments of 1997 place increased emphasis on implementing the projects identified in the INRMP.

### **POLLUTION PREVENTION**

Current instructions for solid waste management and the recycling of solid waste are outlined in AFI 32-7080, *Pollution Prevention Program*, AFI 32-7042, *Solid and Hazardous Waste Compliance*, and ACC Manual 32-751, *Environmental Quality*. These documents were originally released in 1994. Additional guidance on managing the recycling program is provided in the Air Force Resources Recovery and Recycling Program Guide. AFI 32-7080 requires NAFR to establish an umbrella organization for overseeing and managing solid waste recycling. The Range is required to recycle as much of the waste stream as possible and, as a minimum, recycle metals, plastic, glass, used oil, lead acid batteries, tires, high quality copier paper, cardboard, and newspaper. In addition, NAFR must operate a composting program or participate in a regional composting program.

Recent changes in the Pollution Prevention Program are driving the recycling program toward being self-supporting or at least taking into consideration the costs to operate the program. The shift from traditional P2 to Compliance Through P2 (CTP2) over the past year focuses the program on funding items and activities that solve compliance problems or reduce compliance vulnerability, not just achieve an AF goal. This philosophical change was reflected in the new DoD P2 Measure of Merit (MoM) on solid waste diversion. It states, "By the end of FY2005, ensure the diversion rate for non-hazardous solid waste is greater than 40%, while ensuring integrated non-hazardous solid waste management programs provide an economic benefit when compared with disposal using landfilling and incineration alone." Similarly, the draft of the new AFI 32-7080 states, "increase solid waste diversion rates where economically preferable through a Qualified Recycling Program."

### **INSTALLATION RESTORATION PROGRAM**

The DOD developed IRP to identify and investigate potentially hazardous material disposal sites on DOD property. Suspected hazardous material sites identified in the IRP process were evaluated using a pattern of preliminary assessment (PA), site inspections (SI), remedial investigation/feasibility study (RI/FS) and remedial design/remedial action (RD/RA). Sites determined to not contain hazardous materials or that contain materials that (in consultation with appropriate regulatory agencies) would not be expected to require remediation are designated as requiring "no further action."

Ninety-eight IRP sites have been identified on NAFR since the IRP began at the range in 1982. Seventy-four of these sites were recommended for no further action based upon the initial PA. SIs were done for the remaining 24 sites including four sites on the DNWR. Two sites, a fire training area at ISAFAF and a septic tank at Range 65N, required remedial action under CERCLA [limited hydrocarbon-contaminated soil removal at the fire training area and the removal of two underground storage tanks (USTs) and a septic tank at the Range 65N site]. These actions were completed in 1993. The field observations, immunoassay, and laboratory test results revealed no evidence of soil contamination at most of the locations sampled on NAFR. Metal concentrations were generally low and not a source of concern. The results of the SIs indicated that these IRP sites were not causing adverse environmental impacts. Two landfill sites at ISAFAF were recommended for long-term monitoring. Decision Documents (DD) for no further action have been accepted and signed by the Nevada Division of Environmental Protection (NDEP).

#### **FIVE-PARTY COOPERATIVE AGREEMENT**

The Air Force, USFWS, BLM, DOE, and the State of Nevada-Clearinghouse have established the Five-Party Cooperative Agreement to enhance management of the natural resources on NAFR, DNWR, and NTS. The goal of the working group is to foster a collaborative and complementary approach using a biodiversity conservation and ecosystem-based approach to enhance the management of these lands and their associated natural resources. The foundations of natural resource management of these lands are identified in the BLM NAFR Resource Plan, NAFR INRMP, DNWR Natural Resource Management Plan, and the NTS Resource Management Plan. The Five-Party Cooperative Agreement also delineates the responsibilities of each of the signatories. Meetings of the signatories are held, at least, annually. The annual meeting is open to the public. A representative of the CGTO is also invited to attend the annual meeting.

### **1.4 PURPOSE OF RENEWAL OF THE WITHDRAWAL**

The purpose for proposing to renew the land withdrawal for NAFR is to continue to provide a location to test weapons systems and tactics and train military personnel to meet nationally directed missions. The missions are to (1) ensure and protect national security, (2) train for the full and integrated spectrum of military operations, and (3) ensure the continued protection of public safety. The following sections describe each of these mission requirements.

#### **1.4.1 National Security**

A variety of activities that are vital to National Security, some of which are classified, occur throughout NAFR. The range is used for testing technologies and systems, as well as training for operations critical to the effectiveness of U.S. military forces and the security of the United States. Some specific activities and operations conducted on NAFR, both past and present, remain classified and cannot be discussed within this document.

### **1.4.2 Military Operations and Training**

The purpose of all military activity on NAFR is to enhance U.S. defense capability. Military operations (including training, testing, and support activities) include all activities and infrastructure necessary to keep U.S. forces prepared for confrontation with any military force the United States might reasonably expect to oppose in the future. Military activities on NAFR support training and testing combat tactics, aircraft, their associated weapons systems, and all the activities that support those primary missions. The supporting infrastructure (all ground activities, facilities, equipment, personnel, and supporting airspace) must be able to produce a simulated combat environment that can be securely restructured to resemble anticipated threats to U.S. interests.

The dynamics of air combat have changed dramatically in the 50 years that NAFR has been used as a test and training range. When NAFR was first employed during World War II, airspeeds ranged from 250-400 miles per hour; today, modern fighters fly over 1,200 miles per hour (Mach 2). Missions during World War II and the Korean War usually involved one or two different types of aircraft. Today a multi-force strike mission may involve almost every type of combat aircraft in the Air Force inventory. Further, the weapons and sensors employed today by potential adversaries include a wide range of dispersed, camouflaged, and hardened radar-directed anti-aircraft artillery sites, as well as both ground and air-launched radar-directed and heat-seeking missiles. For a mission to succeed, the Air Force must identify and defeat all these threats by simultaneously employing the entire range of available weapons, aircraft, and sensors.

Early in the Vietnam War, unacceptably high losses of aircraft and aircrews convinced the Air Force that enhanced and highly realistic training for aircrews was essential prior to entering combat. The complexity of new weapons and sensors, the speed of modern air combat, and the need to develop appropriate tactics when encountering unfamiliar enemy aircraft and air defenses moved the Air Force into developing training ranges and exercises that would better prepare aircrews for the reality of modern air combat. NAFR offers the Air Force, as well as other military services, an unparalleled opportunity to simulate the dynamics of combat. The training and testing that is ongoing at NAFR realistically simulates the modern combat environment and ensures the maximum potential for combat readiness, survival, and ultimately the best possible military operations capability. While combat results are the only true measure of combat readiness, the safe and secure land that comprises NAFR is essential to the combat-proven training and testing capabilities required by the Air Force and the nation.

### **1.4.3 Public Safety**

The Air Force has established a variety of safety standards due to the hazardous nature of the weapons systems. The purpose of Air Force safety standards is to protect the public, military personnel, and equipment from accidental damage by weapons systems or practices. One NAFR mission requirement is to provide for public safety along with national security and



military operations. Over the years, safety considerations at NAFR have resulted in rules, regulations, and operational practices that minimize the possibilities of harm to the public.

Public safety at NAFR is ensured by preventing public access near hazardous weapons detonation areas and to any areas exposed to risks from weapons system malfunction. The Air Force activities at NAFR must provide for the necessary levels of public safety. Public safety includes (1) prevention of the public straying into dangerous areas, (2) identification of hazardous areas, and (3) risk minimization through management of potential hazards of military activities. Exclusion of the public from NAFR ensures that the public is protected from the dangers of an integrated battlespace environment and weapons testing and training range activities such as exploding ordnance, unexploded ordnance, unintentional ordnance releases, dropped objects, and electromagnetic effects.

Military procedures and activities also enhance the safety of military personnel and assets. The principal objective of training and test range safety procedures is to identify potential conflicts between aircraft activities and supporting ground operations. This is accomplished by scheduling compatible aircraft and land-based activities and placing limitations on hazardous activities.

## **1.5 NEED FOR RENEWAL OF THE NAFR LAND WITHDRAWAL**

The Air Force is committed to providing the U.S. aerospace power to deter aggression, and if deterrence fails, to win on terms favorable to the United States. To do this, the Air Force must field the world's best-trained and best-equipped force, ready to immediately respond to any threat, anywhere in the world.

Our nation's airspace and test and training ranges are critical to fielding the world's finest trained aircrews and best equipped airspace force. To operate proficiently in today's dynamic world, the Air Force must provide cost-effective ranges so that our aircrews can realistically test and train the way they and their equipment will operate. This real-world training ensures U.S. aircrews are ready to respond to real-world needs when necessary. The NAFR, a properly sized and located range, is vital to providing such realistic training.

Land withdrawn for NAFR is needed to provide a secure, flexible range for large-scale military testing and training. A flexible range is capable of rapid adjustment to accurately simulate complex military operations required by the dynamics of world-wide threats to our national security interests. The range land and airspace must accurately simulate the potential battle area that aircrews would expect to encounter. NAFR is the most realistic training and test area in the world because our historic national investment has created an integrated battlespace environment.

The NAFR battlespace environment is the land and airspace that allow for realistic simulation of a battle area, complete with surface and air defense systems, command and control systems, realistic targets, and defensive threats, as well as training systems and instructional aids that provide almost instantaneous test and training feedback. The training supported by NAFR

enhances national security by preparing aircrews for increasingly complex military operations. These test and training activities are performed in an exclusive use area to ensure national security and public safety.

A historical review of aerial combat shows that most losses occur at the start of aircrew participation in a conflict. In the Korean and Vietnam wars, the greatest losses to U.S. aircraft and aircrew were experienced during the first ten combat missions. These losses were the result of a lack of realistic training and testing. U.S. flyers had no experience with the integrated ground and air threats they encountered in combat. The United States needed to provide a battlespace training experience that simulated the first 10 combat missions to reduce that high initial loss rate. NAFR provides that battlespace experience.

Today, NAFR facilities realistically simulate the conditions aircrews will encounter in air combat. During Desert Storm, U.S. and coalition aircrews, most of whom had trained at NAFR, demonstrated that skillfully applied precision weapons can play a decisive combat role. Many American and allied lives were saved by the destruction of the Iraqi command, control, and communication system and airfields by precise application of air and space forces trained and tested at NAFR.

According to former Secretary of the Air Force Sheila Widnall:

Advanced, sophisticated airframes are only part of the equation. Fully trained, combat-ready aircrews are an essential ingredient of combat readiness. To maximize economy and efficiency, our aircrews think globally but train locally.... To guarantee that our combat aircrews remain prepared to meet the security needs of our nation,... we train the way we fight, we ensure the highest state of readiness possible, while getting the most capability out of sophisticated weaponry. Technology gives us the cutting edge, but only if aircrews can employ that technology to its fullest. That ability comes only with demanding, realistic, and frequent exercise of all systems – command and control, aircrew, and equipment.

General Charles Horner, who led coalition air forces in Operation Desert Storm, pointed out in March 1996 that Nellis AFB and Range played a key role in the victory in the Gulf War:

If you're going to look to things that made our successes in the Gulf War, you have to look at things like Blue Flag and Red Flag. Red Flag is fundamental to our learning to fight together, not only in the Air Force but also with the other joint services and in the future when coalition forces assemble. So Nellis is fundamental to the future warfare, particularly airpower.

The development, exercise, and validation of systems is crucial to the continuation of military capabilities. New ideas, equipment, and technologies are introduced and tested for operational suitability and effectiveness. As these systems are proven effective or suitable, tactics are developed to integrate and improve their operational employment. These tactics are tried and perfected to maximize combat capability. Then, before aircrews are sent into combat, they are

trained to use these tactics and technologies against the targets and defensive threats that they can expect to encounter. New technology requirements come back to this process through actual employment or through extensive training in the simulated combat environment. These requirements then start a new development and testing cycle.

NAFR currently provides the realistic combat conditions needed for military testing and aircrew training on the use of new ideas, equipment, and technology. The capabilities provided by NAFR include the following:

- Weapons systems tactics and training for single-aircraft weapons delivery and multiple-aircraft target attack training.
- Large-force training exercises (Red Flag, Green Flag).
- Other specialized training events, such as Gunsmoke, Longshot, JSEAD, Capstone, and Weapons School Mission Employment.
- Comprehensive operational test and training as part of new weapons system development.

The Air Force needs land to accomplish the missions described in section 1.3. The three NAFR missions described – national security, testing and training for military operations, and ensuring public safety – are segregated into operational requirements in this section. The extent to which NAFR lands meet the operational requirements has been evaluated by the Air Force and is detailed for each of the three missions below.

### **1.5.1 National Security**

Preservation of national security can best be achieved by isolating sensitive military activities. The Air Force limits exposure to classified and essential elements of military operations. This isolation is accomplished at NAFR by providing a buffer between sensitive military operations and unauthorized individuals.

### **1.5.2 Military Operations (Testing, Training, Tactics Development)**

The withdrawn land at NAFR and associated airspace supports weapons system operational testing and evaluation, tactics development, and training capability to meet the needs of U.S. and allied tactical air forces. The Air Warfare Center (AWFC) at Nellis AFB is responsible for NAFR and its use. AWFC coordinates training, testing tactics development, and all ground-based support activities associated with maintaining and using NAFR. AWFC strives to provide the most capable training and testing asset in the world for the United States and its allies.

The capabilities made available by NAFR are in extremely high demand. Tactics and training missions on NAFR annually expend over 70 percent of ACC live ordnance and over 40 percent of the total Air Force practice ordnance expended worldwide. Most of the U.S. and some of the coalition aircrews received their first “combat” missions at NAFR’s simulated battlespace before fighting the 1991 Gulf War.

Military use of NAFR and associated airspace in the NRC varies from year-to-year, depending on many factors. These factors include Congressional funding levels, weapons testing requirements, aircrew training requirements, and the actions of the international community that may pose a threat to the security interests of the United States or our allies. The range of aircraft use of the NRC was estimated based on an evaluation of historic use of the NRC by aircraft associated with NAFR. This evaluation is summarized in Appendix A. Tables 1.5-1 and 1.5-2 summarize the test and training operations using NAFR and associated airspace. These tables present data for aircraft that historically have been used in testing and training using assets of NAFR. It is anticipated that the aircraft and weapons systems described here, or upgraded versions, or replacements, will be tested and used in training at NAFR in the foreseeable future.

### **LARGE FORCE TRAINING EXERCISES: RED FLAG/GREEN FLAG OPERATIONS**

Red Flag and Green Flag are special, high-priority use, multi-force training exercises that realistically simulate large-scale multiple aircraft engagements. Red Flag exercises not only increase the combat capability of U.S. and allied armed forces, they enhance the ability to integrate these forces to meet the dynamic challenges of future conflicts. The highest mortality rate among fighter pilots occurs within the first ten missions of combat. By providing realistic combat training scenarios, new fighter pilots receive their first ten missions during Red Flag and Green Flag. As a result, the survivability rate is substantially increased. To ensure realism, these exercises require large blocks of airspace in addition to large exclusive use areas and the infrastructure that is only offered by NAFR and its surrounding airspace.

Each Flag exercise is a multi-week, complex, full-scale, simulated war game, complete with aggressor aircraft simulating potential adversary tactics, ground threats, emitters, and target arrays. These exercises are designed to teach air and ground units how to deploy and operate together in an integrated manner. Air units from all military branches and many allied foreign air forces participate. In a typical year, five Red Flag exercises are planned at NAFR.

Most of the aircraft and personnel deployed to Nellis AFB for Red Flag make up the exercise's "Blue" forces. These forces use various tactics to attack targets on NAFR such as mock airfields, vehicle convoys, tanks, parked aircraft, bunkered defensive positions, and missile sites. These targets are defended by a variety of "Red" forces that simulate ground and air threats to give participating aircrews the most realistic combat training possible.

The adversary or "Red" force ground assets include simulated surface-to-air missiles, anti-aircraft artillery, actual communications, and other electronic jamming forces. These ground forces are supported by an opposing enemy air force composed of Red Flag's Adversary Tactics Division pilots. These pilots fly the F-16C and are specially trained to replicate the tactics and techniques of potential adversaries. Their mission is to attack the "Blue" forces and prevent penetration into the target area.

A typical Red Flag exercise involves a realistic variety of attack, fighter, and bomber aircraft (F-16s, A-10s, B-1s, etc.), reconnaissance aircraft, electronic countermeasures suppression aircraft

**Table 1.5-1. Projected Minimum Annual Sortie-Operations<sup>2</sup> within the NRC by Aircraft Type**

Aircraft Type	TEST AND TRAINING		Military Operations Area	Test & Training Total <sup>1</sup>	Large Force Exercises Total Sortie Operations	NAFR Total <sup>2</sup>
	North Range	South Range				
AV-8B	205	451	145	801	797	1,598
A-10	2,512	6,779	284	9,575	78	9,653
B-1	331	40	172	543	3,303	3,846
B-2	6	9	0	15	69	84
B-52H	190	133	106	429	428	857
C-130	8	34	8	50	2,085	2,135
C-141	0	0	0	0	251	251
E-3	2	0	5	7	160	167
EA-6B	2	0	2	4	1,174	1,178
F-14	418	8	293	719	1,283	2,002
F-15	13,853	4,060	9,916	27,829	21,601	49,430
F-16	28,105	10,377	15,805	54,287	37,767	92,054
F/A-18	1,006	226	936	2,168	3,892	6,060
F-117	3	11	3	17	165	182
KC-10	0	0	0	0	65	65
KC-135 <sup>3</sup>	17	10	6	33	2,206	2,239
Mirage	18	0	5	23	2,219	2,242
Small props	1,737	10	11	1,758	126	1,884
Tornado	359	0	101	460	0	460
Helicopters	4,108	1,082	307	5,497	477	5,974
Other	12,466	4,825	72	17,356	282	17,639
<b>Total</b>	<b>65,340</b>	<b>28,055</b>	<b>28,177</b>	<b>121,571</b>	<b>78,428</b>	<b>200,000</b>

Notes: 1. Test and training total consists of the North Range, South Range, and MOA values.  
 2. NAFR total consists of the test and training total plus the large force exercises total sortie operations values.  
 3. Includes other variants (e.g., E-8C).

<sup>2</sup> A sortie-operation is the use of one airspace area or subdivision by one aircraft during the course of a sortie mission.

**Table 1.5-2. Projected Maximum Annual Sortie-Operations within the NRC  
by Aircraft Type**

Aircraft Type	TEST AND TRAINING		Military Operations Area	Test & Training Total <sup>1</sup>	Large Force Exercises Total Sortie Operations	NAFR Total <sup>2</sup>
	North Range	South Range				
AV-8B	307	676	217	1,200	1,196	2,396
A-10	3,768	10,168	426	14,362	117	14,479
B-1	497	60	257	814	4,954	5,768
B-2	9	13	0	22	104	126
B-52H	285	200	159	644	637	1,281
C-130	12	51	8	71	3,127	3,198
C-141	0	0	0	0	377	377
E-3	3	0	8	11	240	251
EA-6B	3	0	3	6	1,762	1,768
F-14	627	12	439	1,078	1,924	3,002
F-15	20,779	6,090	14,875	41,744	32,402	74,146
F-16	42,157	15,565	23,707	81,429	56,651	138,080
F/A-18	1,510	339	1,404	3,253	5,838	9,091
F-117	4	17	5	26	247	273
KC-10	0	0	0	0	98	98
KC-135	26	14	9	49	3,309	3,358
Mirage	27	0	8	35	3,329	3,364
Small props	2,606	14	17	2,637	188	2,825
Tornado	538	0	151	689	0	689
Helicopters	6,162	1,623	460	8,245	715	8,960
Other	18,783	7,161	103	26,047	423	26,470
<b>Total</b>	<b>98,103</b>	<b>42,003</b>	<b>42,256</b>	<b>182,362</b>	<b>117,638</b>	<b>300,000</b>

Notes: 1. Test and training total consists of the North Range, South Range, and MOA values.  
2. NAFR total consists of the test and training total plus the large force exercises total sortie operations values.

(EA-6Bs, and F-16s, etc.), air superiority aircraft (F-15s, F-16s, etc.), airlift support (C-130s, C-141s, etc.), search and rescue aircraft (HH-60s, HC-130s, etc.), and aerial refueling aircraft (KC-130s, KC-135s, KC-10s, etc.) and ground operations. The E-3A Airborne Warning and Control System (AWACS) aircraft plays a significant role in the training by using its unique radar capabilities to monitor and support many aspects of the "Blue" force effort.

NAFR electronic infrastructure provides mission assessment debriefings that form the basis for aircrew lessons learned. The Red Flag Measurement and Debriefing System (RFMDS), along with Television Ordnance Scoring and threat video replays, provides accurate re-creations of the Red Flag missions. The RFMDS is a computerized tracking system currently capable of displaying real-time interaction and information on multiple aircraft, threats, and ground targets.

Green Flag, the Air Force's premier electronic warfare flying exercise, is held once a year and usually involves about 400 people drawn from Air Force units from around the world. The event is subdivided into three consecutive two-week programs, with new units involved in each. In addition to aircraft, threats, and targets, the focus of Green Flag is on military intelligence, which is gathered, analyzed, and distributed during the exercise. Each two-week segment is normally commanded by a general officer functioning as a joint-force, air-component commander and also involves air and ground operations and battle planning staffs. In addition to aircraft used in Red Flag exercises, intelligence-gathering aircraft, such as the RC-135 Rivet Joint, play a key role in these events.

### **DESERT WARFARE TRAINING CENTER**

The Desert Warfare Training Center, known as Silver Flag Alpha, is the ACC's air base defense school at Nellis AFB. Approximately 3,600 Air Force security police, law enforcement personnel, and Army, Navy, and Marine units are trained annually in desert combat tactics and in providing security for air bases. A wide variety of small arms munitions and ordnance, from rifle and machine gun ammunition to anti-tank rockets, are expended on live-fire ranges on Range 63A, where Silver Flag Alpha is based (see Appendix A).

### **GUNSMOKE**

Gunsmoke is the ACC gunnery and bombing competitive training exercise held at Nellis AFB every other year.

### **LONG SHOT**

Long Shot is a global power projection competitive exercise held at NAFR every other year. Long Shot tests units' ability to both deploy and attack targets.

### **GROUND ACTIVITIES AND TARGETS**

In addition to achieving air superiority, the Air Force is tasked with identifying and destroying the enemy's assets on the ground. Targets range from fixed, heavily defended sites such as

airfields, bridges, and command and control bunkers, to mobile air defenses, tanks, and troop concentrations. At NAFR, targets or impact areas are required to provide weapons delivery and air combat training for all types of ground targets. Targets provide the greatest challenge to air combatants when they are present in large quantities, concentrated at a distance from the combatant, and locally dispersed. To ensure test and training realism, some targets are attacked from the air and/or by ground forces. Ground tactics are tested and forces trained to ensure their ability to perform their assigned missions, which integrate Air Force assets with Army, Navy, and Marine Corps forces. Targets are attacked using small-scale ground assault, ground/air-launched cruise missiles, Multiple Launch Rocket Systems, and/or light artillery. An air combatant will be most challenged when defensive systems, both airborne and on the ground, are at the same lethal distance at the same time and all around in three dimensions. The capability to provide as many of those conditions as possible is the goal of any quality training range. At NAFR, the 440 air-to-ground impact areas are dispersed and of sufficient quantity to push the limits of personnel and weapons system capability.

The distance between targets is a major component of training realism. Limitations to target separation, type, or quantity diminish training effectiveness and combat readiness. Potential adversaries do not arrange their assets for convenient destruction. In reality, various military targets are dispersed, camouflaged, defended, and hardened depending on the type of asset and its resource requirements. Further, they are frequently mobile (such as the SCUD missiles encountered in Operation Desert Storm). NAFR distances between targets are a tremendous asset to training effectiveness and combat readiness.

NAFR infrastructure supports the purpose of providing realistic training and testing capability that simulate combat conditions and characteristics. Target arrays accommodate a wide variety of training and test requirements. Infrastructure designed to provide realistic targets (including infrared signatures and moving targets) and threat presentations (SAM sites), as well as prolonging target life, are examples of innovative new training and testing target development. The exclusive use of NAFR also supports unique military forces testing capability for missile launch and recovery, robotics, nuclear materials handling, and stockpile management practice in realistic conditions.

The annual cleanup of target areas is called "Coronet Clean." In addition to partial range clearances, Coronet Clean was instituted in 1975 to further reduce hazards associated with unexploded ordnance (UXO). This process of range decontamination includes removing and disposing of UXO, inert ordnance residue, training projectile ammunition, and other range material. Explosive ordnance disposal (EOD) personnel inspect ordnance residue and render UXO safe by detonation. Non-EOD range or contractor personnel then remove safe and/or inert ordnance residue, training projectile ammunition, and other range material. The interval and clearance areas are dependent upon the class of range involved.



Class A, B<sup>3</sup>, and C<sup>4</sup> Conventional Ranges: Each year the area surrounding the targets used for missile, rocket, and bomb training is cleared of all unexploded ordnance and inert residue to a radius of 2,000 feet from each tactical target. At the same time, the roads into targets are cleared out to 100 feet on both sides of the roads.

Five-Year Clearance: All hazard impact areas on the entire range for which the Air Force is responsible are cleared every five years (20 percent of the range per year). This clearance includes inspection, removal, and disposal of munitions and unusable debris.

**WEAPONS AND SELF-PROTECTION SYSTEMS USE**

The use of ordnance and self-protection systems (chaff and flares) are essential for realistic training. Aircrews must be skilled in the use of the full range of conventional Air Force weapons, from unguided ordnance to laser-guided bombs to air-to-ground missiles and self-protection systems. Section 1.6.3 details ordnance used on NAFR. Table 1.5-3 displays a summary of munitions use on NAFR from 1991-1995 (nuclear, chemical, and biological weapons are not used on NAFR). A more complete listing of the types and amounts of ordnance and self-protection units expended while using the NRC is presented in Appendix A. The use of these materials varies from year-to-year according to the particular testing and training requirements. The expenditure of these materials is not directly tied to the number of sortie operations flown in the NRC. It would be expected that chaff use would range from approximately 270,000 to 405,000 bundles per year. Likewise, flare use would vary from approximately 60,000 to 95,000 units per year.

Year	Inert (Non-Explosive)	Live (Explosive)	Total
1991	1,998	1,692	3,690
1992	1,948	1,662	3,610
1993	1,779	1,636	3,415
1994	1,641	1,393	3,034
1995	2,401	2,103	4,504

Note: 1991-1993 are estimated data.

NAFR provides for safe training, testing, and evaluation of weapons and self-protection systems in support of potential technological improvements in hardware, software, tactics, and

- 3 This range may be either manned or unmanned and has a scoring capability from the ground but does not have a Range Control Officer on the ground controlling aircraft. The flight lead, forward air controller, or other personnel as briefed will have Range Control Officer responsibilities.
- 4 This range is unmanned, with no scoring or aircraft control from the ground. The Range Control Officer function may be performed by the flight lead, forward air controller, or other person as briefed.

training. Weapons system and live ordnance testing capabilities are prime purposes of exclusive military use of large land areas. Ordnance testing, particularly of live rocket-propelled ordnance, requires that large areas within the range of the ordnance be under exclusive control for safety and security.

### **SUPPORTING AIRSPACE**

There is a direct relationship between size of the available airspace and training effectiveness. Airspace that supports NAFR permits simulation of a modern air combat environment. These requirements are dictated by the operational characteristics of modern military aircraft (e.g., speed, rate of turn, climb).

Airspace size affects training effectiveness by the number of aircraft and types of missions that can be supported. Available special-use airspace is large enough for air-to-air combat that permits radar intercepts beyond visual range. NAFR's airspace (shown on Figure 1-10) produces large gains in training effectiveness and combat readiness by accommodating many missions and types of aircraft. NRC airspace, including the airspace above NAFR lands, is described in section 3.1.

Military units must train and test as close to full capability as possible. To achieve their full capability, aircrew and weapons systems need airspace, land, and infrastructure as close as possible to a realistic battlespace environment. This type of environment ideally involves a minimum of an 80-by-150 nautical mile (NM) airspace for a single-attack axis, a circle of 300 NM in diameter for all-around attacks, or a 150-by-300 NM oblong shape for two target areas and simultaneous attacks. The airspace associated with NAFR provides minimum support to the mission with an 80-by-150 NM corridor for a single-attack axis. Figure 1-11 depicts the single-axis, single target area requirement.

### **OPERATIONAL TESTING REQUIREMENTS**

NAFR is a key to U.S. military test activities and tactics development for new weapons systems. As such it is part of the DOD's Major Range and Test Facility Base (MRTFB). An MRTFB is defined as a national asset that shall be sized, operated, and maintained primarily for DOD test and evaluation support missions but is also available to all users having a valid requirement for its capabilities. The acquisition or sustainment of a weapon system requires specific research developmental test and operational test activities to reduce risk and ensure the system is suitable and effective. Developmental Test and Evaluation (DT&E) is test and attack evaluation conducted to evaluate design approaches, validate analytical models, quantify technical performance, measure progress in system design and development, minimize design risks, predict integrated system operational performance (effectiveness and suitability) in the intended environment, and identify system problems to allow for early correction. Operational Test and Evaluation (OT&E) is testing and evaluation conducted in as realistic an operational environment as possible to estimate the prospective system's operational effectiveness and operational capability. Note that each form of test and evaluation (T&E) requires exercising the

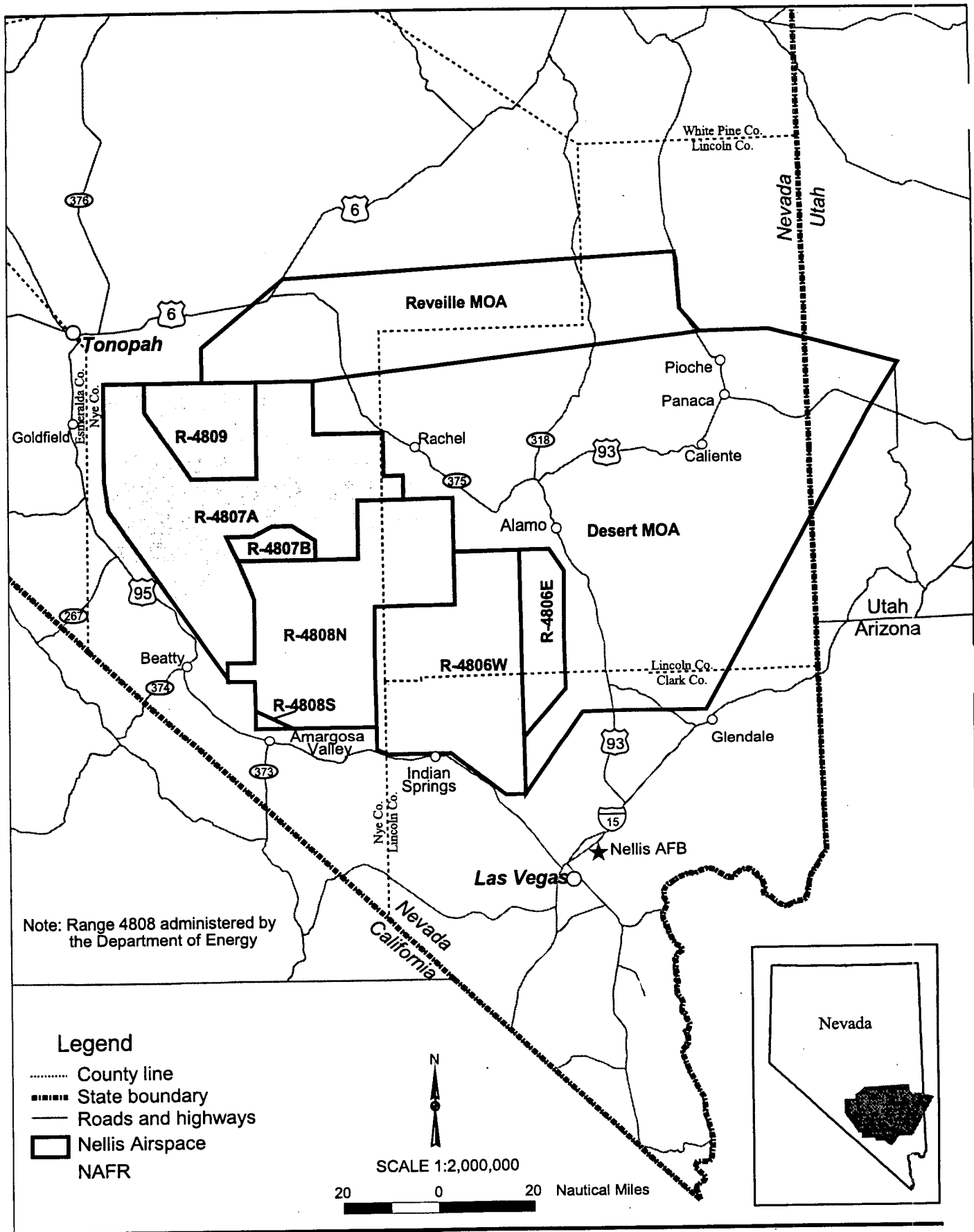


Figure 1-10. Nellis Range Complex Airspace

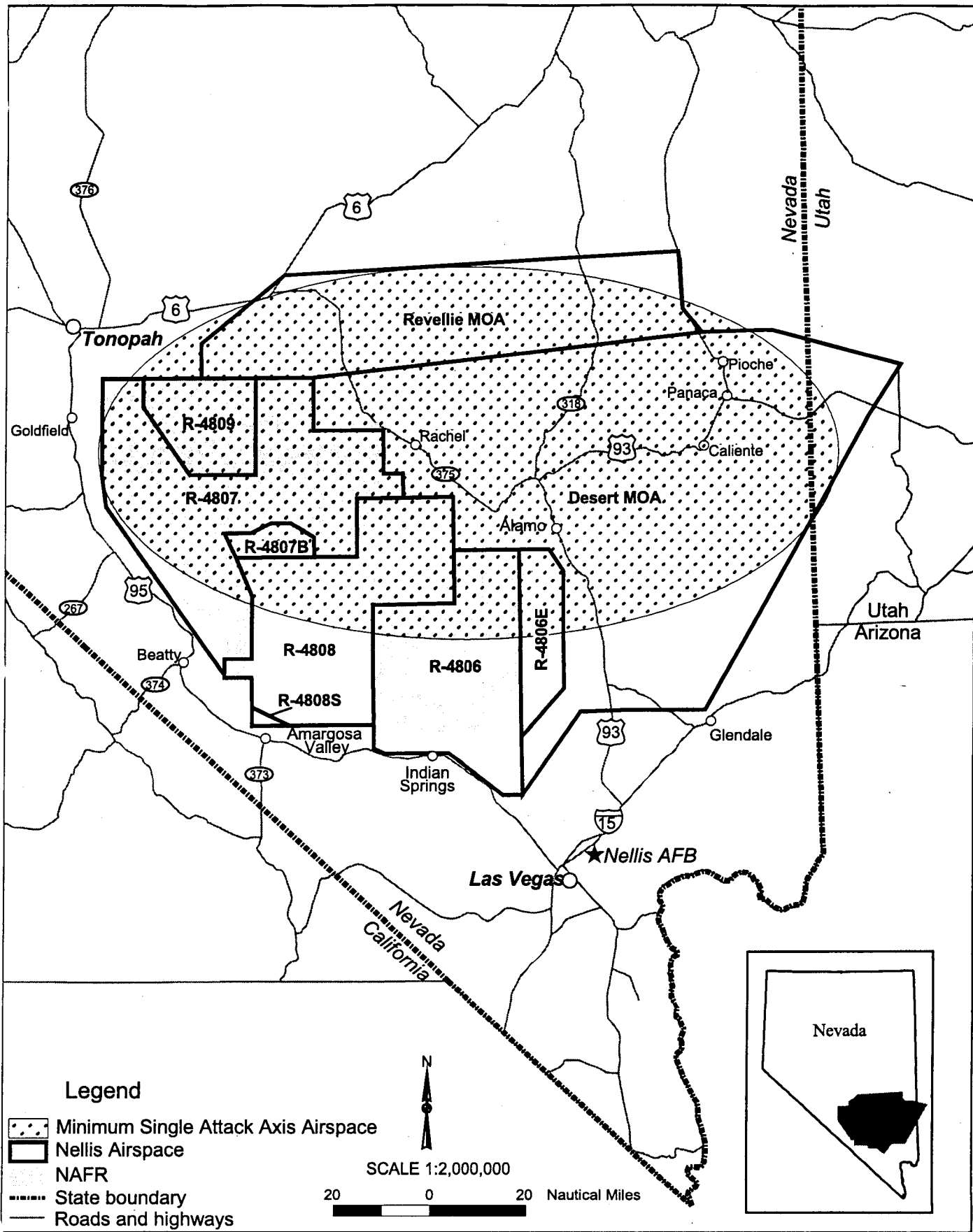


Figure 1-11. Idealized, Unrestricted Single Attack Axis, Airspace Requirement

system in a realistic operational environment. Open-Air Ranges (OARs) are used to evaluate systems in realistic backgrounds, clutter, noise, and dynamic environments. Additionally, research projects frequently require an OAR environment due to the large potentially affected area of the immature weapon concept being tried or the need to protect the security of the emerging weapon concept. Each of the aircraft and their associated systems and weapons discussed in section 1.6 has been tested on NAFR. Future aircraft and projected systems discussed in this section are similarly already scheduled for testing at NAFR.

These research or T&E activities require special infrastructure on NAFR to support specific objectives. NAFR infrastructure provides for the following:

- evaluation of new technology systems that must be understood completely across a wide spectrum of capabilities;
- advanced level testing of upgrades and enhancements to existing systems; and
- treaty compliance technologies and other nuclear stewardship practices, robotics, missile shot and recovery tests, and experimentation.

Weapons testing in the safe and secure NAFR environment is an integral part of the constant improvement cycle of weapons systems. The testing supports DT&E for air-to-air, air-to-ground, EC, and ground-to-ground combat capabilities as follows.

- Air-to-air testing includes the following ground instrumentation to measure for air combat maneuvering instrumentation (ACMI) ranges with the RFMDS facility; air-to-air gunnery range for aircraft gun/gunsight testing; aircraft and missile targets testing; and dynamic and static infra-red targets testing, and avionics software testing.
- Air-to-ground test capability includes ground-based Command and Control (C2) evaluation; open-air weapons evaluation; serial targets evaluation; ground, fixed, and mobile targets evaluation; radio frequency and sensor targets (nondestructive) evaluation; cruise missile flight tests; ballistic flight test weapons evaluation; operational test of weapons launch, release and separation; bombing (separation and accuracy) testing and evaluation; end game scoring system testing; multi-mode missiles and munitions testing; weapons system dispensing (submunitions) testing and evaluation; aircraft and missile targets use and dynamic and static infra-red targets use and testing.
- Ground-to-ground testing includes launch and recovery of surface-launched missiles, recovery of components, and ground shooting of large weapons for testing and training.

EC testing at NAFR uses ground-based instrumentation and is mostly tactics development and countermeasures testing. The final OAR component of the testing cycle is preceded by a series of other components at other Air Force test facilities, primarily operated by the Electronic Warfare Directorate at Edwards AFB, California. NAFR is a unique asset for weapons system OT&E. NAFR provides a unique realistic combat environment that permits employment of a

large combat force in land and airspace for OT&E. NAFR includes extensive capability for air combat maneuvering instrumentation, EC infrastructure, and large-force tactics development capabilities.

The NAFR tests are supported by the ground-based infrastructure throughout the ranges. NAFR supports testing and evaluation of U.S. and its allies' military systems and uses the same test resources to provide training capability.

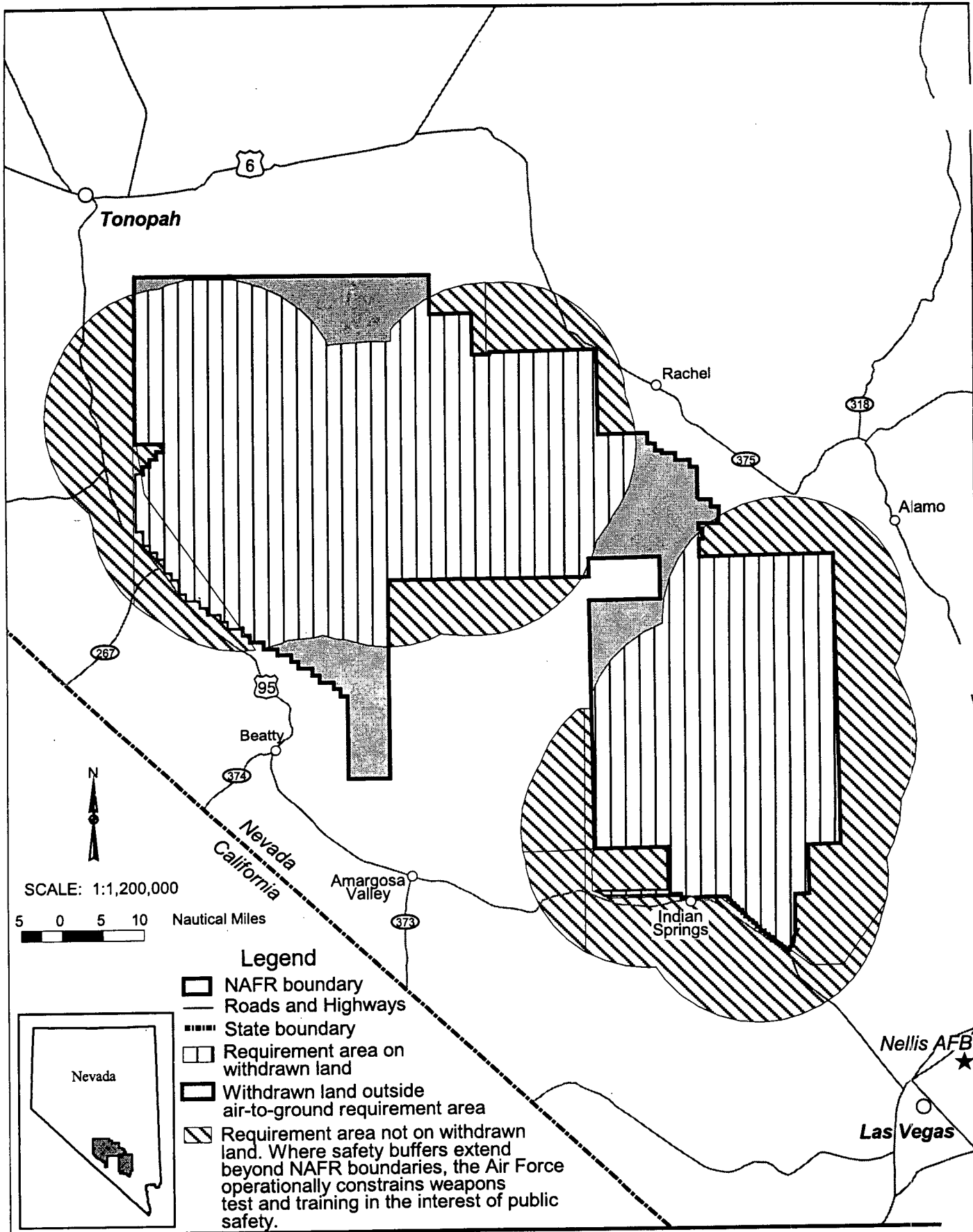
### **1.5.3 Public Safety**

The implementation of safety measures ensures public protection from the inadvertent consequences of a realistic battlefield environment. This protection is ensured at NAFR by excluding the public and non-required military personnel from locations simulating an active, high-stress battlefield environment. Air Force control of NAFR enables flight and ground operations to train and test equipment for the defense of national security interests while minimizing risks to the public. The Air Force uses Operational Risk Management (ORM) for making decisions that promote safe operations. ORM produces standards used to identify and avoid land use conflicts and minimize hazards to the public, military personnel and equipment from ordnance impacts. Long-range weapons present hazards from the point of intended release or firing of missiles to the maximum distance possible (based on any malfunction). For live-fire air-to-ground missiles, the distance traveled could be in excess of 60 NM. Figure 1-12 shows the ideal air-to-ground safety requirement with a 15-NM circle around each potential NAFR target impact area. Ground-to-ground missiles have the potential to travel long distances but have more reliable accuracy characteristics. Some newer air-to-ground ordnance may require a 30-NM safety buffer.

The use of live ordnance is necessary for testing and training. All firing or release of weapons must be conducted in a manner that ensures impact within the hazard area (see section 3.3.3). For air-to-ground missiles and free-fall guided weapons, the land area and airspace must be large enough to contain the entire flight envelope of the weapon from launch/release to impact. Weapons safety buffers are developed for all aircraft, weapons, and delivery systems employed in training/testing. For example, the safety buffer for the AGM-65 Maverick is 9.6 miles beyond the target, 6.3 miles short of the target, and 4.8 miles across the release path. In the foreseeable future, training and testing for the newly developed Joint Direct Attack Munition (JDAM) may increase the safety buffer needs to approximately 27 by 26 miles.

Unmanned aerial vehicles (UAVs) may require safety buffers during testing. As the largest exclusive-use, land-based range in the continental United States, NAFR can accommodate existing and projected future safety buffers.

Realistic training on NAFR includes realistic threats. Electronic threat emitters are deployed throughout NAFR. Many of these threat systems are mobile. Ground-launched threats, such as Smokey SAMs (simulated surface-to-air missiles), also present a falling object hazard and require exclusive-use land to ensure public safety. Exclusive-use land to the limit of the hazard



**Figure 1-12. Unrestricted 15 Nautical Mile Air-to-Ground Safety Requirements**

is provided at NAFR. Some of these systems pose hazards to personnel, who are directed to maintain a safe distance from operating systems. The AN/MPS-14 emitter/receiver has the largest electromagnetic hazard distance of nearly 785 feet.

Isolation of hazardous materials and dangerous operations from the public and unauthorized military personnel provides the greatest safety margin. Each weapon system is evaluated for hazards associated with operations, maintenance, and military capability. Operational rules, regulations, and practices minimize the chance of personnel injuries.

## **1.6 AIRCRAFT OPERATING AT THE NELLIS RANGE**

In more than 50 years of operation, a wide variety of aircraft, both U.S. and foreign, have been tested and used for training on NAFR. This section describes typical aircraft and their missions that are currently or projected to be operational.

### **1.6.1 Current Aircraft and Weapons Systems**

#### **F-15C EAGLE**

The premier air-to-air fighter in the Air Force inventory, the F-15 was first produced in 1972 as an air-superiority aircraft. Weighing over 20 tons, it carries both heat-seeking and radar-guided missiles, a cannon, and an array of complex avionics centered around a powerful radar capable of tracking small, high-speed objects as low as tree-top level. While in service with four air forces around the world, it has been credited with shooting down 96.5 enemy aircraft to no losses in aerial combat.

#### **F-15E STRIKE EAGLE**

A variation of the F-15 fighter, the F-15E is the world's most capable all-weather strike fighter. With the addition of a weapons systems officer located behind the pilot; large fuel tanks molded to the fuselage for added range; sophisticated avionics that permit low-altitude, all-weather precision strikes; and an impressive bomb load (including precision-guided munitions), this aircraft, which played a leading role in the Gulf War, can accurately strike targets day or night.

#### **F-16C/D FIGHTING FALCON**

The F-16, designed originally as a relatively low-cost lightweight fighter, has become the backbone of the fighter force. A highly maneuverable, single-engine aircraft, it is flown by many of the world's air forces. It has evolved into a highly capable strike fighter and, during the Gulf War, flew more missions than any other aircraft. With an attached LANTIRN (low-altitude navigation tracking infrared for night) pod, it can fly low-altitude night attack missions. It has also been equipped to replace the F-4G Phantom in the suppression of enemy air defenses (SEAD). By the time production ends, over 4,000 F-16s will have been delivered.



## **A-10 THUNDERBOLT II**

The A-10 was designed specifically to defeat enemy armored vehicles. Built around a large 30 millimeter (mm) GAU-8/A Gatling gun, it attacks armored vehicles and pierces their armored tops with heavy, armor-piercing projectiles. The aircraft is heavily protected against ground fire with titanium armor, two engines, and redundant control systems. Designed to fly at low altitudes for long periods and to be highly maneuverable, it carries a wide range of electronic warfare pods and external weapons, including air-to-air missiles. A variant, the OA-10, has entered service in the forward air controller mission, providing coordination and control of close air support aircraft.

## **B-1B LANCER**

Originally built as a supersonic low-altitude bomber for strategic (nuclear) missions, the B-1B is a swing-wing aircraft, faster than its predecessor, the B-52, and harder to detect on radar. The B-1B carries a large internal bomb load and can fly at low altitude in all weather. It carries an impressive array of electronic countermeasures to elude enemy defenses and is being equipped to carry precision-guided conventional munitions. The B-1B flies at NAFR when participating in large-force exercises such as Red Flag/Green Flag and during B-1B units' Mission Employment phase of Weapons School.

## **B-52H STRATOFORTRESS**

Based on a design from the 1950s, the B-52H is the last variant of the design flying today. Designed as a long-range, high-altitude strategic bomber, the changing geopolitical and technological environment has led to its taking on a variety of new roles: high-altitude conventional attack (as in Vietnam and in the Gulf War), maritime interdiction (using mines and anti-shipping missiles), and standoff attack (using cruise missiles). Capable of carrying a large load of virtually all Air Force weapons over great distances, the eight-engine bomber is expected to fly well into the next century. B-52s fly in NAFR when participating in large-force exercises such as Red Flag/Green Flag and the Mission Employment/Strike phases of B-52 Weapons School.

## **B-2 SPIRIT**

The B-2 provides the Air Force with state-of-the-art stealth technology for a heavy, long-range, penetrating bomber. Originally conceived as a highly survivable strategic bomber with a large nuclear bomb load, the Air Force is now focusing on the B-2's conventional capabilities. The Air Force views the B-2 as a weapons system capable of attacking heavily defended targets and neutralizing enemy defenses early in any conflict, permitting follow-on attacks by less-stealthy Air Force aircraft.

### **KC-135R STRATOTANKER AND MCDONNELL DOUGLAS KC-10A EXTENDER**

High-performance jet aircraft use large amounts of jet fuel. The KC-135R and more modern KC-10A, through airborne refueling, provide the additional range and endurance needed by combat aircraft. Based on the Boeing 707 airframe, the KC-135R carries up to 83,000 pounds of cargo and fuel. The KC-10A is based on the DC-10 airframe, and while its primary mission is aerial refueling, it can combine the tasks of tanker and cargo aircraft by refueling fighters while carrying the fighters' support personnel and equipment during deployments. The KC-10A can transport up to 75 personnel and about 170,000 pounds of cargo and fuel a distance of about 4,400 miles. Both aircraft are an important part of Air Force capabilities in projecting air power over great distances.

### **C-141 STARLIFTER**

The long-range, four-engined C-141 is the backbone of the Air Force's airlifter fleet, although it is approaching the end of its service life with retirement expected by 2006. These transports are used for cargo, as troop carriers, for air assault with paratroopers, and medical evacuation missions.

### **C-17A GLOBEMASTER III**

The C-17 will replace the C-141 fleet. The C-17 was designed to meet the Air Force requirement for a long-range, heavy-lift cargo transport capable of carrying all classes of military cargo, including the Army's 65-ton M1A2 tank. It will be able to operate out of relatively austere airfields formerly restricted to the smaller C-130 transport.

### **E-3 SENTRY**

The E-3C Sentry is the Air Force's AWACS. Based on the Boeing 707 airframe, the E-3C is packed with complex avionics and sensors, permitting it to electronically monitor airspace up to 200 NM. Carrying a basic crew of 24, it has an unrefueled endurance of 11 hours and up to 22 hours with in-flight refueling. It is used for airspace command and control of aircraft using NAFR.

### **E-8C JOINT-STARS**

The Joint Surveillance and Target Attack Radar System (J-STARS) was developed to undertake ground surveillance, targeting, and battle management missions. The aircraft is a four-engine Boeing 707 airframe modified with a side-looking radar that can locate small objects, such as vehicles, at very long ranges.

### **RC-135 RIVET JOINT**

The RC-135 Rivet Joint is a surveillance aircraft equipped with an extensive array of sophisticated intelligence-gathering equipment that enables the Air Force to monitor enemy

electronic activity. Like the E-3C Sentry, this aircraft carries a large crew of electronic and intelligence specialists that can locate, identify, and determine the status of enemy emitters on land, in aircraft, or on board ships.

### **HH-60G PAVE HAWK**

A variant of the Black Hawk utility helicopter, this aircraft is configured to provide combat search and rescue and other support missions. It is equipped with sophisticated navigational gear, as well as an air refueling system and removable long-range internal fuel tanks that make it very well suited for rapid-response, long-range rescue missions.

### **C-130 HERCULES**

The C-130 Hercules is a four-engine turboprop transport originally designed to operate from austere bases in support of Army units. A highly versatile aircraft, it is operated by the Air Force in transport, tanker, gunship, special operations, and command, control, and communication interface variants. A new, upgraded version, the C-130J, is now entering service.

### **F-117A NIGHT HAWK (STEALTH FIGHTER)**

The F-117A is a subsonic light aircraft capable of carrying two 2,000-pound laser-guided bombs. It was designed expressly to minimize its radar reflections and infrared signature, enabling it to penetrate strong enemy air defenses at night without detection.

### **EA-6B PROWLER**

The EA-6B is a Navy all-weather electronic warfare aircraft capable of detecting, locating, jamming, and destroying enemy air defense radars. It was designed to protect carrier battle groups and associated aircraft by jamming enemy radar and electronic equipment. It is being employed by the Air Force to replace the EF-111 electronic warfare aircraft.

### **F/A-18C/D HORNET**

This capable twin-engine aircraft currently forms the backbone of Navy and Marine fighter air wings and is also in service with numerous foreign air forces. It also has attack capabilities. The Navy will soon be bringing to service a larger and more capable version, the F/A-18E/F Super Hornet.

### **AV-8B HARRIER**

The short takeoff and vertical landing Harrier is a close-support attack aircraft used by the Marine Corps. Its unique takeoff and landing capability (it also has a vertical takeoff capability with a reduced payload) permits the Marine Corps to operate it off small austere fields near

Marine ground units. Versions of this subsonic aircraft are flown by a number of foreign services, primarily navies, because of its capability to take off and land on small decks.

#### **F-14 TOMCAT**

The F-14 was designed to be the Navy's frontline interceptor. A fast, swing-wing fighter with long range, powerful radar, and long-range air-to-air missiles, it is expected to engage enemy aircraft long before they could attack the Navy's carriers. Recent versions of the F-14 have been upgraded to provide a ground-attack capability.

#### **F-4 PHANTOM**

While the twin-engined F-4 fighter-bomber, which saw extensive service during the Vietnam War, has been retired from the active Air Force inventory, this still-capable aircraft is in service with many foreign air forces.

#### **TORNADO**

The Tornado is a supersonic swing-wing aircraft flown by the air forces of the United Kingdom, Italy, Germany, and Saudi Arabia. It is produced in interceptor, attack, and reconnaissance versions.

#### **MIRAGE 2000**

The Mirage 2000 is a high-performance, delta-winged, French-built fighter-bomber produced by France's Dassault Aviation and is in service with a number of foreign air forces.

#### **UNMANNED AERIAL VEHICLES**

UAVs provide long endurance, unmanned aerial reconnaissance, surveillance, and target acquisition that produce approximately real-time intelligence. Operating aircraft include the Predator UAV. Several versions of UAVs are now in development, each differing in size, endurance, altitude, and sensors.

### **1.6.2 Expected Aircraft and Weapons Systems**

#### **F-22 RAPTOR**

This aircraft will combine stealth, high speed, and sophisticated avionics to eventually replace many functions of the F-15. The F-22 is designed to penetrate enemy airspace and achieve air superiority with a first-look, first-kill capability against multiple targets. It will employ a advanced radar that can be used without revealing its location; the active transmitter can be on an off-board platform such as an AWACS. It is able to cruise at supersonic speeds without the use of afterburners.

## **JOINT STRIKE FIGHTER**

The Joint Strike Fighter (JSF) is a next-generation design that constitutes a family of air superiority and strike fighters. It is a relatively low-cost, stealthy strike fighter that is being developed to replace the F-16 for the Air Force, the F/A-18 and the AV-8B for the Navy and Marines, and the Sea Harrier for the British Royal Navy. The Marine and Royal Navy variations will have short take-off and vertical landing (STOVL) capabilities. The Air Force is also considering acquiring a number of the STOVL variants to equip several squadrons for a fast-reaction contingency force. Australia, Belgium, Denmark, and the Netherlands have also expressed interest in co-producing the JSF.

## **UNMANNED COMBAT AERIAL VEHICLES**

Conceptual analysis is underway to develop a family of aircraft capable of undertaking combat operations while being electronically "flown" by a pilot in a remote location. Such aircraft offer a number of advantages: they could be flown into heavily defended areas without fear of losing a pilot; the weight saved by eliminating the pilot and life support equipment, such as an ejection seat, permits increased fuel and weapons capacity; and such aircraft could perform high-G maneuvers that a human pilot could not withstand. Some Unmanned Combat Aerial Vehicle (UCAV) concepts involve radical new aerodynamic designs while others consider the rebuilding of older fighters, such as the F-16A, with new wings, more fuel and weapons capacity, and the removal of all pilot support equipment.

### **1.6.3 Ordnance**

The Air Force currently uses an extensive inventory of conventional live and inert ordnance on NAFR. These include both air-to-air heat-seeking and radar-guided missiles and a wide range of air-to-ground weapons: so-called "iron" (unguided) bombs, guided bombs and missiles, cluster bombs, rockets, and cannon, and soon, a new generation of guided bombs and missiles, some of which contain packages of guided sub-munitions. Table 1.5-3 displays the annual use of munitions on NAFR. A brief description of these weapons follows.

#### **AIR-TO-GROUND ORDNANCE**

##### ***GENERAL PURPOSE BOMBS***

Unguided weapons are relatively unchanged from their World War II ancestors, except for a basic low-drag design. Produced in a variety of sizes, they are steel cases filled with high explosive, fuses at each end, and fins for stabilization in flight. Different tail cones allow them to be released in either a basic, low-drag or high drag configuration.

##### ***CLUSTER BOMBS***

Highly effective against area targets such as convoys, supply dumps, troop concentrations, and air-defense sites, cluster bombs break up in mid-air, spreading sub-munitions over wide areas.

## *Nellis Air Force Range Renewal LEIS*

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These weapons are produced in a variety of sizes and with a range of submunitions (anti-personnel, incendiary, fragmentation, time-delay, and anti-tank). Development is underway to produce submunitions that can detect and guide themselves to targets (so-called "brilliant" munitions).

### ***GUIDED BOMBS***

The so-called "smart bombs" first used in the Vietnam War and then with success in the Gulf War are general-purpose, iron-bomb warheads fitted with a Glide Bomb Unit (GBU) kit. The kit is composed of a laser seeker and control section attached to the front of the warhead and a set of steerable fins attached to the end of the weapon. A laser beam directed from the attacking aircraft (or a sister aircraft or a soldier on the ground) at the target is used to guide the weapon; the bomb tracks the reflected laser light from the target.

GBU kits can be attached to a wide range of bomb sizes. These weapons now include thick, high-tensile, steel-cased penetration bombs and are designed to penetrate hardened aircraft shelters, underground bunkers, etc. Using delayed-action fuses, these bombs were successful against state-of-the-art concrete and steel fortifications during the Gulf War.

The range of a GBU can be extended by adding a rocket motor and digital control system. The AGM-130, which is tested on NAFR, is an improvement of the GBU-15 glide bomb. The attached rocket motor triples the standoff range of the GBU-15.

### **AIR-TO-GROUND MISSILES AND ROCKETS**

#### ***AGM-65 MAVERICK***

This missile, with its 300-pound warhead, is designed to be used against armored vehicles, fortifications, and ships. Originally designed with television guidance, current versions use an infrared seeker that sees the infrared energy (heat) emitted by a target (such as an engine). Mavericks were used against armored vehicles in the Gulf War.

#### ***2.75- AND 5.0-INCH ROCKETS***

Unguided rockets, which can be fired in salvos from underwing pods, are used by helicopters and attack aircraft.

### ***CRUISE MISSILES***

Bombers are equipped to launch cruise missiles, which are long-range, subsonic missiles that are programmed for precision attack on surface targets. Small radar signatures and low-altitude flight make cruise missiles difficult to detect and destroy.

## **AIR-TO-AIR MISSILES**

Air-to-air missile training occurs with a variety of captive missiles, including Sidewinder missiles, AIM-120, and AMRAAM. Due to safety concerns, NAFR does not support the actual launching of air-to-air missiles. NAFR does support high-fidelity simulated missile employment.

## **AMMUNITION**

A wide variety of cannon, machine gun, and small-arms ammunition is expended on NAFR. Strafing pits and small-arms ranges with safety buffers are provided for training.

### ***105 MM AND 40 MM***

The AC-130H Spectre gunship carries a 105-mm howitzer as well as a 40-mm and 20-mm cannon. The new AC-130U replaces the 20-mm cannon with a 25-mm gun.

### ***30 MM***

The A-10 Thunderbolt II was designed to destroy heavily armored vehicles, such as main battle tanks, with its 30-mm cannon. This gun fires three types of ammunition: Target Practice (TP), which is a non-explosive steel slug; Armor-Piercing Incendiary (API), a steel slug encasing a heavy armor-piercing dart composed of depleted uranium (DU) (see section 3.4.3.4); and High-Explosive Incendiary (HEI), a steel projectile encasing an explosive charge.

### ***25 MM***

The AC-130U gunship and the AV-8B Harrier, a STOVL attack aircraft operated by the U.S. Marines, use 25-mm ammunition.

### ***20 MM***

The gun carried by most of the fighter aircraft in the Air Force and Navy inventory (F-14, F-15, F-16, F/A-18, and eventually the F-22 and JSF) is a General Electric Gatling gun that fires 20-mm ammunition, both TP and HEI.

### ***50 CAL***

The 50-caliber heavy machine gun is employed primarily on security vehicles and helicopters.

### ***7.62 MM***

The 7.62-mm machine gun is used by security forces on a bipod or tripod mounts on vehicles, and also used by helicopter door gunners.

## **NEXT-GENERATION ORDNANCE**

### ***JOINT DIRECT ATTACK MUNITIONS***

Built around a variety of current conventional bomb warheads, this weapon is guided to its target by an on-board Global Positioning System (GPS) receiver. Once the target position has been provided in GPS coordinates, the JDAM can be dropped from standoff ranges in any weather and strike its target without the laser designation required of current laser-guided ordnance.

### ***JOINT STANDOFF WEAPON***

Joint Standoff Weapon (JSOW) is a glide bomb designed to deliver a variety of cluster munitions from standoff ranges of up to 40 NM into heavy air defense environments. It employs small wings that deploy after launch and GPS-based guidance.

### ***JOINT AIR-TO-SURFACE STANDOFF MISSILE***

The Joint Air-to-Surface Standoff Missile (JASSM) is a long range (more than 100 miles), stealthy, precision strike weapon designed to evade or defeat all threats en route to its target. It can be carried either internally or externally on a wide range of aircraft, from the F-16 to the B-2. It uses GPS guidance to reach its target and is highly resistant to GPS jamming. It carries a 1,000-lb. class multipurpose warhead capable of penetrating underground targets.

### ***SMALL SMART BOMB***

Precision targeting permits smaller warheads. A lighter smart bomb is currently under development. A small bomb with precision strike capability means that aircraft such as the F-117, which is limited to a 4,000 pound bomb load, can carry more bombs and strike more targets in one mission.

### ***LOW-COST AUTONOMOUS ATTACK SYSTEM***

Development is underway on a low-cost autonomous attack system (LOCAS), or "smart" submunition that can distinguish between different targets and shape its warhead to inflict the most damage. Deployable from underwing, bomb bays, or munitions dispensers, these small, winged weapons use LADAR (laser detection and ranging) and advanced detection technologies to detect and distinguish targets and then to strike them.

### ***WIND CORRECTED MUNITION DISPENSER***

The Air Force plans to adapt standard tactical munition dispensers with inertial navigation system guidance units that will compensate for wind drift when dropped from high altitudes. Wind Corrected Munition Dispenser (WCMD) kits will provide precision accuracy.



#### **1.6.4 Self Protection Systems**

Chaff and flares are the principal defensive mechanism dispensed from military aircraft to avoid detection and/or attack by adversary air defense systems. Chaff consists of small fibers that reflect radar signals and, when dispensed in sufficient quantities from aircraft, form a "cloud" that breaks the radar signal and temporarily hides the aircraft from radar detection. Flares provide high-temperature heat sources ejected from aircraft that mislead heat-sensitive or heat-seeking targeting systems. Chaff and flares are used to keep aircraft from being targeted by weapons such as SAMs, anti-aircraft artillery (AAA), and other aircraft.

The effective use of chaff and flares in combat requires training and frequent use by aircrews to master the timing of deployment, the capabilities of the devices, and to ensure safe and efficient handling by ground crews.

Chaff and flare deployment throughout NAFR and in approved complex airspace is governed by a series of regulations that are based on safety and environmental considerations and limitations. Among these regulations are the following.

- AFI 13-201 establishes practices to decrease disturbances from flight operations and protect the public from the hazards and effects associated with flight operations.
- AFI 11-206 prohibits Air Force pilots from intentionally allowing any object to be dropped from an aircraft, except in an emergency, without prior approval. Approval is only given when the dropped object will not create a hazard to people, property, or other air traffic.
- AFI 13-212 and Nellis Supplement 1 outline procedures governing weapons range use of chaff and flares.
- AFI 11-214 delineates procedures for chaff and flare employment.

The public often raises concerns that the use of chaff constitutes littering. There are no federal laws or regulations that specifically identify chaff as litter, or that even indicate that the use of chaff constitutes littering. The U.S. Environmental Protection Agency (USEPA) defines litter as, "The highly visible portion of solid waste carelessly discarded outside the regular garbage and trash collection and disposal system." Chaff fibers, because of their small size, while detectable in some circumstances, are not "highly visible." Furthermore, when chaff is ejected from an aircraft, it is being used for its intended purpose and is not being "carelessly discarded." A field study of two locations where chaff is used intensively (one of which was NAFR) examined the potential for chaff to accumulate and create land use or visual impacts. Chaff was found to disperse and settle over broad areas, thus being unnoticeable under most conditions. Occasionally, clumps of chaff that had not dispersed properly were found to be visible at short distances, generally less than 25 feet away. Findings indicate that adverse effects on land use or visual resources are unlikely (Air Force 1997d).

In accordance with Nellis AFB Supplement 1 to AFI 13-212, chaff may be deployed in all numbered ranges and MOAs between 300 feet above ground level (AGL) and 10,000 feet AGL except in Range 63, Range 65, Range 74A, Wilderness Areas, Wilderness Study Areas (WSAs), National Parks and populated areas. Chaff drops are authorized to 25,000 feet AGL in R-4807, EC West, the Coyote subdivision of the Desert MOA and Reveille/ ATCCA and up to 20,000 feet AGL in the Caliente and Elgin subdivisions of the Desert MOA and R-4806. Additional restrictions may be imposed depending on weather conditions.

Air Combat Command Supplement 1 to AFI 11-214 (February 25, 1997) prescribes a minimum flare release altitude of 2,000 feet AGL over non-government-owned or controlled areas. Flare deployment restrictions over government-owned and controlled areas are shown in Table 1.6-1.

<i>Aircraft Type</i>	<i>Minimum Altitude (AGL)</i>
OA/A-10	400 feet*
F-4	600 feet
F-15, F-16, B-1	700 feet
B-52	1,000 feet

\*depends on flare type  
Source: AFI 11-214ACC1

Flares are authorized for use in the numbered and EC ranges of the NRC. Flares may not be dropped over manned sites, ground parties, or within 3 NM of forested areas within the NRC. Approved deployment altitudes allow the flares to burn out 100 feet above the ground. The minimum flare release altitude in the MOAs is 5,000 AGL. The minimum flare release altitude for the numbered ranges and EC ranges is 700 feet for all aircraft except B-52s (900 feet AGL). Flares are not authorized during the dry season when the fire code is "extreme."

## **1.6.5 Other Systems**

### **1.6.5.1 LASERS**

Laser targeting systems are an essential part of some modern aircraft. Laser operations in the combat mode are limited to those targets and target areas that have been specifically approved for those operations.

When the laser targeting system is used in the combat mode, it has the potential to be hazardous to the eyes. Laser targeting in the combat mode is restricted to DOD-controlled land, and under specific safety precautions. Procedures have been established to minimize any adverse impacts on the health and safety of either aircrew or observers during the use of lasers

in designated target areas. These procedures require that a certification of the laser operations be completed by the base Bioenvironmental Engineers with assistance from Armstrong Laboratories, Brooks AFB, Texas. This certification describes what hazard control measures, if any, would be required for a target area based on the flight profile and resulting laser safety footprint for each target area. Such evaluations have been performed at NAFR. All safety procedures are implemented prior to the use of lasers at the NAFR targets, including assurance that the laser safety buffers remain within NAFR.

#### **1.6.5.2 RADIO FREQUENCY EMISSIONS**

Radio frequency (RF) emissions consist of the transmission of non-ionizing energy through space to receptive objects (see section 3.3.1). The types of RF-emitting equipment presently used by NAFR include radio communications systems, electronic emitters, and scoring systems. DOD and Air Force safety instructions provide guidance for the safe operation of RF-emitting equipment as well as the training requirements for personnel who operate the equipment. All RF emitters are considered nonhazardous as long as applicable safety precautions and calculated hazard distances are followed. For each piece of equipment producing RF, separation distances between the equipment and a receptor have been calculated so that a person beyond that distance will not receive RF energy that exceeds permissible exposure limits (PEL). All RF-producing equipment is oriented so that the RF energy is directed away from personnel, and safe separation distances are maintained.



The Air Force proposes to renew land withdrawal of the Nellis Air Force Range for exclusive military use. This LEIS addresses four action alternatives for this continued use and the No-Action Alternative. Alternatives 1A and 1B would be continued withdrawal for an indefinite period with periodic reports to Congress regarding land stewardship. Alternatives 2A and 2B would be continued withdrawal for 25 years.

- Under Alternatives 1A or 2A, the Air Force would renew currently withdrawn lands and continue to use NAFR. Memoranda of Understanding (MOUs) addressing the use of lands by other federal, state, and local agencies would continue in effect. There would be no change in the process to gain access to NAFR.
- Under Alternatives 1B and 2B, the Air Force would withdraw an adjusted NAFR. Boundary, jurisdictional overlap, and limited access adjustments would reflect safe and secure test and training operations and answer federal, state, and local agency and public comments received during the LEIS process.

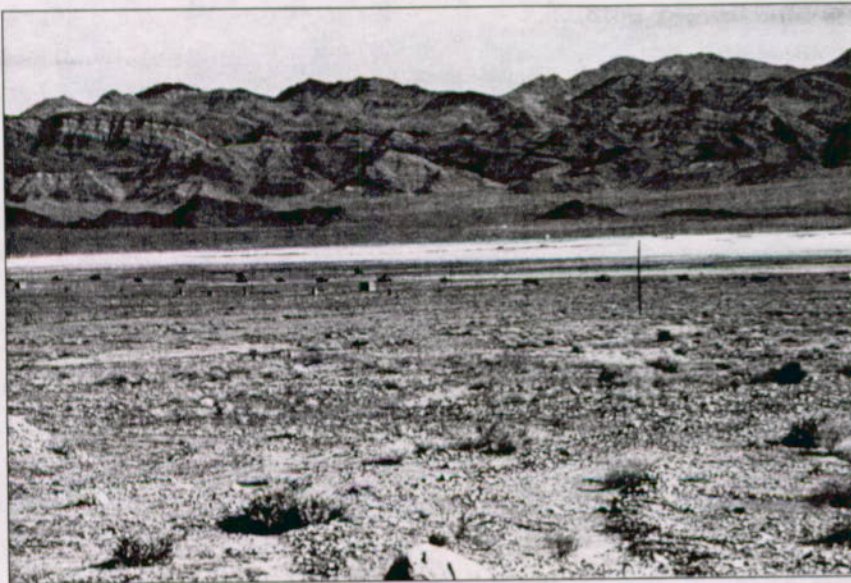
# DESCRIPTION OF ALTERNATIVES

2.0

## DESCRIPTION OF THE ALTERNATIVES

Under the No-Action Alternative special use airspace would continue to be accessible to flight activities. All military ground activities would cease. Without ground activities on NAFR, all of the following would also stop: air-to-ground training missions; Red Flag and other Flag exercises; air-to-air training that requires ground-based tracking, threats, or scoring; operational testing and evaluation; and security-related activities.

*Red Flag and other Flag exercises would continue under a land withdrawal alternative but would stop under the No-Action Alternative.*



*Under range renewal the Air Force would continue to use NAFR for military testing and training. This would include live ordnance use and restricted access to NAFR for security and public safety.*

*The No-Action Alternative would result in no renewal of withdrawal of NAFR for military purposes. All Air Force ground activities would terminate, air-to-ground targets would be removed, and the Air Force would cease to use any public lands in the current NAFR.*



## **2.0 DESCRIPTION OF ALTERNATIVES**

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This description of alternatives is the basis for analyzing potential environmental consequences from a renewal of the Nellis Air Force Range (NAFR) land withdrawal. This information is based on the statement of purpose and the current and anticipated needs, requirements, and activities of NAFR. Appendix A provides additional information on aircraft use and operation within the Nellis Range Complex (NRC).

### **2.1 PROCESS FOR IDENTIFICATION OF ALTERNATIVES**

The U.S. Air Force (Air Force) identified alternatives for the renewal of NAFR that would satisfy the national security, military operations, and public safety purposes and needs, as identified in Chapter 1.0, while complying with the requirements of Public Law (PL) 99-606 as amended by the Groom Mountain Withdrawal (Public Land Order [PLO] 100-338) and the White Sides Safety and Security Buffer (PLO 7131). The identification process of the alternatives drew upon agency and public comments received by the Air Force during scoping for this Legislative Environmental Impact Statement (LEIS). Steps that were taken to assist with the development of appropriate alternatives included the following:

- participation in six public scoping meetings to receive public and agency input;
- identification of the current and reasonably foreseeable future military requirements of NAFR lands;
- desire to reallocate funding to enhance environmental resources on NAFR and expand public interaction programs;
- consultation and informational discussions with the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), State of Nevada, potentially affected counties, interested non-governmental organizations;
- discussions with American Indian tribes, organizations, and individuals; and
- identification of specific Department of the Interior (DOI) requirements that are part of the land withdrawal application to Congress under PL 99-606 as amended.

The process of acquiring input, with special emphasis on the LEIS scoping process, identified issues and concerns raised by other federal agencies, state agencies, and the public. These issues and concerns are summarized as follows:

- access for recreation and non-consumptive uses, through co-use of lands;
- access for consumptive economic activities, specifically mining;

- change in administration of selected range areas where overlap exists between the Air Force and Department of Energy (DOE) or between the Air Force and the USFWS; and
- expanded outside review of NAFR environmental activities by the public, tribal organizations, and other agencies.

These public, state, and agency concerns were evaluated in view of Air Force requirements to ensure public safety, mission test and training requirements, and national security. This evaluation resulted in a set of four potential action alternatives and the No-Action Alternative that are carried forward for detailed analysis. The action alternatives, described in section 2.2, are designed to address public, state, and federal concerns while permitting Air Force training and test activities within critical safety/security parameters. Air Force activities at NAFR throughout the duration of the proposed withdrawal are projected to continue at approximately the same level and type as those described in section 1.5.2. Other alternatives were considered but do not fully meet the purpose and need underlying the renewal of the NAFR withdrawal. These alternatives are described in section 2.3, along with the reasons they were not carried forward.

## **2.2 ALTERNATIVES**

Key sections of the four action alternatives and the No-Action Alternative are summarized in Table 2.2-1. This table is a matrix that describes the duration of the withdrawal, focus and extent of environmental programs during the withdrawal period, extent of co-use of current NAFR lands, potential relinquishment of selected areas, and administrative management actions. Each alternative is explained in detail below. Components of each alternative were derived from comments provided during public scoping (see Table 2.2-2).

Each of the action alternatives (Alternatives 1A, 1B, 2A, or 2B) include the continued military use of NAFR in the manner of its historic use. All existing facilities would remain and would be operated as they have in the past. This would include major facilities associated with the Indian Springs Air Force Auxiliary Field (ISAFAF), Tolicha Peak, and Tonopah Test Range (TTR). The Air Force also would continue to operate target complexes and simulated threat sites to support its testing and training needs. Aircraft operations in the Nellis Range Complex (NRC) would be expected to vary from 200,000 to 300,000 sortie-operations annually. Safety and security buffers would be maintained as they currently exist.

The alternatives address a broad range of potential actions. Although the alternatives group actions for analysis in the LEIS, Congress is not limited to select an individual alternative. Rather, Congress retains the flexibility to select a combination of actions that are evaluated in this LEIS. For example, Congressional decisionmakers could select most of Alternative 1B, with recreational co-use, environmental procedures and funding, resolution of administrative responsibilities between the Air Force and USFWS, but exclude administrative actions

*Nellis Air Force Range Renewal LEIS*

**Table 2.2-1. Summary of NAFR Alternatives**

<i>Duration</i>	<i>Withdrawal Area</i>	<i>Access</i>	<i>Administration</i>	<i>Environmental Procedures &amp; Funding</i>
<b>ALTERNATIVE 1A</b>				
Indefinite	Approximately 3.035 million acres	Same as under PL 99-606 as amended	Same as under PL 99-606 as amended Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Future resources would be requested for environmental stewardship and public interaction programs rather than for reoccurring legislative withdrawal procedures; periodic report to Congress
<b>ALTERNATIVE 1B</b>				
Indefinite	Approximately 2.911 million acres	Specific permitted co-use activities, based on specific mission requirements; priority scheduling (see text)  Non-renewal of approximately 30,000-35,000 acres along western border of NAFR	PL 99-606 with: Revision of land management responsibilities with DOE Revision of land management responsibilities with USFWS Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Same as 1A
<b>ALTERNATIVE 2A</b>				
25 years	Approximately 3.035 million acres	Same as under PL 99-606 as amended	Same as under PL 99-606 as amended Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Future resources will be requested for compliance with future FLPMA rules and renewal procedures (see section 1.2.4)
<b>ALTERNATIVE 2B</b>				
25 years	Approximately 2.911 million acres	Specific permitted co-use activities, based on specific mission requirements; priority scheduling (see text)  Non-renewal of approximately 30,000-35,000 acres along western border of NAFR	PL 99-606 with: Revision of land management responsibilities with DOE Revision of land management responsibilities with USFWS Five-Party Cooperative Agreement participants used for ongoing natural and cultural resources management	Same as 2A
<b>NO-ACTION ALTERNATIVE</b>				
Indefinite	None; no public access to some health and safety areas	BLM multiple use; Specific permitted activities on DNWR	BLM USFWS	BLM USFWS



Table 2.2-2. Alternatives Identified					
Components	ALTERNATIVES				
	1A	1B	2A	2B	NA
<b>DURATION OF WITHDRAWAL</b>					
Indefinite period	●	●			
25 years			●	●	
No action; no land withdrawal renewal					●
<b>AREA WITHDRAWN</b>					
Continue withdrawal of existing NAFR	●		●		
Non-renewal of western portion of Clarkdale and Wagner Mining Districts and neighboring area		●		●	
Resolution of Air Force and USFWS joint withdrawal		●		●	
Resolution of Air Force and DOE land uses		●		●	
No action; no land withdrawal					●
<b>NONCONSUMPTIVE CO-USE</b>					
Current MOUs and Agreements in effect; no other changes	●		●		
Co-use within national security, military operations, and public safety goals at:		●		●	
• Mud Lake		●		●	
• Kawich Range		●		●	
• Southern portion of EC South		●		●	
No action; no land withdrawal renewal					●
<b>ADMINISTRATION</b>					
Air Force administers NAFR land under existing MOUs	●		●		
Air Force administers NAFR; USFWS administers DNWR lands		●		●	
Resolve land management responsibility; Air Force administers revised NAFR; DOE administers Pahute Mesa		●		●	
Resolve land management responsibility; Air Force administers revised NAFR with PLO 1662		●		●	
Air Force administers revised NAFR; BLM administers non-renewal lands		●		●	
Air Force administers NAFR with co-uses reviewed under the Five-Party Cooperative Agreement		●		●	
No action; no land withdrawal renewal					●
<b>ENVIRONMENTAL PROCEDURES AND FUNDING</b>					
Environmental review via existing cultural resources and natural resource management programs; NEPA documentation on mission modifications	●	●	●	●	
Future funding/resources would be requested for environmental stewardship and public interaction programs rather than with reoccurring legislative withdrawal procedures.	●	●			
Future resources will be required for compliance with FLPMA rules and renewal procedures (see section 1.2.4).			●	●	
No action; BLM responsible for North Range land management, BLM & USFWS responsible for South Range land management; Air Force and DOE responsible for environmental cleanup of non-renewal lands					●

affecting DOE. This flexibility in making decisions is possible because the potential environmental consequences of all potential actions are evaluated in the LEIS.

### **2.2.1 Alternative 1A — Indefinite Withdrawal**

Under this alternative, Congress would renew the land withdrawal for NAFR and reserve these lands for military use for an indefinite period of time. The withdrawal would remain in effect until Congress, through consultation with the secretaries of the military department(s) concerned, determined that there is no further military need for the withdrawn land. This would not be a permanent land withdrawal. Congress would retain the ability to review the withdrawal at their discretion any time during its duration. The Air Force would comply with NEPA, and other applicable regulation, during the duration of the withdrawal by completing project-specific evaluations of proposals that would use NAFR resources or lands. A periodic Congressional review would validate the continued military need for the withdrawn land, review environmental issues associated with previous and continued uses, and examine the effectiveness of the public interaction process. Public oversight of ongoing environmental management activities on the NAFR would continue to be available via each of the applicable laws, regulations and policies (i.e. NEPA, Natural Resource Management, RCRA). Further, the i.e., Five-Party Cooperative Agreement, used for purposes of exchanging ideas and information between the Air Force, DOE, BLM, USFWS, and State of Nevada, would also provide public oversight opportunities.

The military need for realistic range environments to train military aircrews is projected for the foreseeable future, and the NAFR is essential to meet the Air Force's national defense responsibilities. A withdrawal of indefinite duration would support safe, efficient, and secure testing and aircrew training needed to utilize weapons systems for their expected life. It also would sustain the combat readiness of aircrews and support personnel in the future. Maintaining long-term access to the NAFR is crucial because its capabilities and capacities cannot be duplicated.

The conservation and management of natural and cultural resources of the NAFR could be best served by implementing long-term environmental programs that promote understanding, protection, and improvement of these resources. Resources required for a recurring renewal process could be better attributed to implementation of NAFR environmental and public interaction programs. Therefore, under this alternative the Air Force could periodically report (e.g., every 15 years) to Congress the results of range stewardship. This report, subject to public comment, could include:

- validation of continued military need for the range;
- a summary of environmental/public involvement programs and results;
- projection of environmental programs for the next period;

- environmental enhancement activities with cooperative agencies;
- government-to-government relations with American Indian tribal representatives; and
- status of permitted nonmilitary land use.

An indefinite withdrawal with scheduled Congressional review and Air Force accountability, rather than a recurring renewal process, would facilitate more effective planning for and management of resources used to support military activities, and promote more effective management and conservation of natural and cultural resources.

#### **LAND AREA**

The Air Force would seek to renew a withdrawal of approximately 3,035,642 acres. This withdrawal would include all lands currently withdrawn by PL 99-606 as amended, and PLO 7131. Since the Air Force is attempting to relinquish the Cactus Springs "Finger" of land, this finger would not be included in the renewal application and is not included in any alternative. Overlapping withdrawals of NAFR and Desert National Wildlife Range (DNWR) lands would remain. The lands included in this alternative are shown in Figure 2-1.

#### **LAND USE**

The land use would be identical to that allowed under PL 99-606 as amended. Lands withdrawn would be used for exclusive military activities. This would include the expenditure of munitions and self-protection systems at levels comparable to historic uses. During the proposed withdrawals, aircraft using the NRC airspace are projected to fly between 200,000 to 300,000 sortie-operations per year. Each sortie-operation represents the use of one defined airspace subrange by one aircraft.

#### **LAND ACCESS**

There would be no change in the process to gain access to NAFR. Access to NAFR would be subject to the same safety and security requirements as it has through the duration of the current withdrawal.

#### **LAND ADMINISTRATION**

No change in land administration is included in this alternative. The public and other agencies would continue to have review of Air Force activities and stewardship programs via the existing cultural resources and natural resources management programs and NEPA documents prepared for new weapons systems or other mission modifications. No other changes to land administration would be contemplated.

Portions of the NAFR South Range actively used by the Air Force for air-to-ground activities that are part of the DNWR would continue to be withdrawn for military use. Other NAFR

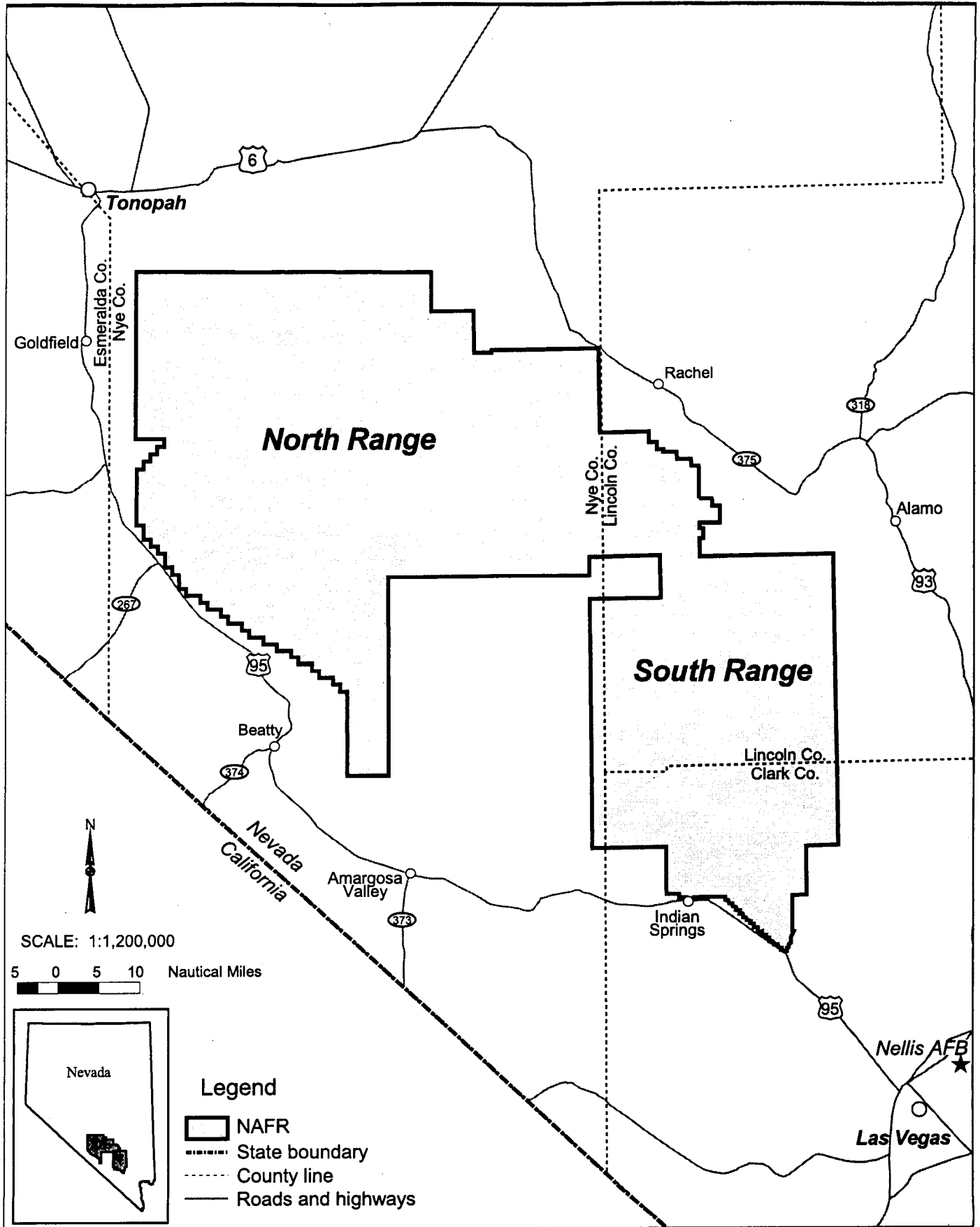


Figure 2-1. Lands Contained within Alternatives 1A and 2A

lands not containing NAFR facilities but required for public safety and national security purposes would remain withdrawn by both the USFWS for the DNWR and the Air Force for NAFR.

### **2.2.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

#### **WITHDRAWAL DURATION**

The duration would be the same as for Alternative 1A.

#### **LAND AREA**

The Air Force would seek to withdraw approximately 2,911,000 acres and to transfer responsibility for approximately 38,400 acres currently withdrawn for use by DOE (under PLO 1662) to the Air Force. The Air Force would seek to transfer administrative responsibility to DOE for approximately 127,620 acres of land generally described as Pahute Mesa. The Air Force would not request the renewal of approximately 30,000 to 35,000 acres of land along the western border of the current NAFR not supported by special use airspace (Figure 2-2). This land includes a portion of the mining districts defined in the Nevada Senate Joint Resolution 25 of 1995. Lands included in this alternative are shown in Figure 2-3.

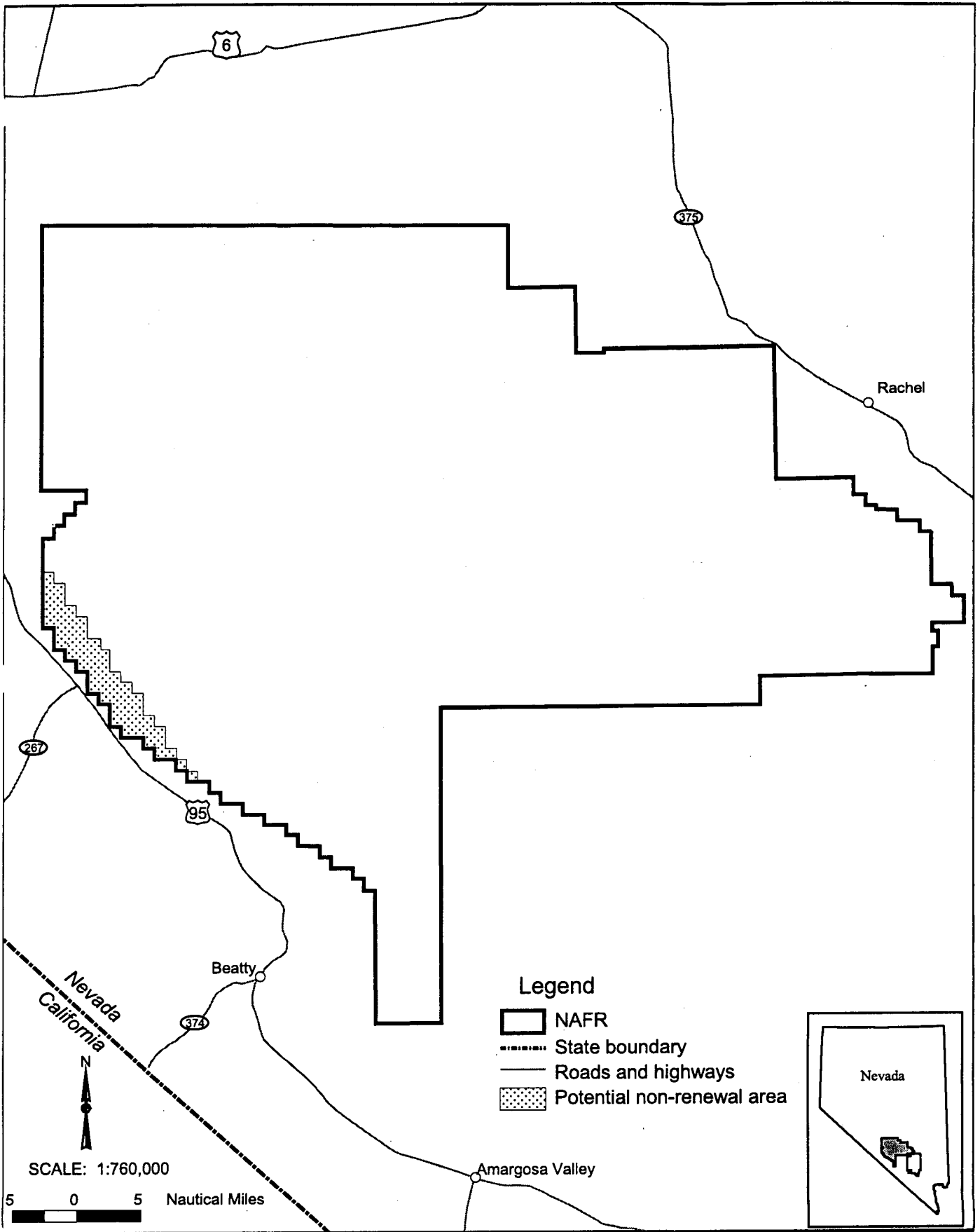
#### **LAND USE**

The land use would be identical to that allowed under PL 99-606 as amended. Lands would be withdrawn for exclusive military activities. The level of military activity would be the same as described in Alternative 1A.

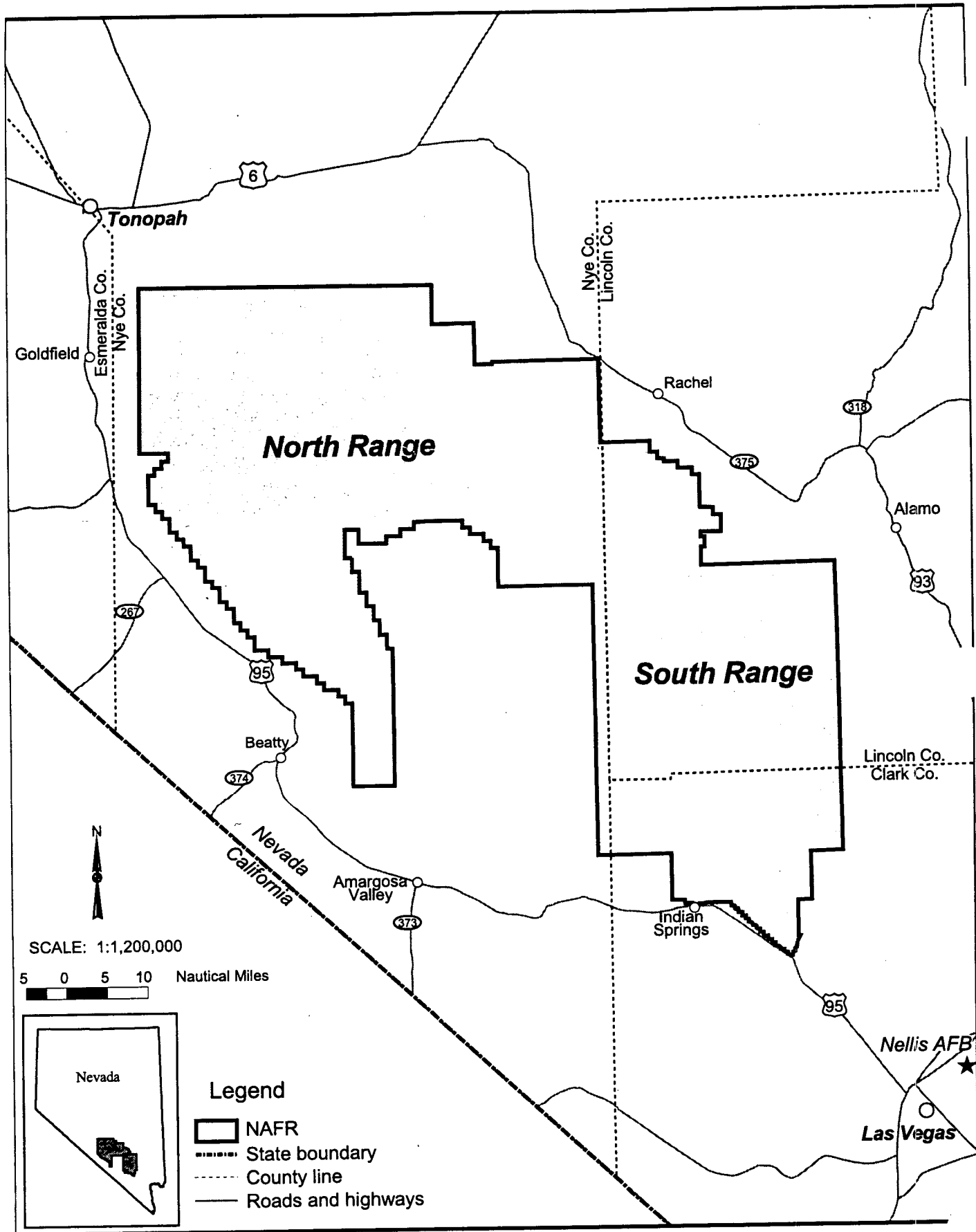
#### **LAND ACCESS**

In certain areas, additional short-term co-use opportunities may be available for mission-compatible environmental resource management, American Indian religious or cultural activities, or recreation. With Air Force approval including a safety and security review, each of these activities would be planned and managed by the BLM following their normal land use processes and procedures, and be subject to change based on the range schedule. Those activities that conflict with Air Force mission, security, and/or safety requirements would not be approved. The following locations, shown in Figure 2-4, have been identified for potential co-use:

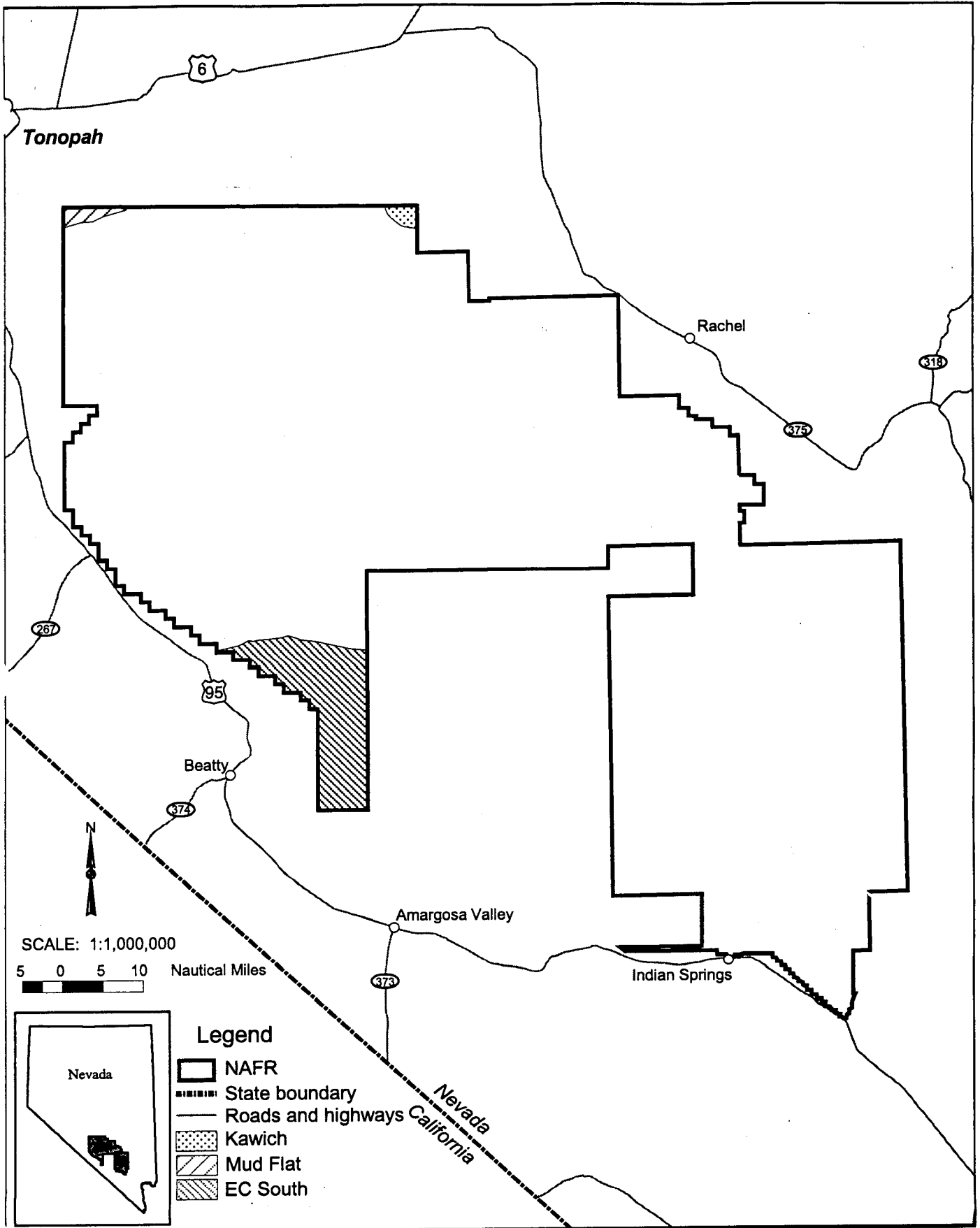
- *Mud Lake* — Non-consumptive co-use recreation activities, such as land sailing, may be permitted on the lakebed south of the northern border of R-71 in the northwestern corner of NAFR.
- *Kawich Range* — Non-consumptive co-use activities, such as hiking, may be permitted north and east of the Kawich Range ridgeline in the northeastern corner of NAFR.



**Figure 2-2. Potential Non-Renewal Locations**



**Figure 2-3. Lands Contained within Alternatives 1B and 2B**





- *EC South* – Non-consumptive co-use public access, such as hiking, may be permitted in the southern portion of this range, south of Timber Mountain.

Future unknown or undefined changes to Air Force mission, security, and/or safety requirements could negatively or positively affect the amount of land available for co-use. Should future Air Force requirements change, co-use of some or all of the three potential co-use areas may become inconsistent with Air Force mission, security, and/or safety requirements. Should that occur, co-use of that particular area could be further restricted or terminated. Changes to future Air Force requirements could increase or decrease the size of the three potential co-use areas.

BLM and USFWS resource management activities on other portions of NAFR would continue as at present. This includes annual hunting, wild horse management, wildlife and habitat enhancement activities, and other forms of natural and cultural resource management.

#### **LAND ADMINISTRATION**

A series of administrative changes would be implemented to facilitate co-use. The Air Force and BLM would develop specific administrative procedures to manage access and approve uses for lands designated for co-use.

The renewal of the South Range lands could be accomplished without a change in administration. South Range lands required for public safety and national security, would remain withdrawn by both the USFWS for the DNWR and the Air Force for NAFR. Management of environmental resources on portions of the South Range actively used for air-to-ground activities is described in a Memorandum of Understanding (MOU) dated December 1997 signed by the USFWS and the Air Force. Congressional decisions could be made regarding management of those overlapping DNWR and South Range areas affected by Air Force activities.

The lands described as Pahute Mesa used by the DOE, and lands withdrawn by PLO 1662, used by the Air Force, could be realigned and withdrawn as part of this Congressional action. The administration of Air Force and DOE lands currently withdrawn by one agency but used by the other would be changed to reflect the using agency.

The Air Force, in association with the other Five-Party Cooperative Agreement signatory agencies, would exchange information on environmental management issues on NAFR. The agencies would meet periodically with an annual public meeting.

#### **2.2.3 Alternative 2A — 25-Year Withdrawal**

Except for duration and administrative requirements, this alternative would be the same as Alternative 1A. Lands included in this alternative are shown in Figure 2-1. This alternative would require completion of a land withdrawal renewal process for NAFR within 25 years. The Air Force would prepare all of the reports required by the Federal Land Policy and Management Act (FLPMA) and Engle Act, including an LEIS, as part of this process.

#### **2.2.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

Except for duration and administrative requirements, Alternative 2B would be the same as Alternative 1B. Lands included in this alternative are shown in Figure 2-3. This alternative requires a full land withdrawal renewal for NAFR within 25 years. Expenses for adhering to renewing withdrawals would be the same as Alternative 2A.

#### **2.2.5 No-Action Alternative**

The No-Action Alternative is defined as no Congressional renewal of NAFR land withdrawn for military use and the end of all military actions on the ground. Lands identified for renewal in Figure 2-1 would not be withdrawn. No air-to-ground flight missions would occur, nor would test or training missions that depend on ground-based targets, threats, or scoring systems. All ground-based military equipment and other assets would be removed.

The No-Action Alternative does not mean the end of military aircraft overflights throughout the special use airspace scheduled by Nellis Air Force Base (AFB). High-performance military aircraft would continue to use the airspace for air-to-air training, aircraft check-out, supersonic flights, and limited training events.

This No-Action Alternative assumes that approximately 3.0 million acres of what is now NAFR would be returned to DOI management in accordance with PL 99-606 as amended. Once a Congressional determination of No-Action has been implemented, and if DOI determines (in consultation with the Secretary of the Air Force), that the withdrawn land is contaminated, the Air Force, DOE, or other federal agencies activities would be limited to those associated with decontamination. Lands that would not pose a risk to humans would be managed under the DOI land and resource policies.

Multiple military missions and activities currently use NAFR, but they would no longer be able to perform some of their missions without ground-based infrastructure. The activities, facilities, and capabilities that would be eliminated by the No-Action Alternative are described in the following.

- ISAFAF and the TTR Airfield and associated complex would be closed, all assets removed, and all operations stopped.
- Applicable terms of the existing MOUs between the Air Force and other agencies, including DOE, BLM, and USFWS would be evaluated and amended, as necessary.
- The Tonopah Electronic Combat Range (TECR), the Tolicha Peak Electronic Combat Range (TPECR), and the EC South Range would be closed, all assets removed, and all operations terminated.

- All ground-based measuring and debrief systems and aircraft testing requiring a NAFR facility would be terminated. Approximately half of the Air Combat Maneuvering Instrumentation (ACMI) capability would be lost.
- Operational test and training for all air-to-ground weapons systems or for any air-to-air weapons systems that require ground-based infrastructure would be stopped.
- Weapons systems tactics and training for single-aircraft weapons delivery or multiple-target attack training would be stopped.
- Large-force training exercises that include Red Flag and Green Flag would be stopped.
- Other specialized training events that require NAFR lands, including Desert Warfare Training, Combat Rescue School, Air Rescue Squadron, and the 11th and 15th Reconnaissance Squadrons, would be stopped.
- Air Force protection and management of natural and cultural resources through funded programs and restricting access would end.

The No-Action Alternative would close NAFR, reduce aircraft missions in the airspace, and substantially reduce current activities and capabilities at Nellis AFB. To estimate the full implications of this loss, the Nellis AFB missions that currently use NAFR were evaluated to determine which missions could continue with no ground-based support and which missions and activities could not continue without that support. The overall effect of the No-Action Alternative is estimated to reduce Nellis AFB missions and personnel by at least 50 percent. Aircraft operations in the NRC would be expected to decline to approximately 100,000 to 150,000 sortie-operations per year. Chaff use would be expected to decline to between 135,000 and 200,000 bundles per year, while flare use would range from 30,000 to 46,000 units per year.

The analysis of environmental consequences of selecting the No-Action Alternative addresses the environmental resources identified as important by public and agency comments during the scoping process.

This LEIS fully recognizes that there may be indirect impacts upon Nellis AFB operations and environmental resources if the No-Action Alternative for NAFR land withdrawal were selected. Fully studying and exploring potential indirect operational and subsequent environmental consequences upon Nellis AFB from a NAFR non-withdrawal decision would first involve defining the indirect consequences. This process would include planning the use of Nellis AFB without NAFR and identification of any secure and safe test or training locations for Air Force and allied aircraft. If such locations could be developed or expanded to meet mission requirements, a redistribution of a portion of Nellis AFB assets to such locations would be associated with a decision to not renew NAFR.

Evaluating such potential indirect effects of non-withdrawal of NAFR to Nellis AFB and secondary impacts at all other bases and ranges in both operational and environmental terms is speculative at this time and beyond the scope of this LEIS. Specific environmental

## *Nellis Air Force Range Renewal LEIS*

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consequences of non-renewal to NAFR are addressed in this LEIS. Where quantifiable consequences to Nellis AFB are predictable, such as in socioeconomics, these consequences are also addressed in Chapter 4.0.

### **LAND AREA**

The approximately 3,056,030 acres of lands withdrawn under PL 99-606 as amended would no longer be segregated for military use. Much of the South Range that overlaps DNWR would be under the jurisdiction of USFWS. Most of the North Range would be returned to BLM. Areas that could pose a health or safety risk after cleanup would be precluded from public access.

### **LAND USE**

The DOI, through the USFWS, would continue to manage the DNWR to protect and preserve desert bighorn sheep and other species of wildlife. It is anticipated that the DOI through the BLM would employ multiple use concepts on lands that do not pose a health threat to potential users. A detailed estimation of the former NAFR areas requiring remedial actions prior to final release or a determination of actions required would follow a Congressional selection of the No-Action Alternative. Such evaluations and characterizations are not included in this analysis. The most likely land uses for the former NAFR would be dispersed recreation, rockhounding, off-highway vehicle (OHV) use, and mineral exploration.

### **LAND ACCESS**

Access to the DNWR would be under the jurisdiction of the USFWS. Access to all other lands would be under the jurisdiction of the BLM.

### **LAND ADMINISTRATION**

The lands withdrawn by the USFWS for the DNWR would be administered by that agency. Lands that DOI does not consider contaminated would be administered by BLM. Lands considered to be contaminated would remain the responsibility of the Air Force or the DOE until sufficiently decontaminated to allow for the transfer to DOI, as described in PL 99-606 as amended.

#### **2.2.6 Air Force Preferred Alternative**

The fundamental purpose for the renewal of the NAFR land withdrawal is to preserve an essential component of the national defense training and testing base that is indispensable to the continued and future readiness of U.S. forces. The NAFR is the nation's largest military reservation. It provides a safe and secure location to realistically test equipment and train military personnel to protect U.S. interests. Furthermore, the NAFR provides the most realistic and challenging aerial combat training and testing in the world.

The CEQ regulations for implementing NEPA requires that the agency's preferred alternative be identified in a Final EIS. A series of alternatives and sub-alternatives were evaluated in the

Draft LEIS based upon comments received from the public, American Indians, and reviewing and cooperating agencies. These comments were balanced with environmental, technical, and other factors to identify a preferred alternative which best fulfills the Air Force's statutory missions and responsibilities.

The Air Force considered various alternatives during the NEPA process and identified Alternative 1B as the Air Force's Preferred Alternative. The Air Force believes that Alternative 1B ensures long-term stability, predictability, and accountability needed for efficient management of the lands entrusted to support the military mission.

The following is a discussion of the elements of Alternative 1B:

- **Duration** - Renew the land withdrawal of the NAFR for an indefinite period of time.

The military need for the NAFR to train aircrews and test equipment is projected for the foreseeable future. The Air Force believes an indefinite withdrawal with Congressional oversight and periodic review would enhance its ability to accomplish the military mission, exercise sound environmental stewardship, and interact more effectively with the public and agency stakeholders.

- **Non-renewed Lands** - Do not renew the 30,000 to 35,000 acre parcel of land on the western portion of the range as delineated in Figure 2-2.

The Air Force has reviewed current readiness requirements for the present and foreseeable future. This review identified lands outside of restricted airspace for which the Air Force no longer has an operational need. Even though the Air Force is currently proposing to return lands to the public domain, the ever evolving nature of national security interests may require additional land withdrawals to meet future unforeseen changes in test and training requirements.

- **Land Access** - The Air Force has identified co-use opportunities that may be available for mission compatible recreation and American Indian religious or cultural activities. These co-use opportunities would be short-term in nature, dependent upon mission safety and security considerations, and subject to Air Force approval. The areas identified are Mud Lake, Kawich Range, and EC South on Figure 2-4.
- **Jurisdictional Realignment** - Change jurisdiction to reflect the using agency's control.

The administration of Air Force and DOE lands currently withdrawn by one agency but used by the other would be changed to reflect the using agency's control.

The lands described as Pahute Mesa are withdrawn for the Air Force, but used by the DOE. DOE lands withdrawn by PLO 1662 are used by the Air Force. Both areas would be realigned as part of this land withdrawal renewal.

## **2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD**

The following alternatives were identified during public scoping and during the evaluation of mission requirements by the Air Force. Each alternative was evaluated with respect to public safety, military operations, and national security. Individual components of these alternatives that were determined to be operationally feasible were included in the alternatives described above. The alternative actions discussed below were considered but not carried forward.

### **Withdrawal for Air Force Use with Full BLM and USFWS Access**

All alternatives presented in section 2.2 include continuation of Air Force agreements to work with BLM and the USFWS to provide scheduled access for research, planning, and management activities. In addition, the Air Force annually funds multiple environmental projects to enhance the understanding and protection of the NAFR environment. Full and unlimited access by agency personnel would severely compromise safety and security aspects of the NAFR mission. This alternative was not considered compatible with NAFR operations and missions.

### **Withdrawal and Full American Indian Access for Religious Ceremonies**

The Air Force currently makes every effort to support access to NAFR lands for American Indian religious ceremonies. Full and unlimited access conflicts with mission requirements, safety, and security. Scheduled limited access for American Indian groups consistent with test and training missions is included in all action alternatives. Full and unlimited access is not considered feasible.

### **Non-Renewal of Areas with High to Moderate Mineral Potential for Mineral Entry, Mineral Leasing, and Disposal of Mineral Material**

Following review of the Minerals and Energy Resources Assessment, a portion of the Case File for this action, BLM suggested the analysis of an alternative that would not include the renewal of areas along the outer perimeter of NAFR that have a high or moderate mineral potential. Twelve areas were identified that are expected to have such a potential to contain base or precious metals. Additionally, six of those twelve areas, plus five other areas were identified as having a moderate potential for industrial minerals, stone, or aggregate.

Non-renewal of all areas with moderate to high mineral potential on the perimeter of NAFR for mineral entry, mineral leasing, and disposal of mineral material in remaining portions of NAFR would substantially affect test and training capabilities of NAFR. Public safety and mission security require highly limited access to NAFR. Electronic warfare testing and training may endanger mineral exploration and extraction personnel. Access for exploration or mineral extraction of all perimeter areas with moderate to high mineral potential conflicts with NAFR mission requirements, safety, and security. Non-renewal of a portion of the Clarkdale and Wagner Mining Districts has been included in the 1B and 2B alternatives.

### **Withdrawal and Full Access for Non-Consumptive or Consumptive Uses**

Public safety and mission security require highly limited access to NAFR. Electronic warfare radio transmissions may endanger mineral exploration and extraction personnel. Munitions delivery would endanger personnel on the ground. Visual access to target placements and tactics could be used by potential adversaries to compromise national security and future military missions. For these reasons, full and unlimited access for non-consumptive or consumptive uses was not considered as a viable alternative. Limited access in specific areas has been included in the 1B and 2B alternatives.

### **Withdrawal of the Majority of NAFR with Limited Land Relinquishment**

Scoping identified limited areas of the current NAFR withdrawn lands where other uses could occur. These locations include the following:

- The Clarkdale and Wagner Mining Districts (as defined by Nevada Senate Joint Resolution 25). Portions of the mining districts are required for operations and safety, including the ridgeline. Inclusion of all of both districts was not compatible with military uses.
- Stonewall Mountain. The current withdrawal is required for national security and public safety. Access to this area is not compatible with safety and security requirements.
- Additional Lands. The 1B and 2B alternatives include lands that could be returned without substantially affecting existing or anticipated NAFR missions. No additional currently withdrawn lands have been identified as unused or excess.

### **Withdraw Additional Land to Fully Meet the Mission Requirements**

The lands withdrawn by PL 99-606 as amended do not fully meet the land requirements of the Department of Defense (DOD) missions on NAFR. Examples of mission-derived land requirements are discussed in section 1.5. To maximize its ability to perform the mission requirements while ensuring public safety and the preservation of national security, the Air Force limits its operations within the NRC and on NAFR to conform to the current capabilities and constraints of the land and airspace. Expansion of NAFR to fully meet the existing and projected military operations requirements was considered as an alternative but not carried forward since it was considered infeasible in light of the various environmental and socio-political concerns of other federal agencies, the State of Nevada, local governments, and the public.

### **Combine NAFR Activities with NAS Fallon at Either NAFR or NAS Fallon**

During the scoping process, a few public participants suggested that the activities on NAFR be combined with Naval Air Station (NAS) Fallon. As described in Chapter 1.0 of this document,

NAFR is unique in many aspects. It is the largest safe and secure air-to-ground range in the DOD inventory and supports large multi-force operations in a realistic combat environment. NAS Fallon does not have the same degree of size and exclusive use as NAFR. NAFR's capability is in direct support of national priorities in fulfillment of DOD mission statements. Air Force support of these national priorities has created the establishment of local use (activities) priorities. Large-scale test efforts and Red Flag exercises lead the list of eight to ten priority activities. NAFR large force exercises occur between 6 A.M. and 10 P.M. During both Flag and non-Flag exercise days, NAFR is saturated by established priority users. The intense use of the Range demonstrates the lack of NAFR time to accommodate another large user such as NAS Fallon. Since the combination of activities is operationally infeasible, this is not included as an alternative.

### **Withdrawal of Range Infrastructure, Target, and Health Risk Locations Only**

Withdrawal of selected sites that include targets, simulated threats, required infrastructure and areas that could pose a health risk was considered as an alternative. The purpose of all military activity on NAFR is to maintain U.S. defense capabilities. NAFR could not meet its national test and training requirements if it were to consist of a patchwork range. NAFR requires exclusive use of the land for both safety and security.

The realistic military activity on NAFR includes all activities and infrastructure necessary to keep U.S. forces prepared for confrontation with any military force the United States might reasonably oppose in the future. To maintain this capability, our military units need a location to train and test as close to full capability as possible. Aircrews and weapons systems need land and airspace that is free of constraints comparable to a combat environment. It would be impossible for aircrews to realistically train in a full, warfighting capability with live air-to-ground weapon systems if public access were allowed in the current range.

The secure, exclusive use of NAFR is also key to the protection of U.S. aircrews and aircraft. The United States must be able to simulate potential real-world targets and test tactics against those targets without access to the area by potential adversaries.

Military operations must ensure the safety of military personnel and the public while training, testing, and evaluating weapons systems in support of potential technological improvements in hardware, software, tactics, and training. Exclusive use of NAFR has provided sufficient safety for most of the military missions in the past and is expected to do so in the future. Lands currently withdrawn and proposed to be withdrawn under the alternatives are the minimum needed for support of the current and anticipated mission requirements. Reduction in the withdrawn area would limit the capability of NAFR to test equipment and train personnel with respect to the current threats and potential future adversaries.

This alternative would withdraw only those areas that contain targets, threat sites, communication structures and other range infrastructure facilities. Such a range would significantly degrade the current capabilities of the NAFR so as not to support the current and anticipated future requirements. As a result of the need to protect national security interests,



many NAFR activities, including some portions of the multi-force exercises (Red Flag) would be precluded from using this limited range. Without the ability to restrict access, many NAFR activities would be restricted by health and safety considerations. This alternative was not considered compatible with NAFR operations and missions.

### **Relocation of NAFR**

During the scoping process, a few public participants suggested that the activities on NAFR be relocated to other existing Air Force or DOD ranges. No other specific locations were suggested.

NAFR provides unique capabilities to the Air Force because of its large, exclusive-use air-to-ground range and adequate military use airspace overlying and adjacent to the exclusive use land. The existing infrastructure (including target and simulated threat arrays, communications and debriefing systems, security systems, and other facilities) developed over the past 50 years to support the Air Force mission would be extremely expensive to replace or move and would require many years to construct and make operational.

NAFR is a nationally unique resource that permits a secure area for testing equipment and tactics as well as multi-force exercises. NAFR facilities (targets and threat simulators) can be rapidly reconfigured to accurately reflect battlespace conditions and threat scenarios. Based on this analysis it is not anticipated that relocation of these assets could be accomplished within the United States.

## **2.4 MANAGEMENT ACTIONS TO REDUCE THE POTENTIAL FOR ENVIRONMENTAL IMPACTS**

Air Force management of NAFR has included a series of actions designed to reduce environmental consequences of use of NAFR for test and training of weapons systems and personnel. These actions fall in the following three categories.

- *Avoidance Actions.* These management practices use environmental data collected on the range to identify areas known to contain sensitive environmental or cultural resources and to avoid those areas to the extent possible during test and training activities.
- *Design Actions.* Project design elements are integrated into test and training activities to reduce potential impacts to a resource or suite of resources to the extent possible. Because of operational and fiscal requirements, not all possible design elements can be incorporated into every action.
- *Operational Actions.* These specific actions are taken to reduce the potential for environmental impacts. Operational mitigations usually reflect some modification to, or restrictions on, certain aspects of the Air Force's use of NAFR for test and training activities.

### **2.4.1 Range Resource Plan**

The Nellis Air Force Range Resource Plan directs the management level for natural and cultural resources on the approximately 2.2 million acres of withdrawn land on NAFR, which is not part of the DNWR. The Range Resource Plan was developed by BLM, in cooperation with the Air Force and with extensive involvement by the public. The Range Resource Plan provides resource-specific objectives, management direction, and management actions. Environmental resources specifically described in the plan are vegetation, wildlife habitat, wild horses, visual resources, areas of critical environmental concern, lands program, access, minerals, soil, water and air resources, forestry, livestock grazing, cultural and paleontological resources, recreation, wilderness, natural areas and fire. As a result of the Resource Plan process, the BLM selected a resource management alternative to be implemented over a 20 year period starting in 1992. These management actions are:

- improve the rangeland vegetation conditions;
- maintain wildlife habitat;
- achieve a thriving ecological balance for wild horses;
- protect visual resource values;
- designate the Timber Mountain Caldera National Natural Landmark as an Area of Critical Environmental Concern (ACEC); and
- continue with valid existing management practices.

### **2.4.2 Integrated Natural Resource Management Plan**

The Integrated Natural Resource Management Plan (INRMP), Nellis Air Force Base/Nellis Air Force Range was prepared by the Air Force (in compliance with AFI 32-7064) to consolidate information on the natural resources of NAFR and recommend direction for natural resource management on NAFR. The primary goal of natural resource management on NAFR is to maintain ecosystem integrity (naturally functioning systems, where they exist), and to restore ecosystem integrity where feasible. The maintenance of ecosystem integrity is important to the Air Force because such management promotes good stewardship by protecting biodiversity, ensures sustainability of NAFR, and minimizes management costs and activities.

The INRMP identifies natural resource constraints to NAFR planning and missions. These include areas which should be avoided, or where special precautions should be taken to limit the impact of military activities on the fragile or protected natural resources on NAFR. For example, the INRMP identifies:

- the presence of desert tortoises that may limit new construction, including new targets, in NAFR South Range valleys,

- areas containing Merriam's bearpaw poppy that should be kept free of human influence,
- sensitive spring and wetlands habitats that should be protected by fencing to make them accessible to indigenous wildlife but inaccessible to introduced species such as wild horses, and
- cantonment ground maintenance that should include efforts to reduce negative environmental effects of herbicides/pesticide use, eliminate exotic species, and seek opportunities to replace traditional landscaping with xeriscape.

### 2.4.3 Avoidance, Design, and Operational Management Actions

The following list details Air Force actions ongoing or proposed to reduce potential environmental consequences associated with NAFR activities:

**Airspace:** One concern expressed in public and agency comments during scoping was that new high-performance aircraft and stand-off weapons would require the Air Force to expand airspace associated with NAFR. The Air Force has taken the following steps to operate within the overall airspace boundaries that have historically applied to NAFR operations.

- *Design Action.* The Air Force proposal for renewal of NAFR land withdrawal includes no changes to external airspace boundaries. This permits the Air Force to make minor adjustments for efficient airspace management within the overall boundaries while providing commercial and general aviation users with no impacts upon their established routes.
- *Operational Action.* The Air Force has adapted missions for training and weapons systems testing programs to fit within the proposed NAFR land renewal boundaries. This requires that certain weapons systems, such as air to air missions, be tested at locations other than NAFR. This action to adapt missions ensures public safety and permits the Air Force to achieve nearly all test and training within the existing NAFR boundaries.

**Noise:** Public concern was expressed during scoping regarding noise from aircraft overflights on both east and west sides of NAFR. The Air Force has integrated a series of actions into flight training profiles to reduce those concerns.

- *Avoidance Actions.* The Air Force has identified a series of locations and established flight avoidance rules and overflight restrictions for those locations to reduce noise to communities on the periphery of NAFR. Nellis personnel work closely with local communities to identify any lack of adherence to such avoidance criteria and with aircrews to reduce the potential for environmental impacts. In addition, the Air Force continues to cooperate with state and federal agencies to identify areas of potential

biological impact and establish criteria to reduce the potential for impacts from noise in these habitats.

- *Operational Actions.* Each aircrew operating in airspace that uses NAFR is given detailed briefings identifying areas to avoid, to ensure consistency with Air Force policies regarding noise reduction.

**Safety:** State and federal agencies responsible for environmental resources expressed concern that fires on NAFR could damage environmental resources. Flight safety from low level missions was also identified as a concern. The Air Force has taken action to reduce potential safety impacts.

- *Design Actions.* The Air Force has established fire response teams at Indian Springs and TTR. In addition, the Air Force has established agreements with DOE and other organizations with fire suppression capabilities to provide back-up teams and equipment that can respond rapidly to wildfires. Air Force personnel and policies also work to ensure flight safety. Arming of live ordnance occurs after entering NAFR, and flight procedures are closely followed so that lives and equipment are protected.
- *Operational Actions.* To reduce the potential for fire risk associated with Air Force action, NAFR has adopted more restrictive aircraft-specific release altitudes for defensive flares than required by Air Combat Command (ACC) regulations. This operational action ensures that flares burn out prior to reaching the surface.

**Hazardous Materials and Solid Waste:** Concern was expressed during scoping that hazardous materials exist on parts of NAFR as a result of past test and training activities. The Air Force has taken the following steps to reduce potential environmental consequences associated with activities under its control.

- *Design Actions.* The Air Force has implemented an Installation Restoration Program (IRP) on NAFR that has identified all sites with potential hazardous materials. Steps have been instituted to reduce the potential for environmental impacts on these sites. Section 3.4 describes these actions.
- *Operational Actions.* Air Force training operations are scheduled to clean up hazardous materials resulting from munitions use from target areas. This is part of the Coronet Clean program that clears unexploded ordnance, refurbishes targets, and removes debris for recycling or disposal. Air Force and contractor personnel on NAFR also work through an Air Force pollution prevention process called HAZMART that records and manages the procurement, handling, storage, and issuance of hazardous materials and the return, recovery, reuse, recycling, or disposal via Defense Reutilization and Marketing Office (DRMO) of hazardous wastes. These operational procedures are designed to reduce the potential for environmental impacts from use of hazardous materials such as fuels or cleaning equipment.

**Earth Resources:** The primary areas of potential environmental consequences associated with earth resources are wind-caused soil erosion and access for exploitation of mineral resources. The following actions are being taken or have been incorporated into the proposal for NAFR land withdrawal renewal.

- *Design Actions.* Access to potential mineral resources within NAFR is not consistent with security and safety requirements associated with high performance aircraft performing rapid maneuvers with live ordnance. In addition, radio frequency transmissions from surface threat emitters and from aircraft could pose a risk to mining operations using explosive devices. A design mitigation in two NAFR land withdrawal renewal alternatives is the non-renewal of a portion of the Clarkdale Mining District and the Wagner Mining District in Nye County. This would permit DOI/BLM to determine whether the mining district could be made available for mining operations.
- *Operational Actions.* The primary sources of particulate matter on NAFR are vehicle traffic on unpaved roads, weapons delivery, and wind erosion. Unpaved roads are regularly graveled to reduce surface erosion, and the Coronet Clean program cleans and grooms target areas to reduce the amount of disturbed soil. These steps help reduce wind erosion.

**Water Resources:** Comments regarding surface water resources on NAFR focused on the conflict between wild horse management and native animals and vegetation. An additional comment dealt with the availability of subsurface water resources for potential agricultural use. The following steps are being taken to protect surface waters and groundwater migration.

- *Avoidance Actions.* Surface and subsurface testing by DOE has resulted in substantial concern by off-range residents that materials could migrate into off-range groundwater resources. DOE 1996a contains steps to address those concerns.
- *Design Actions.* The Air Force is working with BLM and other state and federal agencies to reduce the impacts of overuse to water resources by wild horses. This includes identifying water resources outside the wild horse range and establishing fencing to permit access by native species while preventing access by expanding wild horse populations.

**Air Quality:** Potential sources of degradation of air quality on NAFR include ordnance use, vehicular traffic, and wildfires. Wildfires could result in increased surface areas and increased particulates.

- *Design Actions.* The Air Force incorporates scheduled maintenance of range assets, including roads and targets, to reduce the potential for wind erosion.
- *Operational Actions.* The Air Force has instituted altitude restrictions for defensive flare use and has established response capabilities to reduce surface disturbance from fire.

These actions protect soils from wind erosion, reduce fire potential, and reduce air-borne particulates.

**Biological Resources:** Public and agency commentors expressed concern that adequate information was not available regarding NAFR biological resources to determine the best steps for managing those resources. Management for biodiversity is expected to be a key to protecting biological resources. Access restrictions were identified as the basic reason for the inability to conduct biological surveys.

- *Avoidance Actions.* The Air Force has funded a series of biological surveys and the preparation of a biological inventory to identify species type and abundance on portions of NAFR. These surveys have included focused surveys in natural, undisturbed habitats as well as random surveys in areas that include both disturbed and undisturbed resources. Areas of sensitive resources have been identified and, where possible, avoidance measures have been taken in the siting of targets, road construction or improvement, and siting of other facilities. Most targets are sited in low vegetation playas and avoid impacts to sensitive biological resources.
- *Design Actions.* Nellis AFB personnel have actively participated with federal and state agencies and other stakeholders in the biodiversity initiative to design measures that would support species and habitat management for biodiversity. This initiative is expected to result in additional guidance for habitat improvement, species monitoring, and resource habitat protection. The Air Force is committed to support management for biodiversity to the extent that biodiversity and mission requirements, safety, security, and funding can be managed to achieve compatibility on NAFR.
- *Operational Actions.* The Air Force has worked with state and federal agencies responsible for biological resources to take actions designed to reduce the potential for environmental impacts. These actions have included protection of desert tortoises from ordnance delivery areas, mapping of sensitive species, and protection of water resources from destruction by wild horses.

**Cultural Resources:** Commentors during scoping expressed concern that NAFR exclusive use prevented American Indians from accessing traditional resources, including important cultural resources. Exclusive use was also cited as an obstacle to recreational use of cultural resources and obtaining cultural resource information on prehistoric and historic sites.

- *Avoidance Actions.* The Air Force has used data collected on the range to identify areas known to contain sensitive cultural and historical resources and to avoid potential impacts to those areas. Information briefings are given to personnel associated with NAFR to ensure their sensitivity to the value of cultural resources. These briefings specifically direct personnel to remain on the roads, to avoid known cultural resources, and to refrain from touching or moving any artifacts.

- *Design Actions.* Nellis AFB personnel have participated with American Indian governments and tribal groups to identify their concerns and to institutionalize Air Force activities that would respond to those concerns. Participation in the biodiversity initiative and inclusion of tribal information for Air Force and other decisionmakers are examples of this participation.
- *Operational Actions.* The Air Force has taken specific actions to reduce the potential for environmental impacts to cultural resources. These measures include rapid response to American Indian concerns regarding the value of traditional resources at particular locations on NAFR, scheduling support for American Indian access to traditional sites compatible with safety and security, and inclusion of alternatives in the application for NAFR withdrawal renewal to provide increased access in selected locations. Recreational use of cultural resources is not considered compatible with Air Force missions, Air Force directives, or American Indian goals to protect traditional resources.

**Land Use and Transportation:** Exclusive use of NAFR for safety and security prevents access by unauthorized personnel for multiple land uses or for transportation. The Air Force works within mission constraints to coordinate with other federal and state agencies in support of their land use management responsibilities.

- *Design Actions.* Overlapping resource management areas include the wild horse management area on the North Range, the DNWR on the South Range, and USFWS resource management responsibility on the withdrawn lands. The Air Force has designed procedures to permit access for management of these resources while meeting operational safety and security requirements. It is recognized that these procedures are not always consistent with agency access requests.
- *Operational Actions.* The Air Force has established altitude restrictions over sensitive wildlife habitat and is working to support wild horse management and associated protection of native species. The land withdrawal renewal alternatives provide for BLM to permit varied land use on areas not withdrawn by the Air Force and on potential co-use areas within the withdrawn land.

**Wilderness and Wilderness Study Areas:** Agency commentors expressed the desire to identify wilderness and WSAs under the NRC. These lands have been surveyed and recommended for designation as WSAs by the responsible federal agencies. The wilderness values of these lands can be protected by not using motorized or mechanized equipment, not landing aircraft, and not constructing roads or structures, such as transmission lines. The current military overflights were evaluated by BLM prior to designation of each WSA. The consequences of overflight were not considered to be sufficient to warrant a nonsuitable recommendation for any WSA.

- *Avoidance Action.* The Air Force has worked with BLM, U.S. Forest Service (USFS), and USFWS to avoid establishment of facilities outside NAFR that could impair the future use or enjoyment of areas as wilderness. The Air Force has an MOU with the USFWS

that states that the Air Force will avoid actions that would preclude the USFWS from managing the DNWR wilderness recommendation area as a de facto wilderness.

- *Operational Action.* On the South Range, the Air Force has targets within overlapping DNWR and NAFR management areas. The Air Force has an MOU with the USFWS that states that aircraft operations, except for special training missions, will generally not go below 2,000 feet above ground level (AGL) over overlapping DNWR and NAFR areas that meet wilderness recommendation criteria.

**Recreational and Visual Resources:** Public and agency commentors during scoping expressed the desire to have increased access to NAFR for recreation, including recreational hunting and trapping, recreational use of cultural and historic sites, hiking and camping, and rock collecting. The visual resources within Nellis AFB could be protected by maintaining facilities in built-up areas and limiting construction and operations reducing facilities in non-built-up areas.

- *Design Actions.* The Air Force has designed alternatives in the land withdrawal renewal process to address public desires for increased recreational access. These alternatives provide for non-renewal of some lands and possible access to specific co-use areas on the periphery of the range that could permit low-impact recreational use consistent with safety and security requirements.
- *Operational Actions.* The Air Force schedules missions to permit access to NAFR for several annual recreational hunts. The Air Force has been funded and is in the process of removing towers used for tracking aircraft in NAFR and replacing them with lower visibility Global Positioning System (GPS)-based tracking systems. This will result in fewer visible facilities within NAFR.

**Socioeconomics:** Public and agency interests in access to the range included exploration for mineral resources and potential extraction of economically viable mineral resource deposits. This was particularly identified as a potential economic benefit on the west side of NAFR.

- *Avoidance Actions.* Potential mineral resource areas are identified as part of the land withdrawal renewal environmental process. Operation of high performance aircraft with electronic countermeasures, live ordnance, and security needs requires exclusive use throughout most of NAFR.
- *Design Actions.* Alternatives have been identified that do not include renewal of portions of the Clarkdale and Wagner Mining Districts. If such an alternative were selected, if economically viable mineral resources exist, and if DOI/BLM permits were issued, this land could be used for mineral extraction.
- *Operational Actions.* If alternatives to land withdrawal renewal were selected that provided for co-use of specific areas, the Air Force would, to the extent possible, conduct operations to support these co-use activities.



**Environmental Justice:** Commentors on environmental justice expressed concern that exclusive use prevented American Indians from accessing traditional resources. Additional questions were raised regarding federal procedures for ensuring minority or local participation in procurements for goods and services used by personnel at Nellis AFB and on NAFR. Federal procurement policies were explained during scoping. In addition, the Air Force has identified the following actions.

- *Avoidance Actions.* Full access to traditional resource areas is not compatible with operation of high performance aircraft with live ordnance. Security and safety needs require exclusive use throughout most of NAFR. Alternatives have been identified that permit increased access to co-use portions of NAFR. Air Force mitigation by avoidance and restricted access practices have served to protect traditional properties and resources from unauthorized access.
- *Design Actions.* Nellis AFB and ACC personnel have supported government-to-government relations to identify American Indian concerns and to implement Air Force activities responsive to those concerns. Steps have included supporting the biodiversity initiative and tribal information for decisionmakers.
- *Operational Actions.* In response to concerns regarding noise, the Air Force has identified areas for avoidance of low-altitude overflight during test and training activities in the military operations areas (MOAs) adjacent to NAFR. The Air Force has identified alternatives in the land withdrawal renewal that provide for American Indians and others to access limited co-use areas on NAFR.

#### **2.4.4 Results of Air Force Management Actions**

The management actions described in section 2.4.3 have limited the impact of the military activities on the environmental resources of the NAFR. Existing management practices have been found to be effective in limiting new impacts and mitigating past impacts. Although not specifically prepared for this purpose, the Keystone Dialogue on Nellis Air Force Range Stewardship brought together over 65 individuals representing many agencies and individuals interested in the NAFR. This dialogue found that "Many areas on NAFR are in a relatively pristine ecological condition". This is primarily because "the overwhelming majority of the land is used for buffer zones to provide safety and security when conducting military activities. Consequently, NAFR serves as an ecological island that provides refuge-like conditions for animals, plants, and natural communities indigenous to the Great Basin and Mojave ecosystems". The dialogue recommended continuing stewardship of NAFR "to preserve and sustain NAFR's ecological values for future military and civilian use".

## **2.5 COMPARISON OF ALTERNATIVES**

Table 2.5-1 summarizes the findings and environmental consequences of the alternatives.

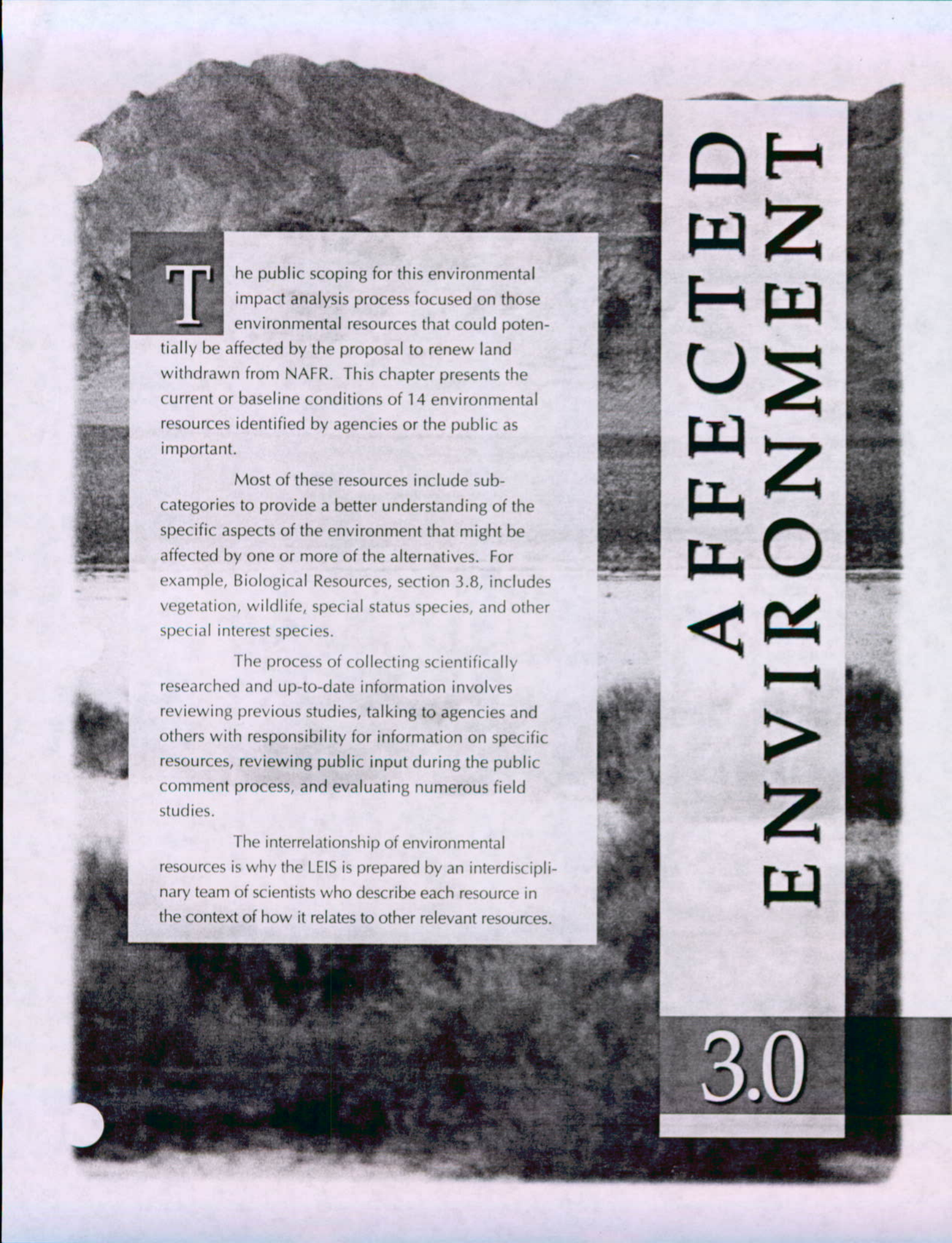
<b>Table 2.5-1. Comparison of Alternatives by Resource and Potential Impact (page 1 of 4)</b>		
<i>Alternative 1A</i>	<i>Alternative 1B</i>	<i>Alternative 2A</i>
<b>AIRSPACE</b>		
No change to airspace boundaries or uses	Same as 1A	Same as 1A
<b>NOISE</b>		
Continuation of aircraft and ground noise and distribution. Sonic booms to continue at current levels.	Same as 1A	Same as 1A
<b>SAFETY (Ground, Ordnance, Flight)</b>		
Safety policies for ground and flight operations to remain in place. Testing and training with more sophisticated ordnance require expanded safety zones within exclusive use areas.	Same as 1A plus limited access to specific areas within safety and security restrictions. Administrative changes not expected to alter access or management of areas.	Same as 1A
<b>HAZARDOUS MATERIALS and SOLID WASTE MANAGEMENT</b>		
Use of hazardous materials to continue in NAFR disturbed area. Types and amounts of waste for disposal to continue. Cleanup and maintenance of target areas and recycling of materials to continue. All DOD and DOE procedures, cleanup, and monitoring to continue.	Same as 1A plus non-renewal of lands including part of mining district defined by Nevada State Senate Joint Resolution 25 could result in increased hazardous wastes if BLM permits mining operation.	Same as 1A
<b>EARTH RESOURCES (Soils, Geology, Minerals)</b>		
Approximately 3% of 3-million-acre total to continue to be disturbed. No change in impacts to geology from Air Force actions. Mineral extraction on NAFR is currently excluded under land withdrawal.	Same as 1A plus potential for additional acreage disturbed in areas opened for recreational co-use and in non-renewal areas. Potential impacts to geology and soils if BLM permits mining operations.	Same as 1A
<b>WATER RESOURCES (Floodplains, Water Quality, Water Rights)</b>		
Continuation of existing water resource impacts. Continuation of existing water usage, quality, or flow.	Potential increased impacts to playa at Mud Lake from recreation and to surface and groundwater from mining operations on non-renewal lands if permitted by BLM.	Same as 1A.
<b>AIR QUALITY</b>		
Short-term air quality impacts from particulates to continue from construction, maintenance, operation activities, and wildland fire. Impacts would not be significant.	Same as 1A plus increased off-road vehicle recreation could increase dust in disturbed areas; impacts not significant. Impacts from mining could be discernible but would depend on state and federal permitting agencies.	Same as 1A
<b>BIOLOGICAL RESOURCES (Vegetation, Wetlands, Wildlife Habitat, Threatened &amp; Endangered Species)</b>		
NAFR disturbed area impacts to continue; native vegetation and species expected to dominate throughout NAFR. Beneficial protection from exclusive use to continue for sensitive species, wetlands, and habitat.	Similar to 1A except local areas of soil and vegetation to be impacted if currently excluded lands become available for mining, agriculture, and/or recreation.	Same as 1A

<b>Table 2.5-1. Comparison of Alternatives by Resource and Potential Impact (page 2 of 4)</b>	
<i>Alternative 2B</i>	<i>No-Action Alternative</i>
<b>AIRSPACE</b>	
Same as 1A	Airspace boundaries remain unchanged. Restricted areas likely to be redesignated.
<b>NOISE</b>	
Same as 1A	Limited air-to-air missions produce a 3-5 dB reduction in both subsonic and supersonic noise.
<b>SAFETY (Ground, Ordnance, Flight)</b>	
Same as 1B	Potential public safety risks in areas opened to the public; unrestricted access could become a hazard due to 50 years of use as a test and training range. Substantial cleanup would have to precede public access to some areas.
<b>HAZARDOUS MATERIALS and SOLID WASTE MANAGEMENT</b>	
Same as 1B	Air Force hazardous materials and ordnance use would stop. Where possible, hazardous materials would be removed from public access parts of NAFR disturbed areas and parts of affected airspace under agreement with DOE and DOI. Potential hazardous materials use and waste generated by future mining operations on NAFR would receive separate environmental review and would be administered by DOI and BLM.
<b>EARTH RESOURCES (Soils, Geology, Minerals)</b>	
Same as 1B	Air Force disturbance to soils would cease except for cleanup. If BLM permits, access for mining, off-road recreation, and agriculture could impact soils through erosion and mining. Environmental permitting and safeguards would be the responsibility of BLM and the appropriate state and federal agencies.
<b>WATER RESOURCES (Floodplains, Water Quality, Water Rights)</b>	
Same as 1B	Air Force actions cease. Any new land uses as authorized by BLM may affect surface water and groundwater. The Nevada State Water Engineer would be responsible for water appropriation.
<b>AIR QUALITY</b>	
Same as 1B	Air quality impacts from ground-based military activities would cease except for cleanup. Potential for increased impacts from recreation or mining development would be regulated by applicable local, state, or federal air pollution rules.
<b>BIOLOGICAL RESOURCES (Vegetation, Wetlands, Wildlife Habitat, Threatened &amp; Endangered Species)</b>	
Same as 1B	Positive and negative impacts. Military training and disturbance would cease. Multiple use and public access including mining, grazing, recreation, and opening of areas for utility and related corridors could have long-term widespread negative impacts that would be expected to offset short-term benefits of reduced military activity.

<b>Table 2.5-1. Comparison of Alternatives by Resource and Potential Impact</b> (page 3 of 4)		
<i>Alternative 1A</i>	<i>Alternative 1B</i>	<i>Alternative 2A</i>
<b>CULTURAL RESOURCES (Archaeological, Architectural, American Indian Traditional)</b>		
Continuation of NAFR access restrictions protect cultural and traditional resources, but impact researchers and American Indian groups desiring to access resources. Impacts from ground disturbance in NAFR disturbed areas and visual and noise intrusions from overflights to continue.	Similar to 1A except local areas opened to public access and co-use from non-renewal to BLM increase potential for impacts from vandalism, ground disturbance, or reduced protection.	Same as 1A
<b>LAND USE and TRANSPORTATION (Ownership/Management; Transportation)</b>		
Land status, land management, transportation and land use unchanged. Overlapping withdrawals and MOUs to continue. No change in impacts to disturbed areas on NAFR.	Short-term mission compatible co-use would permit site-specific access for recreation and American Indian activities. Potential administrative changes in overlapping DOE and DNWR not expected to impact land access or land uses. Potential mining or agriculture, if permitted by BLM in non-renewal areas, could impact land resources.	Same as 1A
<b>WILDERNESS and WILDERNESS STUDY AREAS</b>		
Continued military activity on NAFR and in the NRC is not projected to materially differ from the past, resulting in no change in wilderness quality, recommendations, designations, or management.	Essentially the same as Alternative 1A. Potential increased access through co-use or nonrenewed lands is not expected to result in any change to wilderness resources.	Same as 1A
<b>RECREATION and VISUAL RESOURCES</b>		
Current access restrictions would remain. Limited hunting would continue. Increased access would occur on the Cactus Spring "finger" of NAFR but little increase in recreation is expected. No change in visual intrusions anticipated.	Similar to 1A and including short-term co-use of selected areas, based on safety and security requirements. Recreation benefits include land sailing, hiking, nature viewing, and rock hounding.	Same as 1A
<b>SOCIOECONOMICS</b>		
Continuation of existing socioeconomic effects and no discernible change in socioeconomic impacts.	Similar to 1A except potential for increased employment from private mining development in non-renewal portion of mining district defined by Nevada State Senate Joint Resolution 25 and from limited agriculture and recreation in non-renewal or co-use areas if permitted by BLM.	Same as 1A
<b>ENVIRONMENTAL JUSTICE</b>		
Continuation of ongoing economic activity with no disproportionate impacts on minority or low-income populations. American Indians have stated that NAFR access restrictions interfere with traditional activities.	Similar to 1A except that increased access to local co-use areas could benefit American Indians seeking to use those areas; cultural and traditional resources could also be exposed to unauthorized collectors.	Same as 1A

<b>Table 2.5-1. Comparison of Alternatives by Resource and Potential Impact (page 4 of 4)</b>	
<i>Alternative 2B</i>	<i>No-Action Alternative</i>
<b>CULTURAL RESOURCES (Archaeological, Architectural, American Indian Traditional)</b>	
Same as 1B	No Action has the potential for significant impacts to preserved cultural and American Indian traditional resources. Access-related impacts include changes to land status that place cultural resource protection in other resource agencies and multiple use management policies that expose cultural and American Indian traditional resources to impacts from consumptive (mining, collecting) and nonconsumptive (recreational) uses.
<b>LAND USE and TRANSPORTATION (Ownership/Management; Transportation)</b>	
Same as 1B	Land status substantially altered. Approximately 3 million acres would not be withdrawn for military use and would be transferred to BLM and USFWS management. Multiple-use of BLM managed land would be expected to include grazing, mining, and recreation. These changes to land status and land use would impact current land use with natural and cultural resources essentially isolated for 50 years. Management of the DNWR will continue to be for the benefit of bighorn sheep, desert tortoise, and other wildlife species.
<b>WILDERNESS and WILDERNESS STUDY AREAS</b>	
Same as 1B	Reduction in overflights is not expected to change wilderness resources under the NRC. Potential wilderness resources currently protected in what was NAFR could be impacted by increased access for ORV recreation, mineral exploration, transmission lines, or other intrusions.
<b>RECREATION and VISUAL RESOURCES</b>	
Same as 1B	Since the No-Action alternative would not be expected to result in additional access to the DNWR, no change in recreational opportunities or visual resources would be expected.
<b>SOCIOECONOMICS</b>	
Same as 1B	Substantially reduced missions at NAFR are calculated to reduce employment in Clark County by 7,100 jobs and Nye County by 300 jobs. Subject to BLM approval and the price of gold, increased mining and agriculture could create a net of nearly 400 jobs in Nye County. If growth in Las Vegas continues at present rates, the impact of No-Action could be significant to individuals but not to the region.
<b>ENVIRONMENTAL JUSTICE</b>	
Same as 1B	Minority job losses are calculated to be at least 1,700 in Clark County. This absolute loss from No-Action is not expected to have a disproportionate impact upon minority or low-income populations. Increased access for American Indian traditional activities could be offset by public access impacts to traditional American Indian resources.

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**T**he public scoping for this environmental impact analysis process focused on those environmental resources that could potentially be affected by the proposal to renew land withdrawn from NAFR. This chapter presents the current or baseline conditions of 14 environmental resources identified by agencies or the public as important.

Most of these resources include sub-categories to provide a better understanding of the specific aspects of the environment that might be affected by one or more of the alternatives. For example, Biological Resources, section 3.8, includes vegetation, wildlife, special status species, and other special interest species.

The process of collecting scientifically researched and up-to-date information involves reviewing previous studies, talking to agencies and others with responsibility for information on specific resources, reviewing public input during the public comment process, and evaluating numerous field studies.

The interrelationship of environmental resources is why the LEIS is prepared by an interdisciplinary team of scientists who describe each resource in the context of how it relates to other relevant resources.

# AFFECTED ENVIRONMENT

## 3.0



## AFFECTED ENVIRONMENT

Each environmental resource has a region of influence (ROI). The ROIs used in this LEIS permit examination of the 14 interdependent environmental resources at appropriate levels.



*ROI One consists of areas within NAFR that are subject to physical disturbance. This includes roads, targets, airfields, threat emitters, tracking and scoring devices, and any other facilities.*



*ROI Two includes the entire exclusive use area. The majority of this area is undisturbed and constitutes a protected habitat for all resources, including biological and cultural resources.*



*ROI Three encompasses the area under the Nellis airspace used by aircraft training on NAFR. This ROI extends outside the physical boundaries of NAFR. The area defined as ROI Three is revised or extended for specific resources to capture the potential for impact to those resources.*

## **3.0 AFFECTED ENVIRONMENT**

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Under the National Environmental Policy Act (NEPA), the analysis of environmental conditions is directly related to the expected environmental consequences of the proposed alternatives. NEPA requires that the analysis address those areas and the components of the environment with the potential to be affected by the proposed action; locations and resources with no potential to be affected need not be analyzed. The environment includes all areas and lands that might be affected, as well as the natural, cultural, and socioeconomic resources they contain or support.

In the environmental analysis process, analysts first identify the resources to be analyzed and then select the level of analysis, both in spatial extent and in intensity that the resources will be examined. For this proposal, the Air Force has examined 14 environmental resources at three different levels. These levels have been identified as Regions of Influence (ROIs), each with a different spatial extent, ranging from (1) disturbed areas within Nellis Air Force Range (NAFR) to (2) the approximately 3 million-acre withdrawal area, to (3) the approximately 7.5 million acres underlying the airspace area currently employed by the Air Force. Whether an ROI was examined for a resource, and the extent of the data gathering necessary, depended upon the type of resource and how it could be affected by the action.

### **REGION OF INFLUENCE ONE (ROI ONE)**

ROI One comprises the areas potentially affected by ground disturbance. This includes all targets, threat, tracking and communication sites, all other facilities (including those at the Tonopah Test Range [TTR], Indian Springs Air Force Auxiliary Field [ISAFAF], and Tolicha Peak Site), all roads, and all other areas of direct disturbance (Figures 1-2, 1-3, 1-4, 1-6, and 1-7).

### **REGION OF INFLUENCE TWO (ROI TWO)**

ROI Two comprises the current and projected withdrawal areas. This includes all areas described in Public Law (PL) 99-606 as amended, and those areas withdrawn from or returned to the Department of Interior (DOI) by the Air Force since November 6, 1986. This ROI, comprising the north and south ranges, is designed to support analyses of impacts resulting from exclusive military use (Figure 1-1).

### **REGION OF INFLUENCE THREE (ROI THREE)**

ROI Three includes lands under the affected airspace. This includes lands under restricted areas (R-4806, R-4807, and R-4809), the Desert and Reveille Military Operations Areas (MOAs), and other designated airspace directly connected to activities on the NAFR (see Figure 1-10). This ROI is designed to support analyses of impacts resulting from aircraft operations associated with NAFR. The spatial extent of ROI Three may vary somewhat from resource to resource to account for differences in data or resource attributes. This is further discussed within this chapter under the appropriate section.

In the following sections, the existing environmental conditions for each of the 14 resources (land use and transportation, and recreational and visual resources are combined) are presented. The specific extent of the ROIs is discussed within each resource section.

**S**pecial use airspace has been established and designated over NAFR withdrawn and adjacent lands to contain and protect the high-density training operations occurring regularly throughout this complex. Since its inception, this airspace complex has consistently been one of the most highly used military flight training areas in the world. NAFR provides a realistic testing and training environment where weapons delivery and air-to-air combat training are conducted within restricted access airspace. Aircraft and weapons systems can be tested in an area that preserves public safety and military security.

The military airspace that comprises the Nellis Range Complex (NRC) is not part of the land withdrawal renewal under the Federal Land Policy and Management Act (FLPMA).

# AIRSPACE

3.1

## AIRSPACE

*Airspace is used by a wide variety of aircraft, such as the A-10, shown here.*



Airspace use is managed by rules and regulations that govern how and where aircraft may fly, much like the highway system and traffic laws regulate vehicle travel. The Federal Aviation Administration (FAA) has the overall responsibility for managing airspace and works closely with airport planners, military airspace managers, and other interests to determine how airspace can best be utilized to serve both civil and military aviation needs.

Different types of airspace included in this analysis are as follows:

- Military Operations Areas (MOAs) are established to separate nonhazardous military flight training from other Instrument Flight Rules (IFR) traffic and to identify for Visual Flight Rules (VFR) pilots where these operations are being conducted.
- Restricted Areas are established over NAFR and adjacent lands where classified and/or hazardous activities such as bombing, gunnery, and artillery operations are conducted.
- Military Training Routes (MTRs) are essentially aerial "highways" of varying lengths, widths, and altitudes that are used for low-altitude flight tactics and navigation.
- Aerial Refueling Routes (ARs) are used to refuel military aircraft, thus extending the length of an aircraft sortie.
- Low Altitude Tactical Navigation (LATN) areas are large geographic areas where random low-altitude operations are conducted at airspeeds below 250 knots.



*Airspace rules administered by FAA help identify and protect areas where military flight activities occur.*

## 3.1 AIRSPACE

The primary objectives of airspace management are to ensure the best possible use of available airspace to meet user needs and to segregate any user needs that are incompatible with other airspace or land uses. The Federal Aviation Administration (FAA), which has the overall responsibility for managing the nation's airspace, constantly reviews civil and military airspace needs to ensure that all interests are compatibly served to the greatest extent possible.

The safe, orderly, and compatible use of the nation's airspace is made possible through a system of flight rules and regulations, airspace designations, and air traffic control (ATC) procedures, just as traffic laws and vehicle operating rules govern use of the nation's highways. This system is designed to accommodate the individual and common needs of general, commercial, and military aviation without imposing unreasonable restrictions on any one group. The national airspace system has helped achieve a level of air safety that is widely considered safer than driving a car. One of the primary reasons for this level of air safety is the manner in which airspace is structured across the country and managed to protect aircraft operations around busy airports, along a complex network of airways and jet routes, and within areas where special activities, such as military flight operations, are conducted.

The FAA manages airspace use by (1) establishing rules that specify how aircraft must be operated, (2) depicting routes and other areas on maps that identify where aircraft may or may not fly, and (3) providing ATC services that help aircraft operate in a safe and orderly manner. Collectively, these means are intended to make airspace use as effective and compatible as possible for all types of aircraft, from private propeller-driven aircraft to large high-speed commercial and military jet aircraft.

To better understand how airspace is managed relative to the rules by which pilots operate, a brief explanation of these rules (visual and instrument) is needed. General aviation pilots flying between local airports and airfields within a familiar geographical area operate under Visual Flight Rules (VFR). VFR generally allows these pilots to fly off published routes (weather conditions permitting) using visual references such as highways, powerlines, railroads, or other such cues. Federal Airways may also be followed at altitudes not used for instrument flight. VFR flight is restricted to altitudes below 18,000 feet above mean sea level (AMSL) and does not require flight clearances from ATC, although traffic advisories may be requested. VFR pilots exercise "see-and-avoid" clearance precautions, which means they must be vigilant of their surroundings and alter their course or altitude, as necessary, to remain clear of other traffic, terrain, populated areas, clouds, etc. Other air traffic, including appropriately certified general aviation pilots, commercial air carriers, corporate jets, and military aircraft, operate under Instrument Flight Rules (IFR). IFR requires pilots to be trained and certified in navigational methodologies and adhere to ATC clearances containing specific flight route and altitude directions. ATC clearances and use of elaborate radar and navigational aid systems keep IFR aircraft separated from each other from takeoff to landing. The safe and compatible use of all airspace by both VFR and IFR aircraft depends heavily on pilot adherence to the rules that apply to their type of operations.

### **3.1.1 NAFR Airspace Use and Management**

The airspace region of influence is ROI Three. ROI Three includes those local airspace areas currently delegated by the FAA or designated by the Air Force that have been traditionally used in conjunction with NAFR. ROI Three for airspace in this land withdrawal renewal Legislative Environmental Impact Statement (LEIS) includes restricted airspace and MOAs.

Restricted airspace has been established and designated over NAFR withdrawn and adjacent lands to contain and protect the high density training operations occurring regularly throughout this complex. A 1944 sectional aeronautical map indicates that a "danger area" was established over this area before the national airspace system (as it is known today), came into existence. The outer boundary of this "danger area" nearly coincides with Nellis range restricted airspace as it now exists. Since its early inception, this airspace complex has consistently been one of the most highly used military flight training areas in the world. It provides a realistic training environment where weapons delivery and air-to-air training can be conducted with relatively little impact on other aviation, as discussed later in this section.

MOAs are used to separate military flight activities from IFR traffic and to identify for VFR traffic those areas where nonhazardous military operations are being conducted. Military flight training has occurred in the airspace encompassed by the MOAs within ROI Three since World War II. The altitudes and flight tracks flown in the MOAs during the various types of NAFR test and training missions vary considerably.

The combination of restricted airspace overlying NAFR withdrawn lands and MOAs associated with NAFR use is referred to as the Nellis Range Complex (NRC). The airspace discussion describes how the NRC is structured, operated, and managed to support Department of Defense (DOD) flight training requirements.

The NRC consists of the Desert and Reveille MOAs and five restricted areas: R-4806E, R-4806W, R-4807A, R-4807B, and R-4809. Although the MOAs do not overlie the withdrawn lands, they are often used in conjunction with flight missions within the range restricted areas. Restricted Area R-4809 overlies NAFR lands operated by Sandia National Laboratories for the DOE and is scheduled and controlled by Nellis AFB. The Nevada Test Site (NTS), operated by the Department of Energy (DOE) and located southwest of and adjacent to NAFR, is protected by restricted areas R-4808N and R-4808S. NRC missions are scheduled and tracked by restricted area and MOA subdivisions that have been internally designated for mission planning purposes. NRC use, in terms of aircraft sorties, is generally expressed as the cumulative total of all sortie-operations conducted within each subdivision. A sortie-operation is the use of one airspace area or subdivision by one aircraft during the course of a sortie mission. On this basis, NRC use has historically ranged between 200,000 and 300,000 sortie-operations annually. Appendix A describes NRC sortie-operations in more detail. Regardless of the number of sortie-operations that use the NRC on a yearly basis, the NRC is used for air or ground-based activities nearly 100 percent of the time it is available.

There are several military training routes (MTRs) adjacent to or within portions of the NRC on which low-level training is conducted with or without use of NAFR. Other airspace includes the Low Altitude Tactical Navigation (LATN) areas, aerial refueling routes, an Alert Area, ATC-related airspace surrounding Nellis Air Force Base (AFB), Indian Springs Air Force Auxiliary Field (ISAFAF), and TTR Airfield, as well as range transition corridors. Each of these areas and their uses are described in more detail below.

### **RESTRICTED AREAS**

A restricted area is airspace within which flight by non-participating aircraft, while not wholly prohibited, is subject to restriction during scheduled periods when hazardous activities are being performed (14 Code of Federal Regulations [CFR] Part 1.1). Restricted areas designated as "joint use" by the FAA permit ATC to route nonparticipating aircraft through this airspace when it is not in use or when appropriate separation can be provided. Those areas not designated as FAA joint use cannot be accessed by either non-participating civil or military aircraft at any time. Restricted Areas R-4806E/W and R-4807A/B, delegated by the FAA to Nellis AFB for control, are designated joint use. R-4808N and R-4809 are delegated to the DOE, and are not joint use due to the continuous nature of hazardous activities conducted in these areas. R-4808S is joint use and the FAA uses this area at or above Flight Level (FL)\* 280 (represents a barometric altimeter indication of 28,000 feet). With the exception of R-4806E (which begins at 100 feet AGL), all of these restricted areas extend from the surface up for an unlimited distance into the atmosphere. A brief description of each restricted area follows.

#### ***R-4806 (R-4806W AND R-4806E)***

R-4806W is subdivided and used for conventional bombing and gunnery testing and training. The lands under these subsections contain air-to-air gunnery capabilities, bomb circles, an airfield, supply area, convoys, anti-aircraft artillery/surface-to-air missile (anti-aircraft artillery [AAA]/surface-to-air missile [SAM]) sites, and a small arms live-fire training range. Lands under R-4806E do not contain any targets. Except for the extreme northern portion of these restricted areas, all of R-4806E/W are within the Desert National Wildlife Range (DNWR). For that reason, aircraft normally remain above 2,000 feet above ground level (AGL) unless a mission requires lower altitudes; air-to-air gunnery operations are conducted above 10,000 feet MSL. There is also an 8,000 feet AMSL restriction within 2 nautical miles (NM) of the U.S. Fish and Wildlife Service (USFWS) Corn Creek Station located in the southeast corner of R-4806W.

#### ***R-4807 (R-4807A AND R-4807B)***

R-4807A is subdivided into several subsections. The range is comprised of an electronic battlefield with numerous tactical targets, including a simulated oil field, bomb circles, tank

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\* Flight Level (FL) is a short-hand definition for indicating altitude. FL 280 is the shorthand for 28,000 altitude, mean sea level (MSL).



convoys, an airfield, industrial complex, munitions storage and sites, regimental/battery headquarters, signal platoons, air defense artillery units, infrared targets, and other target arrays. Manned electronic combat threat simulators are also located on lands beneath these restricted areas. R-4807B is used for overflights of a land area (Pahute Mesa) used by the DOE as an annex to the NTS.

***R-4808 (R-4808N AND R-4808S)***

R-4808N/S is controlled by the DOE for NTS activities (DOE 1996a). However, the southwestern and western portions of this restricted airspace are used for military aircraft transit to and from R-4807A/B through an agreement with the DOE. For this reason, Nellis AFB has internally subdivided R-4808N/S into R-4808 E / W for airspace scheduling purposes only. Further internal subdivision of this airspace is being coordinated with DOE to accommodate changes in the military use and scheduling of this restricted area. These changes do not affect the purpose and manner for which R-4808N/S was established nor does it affect surrounding airspace uses. R-4808S is also used by the FAA Los Angeles Air Route Traffic Control Center (ARTCC) for civil aircraft overflights.

***R-4809***

Portions of R-4809 are used jointly by the DOE and the Air Force. This airspace is normally used by aircraft in conjunction with other R-4807A&B subranges; however, the TTR Airfield, located beneath R-4809, can be used as a divert base for in-flight emergencies and other nonroutine operations. Other portions of R-4809 include Electronic Combat (EC) West, an electronic combat range.

**MILITARY OPERATIONS AREAS**

The Desert and Reveille MOAs are used for air-to-air intercept training, which consists of high speed operations, abrupt maneuvers, and supersonic flight at and above 5,000 feet AGL. The base of each MOA is 100 feet AGL. Since a MOA, by definition, only extends up to, but not including, 18,000 feet AMSL, Air Traffic Control Assigned Airspace (ATCAA) is provided by the FAA on an as-needed basis to extend training airspace to higher altitudes in accordance with a Letter of Agreement with Nellis AFB. ATCAAs are not designated airspace or charted on aeronautical maps and are only activated for military use when the higher altitudes are needed. The FAA may use that higher airspace for civil IFR overflights when it is not required for military missions. The type of flight maneuvers conducted in a MOA/ATCAA are considered non-hazardous and, therefore, compatible with other airspace uses. For that reason, VFR aircraft may fly through a MOA when it is in use, exercising see-and-avoid clearance precautions also performed by military pilots during their maneuvers. Military pilots are also vigilant of other aircraft during their maneuvers both visually and through use of cockpit radar displays to identify and remain well clear of nonparticipating air traffic that may be operating in the MOA. Depending upon terrain and an aircraft's position and use of transponder (electronic beacon) equipment, aircraft radar displays are capable of detecting aircraft within

100 miles, including smaller general aviation aircraft. Additionally, VFR pilots are always encouraged to contact Nellis ATC for the MOA status and traffic advisories when using this airspace. IFR aircraft normally fly routes that circumvent the NRC MOA/ATCAAs, but if transit through these areas is required for weather deviation or emergency, ATC maintains appropriate IFR separation between these aircraft and the military operations.

The Reveille MOA/ATCAA is located in the northern portion of the NRC. When not activated, the Reveille MOA/ATCAA is normally controlled by the FAA Salt Lake City ARTCC. Jet Routes (J58-80) are used for east-west transit of IFR traffic and are situated within this MOA/ATCAA, and therefore this airspace is not always readily available for NRC use. When needed for military use, the Reveille MOA/ATCAA is scheduled with the ARTCC in advance and IFR civil flights are provided the appropriate IFR separation from military operations.

The Desert MOA/ATCAA comprises the eastern half of NRC and is normally scheduled and used during daylight hours Monday through Saturday. Any changes to this normal schedule is disseminated by a Notice to Airmen (NOTAM) that advises all military and civil pilots of the use status. The Desert MOA/ATCAA is divided into subsections (Caliente, Elgin, and Coyote) (Figure 3.1-1), which are used individually or in combination for air-to-air training. Elgin is the primary air-to-air training area and contains the Air Combat Maneuvering Instrumentation (ACMI) range, which, through a system of aircraft transmitters and ground receivers, allows recording of all flight maneuvers for later replay and flight debriefings. Sally Corridor is the primary transition route between Nellis AFB and most portions of NRC.

#### **AIRSPACE APPROVED FOR SUPERSONIC FLIGHT**

Approximately 70 percent of ROI Three that includes the restricted areas and MOAs described above has been assessed and approved to perform tactical maneuvers at supersonic speeds. Of the total flight time flown by each sortie performing supersonic flight, between 3 and 10 percent (depending on aircraft type) is actually flown at supersonic speeds (cumulatively, 4 to 6 minutes). The areas shown in Figure 3.1-2, as authorized for supersonic flight, provide protection for noise-sensitive locations within ROI Three.

#### **MILITARY TRAINING ROUTES**

An MTR is a type of training airspace with established vertical and lateral dimensions used for the conduct of military flight training at airspeeds in excess of 250 knots below 10,000 feet AMSL. MTRs are designed to accomplish low-altitude training requirements while minimizing any disturbances to people and property. MTRs are established as instrument routes (IRs) or visual routes (VRs) on various aeronautical charts, with information on their normal scheduled use. Detailed route descriptions in DOD Flight Information Publications and pre-flight pilot

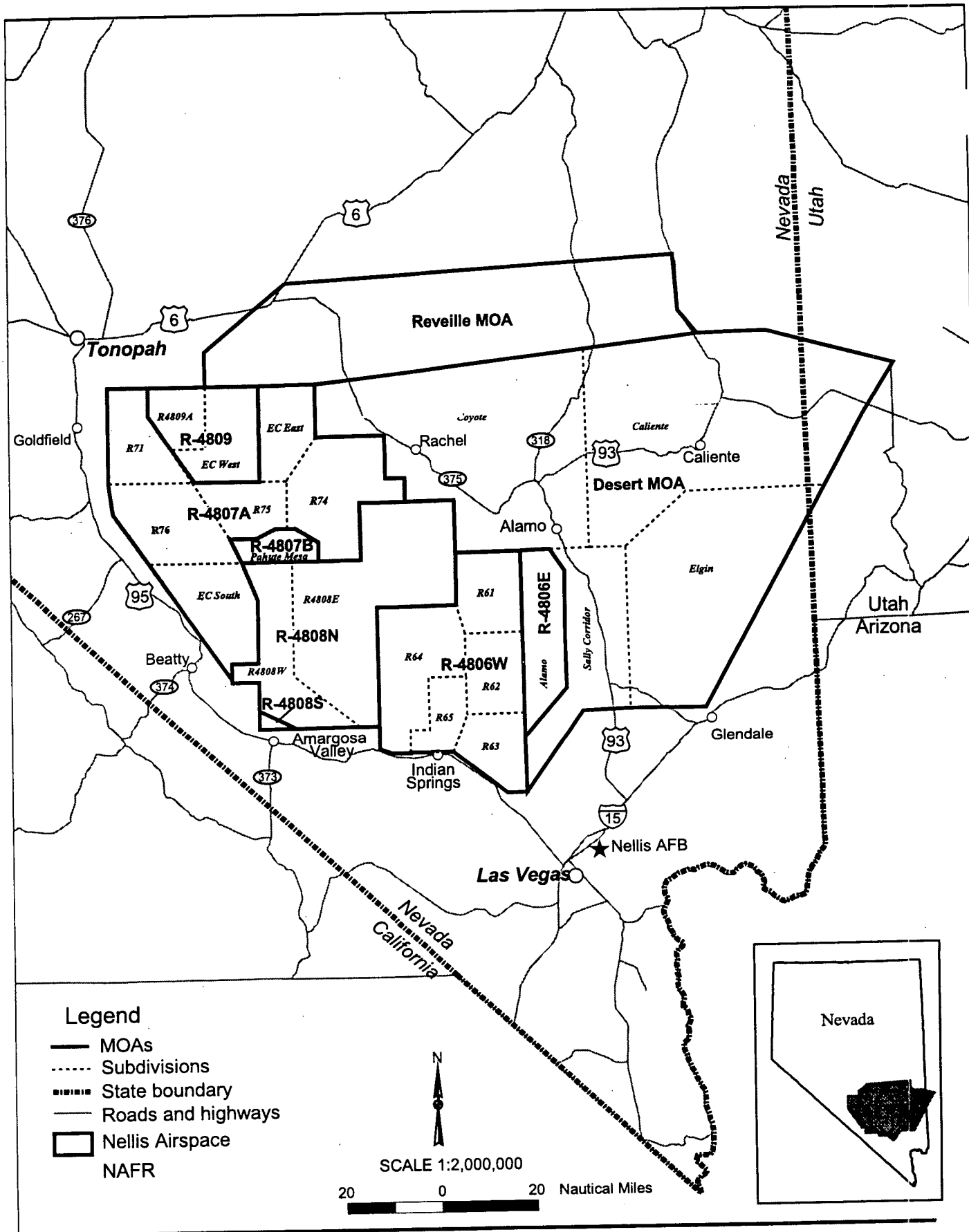


Figure 3.1-1. Nellis Air Force Range Airspace

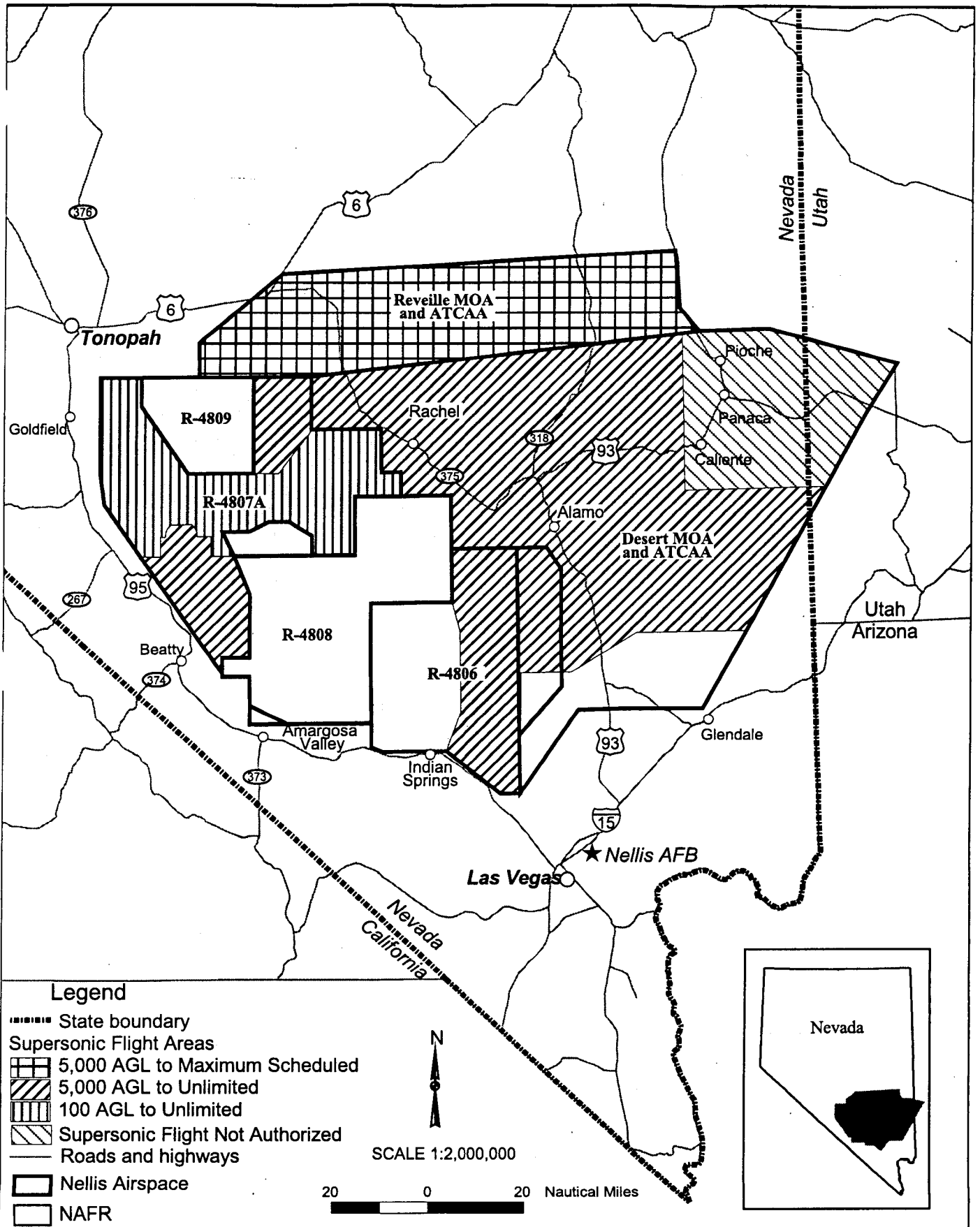


Figure 3.1-2. Airspace Authorized for Supersonic Flight within the Nellis Range Complex

briefings familiarize military pilots with specific locations to be avoided along the routes, such as airports, towns, wildlife habitat areas, and other noise-sensitive areas. MTRs in the region have floor segments as low as 100 feet AGL, but they are normally flown between 500 and 1,000 feet AGL. Both military and civil VFR pilots are responsible for exercising see-and-avoid clearance precautions while operating within MTR designated airspace.

Of the 21 different MTRs transiting within or immediately adjacent to the NRC, five have route segments that overlie NAFR withdrawn lands. These MTRs are controlled and scheduled by different Air Force units and are not always used in conjunction with NAFR activities (Appendix A). Table 3.1-1 identifies these five routes, home base of the scheduling unit, portion of the route within restricted airspace, and approximate annual number of sorties.

<i>MTR</i>	<i>Scheduling Agency</i>	<i>NAFR Airspace Accessed</i>	<i>Estimated Annual Sorties<sup>1,2</sup></i>
VR 222	Nellis AFB	Final segment in R-4807A	550
VR 1214	Edwards AFB	Last segment enters R-4807A	300
IR 279	Offutt AFB	Last segment enters R-4809	115
IR 282	Mountain Home AFB	Last segment enters R-4807A	12
IR 286	Nellis AFB	Final segment in R-4806W	21
<i>Sources:</i> 1. Flight Information Publication Area Planning AP/1B, Military Training Routes. 2. Nellis AFB Airspace Management records.			

### LOW ALTITUDE TACTICAL NAVIGATION AREAS

LATNs are large geographic areas where random low altitude operations are conducted at airspeeds below 250 knots. LATNs are established on the east and southwest sides of the NRC primarily for A-10s and helicopters to practice random selection of navigation points and low altitude tactical formations between 100 and 1,500 feet AGL when airspace may be unavailable within the NRC. About 40 to 50 sorties are conducted weekly in the LATNs by the Nellis AFB A-10 units, 75 percent in the southwest LATN.

The Air Warrior A-10s fly approximately two sorties per week in the southwest LATN only in conjunction with other training activities at Fort Irwin, California. Helicopters also conduct training operations within the LATN areas. While operating in these areas, aircraft must remain clear of residential, populated, and noise-sensitive areas. LATNs are not depicted on aeronautical charts, but local airports and aviation groups have been advised of the Nellis LATNs and their associated operations through civil pilot briefings and locally developed maps depicting their locations.

## **AERIAL REFUELING ROUTES**

Aerial refueling (AR) routes consist of linear tracks or orbital anchors used by tanker aircraft to refuel mission aircraft. Those AR routes within or immediately adjacent to the NRC are used to sustain aircraft operations during training activities/exercises include the following:

- AR-625H/L, located adjacent to the northwest corner of the NRC, has low (FL180-210) and high (FL230-250) tracks that may be used simultaneously.
- AR-641A and B are located adjacent to and within the northeastern portion of the Desert and Reveille MOA/ATCAAs with published altitudes at 12,000 feet AMSL-FL230 (641A) and FL190-FL230 (641B). These AR routes cannot be used simultaneously.

### **3.1.2 Other Airspace**

Nellis AFB and McCarran International Airport are surrounded by the Las Vegas Class B airspace. Class B-designated airspace requires continuous and positive control of all IFR and VFR aircraft operating within its boundaries. This class of airspace ensures flight safety in all airport environments having a very high volume of air traffic. The Las Vegas Class B airspace extends from 20 to 25 NM south and east of Las Vegas/Nellis AFB to the southern boundary of the Desert MOA (Sally Corridor). All aircraft entering or transiting through this charted Class B airspace must be in contact with, and under the positive control of, either the Nellis or McCarran radar approach control facilities, depending on their point of entry. The positive, protective nature of this airspace enhances flight safety for military aircraft operating between Nellis AFB and NAFR, as well as civil aviation transiting through this high air traffic density area.

ISAFAF, located on the southern boundary of R-4806W, provides aircraft staging support and emergency/divert recovery for NRC operations. The 11th and 15th Reconnaissance Squadrons use remotely operated aircraft out of ISAFAF. The airfield is also used as the primary training location for the Air Force's Thunderbirds Air Demonstration Squadron.

Class E airspace encompasses a 5-nautical-mile radius semicircle to the south of ISAFAF. The Indian Springs control tower provides ATC services within this area any time NAFR or ISAFAF has flying operations scheduled for the local area.

The TTR Airfield is located within restricted airspace and does not require a separate controlled airspace designation. It also provides emergency/divert recovery for NRC operations.

An Alert Area is, by definition, an area established and charted on aeronautical maps to inform pilots of a specific area wherein a high volume of pilot training or an unusual type of aeronautical activity is conducted. Alert Area A-481 west of Nellis AFB alerts civil aviation of high-density military aircraft operations transiting between the base and the western portion of NAFR. A-481 begins at 7,000 feet AMSL and extends to a ceiling of 17,000 feet AMSL.

## **RANGE TRANSITION CORRIDORS**

Two flight corridors are used primarily to transition aircraft between Nellis AFB and NRC. As discussed previously in section 3.1.1, the Sally Corridor lies east of the NAFR in the Desert MOA (Figure 3.1-1) and provides the northern access to and from Nellis AFB for the NRC. Lee Corridor, an uncharted 10 NM wide ATC corridor area, lies south of the NRC between Nellis AFB and entry/exit points of R-4808S and R-4807A. It is used to control aircraft transition to and from the R-4806 and R-4807 ranges.

## **LOW-ALTITUDE AVOIDANCE AND NOISE-SENSITIVE AREAS**

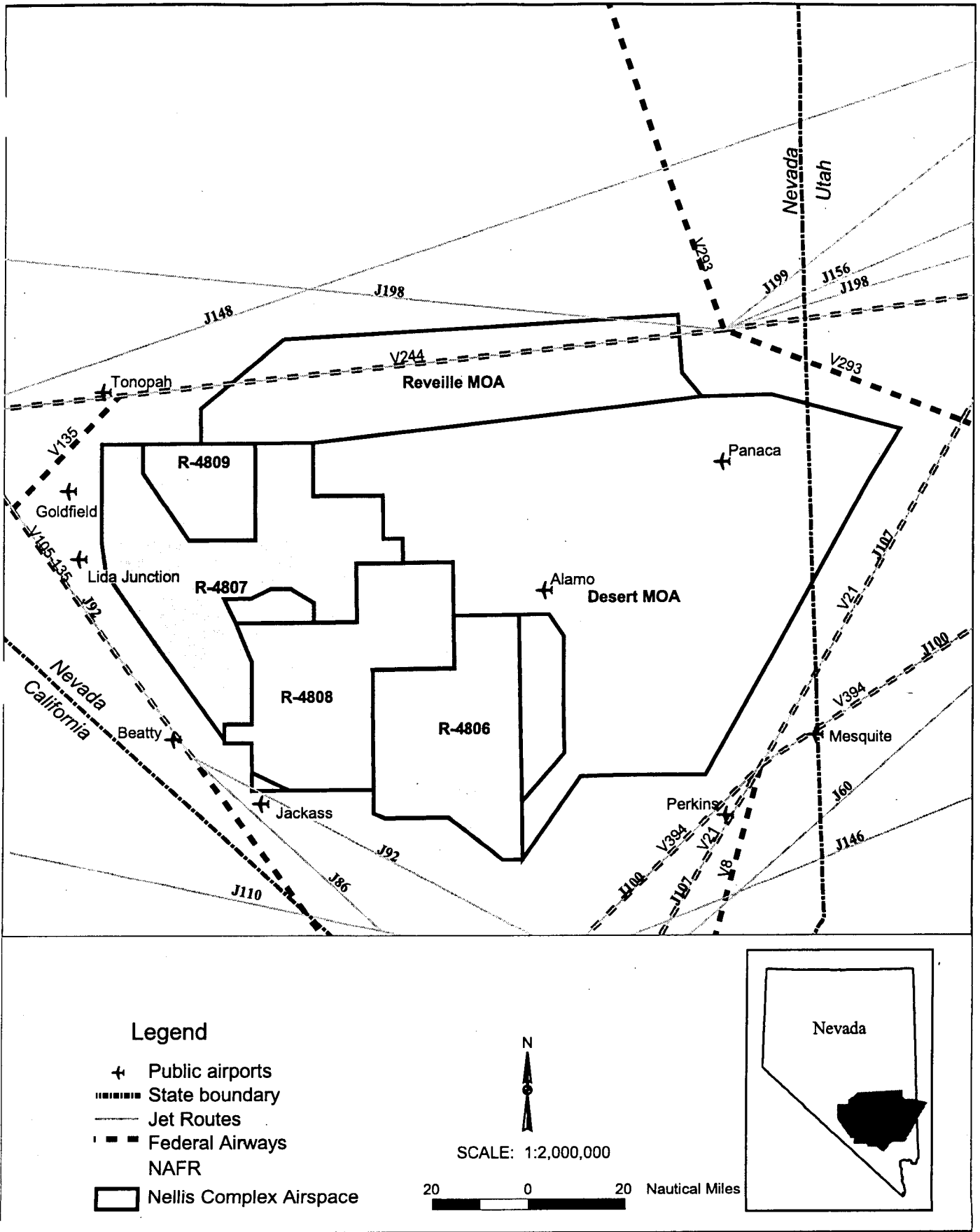
Over 40 sensitive and no-fly areas have been identified by Nellis AFB for avoidance of towns, settlements, airfields, wildlife areas, and other locations within and adjacent to NRC. These locations are avoided by established horizontal and vertical distances for flight safety, noise sensitivity, and environmental sensitivity. Avoidance restrictions are published locally in NRC procedures/maps and as special operating procedures for MTRs in DOD Flight Information Publication AP/1B. Temporary flight restrictions are also occasionally established within NRC for periods when the Bureau of Land Management (BLM) conducts fire-fighting activities.

Routine overflight of Goldfield and other towns within or adjacent to the NRC is not a part of the current or reasonably foreseeable future NRC mission. Overflights on some MTRs in ROI Three are controlled by the FAA and scheduled by other DOD installations and, therefore, not under Air Force control. Currently, both the Navy and the Air Force have established avoidance parameters for the town and airport of Goldfield through MTR route segment planning and/or published cautionary notices.

### **3.1.3 Civil Aviation Airspace Use**

In general, airspace that has been designated by the FAA for military training in some areas of the country may cause some flight diversions and require increased awareness of other air traffic in shared airspace. FAA and military airspace management takes into account such concerns when planning and implementing airspace actions so that critical flight training requirements can be met in an effective and fuel efficient manner without imposing adverse effects on civil aviation. The long existence of NRC airspace and very few modifications that have been made to this airspace over the years have made it reasonably compatible with civil aviation needs in the region.

The NRC airspace is bordered by several Federal Airways (Victor Airways) and Jet Routes (Figure 3.1-3), which are part of a nationwide network of "highways" that interconnect the airport system. Federal airways are established below 18,000 feet AMSL and are normally used by unpressurized propeller aircraft or aircraft not equipped for longer distance, high altitude



**Figure 3.1-3. Federal Airways, Jet Routes, and Airports within the Nellis Range Complex Region of Influence**



flight. Generally overlying those Federal Airways bordering the NRC are Jet Routes on which flight at and above 18,000 feet AMSL is conducted by the greatest majority of IFR air traffic (airliners, air cargo, corporate jets, and other high performance aircraft). These Airways and Jet Routes provide nearly direct IFR routing between key airports. NRC airspace does not pose a great inconvenience to scheduled airlines en route because of the routes and altitudes flown. However, if necessary to route IFR traffic through NRC airspace for a weather diversion or emergency situation, this traffic would be separated from military operations by Nellis ATC.

The few airports or airfields located adjacent to NRC airspace or beneath the Desert MOA include the Tonopah, Goldfield, Lida Junction, Alamo, Beatty, Panaca, and Jackass. The current and forecast annual operations for these airports and others in the region are shown in Table 3.1-2 to provide a general idea of their level of use.

<i>Airports/Airfields</i>	1995	2005	2015
Alamo	50	50	50
Beatty	975	980	980
Boulder City	35,000	36,910	38,180
Coaldale	0	0	0
Echo Bay	750	750	750
Goldfield	300	300	300
Henderson Sky Harbor	60,000	63,830	65,360
Jackass	500	500	500
Lincoln County (Panaca)	2,400	2,400	2,400
Lida Junction	12	12	12
McCarran	494,006	550,626	613,636
Mesquite	15,000	16,880	16,880
North Las Vegas	161,130	191,400	219,340
Tonopah	12,507	13,130	13,760

*Source: Nevada Department of Transportation (NDOT) 1995.*

Air carrier activity in Nevada has increased considerably and is expected to continue to grow during the next 20 years. Most of this present and anticipated growth is at the Las Vegas and Reno airports. While passenger enplanements will grow nearly 98 percent above 1994 levels, air carrier operations are only expected to increase 54 percent from 427,000 total combined operations in 1994 to over 657,450 by 2015. General aviation activity is expected to grow at a much slower pace. Pleasure flying is declining while business or corporate activity is slowly

growing. General aviation operations are anticipated to grow by about 17 percent by 2015 (NDOT 1995).

Intrastate air transportation primarily uses general aviation aircraft since only four communities (Elko, Ely, Reno, and Las Vegas) have scheduled air service. General aviation airports within the state provide convenient air transportation access to many areas that depend heavily on this service, even though their based aircraft and operational activities are low in the rural airports (NDOT 1995).

VFR aircraft operating between any of the airports in the Las Vegas area and other airports or airfields west, north, or east of NRC must either remain west of the restricted airspace or may fly through the Desert and Reveille MOAs, using see-and-avoid precautions, as do the military pilots. Most VFR flights in this region can be conducted directly between these points without being impeded by NRC airspace or military aircraft operations. U.S. Highway 95 and Interstate 15 are commonly used by VFR pilots as visual references or "VFR flyways" when transiting the western or eastern areas of NRC. Normally of greater concern to these pilots are the numerous military flights transiting between Nellis AFB and NRC entry and exit points. In response to these concerns, Nellis AFB operations, airspace management, and ATC representatives provide periodic briefings on Nellis operations to civil general aviation pilots in St. George, Mesquite, North Las Vegas, Henderson Sky Harbor, Tonopah, and other locations as part of the ongoing Midair Collision Avoidance Program. Items discussed include the standard routes and altitudes normally flown by military aircraft in this area, the availability of radar traffic advisories from Nellis ATC, and the areas in which military aircraft operations are conducted.

One of the planning issues addressed in the Nevada State Airport System Plan is the impact of military airspace on the airport system, since nearly 40 percent of the airspace overlying the state is defined by FAA as special use airspace, which includes military airspace. The NDOT interacts with the FAA, regional transportation planning agencies, local governments, military authorities, the public, the air carrier and general aviation industries, and the private sector in fulfilling its airport planning and air transportation objectives. NDOT is a participating agency in meetings held with military agencies to foster better communications between DOD and state/federal agencies on airspace matters. Another forum, the Western Regional Airspace Council, is used by the FAA to discuss and coordinate DOD airspace matters.

The USFWS and Nevada Division of Wildlife (NDOW) conduct periodic flights for aerial census and tracking of bighorn sheep and maintenance of water facilities. These flights occur during the spring and fall, about three to five times a year, and are coordinated through the Nellis AFB range control and scheduling functions.

### **3.1.4 American Indian Issues Concerning Airspace**

The Consolidated Group of Tribes and Organizations (CGTO) has not specifically identified issues concerning airspace.

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# NOISE

**N**oise is created by the engines, air frames, maneuvers, and weapons of military aircraft. Noise was identified as an issue during the scoping process. Specific concern was expressed regarding sonic booms.

An assessment of aircraft noise requires a general understanding of sound measurement and the noise effects on people and animals. The table on the back of this page shows typical maximum sound measurements in decibels (dB) and the relationship of those measurements to common sounds.

Noise levels throughout the Nellis Range Complex (NRC) are derived from actual measurements performed at NAFR. Computer-based simulation programs developed from these studies are used to determine noise impacts associated with high performance jet aircraft operations. The current or baseline noise environment is not expected to change with all action alternatives.

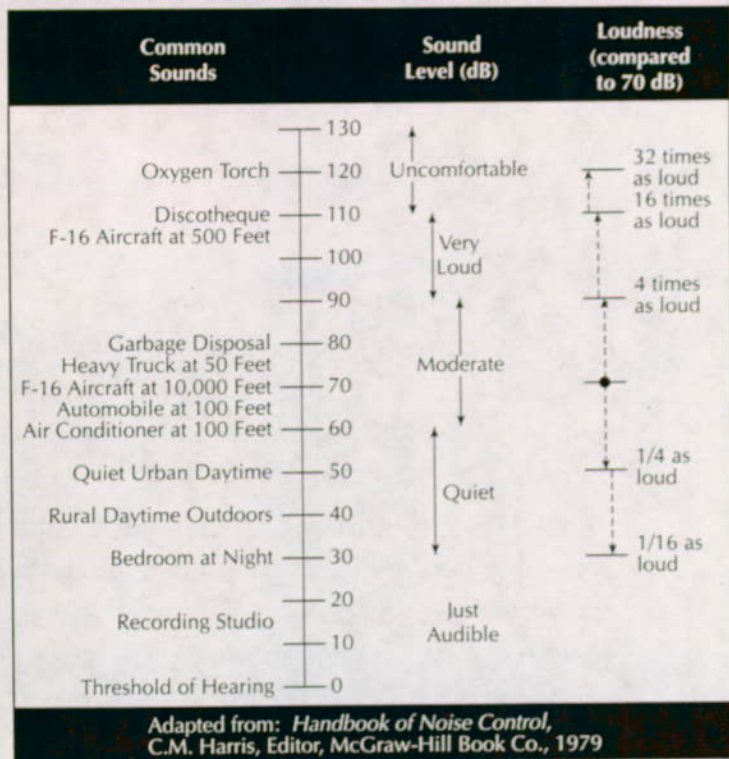


3.2



Noise levels from on-site measurements of aircraft operations at NAFR have been used to develop noise computer models used throughout the world.

TYPICAL MAXIMUM A-WEIGHTED COMMON SOUNDS



In the LEIS Noise section, the noise levels from subsonic aircraft operations are presented in terms of the Onset Rate-Adjusted Monthly Day-Night Average A-weighted Sound Level ( $L_{dnmr}$ ).  $L_{dnmr}$  is not a description of a specific sound but rather is a measure of the total average sound level that can be used for comparison among alternatives. The typical maximum sound levels in the table above are part of the  $L_{dnmr}$  cumulative measure. The  $L_{dnmr}$  accounts for the cumulative sound energy over a 24-hour period. Although called an average, the  $L_{dnmr}$  is more accurately described as a cumulative measure because it accounts for the sound level of individual events, the duration of each event, and the number of events occurring each day.  $L_{dnmr}$  incorporates three considerations:

- Day/night operations are taken into consideration by adding 10 dB to the sound levels for aircraft operations between 10:00 P.M. and 7:00 A.M. This adjustment takes into consideration reduced typical night background noise levels and increased sensitivity.
- The surprise or startle effect from high-speed aircraft is taken into account by adding from 0 to 11 dB to the sound exposure level of the aircraft, depending on the rate of speed at which noise from approaching aircraft increases.
- The average operations during the busiest month of the year is the basis for  $L_{dnmr}$ . This is in contrast to annual averages used at civil airports. This busiest monthly average prevents predictions from being affected by seasonal periods of low military aircraft activity.

## 3.2 NOISE

Noise is perhaps the most identifiable concern associated with aircraft operations. Although many other sources of noise are present in today's communities, aircraft noise is often singled out for special attention and criticism. Existing noise from aircraft operations in MOAs associated with the NRC to the east of NAFR was a concern expressed at scoping meetings.

The ROI used for the noise analysis is ROI Three and consists of the NRC. The noise analysis considers all aircraft operations that occur in the NRC, which includes MOAs and Restricted Areas. For the most part, as described in section 3.1 (Airspace), regional MTRs exist outside of the NRC. The noise levels associated with these routes are not specifically considered, although the noise contribution of those segments of MTRs that underlie the NRC airspace will be assessed. Impulsive noise associated with the use of high explosives on NAFR will be assessed on a site-specific basis.

Two kinds of aircraft noise are of concern within ROI Three. The first is conventional subsonic noise, as generated by the aircraft's engines and airframe. This is the most familiar form of aircraft noise and is heard while an aircraft is within some distance of a receiver. The second type of noise is sonic booms, which are generated by aircraft when they fly faster than the speed of sound. Sonic booms are brief impulsive sounds. Assessment of aircraft noise for the proposed action and alternatives requires a general understanding of the measurement and effects of these two kinds of noise. Appendix E contains a detailed discussion of noise, the quantities used to describe it, and its effects. Appendix E may be referred to for explanations of concepts that are briefly defined in this section.

Baseline noise levels throughout ROI Three are calculated by computer-based simulation models. These models were developed from measurements conducted in a variety of military airspaces, including the NRC. Because utilization of the range complex varies from year to year, the baseline noise levels are presented for high and low typical use levels.

### 3.2.1 Representations of Noise

Noise is represented by a variety of quantities or "metrics." Each noise metric was developed to account for the type of noise and the nature of what may be exposed to the noise. Human hearing is more sensitive to medium and high frequencies than to low and very high frequencies, so it is common to use "A-weighted" metrics, which account for this sensitivity. Impact of impulsive noise depends on factors other than human hearing, so it is often quantified by "C-weighted" metrics, which are flat over a broad frequency range.

Different time periods also play a role. People hear the sound that occurs at a given time, so it is intuitive to think of the instantaneous noise level, or perhaps the maximum level that occurs during an aircraft flyover. However, impact over a period of time depends on the total noise exposure over extended periods, so "cumulative" noise metrics are used to assess the impact of on-going activities such as those that occur on the NRC. Within this LEIS, noise is described by

the sound level (L), the maximum sound level ( $L_{max}$ ), the Sound Exposure Level (SEL), Day-Night Average Sound Level ( $L_{dn}$ ) and Onset Rate Adjusted Monthly Day-Night Average Sound Level ( $L_{dnmr}$ ). A-weighted levels are used for subsonic aircraft noise, and C-weighted levels are used for sonic booms and other impulsive noises. A "C" is included in the symbol to denote when C-weighting is used. The role of each of these metrics is outlined below. Further details are contained in Appendix E.

### 3.2.1.1 SOUND LEVEL

Sound level (L) is the amplitude of the sound that occurs at any given time. Some of the sounds are continuous or long term averages (e.g., garbage disposal; rural and urban ambient), and some are maximum levels (e.g., aircraft and truck passbys). Sound levels are measured in decibels, and are reflected on a logarithmic scale. A 3 dB increase reflects a doubling in sound level. However, due to the way the human ear responds to noise, it actually requires about a 10 dB increase to be perceived as a doubling in noise. It should also be noted that an "instantaneous" level as used in environmental analysis usually represents sound averaged over some short time period, typically one second for slowly changing sounds and 1/8 second for fast-changing sounds. When an aircraft flies by, the noise level changes continuously. It begins at the ambient (background) level, increases to a maximum as the aircraft passes closest to the receiver, then falls back to ambient as the aircraft recedes into the distance.

### 3.2.1.2 MAXIMUM SOUND LEVEL

Maximum sound level ( $L_{max}$ ) is the highest instantaneous sound level measured during a single noise event, such as an aircraft overflight. The maximum sound level is important in judging whether a noise event will interfere with conversation, sleep, or other common activities.

### 3.2.1.3 SOUND EXPOSURE LEVEL

While  $L_{max}$  is commonly viewed as an indication of how intrusive a noise event is, impact also depends on how long a sound lasts. A sound that lasts a long time will be more intrusive than one that is over quickly. Sound Exposure Level (SEL) combines both of these characteristics (maximum sound and duration) into a single metric. SEL does not directly represent the sound level heard at any given time, but rather provides a measure of the total exposure of the entire event. For this reason, it is a better indicator of impact than just  $L_{max}$ . For sonic booms, which occur over a short time compared to typical sound level averaging times (1/8 second for fast sounds, as noted in the discussion of L), C-weighted SEL (CSEL) provides a meaningful measure of how a boom is perceived.

Sonic booms consist of a pair of shock waves, approximately equal to each other, separated by a fraction of a second. CSEL accurately describes the amplitude of the entire boom. It is; however, also common to report the amplitude of a sonic boom by the peak overpressure (in pounds per square foot [psf]) of its shock waves. CSEL and peak overpressure correlate well.

#### **3.2.1.4 DAY-NIGHT SOUND AVERAGE LEVEL**

Day-Night Sound Average Level ( $L_{dn}$ ) is a composite metric combining the levels and duration of individual events, and the number of events that occur over an extended time period. Mathematically, it is a long-term average, but because it incorporates all noise events it is referred to as a *cumulative* metric. It is computed over a specific period of time, commonly a year, to represent the total noise exposure. Because noise is more intrusive at night than during the day, sounds that occur after 10 P.M. and before 7 A.M. are adjusted by a 10-dB penalty.

Studies have shown that  $L_{dn}$  represents adverse effects of noise much more reliably than individual noise levels alone. As noted above for SEL versus  $L_{max}$ ,  $L_{dn}$  is not the sound level heard at any given time, but is the best measure of long-term cumulative impact.

For military airspaces, there are two important variations of  $L_{dn}$  that account for special characteristics of military aircraft noise, described below.

#### **3.2.1.5 ONSET RATE ADJUSTED MONTHLY DAY-NIGHT SOUND AVERAGE LEVEL**

When military aircraft fly low and fast, the sound can rise from ambient to its maximum very quickly. This rapid *onset rate* has the effect of the noise being perceived as louder than the measured level. Accordingly, an adjustment has been developed that adds a penalty of up to 11 dB for this kind of noise.

Military aircraft operations on ranges are often sporadic, with periods of high activity interspersed with periods of low activity. Computation of  $L_{dn}$  on an annual basis, as is common for civil airports, would tend to under-predict the impact that occurs during periods of high activity. Therefore, cumulative impact is computed for the busiest month of the year. This procedure is similar in concept to the use of *average busy day* for analysis of noise around airbases.

The primary metric for military airspaces is therefore Onset Rate Adjusted Monthly Day-Night Sound Average Level ( $L_{dnmr}$ ), which is  $L_{dn}$  computed on a busy-month basis and with inclusion of the onset rate penalty of up to 11 dB.

#### **3.2.1.6 C-WEIGHTED DAY-NIGHT SOUND AVERAGE LEVEL**

In areas subject to sonic booms and other impulsive sounds, individual events are measured according to C-weighting. Therefore, the day-night sound level from these sounds is computed from C-weighted levels ( $L_{cdn}$ ).

It is common for some areas to be exposed to both subsonic noise and impulsive noise. Because of the difference between A and C weighted noise, it is not appropriate to combine them into a single quantity. Instead, they are reported separately. The adverse impact of each is assessed via interpretive criteria, which are discussed in Appendix E.



### **3.2.2 Noise Modeling**

Prediction of aircraft noise requires two elements. The first is a quantitative understanding of aircraft operations: numbers of aircraft, their speeds, altitudes and locations. The second element is physical modeling of the noise itself, which is then accumulated over all operations. Section 3.2.2.1 below describes operations on the range, from the perspective of noise analysis. Modeling of subsonic noise and sonic booms from supersonic flight is described in sections 3.2.2.2 and 3.2.2.3, respectively. Modeling of high explosive noise is discussed in section 3.2.2.4.

#### **3.2.2.1 AIRCRAFT OPERATIONS**

Aircraft operations in the NRC are described in Chapter 1.0. Activity varies from year to year. Historical data were therefore gathered from 1983 through 1997 and high and low baseline levels of activity were established. Data sources are described in section 3.1, and Tables 1.5-1 and 1.5-2 show the distributions of activity for the low (200,000 sortie-operation) and high (300,000 sortie-operation) baselines. The data shown in each table represents scheduled events of each type of aircraft in each airspace unit.

Noise analysis requires activity in terms of time on range, as well as speed, altitude, power setting, and position information. To develop these, a second data source was analyzed. Activity during Red Flag/Green Flag exercises is recorded for up to 36 aircraft at a time by the Red Flag Measurement and Debriefing System (RFMDS). RFMDS uses instrumentation pods mounted on the aircraft and ground tracking stations to record pertinent data. RFMDS data from 1991 and 1992 were used for prior noise analysis in the NRC (Frampton et al. 1993). In the 1993 study, 1991 RFMDS data and 1991 range schedule data were used to develop required inputs. For the current LEIS, 1997 RFMDS data have been processed and analyzed to update the earlier analysis. This updated RFMDS analysis has been combined with the low and high sortie-operations to provide the information required for input to the noise models.

In addition to RFMDS in the areas used extensively by Red Flag/Green Flag exercises, the Elgin MOA is equipped with an Air Combat Maneuvering Instrumentation (ACMI) system. This is similar to RFMDS, except that data are obtained for up to eight aircraft at a time and altitude coverage is above 5,000 feet AGL. This system records aircraft engaging in air combat maneuvers (ACM) training, which takes place at those higher altitudes. Six months of ACMI data were analyzed as part of a 6-month sonic boom monitoring study in the Elgin MOA in 1992 (Frampton et al. 1993). Those operations data were incorporated into the BOOMAP96 sonic boom model (Plotkin 1996), which can therefore work directly from schedule data such as in Tables 1.5-1 and 1.5-2.

#### **3.2.2.2 SUBSONIC AIRCRAFT NOISE MODELING**

Within MOAs and Restricted Areas, flight often occurs randomly, or, due to either airspace configuration or training scenarios, it may be spatially concentrated, or channeled, into specific areas or corridors. Concentrated areas can include MTRs. The Air Force has developed the

MOA Range NoiseMAP (MR\_NMAP) computer program (Lucas and Calamia 1996) to calculate noise in these areas. The acoustic portion of the model is based on the Air Force's NoiseMAP technology, which is the standard method of analyzing military aircraft noise. MR\_NMAP can calculate noise for both random operations and operations channeled into corridors. It is supported by measurements in several military airspaces (Lucas and Calamia 1996)

The NRC includes MOAs and Restricted Areas for which random operation is appropriate. There are also MTRs in the region. For the most part, these MTRs exist outside of the airspace overlying the NAFR. Therefore, the noise levels associated with these routes will not be specifically considered. However, operations within route segments that are within the NRC airspace are included in Tables 3.1-1 and 3.1-2, and are therefore included in the total noise analysis.

The primary noise metric calculated by MR\_NMAP for this assessment is  $L_{dnmr}$ . This quantity has been computed for each of the 21 airspace units identified in section 3.1.1. As discussed in section 3.2.1 and Appendix E, this cumulative metric represents the most widely accepted method of quantifying noise impact. However, it does not provide an intuitive description of the noise environment. A common desire is to know how loud individual aircraft will be. MR\_NMAP and its supporting programs can provide the maximum noise level and SEL for individual aircraft at arbitrary distance, altitude, and flight parameters. Tables in this section have been prepared showing the noise levels for various aircraft and distance.

Baseline noise levels are presented and discussed in section 3.2.3.

### **3.2.2.3 SONIC BOOM MODELING**

Supersonic activity in the NRC is primarily associated with supersonic events during ACMs. This occurs in the Elgin subdivision of Desert MOA, which is an ACM training arena. It also occurs in various locations in the Desert MOA, primarily in Coyote and adjacent airspaces, as part of Red Flag/Green Flag exercises.

Sonic booms from ACM activity form an elliptical pattern. Aircraft will set up at positions 30 to 50 miles apart, then proceed toward each other for an engagement. The airspace used tends to be elliptical, aligned with a line connecting the setup points. Aircraft become supersonic at various times during these exercises. Supersonic events can occur as the aircraft accelerate toward each other, during dives in the engagement itself, and during disengagement. The long term average ( $L_{Cdn}$ ) sonic boom patterns tend to be elliptical.

Long-term sonic boom measurement projects have been conducted in four airspaces: White Sands (Plotkin et al. 1989), the eastern portion of the Goldwater Range (Plotkin et al. 1992), the Elgin subdivision of Desert MOA at Nellis (Frampton et al. 1993) and the western portion of the Goldwater range (Page et al. 1994). These studies included analysis of schedule and ACMI data. They supported development of the BOOMAP model (Plotkin et al. 1991). The current version of BOOMAP (Plotkin 1996) incorporates results from all four studies.

A series of tests were conducted in and around the town of Caliente to provide additional data for the validations of the measurement techniques that simulate structural response to sonic boom and to demonstrate the process by which such measurements may be used to perform an environmental (structural) damage assessment. The results of this study found that prohibiting supersonic operations within five miles of Caliente is necessary and adequate for averting structural and window damage in the town. Without accounting for the current flight prohibition, some damage would be considerably more likely (Garrelick and Martini 1997).

### 3.2.2.4 HIGH EXPLOSIVE NOISE MODELING

The U.S. Army's Noise Assessment Prediction System (NAPS) model was used to assess conditions resulting from the use of high explosives on NAFR. NAPS is a single-event model that generates sound levels based on meteorological conditions. NAPS calculates sound pressure levels in dBP, unweighted maximum sound pressure level based on the TNT-equivalent weight of the explosive. The model uses a ray trace approach that takes into account spherical spreading, absorption and refraction. Appendix E presents a more detailed discussion of impulsive noise associated with the detonation of high explosives.

The dBP metric used by NAPS does not reflect the cumulative effects from multiple noise events over time. The preferred metric is  $L_{Cdn}$ . However, by considering the mathematical relationships between dBP, CSEL,  $L_{Cdn}$  and the number of events per day,  $L_{Cdn}$  values can be derived from the dBP values generated by NAPS.

### 3.2.3 Baseline Noise Levels

#### 3.2.3.1 SUBSONIC NOISE

Table 3.2-1 shows the baseline noise levels for 21 of the airspace units described in section 3.1. Noise was not explicitly computed for the Sally Corridor or for Cedar. Sally Corridor is primarily a transit corridor for aircraft traversing between Nellis AFB and the north range. Sortie rates are comparable to the surrounding airspaces, while altitudes will tend to be higher. Noise levels in the Sally Corridor will therefore be comparable to or slightly less than those in the adjacent airspaces. Cedar is scheduled as part of Caliente's airspace in that its floor is 18,000 feet MSL. Because of this relatively high floor, noise in Cedar will be substantially below  $L_{dnmr}$  of 45 dB. Where noise levels are below 45 dB, explicit values are not shown. Levels that low represent areas where noise events are so infrequent that predictions are not statistically meaningful.

Table 3.2-1 has two columns: one for the low baseline of 200,000 sortie-operations and a second for the high baseline of 300,000 sortie-operations. Tables 3.2-2 and 3.2-3 show  $L_{max}$  and SEL for several representative aircraft at altitudes of 500, 1,000, 2,000, 5,000, 10,000, and 20,000 feet

Table 3.2-1. Baseline Noise Levels		
Airspace	200,000 SORTIE-OPERATIONS	300,000 SORTIE-OPERATIONS
	<i>Ldnmr</i>	<i>Ldnmr</i>
Caliente	54	56
Coyote	57	59
Elgin	46	47
Reveille	54	56
R-61	53	55
R-62	53	55
R-63	53	55
R-64	53	55
R-65	53	55
Alamo	53	55
EC South	52	54
Pahute Mesa	53	54
R-71	53	55
R-74	60	62
R-75	61	63
R-76	58	60
R-4808W <sup>1</sup>	46	47
R-4808E <sup>1</sup>	<45	<45
R-4809A	49	51
EC East	55	57
EC West	56	57
1. DOE airspace over NRC		

Aircraft Type	ALTITUDE IN FEET					
	500	1,000	2,000	5,000	10,000	20,000
B-1B	113	106	98	86	75	61
F-15	114	107	98	86	73	57
F-16	104	97	89	76	64	48
A-10	94	87	78	65	54	43
C-130	91	84	76	66	56	46

\*Level flight, steady high-speed conditions.

Aircraft Type	ALTITUDE IN FEET					
	500	1,000	2,000	5,000	10,000	20,000
B-1B	112	107	101	92	82	69
F-15	112	107	101	90	80	65
F-16	103	98	91	81	70	56
A-10	95	89	82	72	63	53
C-130	96	91	85	77	69	61

\*Level flight, steady high-speed conditions.

AGL. These noise levels correspond to steady level flight at speeds and power settings typically used in high speed operations in MOAs and MTRs.

The SELs for five representative aircraft at a slant distance from the aircraft to an observer are presented on Figure 3.2-1. These aircraft are representative of the types of aircraft to be used on NAFR into the 21st century.

Cumulative noise levels are all below  $L_{dn}$  65 dB. In the noisiest areas, an average of six aircraft per day would be loud enough to be intrusive.

### 3.2.3.2 SONIC BOOMS

Table 3.2-4 shows baseline sonic boom levels,  $L_{Cdn}$  in affected airspaces. The affected airspaces are Elgin (which is used for ACM training) and Coyote and surrounding airspace units (which are used for ACM training and also for air battles as part of flag exercises). As with subsonic

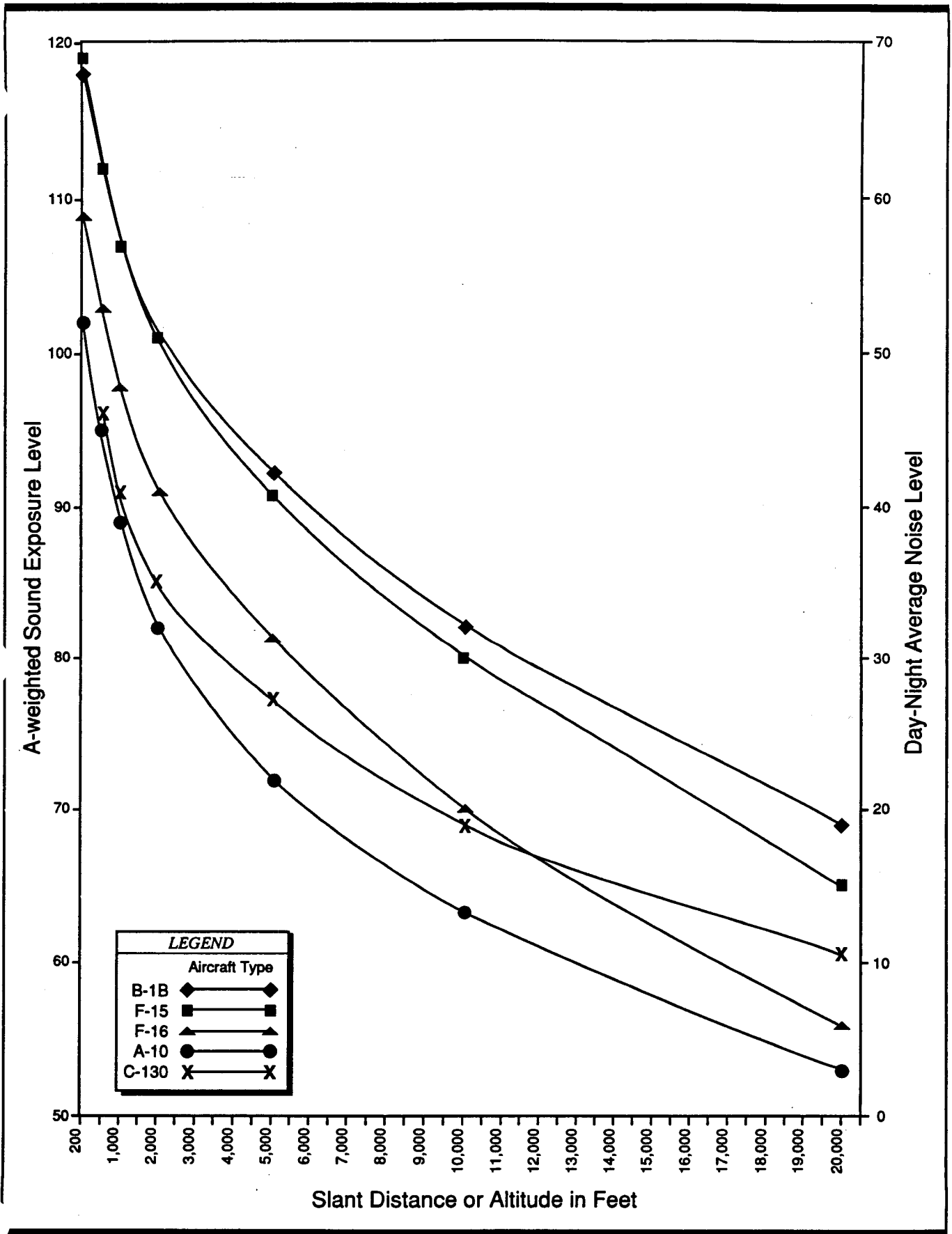


Figure 3.2-1. Aircraft A-Weighted Sound Exposure Level at Various Slant Distances or Altitudes (Right hand axis converts a single daytime set value into an Ldn value)

Table 3.2-4. Baseline Sonic Boom Levels and Numbers per Day				
Airspace	200,000 SORTIE OPERATIONS		300,000 SORTIE-OPERATIONS	
	LCdn	Number/day	LCdn	Number/day
Elgin	54	1.0	56	1.5
Coyote	48	0.2	50	0.3
All Others	<45	0.1	<45	<0.1

noise, airspaces with levels below 45 dB are not included in Table 3.2-4. Note that only portions of Caliente and Elgin are supersonic, and the values shown are for the supersonic areas.

Table 3.2-4 shows, in addition to LCdn, the number of booms per day which would be heard at an average location in each airspace. Individual sonic boom footprints will affect areas from about 10 square miles to 100 square miles, which is a small portion of the airspace. The booms/day values account for the total number of booms and the average area affected by each, and represent the number that would be heard, on average, by an individual on the ground under the airspace.

### 3.2.3.3 HIGH EXPLOSIVES

There are 73 target complexes on NAFR capable of supporting the delivery of live ordnance. To assess the most sensitive case, a representative target near a border of NAFR was selected for evaluation. Target 8 on Range 63, located approximately 6.3 miles from the range boundary, was used for this assessment. Considering all of the ordnance delivered on NAFR, the ordnance selected for evaluation purposes was a 2,000-pound general purpose bomb (which contains 1,162 pounds of TNT-equivalent high explosive). The scenario was modeled with NAPS, using a U.S. Standard Atmosphere with no winds.

For this evaluation, there are two levels of significance. Federal Occupational Safety and Health standards prescribe that an individual should never be exposed to impulsive sounds greater than 140 dBP without hearing protection (29 CFR Ch. XVII § 1926.52[e]). The second level is 136.4 dBP, which corresponds (at a rate of one explosion per day) to LCdn 62 dBC, a threshold for land use compatibility (refer to Appendix E for an explanation on the derivation of these values).

Modeling of this explosive weight indicates that 140 dBP or greater is present out to approximately 3,700 feet from the point of detonation. Safety requirements would preclude any human presence in this zone; therefore, there are no health or safety risks associated with this acoustic level.

Using output from the model, the sound pressure level (in dBP) at 6.3 miles was determined. After converting the sound pressure level into a C-weighted sound exposure level, the  $L_{Cdn}$  equation was solved for a single event, and the number of events required to equate that contour to  $L_{Cdn}$  62. These calculations indicate that a single event results in  $L_{Cdn}$  38.7 at the NAFR boundary, and that approximately 214 day-equivalent detonations could occur at that point per day, and the noise level of  $L_{Cdn}$  62 would not extend past the range boundary. The capacity factor is considered in terms of day-equivalent events. Due to the penalty associated with noise events at night, this equates to about 21 night-equivalent events per day. However, these events can also be combined. For example, 114 day events and 10 night events per day equals 214 day-equivalent events.

In the capacity example developed above, a worst-case impact location was considered. Since all other impact locations are further removed from the range boundaries, their capacities would be proportionately greater. Based on the above, excessive impulsive noise levels associated with high explosives would not be expected to impact land areas off NAFR.

#### **3.2.4 American Indian Issues Concerning Noise**

The CGTO has not specifically identified issues concerning noise from military aircraft or from other sources. However, it is known from other areas that noise can be an issue for American Indians because it can intrude on ceremonies and other traditional activities.



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# SAFETY

**T**he LEIS Safety section considers potential risks that may occur from NAFR ground activities, flight operations that use NAFR and surrounding airspace, and materials delivery.

Ground safety includes day-to-day operations and maintenance activities that involve hazardous materials, threat emitters, live ordnance, and equipment.

Flight safety considers the risk of aircraft accidents and bird-aircraft strikes. Historical mishap data are used to predict the frequency of major mishaps. Calculations consider aircraft and hazards associated with the use of the NRC.

Materials delivery considerations include delivery of ordnance, use of chaff, and use of flares. The potential for the ignition and spread of fire varies depending on the vegetation type and time of year. The general location of targets in sparsely vegetated areas reduces the potential for fire.

## SAFETY

Ordnance delivery during training is limited to air-to-ground ranges within Restricted Airspace. Ranges in the NRC support delivery of a wide range of ordnance. Approximately 80 percent of the ranges accommodate inert bombs and rockets, approximately 64 percent accommodate live bombs, rockets, and missiles, and approximately 61 percent accommodate strafing.

Day-to-day operations and maintenance activities on NAFR 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. The handling, processing, storage, and disposal of hazardous by-products of these activities are accomplished in accordance with all federal and state requirements applicable to the substance generated.

Specific ground safety items questioned during scoping include chaff and flare use, and unexploded ordnance:

- **Chaff** is used throughout NAFR. Chaff consists of very small strips of aluminum-coated mica designed to confuse a threatening radar system. The chaff is made to specifically counter a band of radio frequencies on which the radar is operating.
- **Flares** consist of highly flammable material that burns rapidly at extremely high temperatures. Their purpose is to provide a heat source other than the aircraft's engine exhaust as a target for a threatening heat-seeking missile.
- **Unexploded ordnance** may be encountered on various areas of the range. The treatment of this material is described in section 3.4, Hazardous Materials and Solid Waste.



*When threatened by "enemy" radar, pilots must take evasive action, including the discharging of chaff to confuse the threat.*



*Ground safety includes radars to simulate "enemy" threats.*

*Emitters are operated under strict safety control measures to ensure that the radio frequency energy does not pose a health risk.*

## 3.3 SAFETY

This section addresses ground, flight, and range safety associated with activities conducted by units operating within ROI Three. Ground safety considers issues associated with NAFR operations and maintenance activities that support ROI Two, including fire and crash response that could occur in ROI Three. Flight safety considers aircraft flight risks such as aircraft accidents and bird-aircraft strikes in ROI Three. Range safety assesses the management and use of ordnance or munitions associated with operations and training activities primarily within ROI Two.

### 3.3.1 Fire Risk and Management/Ground Safety

The Nellis AFB military fire department provides crash response by convoy to those ranges that are close to Nellis AFB. The unit is fully equipped and staffed with qualified personnel. There are no identified equipment shortfalls or limiting factors (personal communication, Ploense 1998). Elements of the fire department are dispersed at locations throughout NAFR, and would respond to range fires on DOD withdrawn land. If required, additional response support could be provided by BLM in accordance with a memorandum of agreement. Fire and crash response on the south ranges is provided by the Air Force Fire Department at ISAFAF. Additional assistance could be provided under a mutual support agreement between the Air Force and the community fire department at Indian Springs. Fire suppression on the north range is the responsibility of the Air Force fire department at TTR, with additional assistance available under mutual support agreements and a memorandum of agreement with BLM (personal communication, Garner 1998). BLM has primary responsibility for suppression of wildland fires on NAFR.

Day-to-day NAFR operations and maintenance activities are performed by qualified personnel and are conducted 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. The handling, processing, storage, and disposal of hazardous by-products of these activities are accomplished in accordance with all federal and state requirements applicable to the substance generated. Additional specific data pertaining to hazardous material and solid waste management are contained in section 3.4 of this LEIS.

### LASERS

Many aircraft operating at NAFR are equipped with laser targeting capability. Approximately 80 percent of the targets on the NAFR are approved for laser use. As part of this approval, each individual target and target complex is surveyed by a 99th Range Squadron quality assurance evaluator to ensure that no hazards, such as standing water or other reflective surfaces are present in the target area. Only those targets that pose no threat to human health or safety are approved for lasing. If necessary to ensure safety, detailed operational constraints applicable to specific targets (e.g., limitations on attack axes, dive angles, etc.) are documented (Air Force 1996d).

## RADIO FREQUENCY EMISSIONS

To provide training realism, threat simulation electronic emitters (radars) are located throughout the NAFR. The frequencies at which radars operate are in the radio frequency (RF) band of the electromagnetic spectrum. Potential effects of RF energy on biological species are discussed below.

RF energy is absorbed macroscopically by an animal or human body in the form of heat and is defined as an increase in the mean kinetic energy of the molecules. The result is a temperature increase. At relatively low RF energy intensities, the heat induced can usually be accommodated by the thermoregulatory capabilities of the species exposed. Thus, any effects produced would generally be reversible. At high intensities, the thermoregulatory capabilities of any given species may be exceeded, which could lead to thermal distress or even irreversible thermal damage.

The effects of RF energy on people depend on the frequency and polarization of the energy field, the size and shape of the individual, and the individual's ability to dissipate the absorbed energy by a normal biological response. Department of Defense Instruction (DoDI) 6055.1 (1995) has set the permissible exposure limit (PEL) for personnel. These PELs represent conditions under which it is believed that humans may be repeatedly exposed without adverse effects, regardless of age, sex, or childbearing status. Depending on the RF frequency, the PEL for personnel working in a designated controlled environment where the emitter is operating is 10 milliwatts per square centimeter ( $10 \text{ mW/cm}^2$ ) over any continuous 6-minute period. For persons in an uncontrolled environment (i.e., the public), the PEL is  $5 \text{ mW/cm}^2$  over any continuous 6-minute period. Repetitive exposures to these levels (that are less than 6 minutes each) are not expected to be harmful. Most studies have shown that, in general, people can actually be exposed to up to 10 times the above-stated PEL without any harmful health effects.

Acceptable energy levels and safe separation distances for persons vary depending on the frequency and transmitted power of the RF emitter. For the emitters used on the NAFR, calculations have been performed to determine the required separation distances for persons. These data are presented in Table 3.3-1. When a system operates across a band of frequencies, the range of separation distances is shown.

The majority of this equipment is aircraft threat simulation radar. Frequency management ensures that these transmitters do not create interference with other federal or civil transmitters or receivers. The unit is normally placed on elevated ground, and then emits skyward. It is not pointed at the ground, or along roadways. This equipment is operated under strict safety control measures that are determined for each system. These measures include installing warning signs, erecting rope or chain barriers, and having the equipment and the surrounding area under constant observation while it is operating. Adherence to these established safety standards ensures that no health or safety impacts will occur.

<i>Equipment</i>	<i>Distance (in Feet)</i>	<i>Equipment</i>	<i>Distance (in Feet)</i>
AN/MPQ-T3	62 - 78	AN/TPT-4	53 - 58
AN/MPS-14	783	AN/TPT-T1V,1A	118
AN/MPS-T9	432	AN/TPT-T1V,1B	131
AN/MSQ-T13	127 - 239	AN/TPT-T1V,2A	146
AN/MSQ-T43	176 - 194	AN/TPT-T1V,2B	57
AN/MPS-T1	2 - 252	AN/MSQ-77	93
AN/VPQ-1	21		
<i>Source: Air Force 1997g.</i>			

RF emitters used on aircraft pose no hazard to the public due to the aircraft's altitude, the energy levels used by the equipment, and the speed of the aircraft. Given these factors, the duration of any possible RF energy exposure is very small if such exposure were even to occur. However, RF emissions near the NTS need to be coordinated with the DOE, because there is communication and other electronic equipment at the NTS that is sensitive to RF emissions.

**SUPERSONIC FLIGHT**

Some high performance aircraft using NAFR may go supersonic while training for air combat maneuvering. When an aircraft flies faster than the speed of sound, it creates a shock wave that is projected along its flight path. When this shock wave reaches the ground, it is manifested as an overpressure and is sensed as a sonic boom. A sonic boom is characterized as a rapid rise in pressure, followed by a rapid drop-off before the pressure returns to normal atmospheric levels. This change occurs rapidly (i.e., in significantly less than one second). In the vast majority of cases, all overpressures created are relatively low, and are well below levels that would even begin to cause physical injury or damage to structures.

In rare cases, a sonic boom may cause physical damage, as to a window, if the overpressure is of sufficient magnitude. Sonic booms are alleged to cause startle effects in humans and animals, resulting in safety issues. The Air Force has established procedures for documenting any such cases, and for working with affected parties.

**ACCIDENT RESPONSE**

The 57th Wing maintains detailed mishap response procedures to respond to a wide range of potential incidents. These plans assign agency responsibilities and prescribe functional activities necessary to react to major mishaps, whether on or off base. Response would normally occur in two phases. The initial response considers such factors as rescue, evacuation, fire suppression, safety, and elimination of explosive devices, ensuring security of the area, and

other actions immediately necessary to prevent loss of life or further property damage. Subsequently, the investigation phase is accomplished.

The initial response element consists of those personnel and agencies primarily responsible for beginning the initial phase. This element includes the Fire Chief, who normally is the first on-scene commander, fire fighting and crash rescue personnel, medical personnel, security police, and crash recovery personnel. A subsequent response team is comprised of an array of organizations, whose participation is governed by the circumstances associated with the mishap, and actions required to be performed.

If an aircraft accident occurs on non-federal property, regardless of the agency initially responding to the situation, as soon as the situation is stabilized, a National Defense Area would normally be established around the accident scene. The site would be secured for the investigation phase.

After all required investigations and related actions on the site are complete, the aircraft would be removed. The base civil engineer accomplishes cleanup of the site or contracts to an outside agency to accomplish the cleanup.

Overall, the purpose of response planning is to:

- save lives, property, and material by timely and correct response to mishaps;
- quickly and accurately report mishaps to higher headquarters; and
- investigate the mishap to preclude the reoccurrence of the same or a similar mishap.

### **3.3.2 Flight Risks**

Aircraft flight operations on the NRC are governed by standard rules of flight. Additionally, specific procedures applicable to local operations are contained in detailed standard operating procedures that must be followed by all aircrews operating from the installation (Nellis AFB Instruction 11-250).

The primary public concern with regard to flight safety is the potential for aircraft accidents. Such mishaps may occur as a result of mid-air collisions, collisions with manmade structures or terrain, weather-related accidents, mechanical failure, pilot error, or bird-aircraft collisions. Flight risks apply to all aircraft; they are not limited to the military. Flight safety considerations addressed include aircraft mishaps and bird-aircraft strikes.

#### **AIRCRAFT MISHAPS**

The Air Force defines four categories of aircraft mishaps: Classes A, B, C, and High Accident Potential (HAP). Class A mishaps result in a loss of life, permanent total disability, a total cost in excess of \$1 million, destruction of an aircraft, or damage to an aircraft beyond economical repair. Class B mishaps result in total costs of more than \$200,000, but less than \$1 million, or

result in permanent partial disability, but do not result in fatalities. Class C mishaps involve costs of more than \$10,000, but less than \$200,000, or a loss of worker productivity of more than eight hours. HAP represents minor incidents not meeting any of the criteria for Class A, B, or C. Class C mishaps and HAP, the most common types of occurrences, represent relatively unimportant incidents because they generally involve minor damage and injuries, and rarely affect property or the public. This LEIS will focus on Class A mishaps because of their potentially catastrophic results.

It is impossible to predict the precise location of an aircraft accident. Major considerations in any accident are loss of life and damage to property. The aircrew's ability to exit from a malfunctioning aircraft is dependent on the type of malfunction encountered. The probability of an aircraft crashing into a populated area is extremely low, but it cannot be totally discounted. Several factors are relevant: the ROI and immediate surrounding areas have relatively low population densities; pilots of aircraft are instructed to avoid direct overflight of population centers at very low altitudes; and, finally, the limited amount of time the aircraft is over any specific geographic area limits the probability that impact of a disabled aircraft in a populated area would occur.

Secondary effects of an aircraft crash include the potential for fire and environmental contamination. The extent of these secondary effects is situationally dependent, and is therefore difficult to quantify. The terrain overflown in the ROI is diverse. For example, should a mishap occur, highly vegetated areas during a hot, dry summer would have a higher risk of experiencing extensive fires than would more barren and rocky areas during winter. When an aircraft crashes, it may release hydrocarbons. Those petroleum, oils, and lubricants not consumed in a fire could contaminate soil and water. The potential for contamination is dependent on several factors. The porosity of the surface soils will determine how rapidly contaminants are absorbed. The specific geologic structure in the region will determine the extent and direction of the contamination plume. The locations and characteristics of surface and groundwater in the area will also affect the extent of contamination to those resources.

Since the NAFR includes portions of the DNWR, additional effects could result from an aircraft mishap in these areas. The lands comprising the DNWR are managed by the DOI as wilderness, with special steps taken to preserve wilderness values. To support these management objectives, the Air Force is party to agreements with DOI that place some restrictions on military operations conducted over some of these lands. These restrictions include such steps as establishing minimum flight altitudes. Steps such as this not only minimize intrusiveness on wilderness values, but also enhance safety by limiting the risks associated with low altitude flight.

Should a mishap occur in these areas, response and recovery operations could necessitate such activities as the use of motorized vehicles and excavation to contain contamination. This type of activity is normally prohibited in wilderness areas. While these actions could result in damage to the wilderness characteristics of the area, the Air Force would attempt to minimize direct damage and the resultant evidence of intrusiveness to the maximum extent practicable,



consistent with national security considerations and the need to protect life and property from further risk.

F-16 aircraft carry a small quantity of hydrazine in a sealed canister that is designed to withstand crash impact damage. Hydrazine is a highly volatile propellant that contains toxic elements. It is carried on the F-16 as part of the emergency power unit (EPU) system. When used for this purpose, hydrazine is completely consumed, and poses no safety hazard. In any crash that is severe enough to rupture the canister, it is most likely that fire will also be involved. In this case, the hydrazine will also burn and be completely decomposed. In the unlikely event that the hydrazine should be released, but not consumed by fire, impacts on soils and groundwater are likely to be of minor consequence. Hydrazine absorbs water at room temperature. It is incombustible in solution with water at concentrations of 40 percent or less, and it evaporates at any given temperature at a rate slightly slower than water evaporation. Movement of hydrazine through natural soils has been shown to be slow and limited. Due to its absorption and natural decomposition processes, the probability of released hydrazine significantly contaminating groundwater is considered extremely low. However, if quantities of hydrazine were to reach a surface water body, aquatic life in those areas experiencing high concentrations could be significantly impacted.

Based on historical data on mishaps at all installations, and under all conditions of flight, the military services calculate Class A mishap rates per 100,000 flying hours for each type of aircraft in the inventory. Combat losses are excluded from these mishap statistics. In the case of MOAs and restricted areas, an estimated average sortie duration may be used to estimate annual flight hours in the airspace. Then, the Class A mishap rate per 100,000 flying hours can be used to compute a statistical projection of anticipated time between Class A mishaps in each applicable element of airspace. In evaluating this information, it should be emphasized that those data considered are only statistically predictive. The actual causes of mishaps are due to many factors, not simply the amount of flying time of the aircraft.

To assess existing conditions, elements of the NRC have been grouped into major categories, comprised of MOA-type airspace and restricted airspace. MOAs include the Desert MOA, with its sub-areas, and the Reveille MOA. Sub-sets of the Desert MOA include the Caliente, the Coyote, and the Elgin. Restricted areas, with their indicated specific elements, include the following:

- R-4806. This includes the 60-series ranges.
- R-4807. This includes the 70-series ranges, the south electronic combat (EC) range, and Pahute Mesa.
- R-4808. This is used for transit along the western border to and from the northern range.
- R-4809. This includes the east and west EC ranges.

There are also several MTRs that afford access to the NAFR. Use of these routes can be generally characterized as low. The vast majority of these routes terminate at the point-of-entry to the NAFR airspace. While a few transverse some small portion of the NAFR for short distances, the small number of aircraft involved and the extremely brief periods of time they are on the routes within the boundaries of the NAFR reduce the risk of a Class A mishap to insignificant levels.

Table 3.3-2 summarizes the statistically predicted minimum time between Class A mishaps for each of the airspace categories identified above. These data reflect the highest risk associated with potential aircraft mishaps in each airspace element under a maximum and minimum scenario. The maximum scenario considers a total of 300,000 annual sortie-operations flown in the airspace, while the minimum scenario considers 200,000 annual sortie-operations.

**Table 3.3-2. Class A Mishaps under Current Operations**

Airspace	200,000 ANNUAL SORTIE-OPERATIONS		300,000 ANNUAL SORTIE-OPERATIONS	
	<i>Minimum Time Between Class A Mishaps (in Years)</i>	<i>Probability of Class A Mishap</i>	<i>Minimum Time Between Class A Mishaps (in Years)</i>	<i>Probability of Class A Mishap</i>
Desert MOA	3.0	0.000030	2.0	0.000030
Reveille MOA	12.7	0.000012	8.5	0.000012
R-4806	36.5	0.000010	24.3	0.000010
R-4807	7.7	0.000013	5.2	0.000013
R-4808	67.5	0.000003	45.0	0.000003
R-4809	26.9	0.000009	17.9	0.000009

*Sources:* Mishap Rates - personal communications, Air Force, Navy Flying Safety Centers; Aircraft Sortie-Operations - personal communication, Air Combat Command (ACC), 1997

However, several factors can influence the calculation of this projected time interval. Since the calculation is based on hours of flight time per year, an indication of increased risk can result from a large number of aircraft flying in the airspace, or a smaller number flying for extended periods. To place these values into context, it is also appropriate to consider the probability of a mishap, which accounts for each aircraft's exposure. As illustrated in Table 3.3-2, although the greatest indicated risk is associated with MOA airspace under the maximum-use scenario (2.0 years in the Desert MOA), the probability of a mishap remains very low. The aircraft involved is the single-engine F-16, which will fly an estimated 16,837 annual sortie-operations in the Caliente MOA. All other aircraft in that MOA, as well as all other aircraft in every airspace element indicate significantly less risk. Overall, there is low risk associated with flight operations on NAFR. Over the last 5 years, there have been eight Class A mishaps on NAFR (personal communication, AWFC/SE 1998).

## BIRD-AIRCRAFT STRIKE HAZARDS

Bird-aircraft strikes constitute a safety concern because of the potential for damage to aircraft or injury to aircrews or local populations if an aircraft crash should occur in a populated area. Aircraft may encounter birds at altitudes of 30,000 feet above MSL or higher. Over 95 percent of reported bird strikes occur below 3,000 feet AGL. Approximately 50 percent of bird strikes happen in the airport environment, and 25 percent occur during low-altitude flight training (Worldwide Bird-Aircraft Strike Hazard [BASH] Conference 1990).

Migratory waterfowl (e.g., ducks, geese, and swans) are hazardous to low-flying aircraft because of their size and their propensity for migrating in large flocks at a variety of elevations and times of day. Waterfowl vary considerably in size, from 1 to 2 pounds for ducks, 5 to 8 pounds for geese, and up to 20 pounds for most swans. There are two normal migratory seasons, fall and spring. Waterfowl are usually only a hazard during migratory seasons. These birds typically migrate at night and generally fly between 1,500 to 3,000 feet AGL during the fall migration and from 1,000 to 3,000 feet AGL during the spring migration.

The potential for bird-aircraft strikes is greatest in areas used as migration corridors (flyways) or where birds congregate for foraging or resting (e.g., open water bodies, rivers, and wetlands).

Along with waterfowl, raptors, shorebirds, gulls, herons, and songbirds also pose a hazard. In considering severity, the results of bird-aircraft strikes on MTRs and in restricted areas show that strikes involving raptors result in the majority of Class A and B mishaps, which are few in number. Raptors of greatest concern are vultures and red-tailed hawks. Peak migration periods for raptors, especially eagles, are from October to mid-December and from mid-January to the beginning of March. In general, flights above 1,500 feet AGL would be above most migrating and wintering raptors.

Songbirds are small birds, usually less than one pound. During nocturnal migration periods, they navigate along major rivers, typically between 500 to 3,000 feet AGL.

While any bird-aircraft strike has the potential to be serious, many result in little or no damage to the aircraft, and only a minute portion result in a Class A mishap. During the years 1985 to 1996, the Air Force BASH Team documented 31,522 bird strikes. Of these, 23 resulted in Class A mishaps. These occurrences constituted approximately 0.07 percent of all reported bird-aircraft strikes (personal communication, BASH Team 1997).

For aircraft operating in the immediate vicinity of Nellis AFB, the bird-aircraft strike data maintained by the 57<sup>th</sup> Wing indicate that from 1985 through 1995, aircraft have experienced 135 bird strikes. The majority (56.3 percent) occurred at altitudes of 1,000 feet AGL or less. Of this total, 10 percent were classified as Class C mishaps; there were no Class A or Class B mishaps (personal communication, HQ AFSC/SEFW 1997).

The Air Force BASH Team maintains a database that documents all reported bird-aircraft strikes. Historic information for the last 10 years for the NAFR airspace indicate that 10 bird-aircraft strikes have occurred. Of these, one was a Class B mishap and three were Class C mishaps. These data reflect total strikes experienced by all users of the airspace, not just aircraft from Nellis AFB.

### **3.3.3 Munitions Use and Handling**

Personnel at Nellis AFB control, maintain, and store all ordnance and munitions required for mission performance. This includes training and inert bombs and rockets, live bombs and rockets, chaff, flares, gun ammunition, small arms ammunition, and other explosive and pyrotechnic devices. Ordnance is handled and stored in accordance with Air Force explosive safety directives (Air Force Manual [AFM] 91-201), and all munitions maintenance is carried out by trained, qualified personnel using Air Force-approved technical data. All munitions storage facilities are sited for the ordnance they store. One storage facility exemption is currently in effect. The quantity-distance safety zone associated with the Live Ordnance Loading Area exceeds the installation boundary (personal communication, Nellis AFB Safety Office 1997). The Air Force is working with BLM, local communities, and owners of the land to resolve this issue.

Use of ordnance during training is limited to ranges within Restricted Airspace. Air Force safety standards require safeguards on weapons systems and ordnance to ensure against inadvertent releases. All munitions mounted on an aircraft, as well as the guns carried in the aircraft, are equipped with mechanisms that preclude release or firing without activation of an electronic arming circuit.

System malfunctions or material failures that could result in either an accidental release of ordnance or the release of a dud component that fails to operate properly cannot be totally discounted. However, studies have shown that the probability of such an accidental release occurring, followed by injury to a person or damage to property on the ground, is infinitesimal (Air Force 1997d). In the last five years, no inadvertent releases have occurred on NAFR.

Air-to-ground ranges in the Nellis Range Complex support delivery of a wide range of ordnance. Approximately 80 percent of the ranges accommodate training or inert bombs and rockets, approximately 64 percent accommodate live bombs, rockets, and missiles, and approximately 61 percent accommodate strafing.

Chaff and flares are also used throughout the NAFR. Their use is controlled in accordance with standard operating procedures (SOPs) detailed in Air Force Instruction (AFI) 13-212, Volume 2, NAFB Supplement 1. Depending on the type of chaff and flares used, types of use, locations, and altitudes authorized for release vary. When fire danger is extreme, all flare use is curtailed.

Chaff is small fibers of aluminum-coated mica packed into approximately 4 ounce bundles and ejected by aircraft to reflect radar signals. When dispensed from an aircraft, chaff forms a brief "cloud" that temporarily hides the aircraft from radar detection. Although the chaff may be

ejected from an aircraft using a small pyrotechnic charge, the chaff itself is not explosive. Chaff is composed of silicon dioxide fibers ranging in diameter from 0.7 to 1 mil (thousandth of an inch), coated by an aluminum alloy and a slip coating of stearic acid (fat). Analyses of the materials comprising chaff indicate that they are generally non-toxic in the quantities used (Air Force 1997d). Silicon dioxide is an abundant compound in nature that is prevalent in soils, rocks, and sands. The trace quantities of metals included in the mica fibers are not present in sufficient quantities to pose a health risk. Aluminum is one of the most abundant metals in the earth's crust and water. In general, aluminum is regarded as non-toxic. Trace quantities of silicon, iron, copper, manganese, magnesium, zinc, vanadium, or titanium may be found in the alloy. The quantities involved are a minuscule percentage of levels that might cause concern. Stearic acid is found naturally as a glyceride in animal fat and some vegetable oils. Chaff has also been test-fired in a controlled environment to determine its potential to break down into respirable particulates (PM10). The findings of the test detected no PM10 (Air Force 1997d).

Flares consist of small pellets of highly flammable material that burn rapidly at extremely high temperatures. The purpose of defensive flares is to provide a heat source other than the aircraft's engine exhaust to mislead heat-sensitive or heat-seeking targeting systems and decoy them away from the aircraft.

The quantity of ordnance expended in 1995 is presented in Table 3.3-3. All ordnance other than self protection flares and chaff are expended on NAFR. Of this, nearly one-half of the ordnance by weight is live, high explosive ordnance.

<i>Ordnance Type</i>	<i>Quantity</i>	<i>Ordnance Type</i>	<i>Quantity</i>
Training Bombs	17,928	Training Ammunition <sup>2</sup>	266,700
Inert Bombs	1,944	HEI Ammunition <sup>2,3</sup>	15,267
Live Bombs <sup>1</sup>	4,867	Self-Protection Flares	90,089
2.75-Inch Rockets	4,228	Illuminating Flares	1,349
Missiles	102	Chaff (Bundles)	394,744
<i>Notes:</i> 1 Live Bombs include both gravity and glide bomb units (GBU) 2 Gun ammunition includes 20mm and 30mm 3 HEI = High Explosive/Incendiary <i>Source:</i> AFI 13-212, Volume 1, Nellis AFB Supplement.			

To ensure safe ordnance delivery, safety footprints based on specific aircraft and type of ordnance delivered have been developed for each target on NAFR. These footprints describe geographic areas around the targets where inert or training ordnance itself, or the effects of high explosive ordnance could cause injury or damage property. Therefore, these areas must remain clear when the target/range is being used. These footprints are unique for specific aircraft, specific delivery or attack profiles, and ordnance type. Application of these footprints

is a prime safety concern, and is one of the elements contributing to the target/ordnance compatibility documentation contained in Nellis AFB Supplement 1 to AFI 13-212, Volume 2.

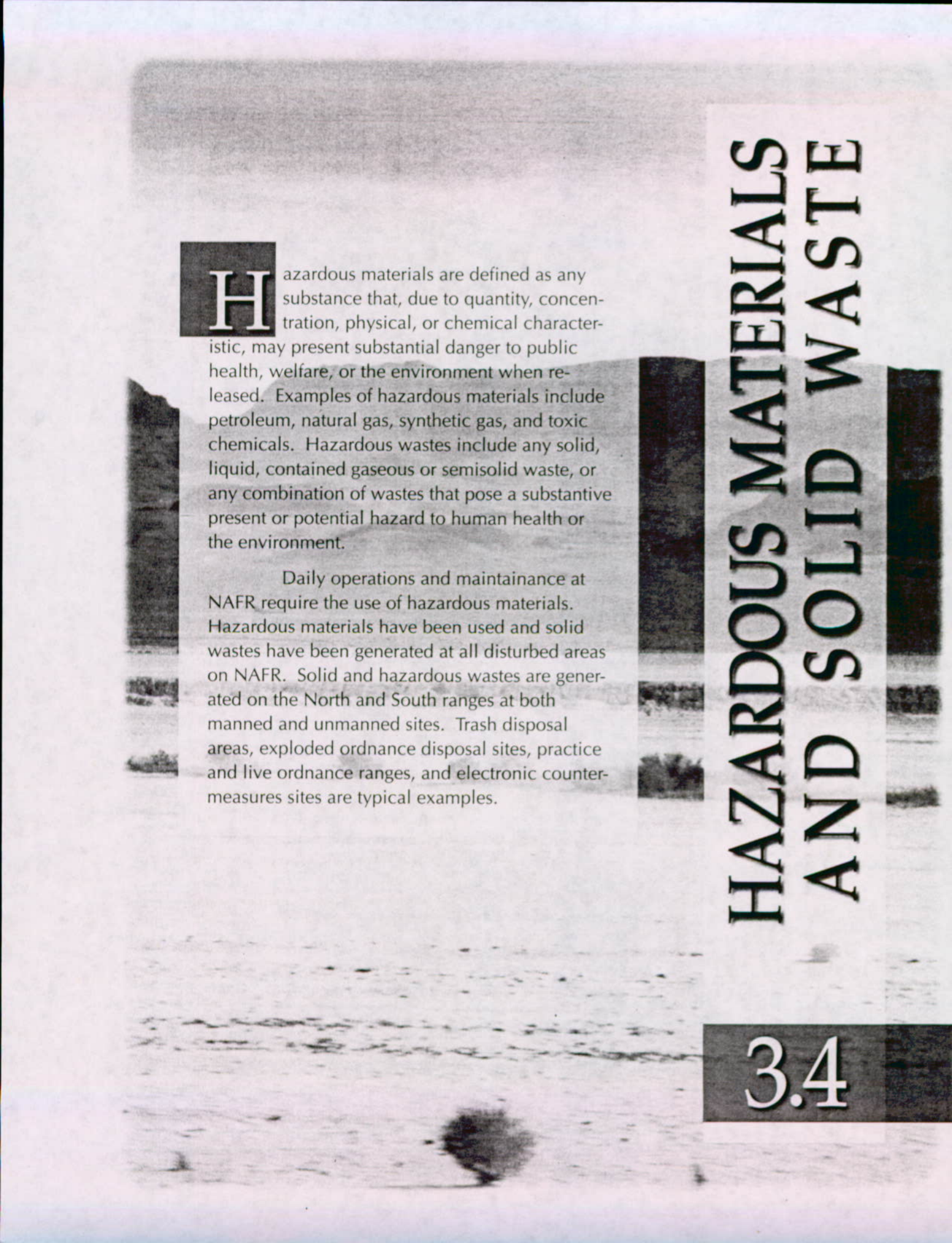
The South Range also supports ground training for military, federal, state, and local law enforcement personnel. This training, Silver Flag Alpha, is the ACC's air base defense school and is part of Nellis' Desert Warfare Training Center. In 1995, 5,595 people were trained on this range. Training is provided in desert combat tactics and procedures to provide security for air bases. Weapons used in this training reflect a wide range of small arms, shoulder fired weapons, and various incendiary and explosive devices. Training is conducted on Range 63A. Additional details regarding Silver Flag Alpha are contained in Appendix A.

After use, ordnance is removed from target areas under a program called "Coronet Clean." Initiated in 1975, this process clears unexploded ordnance (UXO), refurbishes targets, and removes debris. Conventional and test ranges are cleared to a distance of 500 feet every 2 months, and to 2,000 feet annually. Tactical ranges are cleared to 1,000 feet from the center of the target.

#### **3.3.4 American Indian Issues Concerning Safety**

American Indians have general concerns about the safety of transporting hazardous materials. However, they acknowledge that the Air Force follows Occupational Safety & Health Administration (OSHA) regulations, and have not specified any particular concerns about safety with respect to NAFR.

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**H**azardous materials are defined as any substance that, due to quantity, concentration, physical, or chemical characteristic, may present substantial danger to public health, welfare, or the environment when released. Examples of hazardous materials include petroleum, natural gas, synthetic gas, and toxic chemicals. Hazardous wastes include any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that pose a substantive present or potential hazard to human health or the environment.

Daily operations and maintenance at NAFR require the use of hazardous materials. Hazardous materials have been used and solid wastes have been generated at all disturbed areas on NAFR. Solid and hazardous wastes are generated on the North and South ranges at both manned and unmanned sites. Trash disposal areas, exploded ordnance disposal sites, practice and live ordnance ranges, and electronic countermeasures sites are typical examples.

# HAZARDOUS MATERIALS AND SOLID WASTE

## 3.4



## HAZARDOUS MATERIALS AND SOLID WASTE

The Nellis AFB environmental stewardship program is a priority mission objective in all operations. The Environmental Management Directorate at Nellis AFB conducts an extensive environmental education and protection program on NAFR that includes environmental compliance (permitting, haz-

ardous material and hazardous waste management, underground storage tank and above-ground storage tank management, air and wastewater protection, spill prevention, incident reporting), pollution prevention, the base focal point for hazardous materials (HAZMART), recycling, product substitution, waste minimization), natural and cultural resources management, and restoration/remediation. The environmental protection program has looked at past activities on the range and has identified and evaluated areas where environmental issues occurred associated with these activities. The proactive program includes education and actions in support of current operations, and precludes, to the greatest degree possible, future environmental issues. Planned future activities are evaluated for environmental impacts, and mitigation measures are included to minimize the environmental impacts of the activities.

The Department of Energy (DOE) Environmental Restoration Division is responsible for directing and managing environmental restoration activities at sites previously used by the DOE in the State of Nevada. Past atmospheric testing and underground testing of nuclear weapons on parts of NAFR introduced quantities of radioactive and chemical contaminants into the soil



and groundwater flow systems. The DOE and the Department of Defense (DOD) have entered into a Federal Facility Agreement and Consent Order (FFACO) with the State of Nevada that provides guidance and direction for the evaluation and cleanup of these contaminated test sites.

*Installation Restoration Program (IRP) sites on NAFR are marked by large concrete blocks.*



*The great majority of non-weapon wastes generated at NAFR are controlled through an Air Force solid waste management process. Concrete and metal target waste materials are collected and reused as part of the waste management program.*

DOE has used hazardous materials, including radioactive materials, and generated radioactive and hazardous wastes at the Nevada Test Site (NTS) and on a portion of TTR. DOE testing of nuclear devices has caused contamination of NAFR land adjacent to the DOE test sites. The State of Nevada, the DOE, and the DOD have entered into a Federal Facility Agreement and Consent Order (FFACO) for DOE environmental restoration activities in Nevada.

### **3.4.1 Hazardous Materials**

The great majority of the non-weapon hazardous materials used by Air Force and contractor personnel on the range are controlled through an Air Force pollution prevention process called HAZMART. This process provides management for the procurement, handling, storage, and issuing of hazardous materials and the turn-in, recovery, reuse, recycling, or disposal of hazardous wastes. The HAZMART process includes review and approval by Air Force personnel to ensure users are aware of exposure and safety risks. After the request for the issue of hazardous material is approved, the user picks up the material from the hazardous material storage area. The user then transports the hazardous material directly to the work site or to a hazardous material storage site at one of the main operating areas. Range personnel may also obtain hazardous materials through other on-base government supply outlets such as the Contractor Operated Parts Store or the Contractor Operated Civil Engineering Supply Store. Requests for hazardous materials that are processed through one of these alternate supply outlets are reviewed for environmental, health, and safety risks.

NAFR flight and aircraft maintenance operations and installation maintenance processes such as vehicle maintenance, target refurbishment, and electronic countermeasures emitter repair require the use of hazardous and toxic materials. The Air Force and its range contractors store and use moderate amounts of paints, solvents, thinners, adhesives, aircraft fuel, diesel, gasoline, lubrication oils, brake and hydraulic fluids, cleaners, batteries, acids, chlorofluorocarbon refrigerants, herbicides, insecticides, rodenticides, and compressed gases in compliance with applicable regulations and Air Force instructions. The Air Force maintains data within the supply system that can be used to generate listings of the hazardous materials that are used for various purposes/processes at the ranges and operations areas.

### **3.4.2 Hazardous Waste Management**

Hazardous materials and wastes are federally regulated by the U.S. Environmental Protection Agency (USEPA), in accordance with the Federal Water Pollution Control Act, the Clean Water Act (CWA), the Toxic Substance Control Act (TSCA), SWDA, RCRA, CERCLA, and the Clean Air Act (CAA). Pesticide application, storage, and use are regulated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The federal government also complies with applicable state laws and regulations. State and Air Force directives applicable to the management of hazardous material and hazardous waste are referenced in Appendix C.

In February 1997 the USEPA finalized the Military Munitions Rule, 40 CFR 260, and it became effective 12 August 1997. This rule identifies when conventional and chemical military

### 3.4 HAZARDOUS MATERIALS AND SOLID WASTE

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Solid Waste Disposal Act (SWDA), and the Emergency Planning and Community Right-to-Know Act (EPCRA). They are defined as any substance that, due to quantity, concentration, physical, chemical, or infectious characteristic, may present substantial danger to public health, welfare, or the environment when released. Examples of hazardous materials include petroleum, natural gas, synthetic gas, toxic chemicals, and low-level radioactive sources, such as compasses and gauges. Hazardous wastes that are regulated under the Resource Conservation and Recovery Act (RCRA), are defined as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that either exhibit one or more hazardous characteristic of ignitability, corrosivity, toxicity or reactivity, or are listed as a hazardous waste under 40 CFR Part 261 (RCRA, Determining Solid and Hazardous Wastes).

The ROI for potential contamination associated with the use of hazardous materials and solid waste is ROI One, which includes all disturbed areas on NAFR. These areas include six Air Force major operations areas and portions of other areas on NAFR where hazardous materials are being used, or have been used in the past, and where hazardous wastes have been generated. Other areas include targets, roads, and monitoring, tracking, and communications sites.

The operations areas are ISAFAF, Point Bravo Facility, and Silver Flag Alpha on the South Range. TTR, Tonopah Operations and Management (O&M) Compound, and Tolicha Peak Electronic Combat Range (TPECR) are on the North Range. Activities that generate wastes at some or all of NAFR operations areas include fuel handling and storage, vehicle maintenance and cleaning, aircraft maintenance and cleaning, fire training, landing operations, Civil Engineering infrastructure maintenance, and construction. Wastes commonly produced may include used fuel and oil, greases and lubricants, solvents, paint waste, used batteries, oil filters, and contaminated anti-freeze.

Solid and hazardous wastes are also generated at both manned and unmanned sites on the North and South ranges. Waste sites include target debris, exploded ordnance disposal sites, practice and live ordnance ranges, and electronic countermeasures (ECM) sites.

Fuel and oil spills in the major operations areas and at some of the ECM sites have resulted in small areas of soils contamination in the immediate area of the spill. Petroleum contamination has also been noted at some of the target debris sites.

Department of Transportation regulations as specified in 49 CFR are followed for the transportation of hazardous material on and off NAFR. Drivers of vehicles transporting hazardous or nonhazardous materials are required to have Nevada commercial vehicle operator licenses. Drivers transporting hazardous materials are trained in how to respond to incidents involving hazardous materials.

munitions become a hazardous waste under RCRA and provides for the safe storage and transport of such wastes. The rule applies generally to unused munitions but does clarify that on-range disposal (e.g. the recovery, collection, and subsequent burial or placement in a landfill) of UXO is a RCRA-regulated activity. USEPA postponed applying the munitions rule to closed and transferred ranges pending evaluation of the proposed DOD Range Rule. It does not apply to NAFR at this time.

The proposed DOD Range Rule (32 CFR 178) was published in the *Federal Register*, 26 September 1997. The rule identifies a process for evaluating appropriate response actions on closed, transferred, and transferring military ranges. Response actions will address safety, human health, and the environment. This rule contains a five-part process that is consistent with CERCLA and is tailored to the special risks posed by military munitions and military ranges. The parts consist of identification of applicable ranges, range assessment and accelerated response to risks posed by munitions or other materials on military ranges, range evaluation/site-specific response evaluation, recurring reviews, and close-out. The rulemaking includes extensive public and government agency involvement to ensure this regulation responds to public needs. Once the rule is final, numerous government agencies and the public will continue their involvement to ensure the safety and environmental protection of the range response actions.

NAFR generates, stores, and transports hazardous waste as defined under RCRA, as amended, and TSCA. The hazardous wastes generated by range operations include waste paint that does not meet Defense Reutilization and Marketing Office (DRMO) and HAZMART labeling and condition standards for resale or reuse, used paint filters, used solvents, contaminated anti-freeze, fuel soaked pads and fuel filters. Nonhazardous wastes include recyclable used petroleum products, reclaimable JP-8 (jet fuel), and diesel fuel.

The Air Force manages four 90-Day Accumulation Points, referred to as sites on NAFR, for hazardous wastes generated on the ranges. These accumulation sites are located at Point Bravo, ISAFAF, TPECR, and TTR Area 10. Each site accepts all types of hazardous wastes from all range users (associate contractors, subcontractors, temporary duty military units, Air Force personnel, and tenant organizations). Once at the accumulation sites, the contractor personnel manifests and transports the waste to the DRMO RCRA-permitted storage facility on Nellis AFB. This facility is the only RCRA-permitted storage facility on Nellis AFB and NAFR. DRMO is responsible for the disposal of excess property and waste generated on NAFR, and accomplishes this mission through reuse, transfer, sale, donation, or ultimate disposal. Approximately 38,000 pounds of hazardous wastes from NAFR were manifested for disposal in 1995 (personal communication, Cardenas 1997).

The Range O&M Contractor removes hazardous materials, including dials and gauges, that contain low-level radioactive sources from older vehicles that are to be used as targets. These items are placed in 55-gallon drums and stored in designated areas pending disposal. Storage areas are surveyed periodically by the Range Radiation Protection Officer. The contractor sends requests for disposal to the Nellis AFB Bioenvironmental Engineer, who forwards the

request to the Air Force Low-Level Radiation Waste office at Brooks AFB, Texas. This office provides the instructions on where the waste is to be shipped for disposal. Approximately 4 to 5 drums are disposed of every 2 years.

The Air Force and their subcontractors have policies and procedures in place to prevent spills from occurring at the major work areas on the range. Emergency Response/Contingency Plans (ER/CP) and an associated Spill Prevention, Control, and Countermeasures (SPCC) Plan has been prepared and implemented for these areas. For future releases of CERCLA hazardous substances, the National Contingency Plan will be followed (40 CFR 300). Pre-positioned absorbent materials, cleanup material, and personal protective equipment are stored at various areas in the major operating areas. When spills do occur, they are cleaned up following the procedures described in the above plans and reported to the Nevada Division of Emergency Management (NDEM). Reporting criteria are in section 3.4.3.5.

### **3.4.3 Department of Defense Environmental Monitoring Program**

Major DOD environmental investigations and restoration programs on NAFR have included the DOD Installation Restoration Program (IRP), RCRA Facility Assessments, and the Surface Soil Sampling Investigation of Bombing Targets. In addition, small spill sites and aircraft crash sites have been evaluated for environmental impacts.

#### **3.4.3.1 INSTALLATION RESTORATION PROGRAM**

The DOD developed IRP to identify and investigate potentially hazardous material disposal sites on DOD property. The IRP process begins with a Preliminary Assessment (PA) designed to identify and evaluate past disposal and/or spill sites that might pose a potential or actual hazard to public health, welfare, or the environment. Tasks are accomplished through document review, records searches, and personnel interviews. None of these sites are subject to RCRA corrective action.

If the PA suggests that a particular site may be contaminated, a Site Investigation (SI) is conducted. The investigation consists of field activities designed to confirm the presence or absence of contamination. A Remedial Investigation may then be performed if it is necessary to quantify and identify the site contaminants, the extent of the contaminant plume, and pathways of contaminant migration. The findings from these activities result in the selection of one or more of the following options: no further action; long-term monitoring; and/or a feasibility study designed and developed to identify and select the most appropriate remedial action.

Ninety-eight IRP sites have been identified on NAFR since the IRP began at the range in 1982. Seventy-four of these sites were recommended for no further action based upon the initial PA. SIs were done for the remaining 24 sites including four sites on the DNWR. Two sites, a fire training area at ISAFAF and a septic tank at Range 65N, required remedial action under CERCLA (limited hydrocarbon-contaminated soil removal at the fire training area and the removal of two underground storage tanks [USTs] and a septic tank at the Range 65N site).

These actions were completed in 1993. The field observations, immunoassay, and laboratory test results revealed no evidence of soil contamination at most of the locations sampled on NAFR. Metal concentrations were generally low and not a source of concern. The results of the SIs indicated that these IRP sites were not causing adverse environmental impacts. Twenty-two of the remaining 24 sites, including the two sites where remedial actions were done, were recommended for No Further Action. Two landfill sites at ISAFAF were recommended for long-term monitoring. Decision Documents (DD) for no further action at 96 of the 98 sites have been accepted and signed by the Nevada Division of Environmental Protection (NDEP).

Two permitted landfills are located on NAFR, one Class II (nonhazardous solid waste) and one Class III (solid construction debris). These landfills are operated in compliance with the Nevada Administrative Code (NAC 444.570 to NAC 444.748); the Code of Federal Regulations (40 CFR parts 240, 241, 243); and the Air Force Instruction (AFI 32-7042, Solid and Hazardous Waste Compliance, and Air Combat Command Solid Waste Program Management Guidance, dated October 5, 1994). All IRP sites on NAFR were addressed in a manner consistent with CERCLA NCP. Decision documents for no further action have been accepted and signed by the Nevada Division of Environmental Protection for 96 of the 98 sites. Long-term monitoring is being conducted at two landfills at ISAFAF.

#### **3.4.3.2 RESOURCE CONSERVATION AND RECOVERY ACT FACILITY ASSESSMENT**

A RCRA Facility Assessment (RFA) of NAFR was conducted in August, September, and November 1995. This proactive initiative was done voluntarily and was not required by law since there is no Part B Permit to operate a hazardous waste treatment, storage, and disposal facility on the range. None of the surveyed sites are subject to RCRA corrective action. RFAs are conducted in three phases: the preliminary review, the visual site inspection, and the sampling visit. The following summarizes the findings of the RFA and the actions that followed.

Preliminary reviews are conducted to identify locations of potential environmental contamination. Locations identified for further site inspection are classified as either Solid Waste Management Units (SWMUs) or Areas of Concern (AOC). A SWMU is defined by the USEPA as any discernible waste management unit at a RCRA-permitted facility from which hazardous constituents might migrate, regardless of whether the unit was intended for the management of solid and/or hazardous wastes. This definition includes landfills, container storage facilities, USTs, above-ground storage tanks (ASTs), wastewater treatment units, and areas contaminated by routine, systematic, and deliberate discharge from process areas. It does not include product storage areas and accidental spills from production areas. An AOC is defined as a discernible unit or area in which the management of hazardous waste was not intended, however, the release of potential hazardous waste may have occurred through accidental spill or leaks during normal day-to-day operation of the unit.

The information from the preliminary review came primarily from existing documents, including previous site investigations and preliminary assessments, maps, inspection reports,

historical monitoring data, spill reports and interviews with personnel who were familiar with the facility. The potential SWMUs and AOCs were visually inspected in September and November. No sampling visits were conducted during the RFA.

The SWMUs and AOCs found on NAFR include ECM sites, oil/water separators, acid neutralizing basins and oil interceptors, explosive ordnance disposal (EOD) and target debris disposal pits, initial and central hazardous waste accumulation points, and underground and above ground storage tanks.

A total of 272 SWMUs and AOCs were evaluated during the RFA. Further investigations were recommended if documented releases had occurred, if a risk was present to human health or the environment, or if a high potential for a significant release existed. All 68 of the sites have been reevaluated and sampled, as appropriate, in accordance with the recommendations (Table 3.4-1). An oil water separator was removed.

#### ***ELECTRONIC COUNTERMEASURES SITES***

A typical ECM site consists of a small, graded area that is currently or has in the past been the location of manned and unmanned mobile radar stations and related support equipment. The sites vary in size from 20 feet to 250 feet in diameter. The equipment that is, or has historically been used, at the ECM sites included 250 to 600-gallon capacity, portable diesel and/or high octane aviation gasoline fuel tanks and their associated generator(s). The active sites generally have 2 to 6-inch thick layers of well-sorted, fine-to medium-grained gravel evenly spread around the one to two generators. At inactive sites, the past generator locations are identified by patches of gravel or electrical ground rods.

A total of 83 ECM sites were visually inspected on the North Range: 60 sites on the EC West and EC East ranges and 23 sites on the TPECR. Signs of possible fuel releases associated with generators were found at 30 of the EC West and East sites and 11 of the TPECR sites as evidence by stained soil/gravel. Stained areas were generally found to be covered with gravel and to be from less than a foot in diameter to as much as several feet in diameter.

In 1993, a new SOP was instituted for releases at Air Force-managed ECM sites that included notification to the State of Nevada (for releases greater than 5 gallons), followed by remediation of the impacted soil. Notification in this case is done by Nellis AFB environmental management personnel. Spills at non-Air Force-managed sites are typically done by the contractor operating the site (personal communication, Haarklau 1997).

#### ***WASTEWATER TREATMENT UNITS***

The wastewater treatment units inspection process includes oil/water separators, oil interceptors, grease traps, and closed-loop recycle systems. In addition, four acid neutralizing basins were identified in documents for TTR.

**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action 1**  
(page 1 of 10)

Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
<b>TTR O&amp;M Compound</b>			
Nonhazardous waste accumulation point (NHWAP)	NHWAP in use for more than 10 years	Metals, crushed oil filters, used oil. Visible soil staining and petroleum odor.	Based on the long history and the lack of knowledge related to past hazardous waste storage practices, it should be examined further by soil sampling for volatile organic compounds (VOC) and total recoverable petroleum hydrocarbons (TRPH).
Former Oil/Water Separator	The oil/water separator was taken out of service and building floor drains blocked in approximately 1991.	Minor amounts of POLs, cleaning compounds from vehicle, generator, and equipment maintenance. No evidence of release	The integrity of the unit at the time of removal and the methodology used to determine closure are not known. Should further investigation uncover evidence that possible releases may have occurred, soil sampling for VOCs and TRPH should be conducted.
Civil Engineering Yard	Storage of equipment and some hazardous materials required for ongoing O&M. Two potential SWMUs were identified and have been tentatively identified as sumps. PCB-containing transformers also were formerly stored.	Three 55-gallon drums of ethylene glycol and possibly PCB. Some dark brown staining relative to the background soil.	Soil sampling should include VOCs, TRPH, and PCBs.
<b>TPECR Main Compound</b>			
Hazardous Waste Accumulation Point (HWAP)	HWAP in operation for approximately 2 years. A former waste accumulation site was also identified. The length of operation is not known.	Paint, oily rags, antifreeze, fuel fibers, fluorescent bulbs, battery rinsate.	In addition to ongoing, regular compliance inspection of the HWAP. It is recommended that a non-hazardous waste storage area be established. If further investigation uncovers evidence of possible releases, soil sampling for VOCs and TRPH should be conducted.
Grease and Oil/Sand Interceptors	Two grease and oil/sand interceptors, connected in series, accepting influent from three floor drains of a vehicle maintenance building	Wastewater with minor amounts of lube oil grease, motor oil, hydraulic fluid, auto and diesel fuel, antifreeze. No evidence of a release.	If inspection uncovers that possible releases may have occurred, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH. To characterize the presence and extent of the possible release to the leach field, it is recommended that soil samples from the leach field be analyzed for VOCs and TRPH.
Septic Tank/Leach Field System	System has been in place since 1979. It was designed to serve 90 to 110 persons with a maximum discharge rate of 5,500 gallons per day to the 0.25-acre leach field.	Domestic wastewater including toilets, urinals, sinks, showers. No evidence of release.	Since the leach field has received waste from the vehicle maintenance building for an unknown length of time and the past practices regarding spill cleanup are not well known, it is recommended that soil samples be collected from the leach field and analyzed for VOCs and TRPH.

Note: 1. All recommended actions have been completed and all the sites have been closed by NDEP.



**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action 1  
(page 2 of 10)**

Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
	<b>Indian Springs AFAP</b>		
Oil/Water Separators (Bldgs 115, 225, and 227)	Five oil/water separators are located on ISAFAP. Two receive wastewater from the floor drains beneath the main parking bay. One is connected to a trench drain inside the truck maintenance building. One is used to treat wastewater from the trench drain in the vehicle maintenance area. The final one is used for heavy vehicle maintenance.	Wastewater with minor amounts of lube oil grease, motor oil, hydraulic fluid, auto and diesel fuel, antifreeze. No evidence of a release.	It is possible that the separators may have released materials to migration pathways via leaks or overflows. If further investigations uncover evidence that possible releases may have occurred, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Underground Storage Tanks (USTs)	There are three underground storage tanks located on ISAFAP.	POL, diesel fuel No. 2, unleaded gasoline. There are documented historic UST spills and overfills.	It is recommended that all USTs be considered suspect until an inspection and/or monitoring indicate no release has occurred. Alternatively, they can be removed and the site closed in order to prevent future releases.
Former Drum Storage Rack	A drum rack used for storage and dispensing virgin hydraulic oil materials used in maintenance operations are now stored inside.	Hydraulic oil and possibly other POLs. There is no visual evidence of a release.	It is recommended that surface soil samples be collected and analyzed for TRPH to assess the presence or absence of soil contamination due to potential releases.
Suspected Asbestos Containing Tiles	Scattered pile of suspected asbestos containing floor tiles located just west of the western end of the taxiway. Tile appear to have been blown to this location by wind.	Possible asbestos containing tiles. The site was not visually inspected.	The debris should be removed by a qualified contractor. The site is considered a low risk due to the low potential for contact.
<b>Point Bravo</b>			
Above ground Storage Tank (AST) Farm	Three ASTs are located within a tank farm.	Unleaded gasoline, diesel fuel. Documented contaminated soils.	Recommended that a concrete foundation and berms be installed to provide a more effective containment system around the tank farm. The presence and extent of any possible releases should be further investigated by soil sampling for VOCs, TRPH, and RCRA metals.
Possible Former Drum Storage Locations	Three former drum storage locations.	Reportedly paint solvents, motor oil, hydraulic oil, diesel fuel, antifreeze.	It is recommended that more information be gathered about the past practices at this site before other action is taken. If the investigation uncovers evidence that possible releases may have occurred, the presence and extent of the release should be further investigated by soil sampling for VOCs, TRPH, and RCRA metals.

**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action <sup>1</sup>**  
**(page 3 of 10)**

Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
<b>Point Bravo</b>			
Historic Spill Locations	Three former spill locations.	Approximately 6 gallons of unleaded gasoline and small quantity of PCB-contaminated oil. No visual evidence, although documented evidence indicated that soil contamination has occurred over the long period of site operation.	It is recommended that more extensive soil sample for VOCs, TRPH, and PCBs be conducted to identify other areas of potential soil contamination.
<b>Ranges 61, 62, and 64</b>			
Scattered Target Debris Area	Scattered wood target debris.	Unknown, site not visually inspected.	No specific recommendations.
<b>Silver Flag Alpha - Range 63A</b>			
Fuel Storage Building	Storage location for flammable liquids	Approximately 30 5-gallon cans containing unleaded gasoline and diesel fuel, and some smaller cans of hydraulic fluid. Brown staining of the soil outside the entry doors.	It is recommended that the contaminated soil be removed and an area adjacent to the building entrance be paved and bermed to capture the incidental spills. Limited soil samples for TRPH is also recommended.
Septic Tank / Leach Field Systems	One abandoned system and one existing system.	Domestic wastewaters and potentially unknown fluids from a floor drain. No evidence of a release.	Further investigation of the abandoned leach field is recommended on the basis that past practices concerning the exposed drain are not known.
Range Storage Yard	A flammable storage building and former HWAP.	Approximately 14 5-gallon cans containing unleaded gasoline and diesel fuels, cans of paint, motor oil, acetone, epoxy. No visual or documented evidence of a release.	Further investigation is recommended to determine the details regarding use as a HWAP.
Rifle Bore Cleaner Storage Shed	Small shed reportedly served as a storage shed for rifle bore cleaning fluid and fuel.	Rifle bore cleaning fluid, unleaded gasoline and/or diesel fuel. No evidence of a release.	Further investigation to determine what types and quantity of fluids were stored at the site.
<b>Range 63</b>			
Site X-63-211	Surface debris pile	Diesel fuel, hydraulic fluids, engine fluids. One stained area.	Identify wastes through soil sampling and verify that the military tanks have been properly defluidized.

*Note:* 1. All recommended actions have been completed and all the sites have been closed by NDEP.

**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action <sup>1</sup>**  
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Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
<b>Range 63</b>			
Borrow pit	Borrow pit	Oil, tar, asphalt. No indication of release, however, the potential exists for precipitation to leach potential waste constituents from the pile.	Collect soil samples for TRPH analysis.
<b>Range 65</b>			
Mile Range Staging Area	Target preparation, defluidization, and staging area.	Lube oil grease, motor oil, hydraulic fluid, transmission fluid, unleaded/leaded gasoline, diesel fuel, antifreeze. Releases have been documented.	Soil sampling and analysis for VOCs and TRPH.
Asbestos-Containing Material (ACM) Debris Pile	Debris pile	Non-friable ACM. No evidence of release but may still release a very small number of fibers if disturbed.	Remove debris.
Checkerboard Building	Two buildings (inactive since approximately 1975) used for target scoring evaluation of nearby strafe pits.	Diesel fuel, ACM, trace amounts of mercury, metals. No evidence of release.	Remove inert materials from the location and separate according to material type for eventual recycling. Collect samples and analyze for the asbestos fiber content.
1940s Target Vehicle Debris Area	Storage of target and practice ordnance debris	Lube oil grease, motor oil, hydraulic fluid, leaded gasoline, diesel fuel, antifreeze, vehicle batteries, trace amounts of munition debris. No visible evidence of release.	A thorough search for UXO should be conducted prior to any action. Soil samples should be collected at engine-containing vehicle locations and analyzed for VOCs, TRPH, and metals.
M-Series Target Debris Area	Storage of debris and target vehicles	Lube oil grease, motor oil, hydraulic fluid, leaded gasoline, diesel fuel, antifreeze, vehicle batteries, trace amounts of munition debris. No visible evidence of release.	A thorough search for UXO should be conducted prior to any action. Soil samples should be collected at engine-containing vehicle locations and analyzed for VOCs, TRPH, and metals.

<sup>1</sup> 1. All recommended actions have been completed and all the sites have been closed. NDEP.

**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action 1**  
(page 5 of 10)

Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
<b>Range 65</b>			
Old Tank Table Target Debris Area	Former target area which contains an estimated 50 to 75 target vehicles	Lube oil grease, motor oil, hydraulic fluid, leaded gasoline, diesel fuel, antifreeze, vehicle batteries, trace amounts of munition debris. No visible evidence of release, however, assumed that residual amounts of fluid have leaked from the target vehicles..	A thorough search for UXO should be conducted prior to any action. Soil samples should be collected at engine-containing vehicle locations and analyzed for VOCs, TRPH, and metals.
Abandoned Strafe Pits	Surface debris	Unknown/not documented. Not visually inspected.	No specific recommendations provided.
Beacon Hill Debris Pile	Abandoned wood/barrels, debris piles (possible ACM)	Unknown/not documented. Not visually inspected.	No specific recommendations provided.
FAC Hill	Surface garbage, debris, and abandoned military equipment	Unknown/not documented. Not visually inspected.	No specific recommendations provided.
Gravel Pit	Abandoned shed, surface debris, abandoned military equipment (M-60 tank)	Unknown/not documented. Not visually inspected.	No specific recommendations provided.
<b>Area 10</b>			
Oil/Water Separator Bldg 145	Oil/water separator handles influent from wash and rinse basins in Bldg 145	Possible POL and sludge of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 184	Separator handles influent from floor drains in Bldg 184	Possible POL, fire foam, a 2-inch layer of gravel, saw cutting mud, aluminum cans, bricks, and wood. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 186	Separator handles influent from floor drains in Bldg 186	Possible POL, antifreeze, and sludge of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 188	Separator handles influent from floor drains in Bldg 188	Possible POL, antifreeze, and sludge of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 266 (original)	Separator handles influent from floor drains in Bldg 266	Possible POL and grease containing sludges/sediments of an unknown composition. Not visually inspected.	If further inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.

Note: 1. All recommended actions have been completed and all the sites have been closed by NDEP.

**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action <sup>1</sup>**  
**(page 6 of 10)**

Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
<b>Area 10</b>			
Oil/Water Separator Bldg 257 (East)	Separator handles influent from a washrack in Bldg 257	Possible POL, hydraulic fluids, and sludges/sediments of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 257 (West)	Separator handles influent from floor drains in Bldg 257	Possible POL, hydraulic fluids, and sludges/sediments of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 257 (South)	Separator handles influent from floor drains in Bldg 257	Possible POL, hydraulic fluids, degreasing agents and sludges/sediments of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 257 (Southwest)	Separator handles influent from floor drains in Bldg 257	Possible POL, hydraulic fluids, degreasing agents and sludges/sediments of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 227	Separator handles influent from floor drains in Bldg 257 and an exterior washrack	Possible POL and sludges/sediments of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 218	Separator handles influent from floor drains in Bldg 218	Water and sludge/sediment of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 228	Separator handles influent from floor drains in Bldg 228	Possible POL and sludges/sediments of an unknown composition. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 505	Separator handles influent from paint booth scrubbers in Bldg 505	Water with possible paint thinners, solvents, and paints. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 229	Separator handles influent from floor drains from an oil dispensing area in Bldg 229	Observed to be dry in 1988 during inspection. Effluent present in the overflow/storage tank was reported to be predominantly water with a thin film of "unknown" oil. Not visually inspected.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.

**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action 1**  
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Site Name	Description	Materials/Contaminants Area 10	Evaluation/Recommendations
Oil/Water Separator Bldg 259	Two separators handle influent from floor drains and a paint booth	Effluent present in the south separator in 1988 included liquid (brown/green/yellow) with a strong solvent odor and possibly POL containing sludges/sediments of an unknown composition. No effluent was present in 1995. Some minor deterioration of concrete was observed in both separators.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 249	Handles influent from floor drains from Bldgs 351 and 269, and catchbasins on the west apron pad.	Water with possible POL and solvents present. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 536	Handles effluent from five poly drains, 22 floor drains, one acid neutralizing basin, and two service sinks from Bldg 536	Water with possible POL and solvents present. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 524	Influent from three catchbasins/floor drains flow to a settling basin, the settling basin and water tank drains flow to recycling basin which drains into the separator.	The settling basin contained dirty water with no indication of any oil. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 535	Handles influent from body shop, paint booth, and paint booth scrubber floor drains in Bldg 535	Effluent observed in 1988 consisted of blue-colored water containing paint chips. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 373, 374, 383, and 384	Handles effluent from floor drains in Bldgs 373, 374, 383, and 384	Effluent observed in 1988 consisted of black/brown/red colored water, possible POL, and sediment/sludges of unknown composition. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 376, 377, 286, and 387	Handles effluent from floor drains in Bldgs 376, 377, 386, and 387	Effluent observed in 1988 consisted of black/brown/red colored water, possible POL, and sediment/sludges of grease, sand, and sweeping compound. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.

Note: 1. All recommended actions have been completed and all the sites have been closed by NDEP.

Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action <sup>1</sup>  
(page 8 of 10)

Site Name	Description	Materials/Contaminants	Evaluatory/Recommendations
		Area 10	
Oil/Water Separator Bldg 401 and 411	Separator handles effluent from floor drains in these buildings	Effluent observed in 1988 consisted of black/brown/red colored water, possible POL, and sediment/sludges of grease and concrete-saw cutting mud. During the 1988 survey, evidence of possible releases were observed from the transfer tube from the separator to the outer chamber.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 405, 409, 415, and 419	Separator handles effluent from floor drains in these buildings	Effluent observed in 1988 consisted of brown colored water, possible POL, and sediment/sludges of grease of unknown composition. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Bldg 431, 435, 441, and 445	Separator handles effluent from floor drains in these buildings	The separator was not functioning during the 1988 survey because it was fouled with miscellaneous construction debris. No evidence of possible release.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Oil/Water Separator Facility 493 (Fire Training Pit)	Handles influent from the facility burn rings	Effluent observed in 1988 consisted of water mixed with possible POL, and sediment/sludge of unknown composition. During the 1988 survey, evidence of possible releases related to overloading of the separator with fuels were observed.	The separator should be emptied, cleaned, and inspected for cracks or other structural failures. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Waste Storage Tank Bldg 142 (Waste Trichloroethane Tank)	Tank handles effluent from a drain in Bldg 142	Effluent observed in 1988 consisted of a brown fluid containing paint particles and POL. No evidence of possible release.	The tank should be emptied and removed. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Waste Oil Storage Tank, Bldg 536	Tank handles effluent from waste oil drains in Bldg 142	No effluent was observed. No evidence of possible release.	The tank should be emptied. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.

1. All recommended actions have been completed and all the sites have been c/c NDEF.

**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action 1**  
(page 9 of 10)

Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
<b>Area 10</b>			
Waste Fuel Storage Tank, Facility 493	Tank handles overflow from the fill pad located over the tank.	Effluent observed in 1988 was contaminated fuels to be used in burn exercises. No evidence of possible releases.	The tank should be emptied. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Acid Neutralizing Basin, Bldg 143	Handles influent from floor drains and wash basin in Bldg 143	No effluent was observed in 1988. The basin was not in use. No evidence of possible releases.	The basin should be emptied. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Acid Neutralizing Basin, Bldg 536	Handles influence from floor drains and wash basin in Bldg 536	No effluent was observed in 1988. The basin was not in use. The basin was inaccessible and could not be inspected.	The basin should be emptied. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Acid Neutralizing Basin, Bldg 249 (Wheel and Tire Shop)	Handles influent from the Wheel and Tire Shop in Bldg 249	Unknown. The basin was inaccessible and could not be inspected.	The basin should be emptied. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Acid Neutralizing Basin, Bldg 249 (Battery Shop)	Handles influent from the Battery Shop in Bldg 249	Unknown. The basin was inaccessible and could not be inspected.	The basin should be emptied. If the inspection uncovers possible releases, the presence and extent of the release should be further investigated by soil sampling for VOCs and TRPH.
Pesticide and Herbicide Storage Bldg 543 and 546	Buildings are used for storage and mixing of pesticides and herbicides for building and ground maintenance	Materials that are mixed include a variety of herbicides, fungicides, and insecticides. No evidence of releases. The buildings are inactive.	The sump should be emptied. The floor drain should be closed to prevent possible future releases at the mixing area.
Underground Storage Tanks (USTs)	Underground storage tanks	The majority of the USTs contain POLs. Oil/water separator tanks may contain other typical separator materials. The USTs were not visually inspected.	All USTs should be considered as potential release sites until inspection or monitoring indicate that no release has occurred. If further investigation uncovers evidence of possible releases, soil sampling for VOCs, TRPH and RCRA metals should be considered.
Steam-Cleaning Pad (north of Bldg 543)	Building is used for general steam cleaning	Materials include a variety of herbicides, fungicides, insecticides, and possible POL. No evidence of a possible release. However, it has been reported that some of the surrounding soil at the site was removed due to oil contamination.	The presence and extent of the release should be further investigated by soil sampling for VOCs, TRPH, herbicides, and pesticides.

Note: 1. All recommended actions have been completed and all the sites have been closed by NDEP.



**Table 3.4-1. Summary of Release Assessment Sites Recommended for Further Action <sup>1</sup>**  
**(page 10 of 10)**

Site Name	Description	Materials/Contaminants	Evaluation/Recommendations
<b>Area 10</b>			
Former Drum Storage Reynolds Electric Company Open Storage Yard	Possible former drum storage area	It is unknown what type of drummed material may have been stored and dispensed at this site. No evidence of a release was observed.	The presence and extent of a possible release should be further investigated by soil sampling for VOCs and TRPH.
Concrete Batch Plant	The plant was constructed in early 1980 or 1981 to supply concrete for the Area 10A runway and other construction projects. The plant is currently inactive.	Various drummed wastes. No evidence of possible release.	The presence and extent of the release in the drum storage area should be further investigated by soil sampling for VOCs, TRPH, and RCRA metals.
<b>SUMMARY OF INSTALLATION RESTORATION PROGRAM SITES RECOMMENDED FOR LONG-TERM MONITORING</b>			
<b>ISAFAF</b>			
LF-01	Landfill that received all types of waste generated at ISAFAF prior to 1975	Monitoring wells were installed and sampled in 1989. With the exception of benzene at a concentration of 0.1 µg/L of water, VOCs and semivolatiles were not detected in the groundwater. TRPHs were at or below 1.3 µg/L water and metals were generally below laboratory detection levels.	Long-term monitoring is currently being performed.
LF-02	Landfill	Reported disposal debris includes vehicle parts and target debris; however, chemical disposal was not reported.	Long-term monitoring is currently being performed.

1. All recommended actions have been completed and all the sites have been closed. NDEP.

Fifty-three systems were identified at the various manned compounds. Two sets of two oil interceptors in series were identified at the TPECR main compound. Seven oil/water interceptors, two grease traps, and three grease oil/sand interceptors were identified at the ISAFAF main compound. Two oil interceptors were identified during the visual sight inspection of Point Bravo. At the O&M compound in the North Range, a removed oil/water separator was noted. Four acid neutralization basins were identified at TTR.

#### ***EOD AND TARGET DEBRIS DISPOSAL PITS AND SURFACE PILES***

The use of live and practice ordnance on portions of NAFR generates large volumes of target debris, smaller quantities of exploded ordnance debris, ordnance casings, concrete, live ordnance, and trace amounts of explosive residue.

From 1958 to 1975, the standard practice for disposal of target debris was to bury it in pits on the range. Depending on the frequency of use and the volume of debris generated, as many as four to five pits may have been located on a 1-acre parcel of land adjacent to the target site. These unlined pits were approximately 10 to 16 feet wide, 100 feet in length, and 8 to 12 feet deep. Once filled to approximately 2 feet below the surface, a 2-foot layer of native soil was used as covering. There is a possibility that live ordnance may be present in pits constructed during this period. The NDEP has signed Decision Documents (DD) agreeing to no further action (NFA) for the burial sites. The NFA decisions were based on results of an August 1995 Site Inspection report that indicated that the IRP burial sites on NAFR were not causing adverse environmental impacts.

Training on the Nellis Range includes bombing targets that are generally constructed of wood, concrete blocks, and salvaged military vehicles. When new, the concrete blocks measure 2 x 2 x 8 feet. The blocks are generally destroyed by the bombing. The larger pieces that remain are reused for targets. Currently, smaller pieces of concrete rubble that cannot be reused are scattered around the target sites. Nellis AFB has received approval from NDEP to use the concrete rubble to fill the bomb craters at the target sites (personal communication, Gravenstein 1997).

#### ***HAZARDOUS WASTE ACCUMULATION SITES***

Hazardous waste accumulation sites and hazardous waste initial accumulation points are facility locations designated for the temporary storage and segregation of RCRA and regulated hazardous wastes. The waste materials are stored in drums or other containers that are sealed, labeled, and placed on spill containment pallets or wooden pallets and covered with a tarp or hard "poly" shell.

At the central hazardous waste accumulation points, containers are housed within locked and ventilated hazardous waste containment buildings or within other appropriate facilities. The wastes are isolated from the ground with asphalt, concrete, or bermed concrete surfaces. The accumulation site locations are fenced. Prior to expiration of the 90-day storage limit, the

wastes are transported to the RCRA-permitted storage facility on Nellis AFB for disposal. The accumulation sites are well maintained and comply with applicable RCRA regulations.

**UNDERGROUND STORAGE TANKS**

Underground storage tanks (USTs) on NAFR are constructed of several different materials including fiberglass-reinforced plastic, coated steel, and or steel with cathodic protection. All regulated USTs at TTR, Tonopah EC Range (TECR), and TPECR, with the exception of one UST at the TTR fire department, meet the upgrade and leak detection requirements found in 40 CFR Part 280.

The number of USTs currently in use on NAFR are provided in Table 3.4-2:

Location	Regulated Tanks	Non-Regulated Tanks
ISAFAF	0	3
TTR	16	70
TECR	3	1
TPECR	4	0

The majority of the regulated tanks contain unleaded gasoline, diesel, JP-8 jet fuel, or other petroleum products. Most of the non-regulated tanks contain heating fuel. Tanks are removed and/or replaced when they are found to be leaking (personal communication, Haarklau 1997).

**ABOVE-GROUND STORAGE TANKS**

During the RFA a total of 21 and 4 ASTs were visually inspected at ISAFAF and the TPECR main compound, respectively. The majority of these ASTs contained diesel fuel. The AST fuel farm at ISAFAF contained materials such as diesel fuel, unleaded gasoline, and JP-8. Secondary containment is provided for the ASTs at ISAFAF and six major bulk fuel storage tanks at TTR.

The ASTs at ISAFAF were cathodically protected and placed on concrete drip pads with fuel lines set in concrete channels. Those tanks of older design have diesel fuel filters situated over the surrounding gravel bed. These are locations where minor leaking occurs. The operations areas' Emergency Response/Contingency Plans identify the location(s) of spill cleanup materials and disposal instructions for hazardous wastes.

**OTHER SWMUS AND AOCs**

Other potential SWMUs and AOCs include a concrete batch plant on TTR, and an asphalt debris pile at ISAFAF.

### **3.4.3.3 DEPLETED URANIUM TARGET ASSESSMENT**

Research, tests, and evaluations were conducted during the 1970s to develop an improved armor-penetrating munition capable of defeating a heavily armored target, such as main battle tanks. The development of the 30 millimeter (mm) depleted uranium (DU) round in the early 1980s created the need for a range to support its development, testing, and operational testing. The present Range 63 DU was created for this purpose. With establishment of the Nuclear Regulatory Commission in 1982, the Range 63 target areas were licensed for firing 30 mm DU rounds at tank, aircraft, and vehicle targets.

The possession and use of DU munitions by Nellis AFB is currently authorized by Air Force radioactive materials permit No. 27-30048-1AFP, issued by the Air Force Radioisotope Committee on April 23, 1996. The permit was issued under the Master Materials License issued to the Air Force by the Commission in 1986. This license is administered by the Commission's Region IV and is managed by the Region's Division of Radiation Safety and Safeguards. The permit authorizes a maximum quantity of 35,000 kilograms (77,000 pounds; 116,178 rounds) of DU munitions to be stored at Nellis AFB. The permit also authorizes the expenditure of 30 mm AN/GAU-8 API armor-piercing incendiary (API) and API Tracer (APIT) rounds on the Range 63 target area in quantities "as needed" for pilot training and tactical employment evaluation (Air Force 1996b). The storage locations are radiologically surveyed at least annually and the results are documented in a report to the Radioisotope Committee.

The Range 63 licensed area encompasses Target 63-10 and a holding area for used and new targets. The target area consists of four tanks in two groups spaced 300 feet apart and located within two 100-meter bladed circles. This area is approximately 2,000 feet east of the holding area that contains nearly 200 tanks and vehicles that have been fired upon with DU munitions in the past. Depleted uranium target refurbishment must be accomplished in accordance with the DU Management Plan and under the direct supervision of a qualified health physicist, as specified in the Nellis AFB permit. A variety of live and inert ordnance is authorized on the target area and the associate strafing fans encompassing the target. Conventional munitions consisting of 20 and 30 mm training projectiles and high explosive incendiary (HEI) are used on the target area.

Conventional and DU rounds are fired by a AN/GAU-8 30 mm seven-barrel gatling gun mounted in the nose of the A/OA-10 Thunderbolt aircraft, the only USAF aircraft that employs DU rounds. This aircraft is used for close-air support in attacking ground threats such as tanks and armored vehicles, and also serves as a forward air control observer for sighting ground threats and directing air strikes against enemy targets. DU is the primary munition of the A/OA-10 in a combat environment.

In 1992, NAFR maintenance personnel attempted to refurbish two DU tank targets within Target 63-10 under the oversight of the Air Force Armstrong Laboratory Health Physics Function. Background air samples were taken and personnel participating in this activity were fitted with air samplers to determine the extent of any respirable hazard. Readings from the

background samplers around the targets showed DU contamination was relatively localized to the immediate target area (within 300 feet). The personnel air sampler results ranged from 6.5 attoCuries ( $10^{-18}$ ) per liter to 0.58 picoCuries ( $10^{-12}$ ) per liter. The higher value, 0.58 picoCuries per liter, is about 0.64 percent of the allowed Derived Air Concentrations (DAC) as listed in International Commission on Radiation Protection Publication 30, of 0.9 picoCuries per liter. Use of DAC is a method of determining the hazard associated with air concentrations of radionuclides in the workplace, based on a 2,000-hour work year exposure to the hazard. Since there has been very little range maintenance activity in Target 63-10 over time, personnel exposure to the DU contamination has been negligible. None of the individuals monitored during refurbishment had any measurable contamination on their respirators and little, if any, contamination on their protective clothing or equipment. It was concluded that no significant airborne DU contamination hazard existed, but adequate health physics controls were necessary to ensure DU contamination was not inadvertently removed from the site via boots, gloves, and equipment.

In 1993, Nellis AFB suspended the use of DU rounds at the request of the USFWS, who expressed concerns about the environmental impacts of DU to the flora and fauna in the DNWR. Up to that time, the quantity of DU material expended on Nellis Range 63 for all activities is estimated to be 27,805 kilograms (Lockheed Martin 1995).

Nellis AFB conducted a limited site assessment of Range 63 from March through November of 1994. The objectives of the assessment were to determine the scope of the suspected contamination, identify the uranium concentrations and distribution in the vicinity of the target area soils, and investigate the possible pathway transmission of the DU and its oxides. The assessment was not intended to locate all the DU on the range, nor to provide a blueprint for cleanup. The area that was studied included the specific target areas, areas around the aircraft run-in line, strafe fans from projectile hits and over shot, and other areas that potentially might be impacted from stray rounds. This included a large area on Range 63 starting from the dry lake bed in the southwest quadrant to the northeast area, nine miles beyond the target area. The limited site assessment determined the general locations and probable state of the DU bullets or penetrators, so that an approach for management of the DU could be developed. A sampling approach was taken to determine the extent of both affected and unaffected areas and transmission pathways, with the understanding that this initial sampling would provide the basis for other studies if deemed necessary.

Soil samples were taken at the Range 63 control center to determine background levels of naturally occurring uranium ( $U^{238}$ ). The control center is 10 miles from Target 63-10. Background levels ranged from 0.14 pCi/g to 1.0 pCi/g. Samples taken from or immediately adjacent (up to 300 feet) of the DU targets gave results ranging from 54.8 pCi/g to 1.6 nanoCuries per gram (nCi/g) of  $U^{238}$  (Lockheed Martin 1995).

The sampling results indicate that current contamination levels at Target 63-10 are approximately 1.5 orders of magnitude greater than background levels, and that the activity of surface soils decreases quickly beyond the immediate target area (up to 300 feet).

In addition to soil sampling and analysis, gamma scans were performed on the areas around sampling trenches and on the trench bottoms and sidewalls. The results of the gamma scans indicate that the maximum concentrations of DU persist on and in the surface soil, and that DU rounds do not penetrate one foot below the surface.

Results of the limited site assessment indicate that, at present, the DU on Range 63 does not appear to pose a hazard to public health, and it is not an environmental hazard. This was concluded from the active air sampling studies conducted during target refurbishment in the DU area, and from the results of soil sampling for both DU and from an infiltration chloride analysis as an indicator of water migration both laterally (surface water transport) and vertically (transport from surface to ground water). Due to the very limited occurrence of plant and animal species in and around the DU impact area, conclusions could not be drawn regarding the risks and biological effects associated with DU exposure to the small mammals. With continued restricted land use, there appears to be no pathway for exposure potential.

Nellis AFB provided information to the USFWS regarding the site assessment and other efforts taken for management of the Range 63 target area. In response, the USFWS authorized temporary resumption of DU use on Range 63 (within the DNWR) in October 1996. It should be noted that, although the USFWS gave this authorization following extensive site assessment and environmental analysis, the use of hazardous materials on a unit of the National Wildlife Refuge System is not allowed. An exception was made in this case to accommodate the mission of the Air Force.

An environmental assessment for the resumption of use of DU on Target 63-10 was completed in June 1998. The Air Force will not resume the use of DU until the DU Management Plan and Air Force Policy are finalized.

#### **3.4.3.4 SURFACE SOIL SAMPLING AT NAFR BOMBING TARGETS**

The Air Force has gathered environmental information about NAFR in an effort to comply with the Military Lands Withdrawal Act (MLWA). One area of environmental information was to determine whether explosives, metals, and other organic residues are present in surface soils as a result of historical bombing activities at NAFR. A surface soil sampling program was conducted to gather this information. The following text summarizes information contained in Air Force 1996b and 1997.

Surface soil sampling was conducted at ten representative bombing targets, six on the North Range and four on the South Range. The sampling confirmed that the bombing targets on NAFR contain concentrations of inorganic and explosive constituents in excess of background concentrations. Semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs), which are potential thermal degradation products of explosives, were generally absent from the target areas. The inorganic concentrations were generally less than the USEPA Preliminary Remediation Goals (PRGs). However, certain explosives frequently exceeded the risk-based PRGs (Air Force 1996b).

The primary inorganic constituents detected on the range included cadmium, chromium, copper, nickel, zinc, cyanide, and to a lesser degree lead and suppressed pH (pH values less than the background range of pH values of 8.2 to 8.9 on the South Range and 8.0 to 9.6 on the North Range). The constituents are likely a result of expended ordnance. Antimony and mercury might also be attributable to expended ordnance, although the detectable concentrations were generally very low. The inorganic PRGs for the above listed inorganic parameters were only exceeded once for chromium (370,000 milligram [mg]/kilogram [kg] compared to the PRG of 100,000 mg/kg) and once for zinc (550 mg/kg compared to the PRG of 450 mg/kg).

The data indicate that use of cluster bomb units (CBUs) resulted in the highest and most widespread distribution of both inorganic and explosive contamination among the target sites samples. The use of HEI ammunition also appears to cause relatively high and widespread contamination, particularly with respect to explosives contamination. The soil contamination concentrations relative to the USEPA Preliminary Remedial Goals, for both the CBU and HEI sites, is usually contained within approximately 600 feet of the immediate target area. There are currently three targets where live CBUs are authorized (Targets 62-7 and 63-4 on the South Range, and 75-46 on the North Range) and four targets where HEI is authorized (Targets 63-10 and 64-1 on the South Range, and 71-12, and 74-4 on the North Range) (personal communication, Starrett 1997).

Ecological risks are considered insignificant at targets located on playas, since playas are naturally free of vegetation. Ecological risks related to bombing residues may exist in target areas outside of playas. However, bombs/strafe tend to destroy vegetation in target areas. Therefore, plant uptake and associated exposure of foraging wildlife would not likely occur within active target areas.

The remaining live ordnance types, such as air-to-ground missiles, rockets, general purpose bombs and guided bomb units, resulted in some localized areas of metals and explosives concentrations above background levels but these target areas seldom exceeded the risk-based PRGs. The types of contaminants were similar to those previously discussed. These general ordnance types account for the majority (about two-thirds) of the target areas.

#### 3.4.3.5 SPILLS AND AIRCRAFT CRASHES

Spills are reported to the National Response Center and the NDEM when the following occurs:

- a substance is released in a quantity equal to or greater than that reportable to the National Response Center under 40 CFR 302.6(a).
- any quantity of pollutant, hazardous waste, or contaminant is released into water.

Spills are reported to the NDEM when the following occurs:

- A quantity of a petroleum is released that is either a volume greater than 25 gallons or affects a soil volume greater than 3 cubic yards.
- Any quantity of sewage release from waste treatment systems on the range.

Historically, an average of nine spills have been reported each year. Guidance in the Nellis AFB Contingency Plan will be used in the event of a release of a hazardous substance.

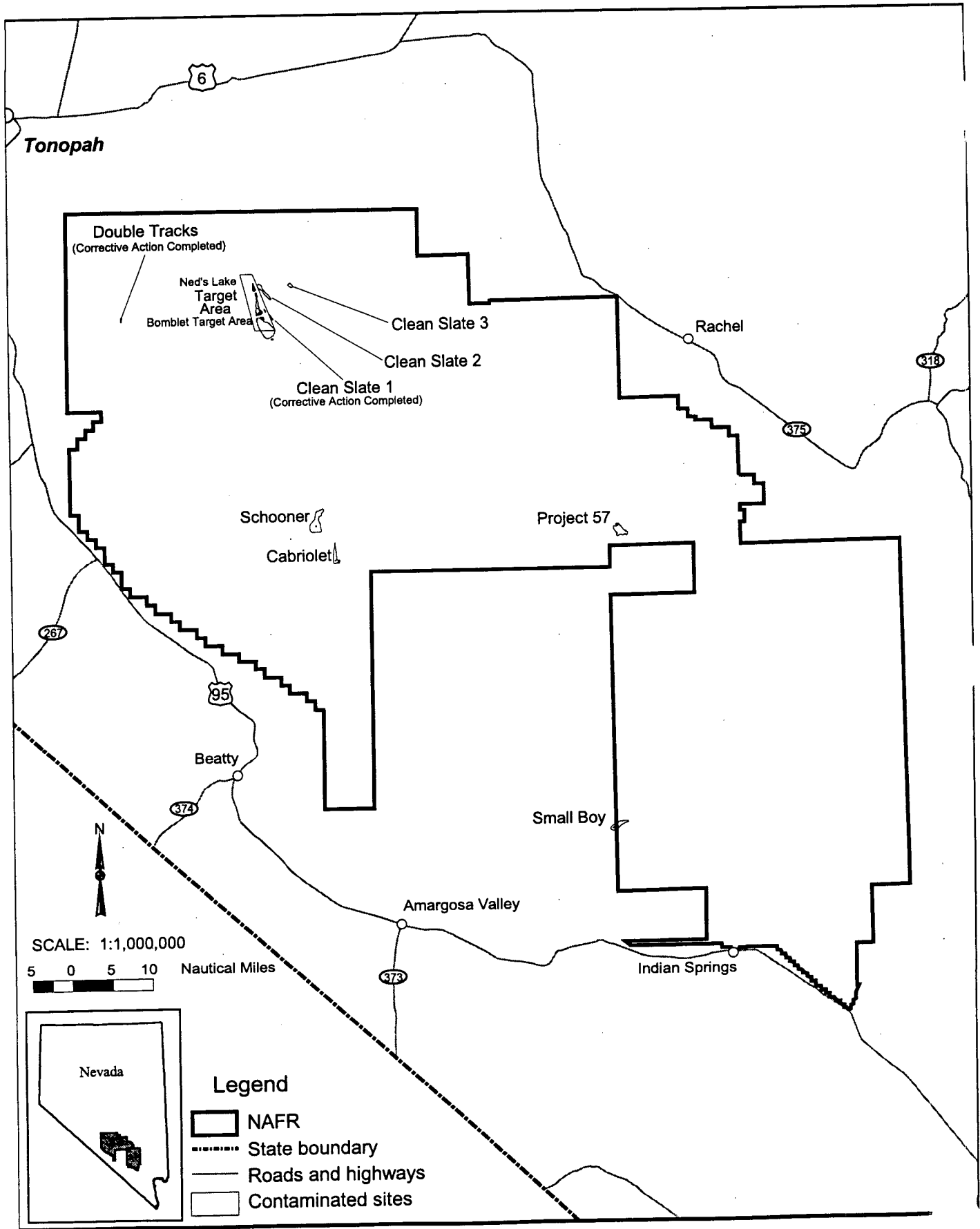
#### **3.4.4 Department of Energy Environmental Restoration Program**

As a signatory to the FFACO with the DOD and the State of Nevada, DOE remediates contaminated sites on the NTS, parts of the TTR, and parts of the NAFR through its Environmental Restoration Program (FFACO 1996). The Agreement clearly shows that the DOE, in cooperation with the DOD, is responsible for remediating areas it and its predecessor agencies have used on the NTS, the NAFR, and the TTR. For purposes of the FFACO, the approximately 106,000 acres of Air Force land withdrawn in the Pahute Mesa area, transferred by MOU to the Atomic Energy Commission in 1963, is considered to be part of the Nevada Test Site. The TTR is treated as a DOE-managed area separate from the NAFR. Both the FFACO and the Pahute Mesa MOU state that DOE is responsible for remediating the test areas on Pahute Mesa. The DOE also has responsibility for remediation efforts on the TTR for those sites resulting from past DOE activities. In addition to those sites on the TTR (Clean Slate 1, 2, and 3) and Pahute Mesa (Cabriolet and Palanquin), four contaminated areas of the NAFR are also subject to the terms of the FFACO: Project 57, Small Boy, Schooner, and Double Tracks (Figure 3.4-1). The Air Force and DOE have signed an MOU delineating environmental restoration responsibilities on NAFR (effective July, 1998).

The strategy for implementation of the FFACO organizes corrective action sites into management groups called corrective action units. The units are further categorized into four projects: Industrial Sites, Underground Test Area Sites, Soil Sites, and Offsites. *Industrial Sites* include sites on Pahute Mesa and TTR used to support nuclear testing activities. Units where underground testing occurred that might have impacted groundwater are grouped as the *Underground Test Areas*. Units where tests have resulted in surface and/or shallow subsurface contamination are grouped as the *Soil Sites*. Units that are not on NAFR or on the NTS are designated as *Offsites* and are not discussed in this LEIS. Corrective action would proceed in four steps: (1) identifying the sites, (2) grouping the sites into the corrective action units, (3) prioritizing the work schedule for funding, and (4) implementing the corrective investigations and/or actions as applicable. After a corrective action is completed, DOE will provide a closure report to the state of Nevada and the Air Force. Corrective actions depend on the nature of the unit, anticipated future land use, and the assessment of risk. DOE will prepare planning documents according to the complexity of the needed action for each unit investigation and corrective action.

DOE's Environmental Restoration Program (ERP) has identified and categorized all known sites. Some sites are under investigation and a some sites have been remediated and closed.





**Figure 3.4-1. Locations of Potential Contamination from Prior DOE Actions**  
3.4-24

Appendix II of the FFACO lists those sites where investigation has not begun or corrective action has not been completed, Appendix III lists those sites in investigation, and Appendix IV lists those sites that have been closed. These Appendices are updated on a semi-annual basis.

Tests of nuclear devices conducted in Nevada by the U.S. have caused radioactive contamination of the land surface and groundwater. Although most of the tests were conducted on the NTS, some caused contamination of the surface and/or groundwater on the NAFR. A few tests were conducted on the NAFR, and these have left areas of surface contamination. Nuclear weapons exploded on or above the surface left downwind fallout contamination of the surface. Some nuclear weapons exploded underground contaminated groundwater that may have moved beyond the boundaries of the test site. Supporting activities that employed such facilities as landfills and drains caused other types of contamination, both chemical and radiological.

Two industrial sites of significant area on the TTR are the Bomblet Target Area and NEDS Lake (Figure 3.4-1). NEDS Lake is located within the Bomblet Target Area. The NEDS lake area is contaminated with depleted uranium and the Bomblet Target Area is contaminated with conventional ordnance. Site investigations have been initiated because the areas are active weapons test areas and may contain live ordnance. The NEDS Lake and Bomblet Target Area are listed in the FFACO as inactive sites, pending characterization and corrective actions.

### **INDUSTRIAL SITES**

For the purposes of the FFACO, the industrial sites category includes facilities contaminated with chemical hazardous materials as well as with radioactive materials. The FFACO Appendices II, III, and IV (as revised January 1998), list the corrective action sites and progress toward closure. The nature of these sites range from abandoned septic systems and drains to buried ordnance and underground storage tanks. Remedial actions that lead to closure will be conducted in accordance with applicable laws and regulations.

### ***STATUS OF THE REMEDIATION OF INDUSTRIAL SITES***

Industrial sites on the TTR are in various stages of remediation. Remediation has completed for many industrial sites on the TTR. The FFACO Appendices II, III, and IV (as revised January 1998), list the corrective action sites and progress toward closure.

### **SOIL SITES**

The U.S. Government conducted *safety tests* of nuclear weapons where small quantities of plutonium or entire weapons were subjected to conventional high explosives (HE) to determine whether a nuclear chain reaction could occur following an accidental triggering of the HE materials in an assembled weapon. These experiments resulted in the dispersal of plutonium into the air and onto the ground (DOE 1996b).

Although most of the nuclear testing occurred on the NTS, one atmospheric nuclear test (Small Boy in 1962) and five safety experiments were conducted within the NAFR complex. Small Boy was exploded just east of the NTS/NAFR border on Frenchman Flat and left a downwind fallout pattern of fission products and plutonium on NAFR land which was still detectable in an 1994 aerial survey (DOE 1996a). Safety experiments on the NAFR included Project 57 (April 1957), Double Tracks under NAFR Range R-71 (May 1963), and Clean Slate I, II, and III (May and June of 1963) on the TTR. These safety shots did not produce fission products but dispersed plutonium onto the land surface.

Under a 1963 MOU, the Air Force delegated the portion of the NAFR known as Pahute Mesa to the Atomic Energy Commission for high-yield nuclear testing. The delegated area is delineated by R-4807B or equivalently by Areas 19 and 20 of the NTS. Surface contamination from the cratering tests, Palanquin (April 1965), Cabriole (January 1968), and Schooner (December 1968) were detected in the RIDP ground survey (DOE 1995) and in the 1994 aerial survey (EG&G 1994). The aerial survey data confirm that surface contamination from the Schooner test extends into the NAFR beyond the NTS boundary of the delegated Pahute Mesa area.

#### ***STATUS OF THE REMEDIATION OF SOIL SITES***

Interim clean-up actions were completed at the Double Tracks site in 1996. Clean Slate I sites were completed in accordance with the FFACO in 1997. The FFACO Appendices II, III, and IV (as revised January 1998), list the corrective action sites and progress toward closure.

The Air Force, DOE, and NDEP have formed a technical working group with other identified decisionmakers to reach concurrence on a corrective action level for radionuclide contamination in soil. It has been agreed upon through the technical working group that military future land-use scenarios will be used for the soil sites on the TTR and NAFR, and that a dose criteria of 25 milliroentgen equivalent man/yr and the RESRAD computer program will be used to calculate a corrective action level, where appropriate. Some of the military future land-use scenarios are relatively simple, so the corrective action levels can be calculated using simple spread sheet-type calculations. The corrective action level calculations are being independently peer-reviewed by the Nevada Risk Assessment Management Program. After the Nevada Risk Assessment Management Program's review and concurrence, and the as low as reasonably achievable analysis is complete, a corrective action level will be established.

#### **UNDERGROUND TEST AREAS**

The underground nuclear weapons tests conducted on Pahute Mesa have contaminated the groundwater. Of the underground test areas on the NTS, Pahute Mesa is in closest proximity to existing groundwater wells off site in the Oasis Valley (Daniels et al. 1993). The sites on Pahute Mesa are divided into two corrective action units (CAU): The Western Pahute Mesa CAU and the Central Pahute Mesa CAU. Eighty-one underground nuclear weapons development tests, one DOD nuclear test detection experiment, and three nuclear cratering experiments were conducted in the Pahute Mesa area (DOE/NV 1994).

The Western Pahute Mesa CAU consists of 18 sites in Area 20. These tests were all conducted in vertical emplacement holes. This CAU is separated from the Central Pahute Mesa CAU by the Boxcar Fault and is distinguished by the relative abundance of tritium. Transport of contaminants on and from Western Pahute Mesa involves groundwater flow in both welded and vitric tuffs, both in the rock matrix and in the fracture system (FFACO 1996).

The Central Pahute Mesa CAU consists of 64 sites in Areas 19 and 20 on Pahute Mesa. These tests were all conducted in vertical emplacement holes. Transport of contaminants on and from Central Pahute Mesa involves groundwater flow in fractures and the rock matrix in welded and vitric tuffs and lava flow aquifers. The influence of the large-scale block faulting is not well known (FFACO 1996).

#### ***STATUS OF THE REMEDIATION OF UNDERGROUND TEST AREAS SITES***

The DOE ERP is utilizing new and existing wells to characterize radionuclide transport via groundwater flow. Because of the contamination resulting from underground nuclear tests, portions of Pahute Mesa may require restrictions to additional groundwater development (DOE 1996a).

### **3.4.5 Solid Waste Management**

On the North Range, nonhazardous refuse, office wastes, dining hall wastes, and garbage that are generated in the major operating areas are collected in dumpsters and transported to a Class 2 landfill on TTR for disposal. A permit application for this landfill has been submitted to the State of Nevada. The landfill is currently operated under interim approval NAC 444.6405, paragraph 5. Hazardous wastes, asbestos wastes, construction debris and other special wastes are not permitted in this landfill. On the South Range, nonhazardous refuse and garbage generated in the major operating areas is picked up by a commercial disposal company and transported off-range to the Apex disposal site north of Las Vegas for disposal. Materials containing asbestos are removed from the ranges by licensed contractors and transported to commercially licensed permitted disposal facilities off-range. Polychlorinated biphenyl (PCB) contaminated equipment and wastes are disposed of through the DRMO. They are transported off base and disposed of at licensed permitted facilities. Hazardous wastes are removed from the range by licensed contractors and transported to commercially licensed and permitted disposal facilities off-range (personal communications, Vanderveen 1997 and Feldt 1997).

### **3.4.6 American Indian Issues Concerning Hazardous Materials and Solid Waste**

Although American Indian languages in the NAFR region have no words equivalent to the concepts of radiation and radioactive materials, the term "angry rocks" expresses the cultural perception. American Indians near NAFR believe that breaking or disturbing a rock, without accompanying the action with a full explanation, may release the rock's power and upset its natural balance. This action will "anger" the rock and result in "the creation of a source for cultural anomalies, which upsets the balance of the cultural ecosystem and affects Indian

people" (AIWS 1997). They believe that radiation, or the power released by the "angry rock," can hurt, damage or kill plants, animals, people, water or the air.

Indian people believe that past releases of radiation have already contaminated plants and animals used in traditional cultural practices. Some Indians feel they can detect radiation; if an area is determined by whatever means to be contaminated, then Indian people can no longer use its resources.

With regard to transporting hazardous materials, the *Native American Resource Document* (NARD) states:

Portions of the current road system within the western U.S. is based on ancient pathways and trails of Indian people. The Southwestern Desert Trail System was not used for trivial activities, but for trade, commerce, pilgrimage, and often for a hasty retreat or to pursue an enemy in the act of warfare. Trails were used to relay important messages to distant tribal groups.

Tribal governments would like to cooperate with Nellis AFB in the development and implementation of safe transportation policies. However, no systematic consultation with tribal governments has been conducted to date. [AIWS 1997]



**N**

AFR is located within the southern part of the Great Basin and includes geographic portions of the Mojave Desert.

NAFR is generally characterized by regularly-spaced, north-south trending mountain ranges that are separated by internally-draining alluvial basins or playas.

The elevations of mountains and intervening valleys increase from south to north. The valley bottoms of the South Range vary in elevation from approximately 3,000 to 3,600 feet, whereas the valley bottoms of the North Range are approximately 4,500 to 5,500 feet. Mountain range elevations are in excess of 6,000 feet on the South Range and over 8,600 feet on the North Range.

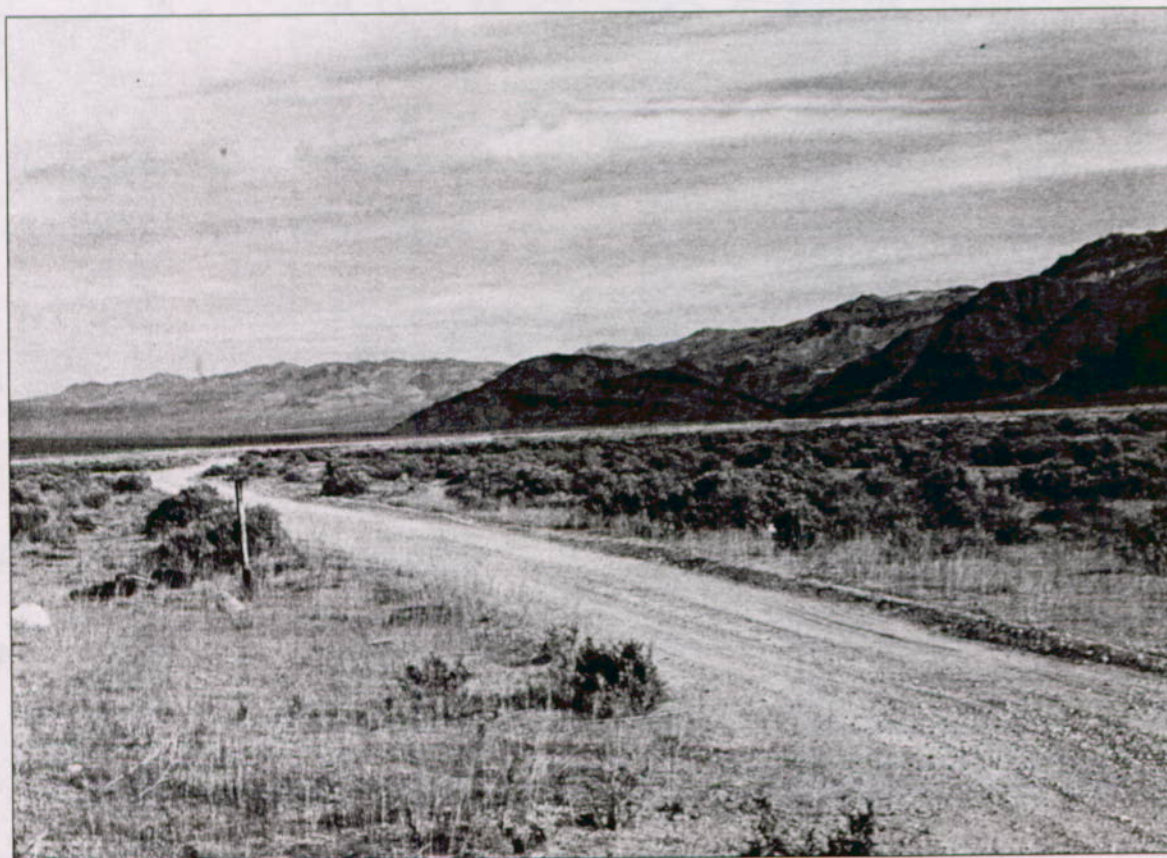
# EARTH RESOURCES

3.5



The basin and range structure of this region is most prominent in the southern and eastern portions of NAFR, as compared to the northern and western portions where volcanic activity buried the prominent mountain ranges. Pahute Mesa is a volcanic plateau within NAFR.

*NAFR is in the basin and range province, which is characterized by steep north-south trending mountains that drain to usually dry lake beds called playas.*



*The primary earth resource currently used on NAFR is aggregate spread on roads used to access target areas and other NAFR facilities.*

## 3.5 EARTH RESOURCES

Earth resources include geologic, soil, and paleontological resources located within ROI Two. For this assessment, the term "soil" refers to unconsolidated material and "rock" refers to consolidated material. Earth resources include mineral deposits, soils, significant landforms, tectonic features, and paleontologic (fossil) remains, any of which can have scientific, economic, and recreational value. This assessment analyzed data on the area's geologic setting, as well as the metallic, industrial, and energy resources of NAFR.

### 3.5.1 Geology

#### PHYSIOGRAPHY AND TOPOGRAPHY

NAFR is located within the southern part of the Great Basin, the northernmost subprovince of the Basin and Range Physiographic Province (Figure 3.5-1). This province is characterized by north-trending mountain ranges that are separated by alluvial basins (Figure 3.5-2). The Great Basin subprovince drains internally; precipitation has no surface water outlet to the Pacific Ocean.

Elevations vary substantially across NAFR. The valley bottoms of the South Range vary in elevation from approximately 3,000 to 3,600 feet, whereas those of the North Range are approximately 2,000 feet higher. Similarly, mountain ranges on the South Range exceed 6,000 feet and are more than 8,600 feet on the North Range (Air Force 1997g).

The topography over most of NAFR is undisturbed; however, the topography has been locally modified by man-made features, including roads, sand and gravel pits, underground mining, flood-control structures, drainage improvements, airstrips, landfills, fuel staging and storage areas, bombing targets, and by cratering from aerial bombing and nuclear detonations. Air Force tactical target complexes and associated infrastructure have disturbed approximately 90,000 acres. Aerial bombing craters are often present in the vicinity of the numerous bombing targets located throughout the North and South Ranges. However, the Coronet Clean program annually reconditions the target area by clearing unexploded ordnance, refurbishing targets, and removing bombing craters. Underground nuclear detonation tests, which result in the shattering of overlying rock layers and subsequent collapse of the near-surface soils, have created surface craters in the vicinity of Pahute Mesa.

The basin and range structure of this region is most prominent in the southern and eastern portions of NAFR. In this area, block-faulted mountains composed of massive Paleozoic carbonate rocks rise abruptly from flanking bajadas (coalescing alluvial fans). These bajadas are prominent physiographic features, attaining slopes up to 6 degrees. Because the prevailing wind direction in this area is from the west, sand ramps, created by blowing sediments from upwind playas (dry lakes), mantle the bajadas on the west side of the Desert and Pintwater ranges as they extend into the Three Lakes and Indian Springs valleys, respectively (Figure 3.5-2). The lower portions of the alluvial fans commonly attain slopes of 2 degrees or less, and



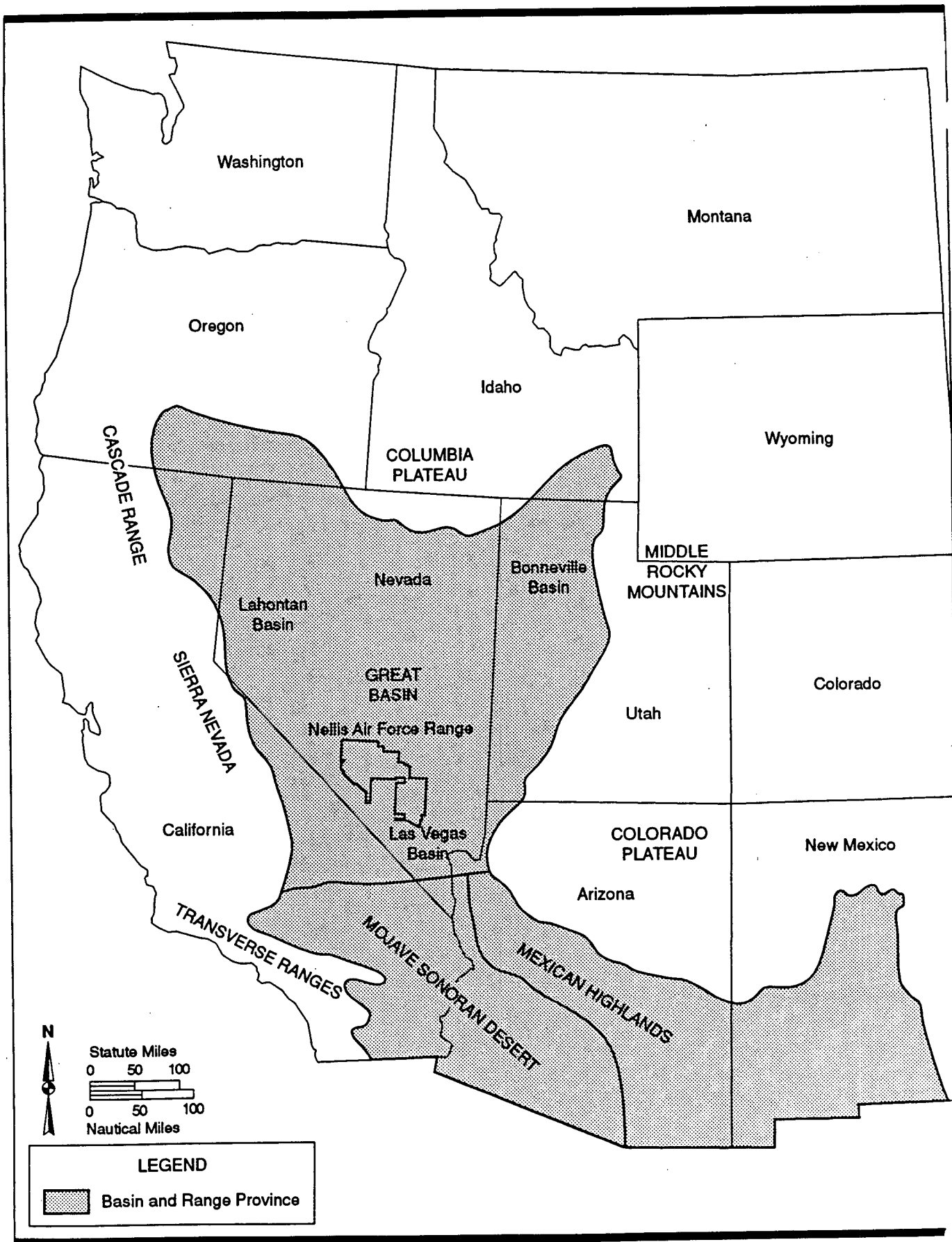


Figure 3.5-1. Basin and Range Physiographic Province

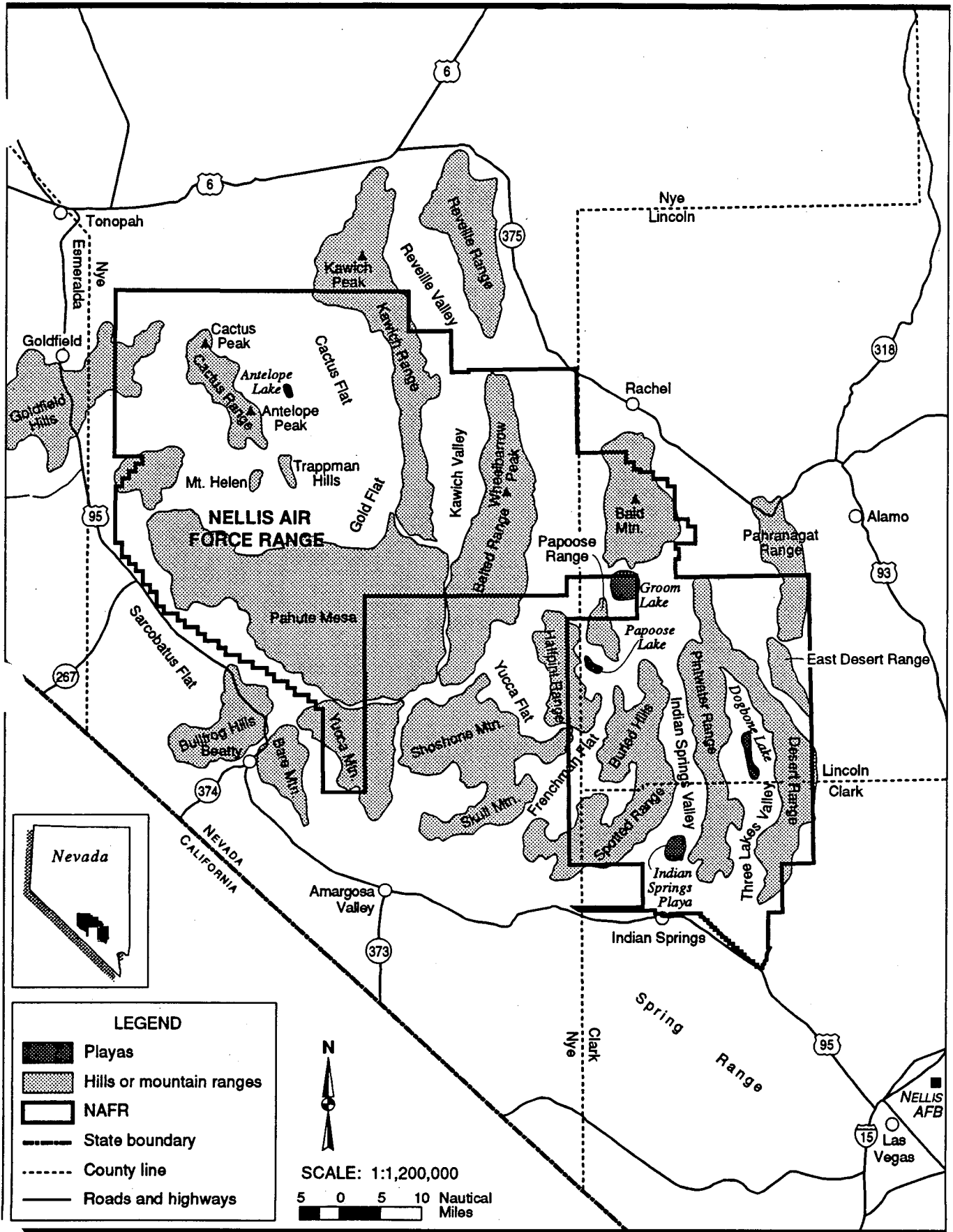


Figure 3.5-2. Physiographic Map of the Nellis Air Force Range and Surrounding Portions of Southern Nevada

terminate at playas that occupy the floors of many valleys in the NAFR. Other mountain ranges in this area include the Spotted, Pahrangat, Groom, and Belted Ranges (Air Force 1997g; NBMG 1997). The basin and range topography is not as pronounced in the northern and western portions of NAFR, as compared to the southern and eastern portions, due primarily to enormous accumulations of Tertiary volcanic rocks that have buried landscape. Pahute Mesa, a volcanic plateau in the southwestern part of NAFR (Figure 3.5-2), separates the two physiographic areas. Vast expanses of volcanic ash and rock, derived from the vicinity of the western Pahute Mesa, form Timber Mountain, Stonewall Mountain, the Black Mountains, and the Cactus and Kawich Ranges (Figure 3.5-2) (Cornwall 1972). The valleys are broader in this area than in the southern portions of the NAFR. In addition, playas have developed in many of these valleys (e.g., Mud Lake, Stonewall Flat, Cactus Flat). Drainages from Stonewall Mountain and Pahute Mesa flow west and southwest into Sarcobatus Flat and the Amargosa Desert (Air Force 1997g; NBMG 1997).

### **GEOLOGIC SETTING**

The geologic terrain of NAFR can be divided into a southeastern area of largely Paleozoic sedimentary rocks and a northwestern area of mainly volcanic rocks of late Cenozoic age (Figure 3.5-3) (NBMG 1997).

### **STRATIGRAPHY**

Rock formations (or units) exposed across NAFR vary in age from Precambrian (older than 570 million years before present [B.P.]) to Quaternary (less than 1.6 million years B.P.). Quaternary alluvium and lower Tertiary volcanic rocks occur in and near valleys as relatively large, irregular-shaped outcrop patterns, whereas the older strata, primarily mixed clastic and carbonate rocks, occur in the mountains as smaller, scattered, isolated outcrops. This distribution of rocks at the surface is a function of both the covering affect of volcanics and alluvium and the extensive fragmentation of the older rocks from multiple mountain-building events in the region (Air Force 1994a).

The strata in NAFR represent many depositional environments and time periods. Upper Precambrian and Lower Cambrian strata, which range in age from 550 to 650 million years B.P., are predominantly mixed clastic sediments (sandstone and shale) and carbonates (limestone), with some metasedimentary rocks (quartzite and chert). The remainder of the Paleozoic section, which ranges in age from 245 to 550 million years B.P., includes a similar mix of rock types, with scattered volcanics occurring in the lower portion. Mesozoic rocks (66 to 245 million years B.P.) are sparse. Lower Tertiary strata (Eocene, Oligocene, and Miocene), which range in age from 5 to 58 million years B.P., are dominated by volcanics, whereas mixed sediments are generally present in the upper Tertiary sequence (Pliocene – 1.6 to 5.3 million years B.P.). Quaternary sediments are generally unconsolidated debris shed from the erosion of neighboring mountains (Air Force 1994a).

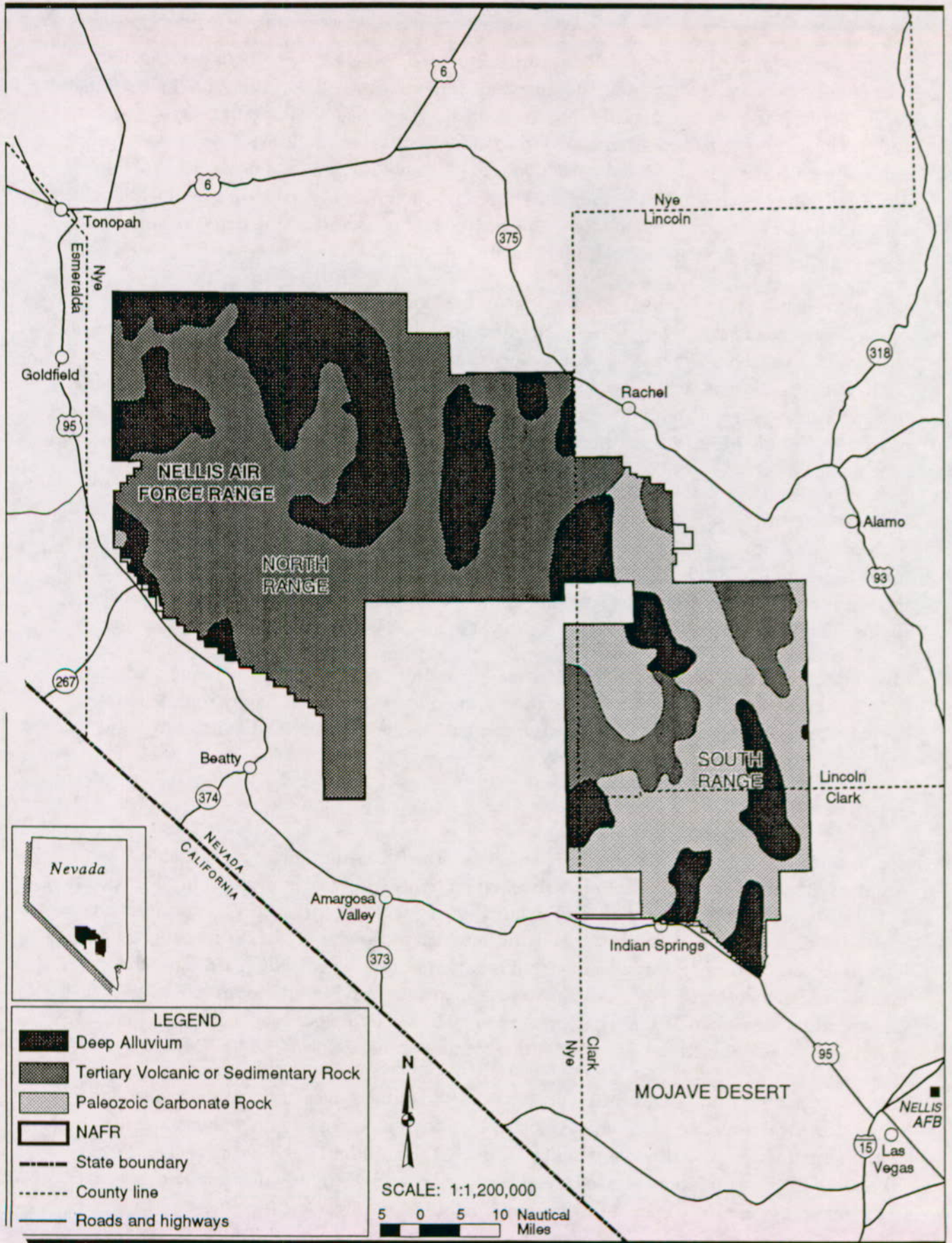


Figure 3.5-3. General Geology within the Nellis Air Force Range

The mountain ranges in the South Range are dominated by Paleozoic carbonate rocks, with lesser amounts of quartzite, sandstone, and shale (Figure 3.5-3). Valleys contain thick deposits of late Tertiary and Quaternary alluvium from erosion of adjacent mountain ranges. Lacustrine and fluvial sedimentary rocks, deposited in shallow basins from middle to late Tertiary, crop out in several areas within NAFR, particularly in the southern Spotted Range, the Pintwater Range, and the Desert Range (Figure 3.5-2). Locally, older Tertiary valley-fill sediments, which were uplifted with the underlying Paleozoic bedrock, are exposed on the flanks of some mountains (Longwell et al. 1965; NBMG 1997).

Tertiary volcanic rocks dominate the geology of the North Ranges. The Timber Mountain caldera was one of several large centers of volcanic activity in this area (Figure 3.5-4) (Byers et al. 1976, Huber 1988). Other volcanic centers include the Black Mountain, Cactus Range, and Silent Canyon calderas, and the Mount Helen dome. Welded and air-fall tuff, derived from these volcanic centers, extend throughout the North Ranges, including the extensive tableland of western Pahute Mesa, the southern Cactus and Kawich ranges, and Stonewall Mountain (Cornwall 1972; NBMG 1997) (Figure 3.5-2).

Two general groups of volcanic rocks are recognized: (1) an older, late Oligocene-early Miocene sequence of ash-flow tuffs and related lavas erupted from volcanic centers within and to the north of NAFR (Ekren et al. 1971; Best et al. 1989); and (2) middle- and late-Miocene ash-flow tuffs and lavas erupted from volcanic centers of the southwestern Nevada volcanic field (Byers et al. 1976; 1989; Noble et al. 1991; Sawyer et al. 1994).

Hydrothermal alteration and associated mineralization have affected rocks in many parts of NAFR. Many areas of alteration appear to be related to magmatism (mainly middle to late Tertiary) associated with caldera margins or centers of silicic to intermediate volcanic and shallow subvolcanic rocks (NBMG 1997).

### ***TECTONIC HISTORY***

The tectonic history of the region is very complex. The Basin and Range was a stable continental margin until late Devonian time, when uplift and erosion resulted in the deposition of thick Mississippian sandstones in a foreland basin. Regional thrusts, folds, and wrench faults developed during compressional deformation associated with the Sevier orogeny during late Cretaceous and early Tertiary time; that mountain-building episode rearranged the position of Paleozoic and older sedimentary rocks in southern Nevada (Armstrong 1968; Caskey and Schweickert 1992). The Spotted Range thrust fault, located in the South Range (Figure 3.5-5), is believed to be a result of this compressional deformation (NBMG 1997).

Following erosion throughout early Tertiary time, the initial stages of the modern basin and range structural province began to develop from extension along low-angle normal faults, high-angle normal faults, and strike-slip faults (Guth 1981; Hamilton 1988; Wernicke et al. 1988; NBMG 1997). The initiation of extensional faulting at NAFR is poorly documented; however, early phases appear to be episodic, beginning in Eocene or Oligocene time (Best and

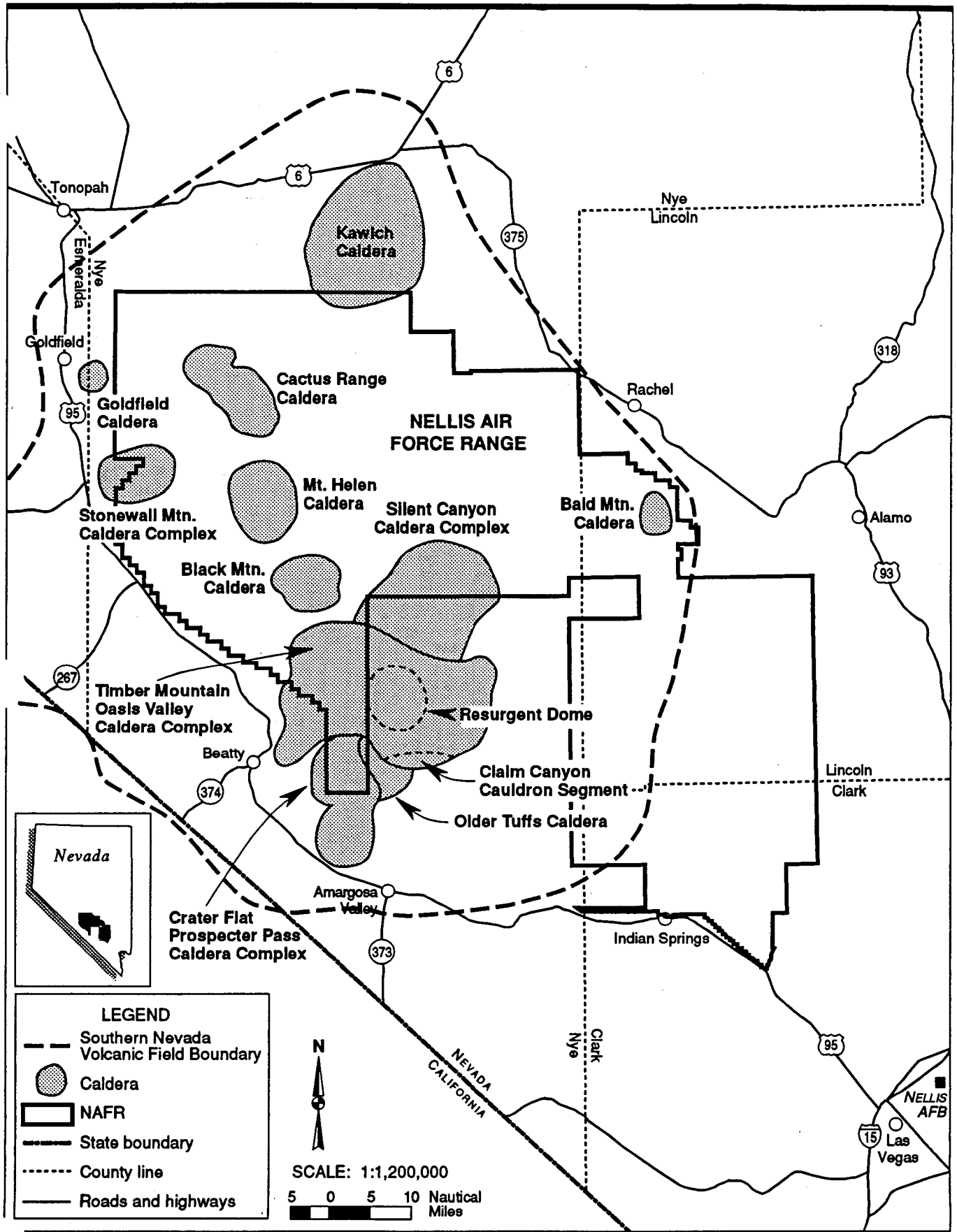


Figure 3.5-4. Southwestern Nevada Volcanic Field

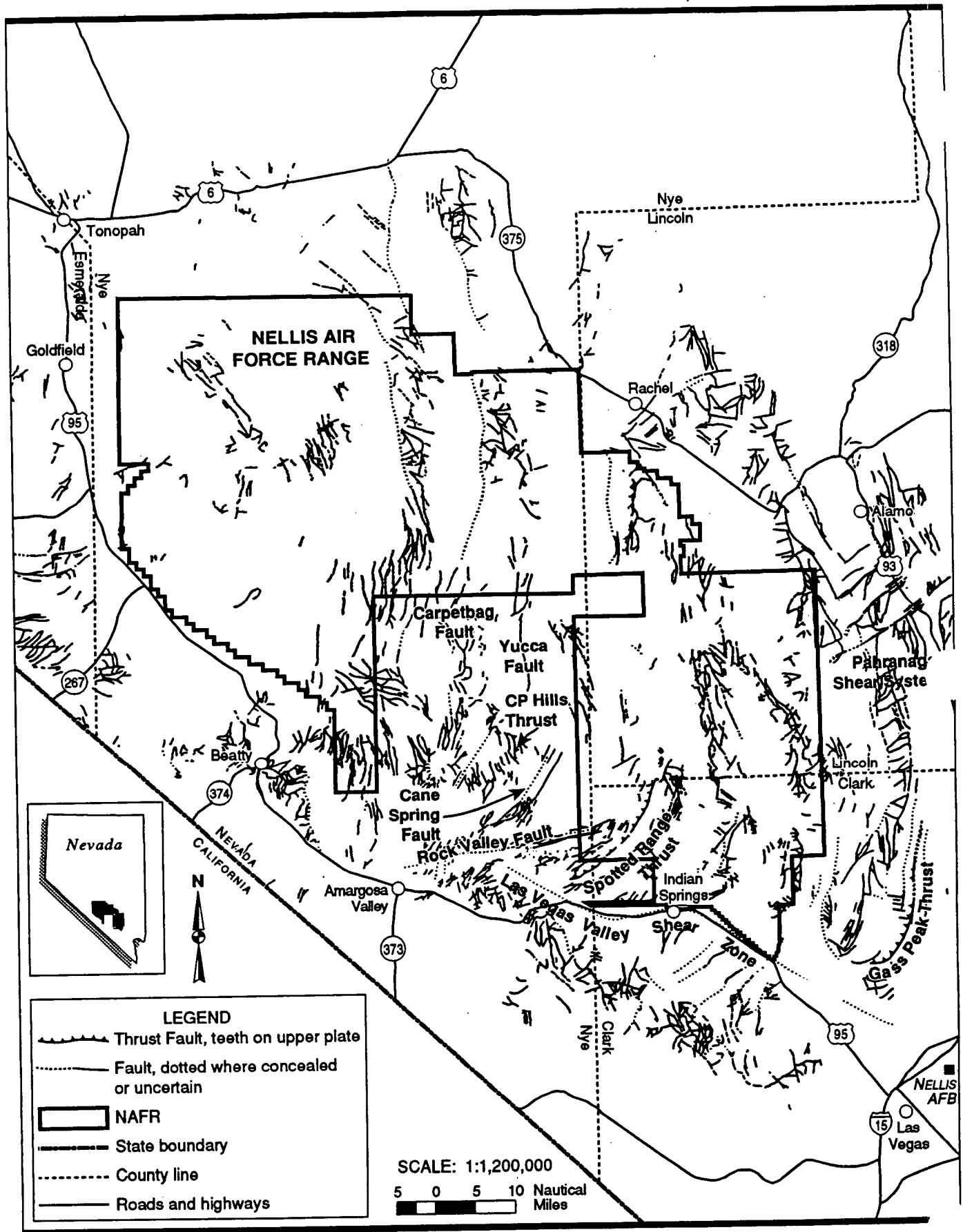


Figure 3.5-5. Tectonic Map of NAFR and Vicinity

Christiansen 1991). Low-angle normal faulting and associated tilting began in the early Miocene. High-angle, basin-and-range normal faulting at NAFR began in the middle Miocene (14 to 17 million years B.P.) (Ekren 1968).

Eruptions of the southwest Nevada volcanic field occurred in middle Tertiary time (Sawyer et al. 1990). Successive eruptions produced at least seven large and partially overlapping calderas on NAFR (Figure 3.5-4), which were filled with lava flows and covered by vast deposits of tuff. This volcanic field is located along the margin of the Walker Lane Belt, a zone of diverse topography between the Sierra Nevada and the north-striking ranges of the basin and range. In the western NAFR, this section of the Walker Lane Belt does not include significant right-lateral strike-slip faults, in contrast to other sections such as the Las Vegas Valley shear zone and areas in west-central and northwest Nevada (NBMG 1997).

Although extensional faulting has occurred in the area for the past 17 million years, this faulting has been episodic and has changed in location through time. The existing mountains have generally been present in the current configurations for 5 to 7 million years. Resultant intervening alluvial basins have progressively filled with coarse gravels, sands, and playa deposits. Specific faulting mechanisms (e.g., normal faults overlying detachment faults versus simple normal faulting) often determine resulting sedimentation and erosion patterns.

#### ***SEISMICITY AND FAULTING***

NAFR is located within Seismic Zones 2B and 3, as defined in the Uniform Building Code (ICBO 1991) (Figure 3.5-6). The eastern two-thirds of NAFR is located within Zone 2B, defined as an area of moderate damage potential. The western one-third of NAFR is located within Zone 3, defined as an area with major damage potential. Current design standards require facilities to be built to seismic Zone 4 standards (DOE 1996a).

At least one active fault is located at NAFR. The Yucca fault, located in the south-central portion of the site (Figure 3.5-5), is considered active based on displacement of surface alluvium by as much as 60 feet. Offset of such young deposits is indicative of fault movement within the last few thousand to tens of thousands of years. Subsurface displacement along this fault has been determined to be approximately 700 feet (Sinnock 1982). Other active faults may also occur on the range.

Inactive or potentially active faults are also present at NAFR. The Carpetbag fault, located west of the Yucca fault, demonstrates approximately 2,000 feet of displacement in the past 7.5 million years (Sinnock 1982). In addition, the Pahrnagat fault system, located in the South Range, displays Quaternary (past 2 million years) fault movement. The majority of the faults on NAFR are considered inactive.



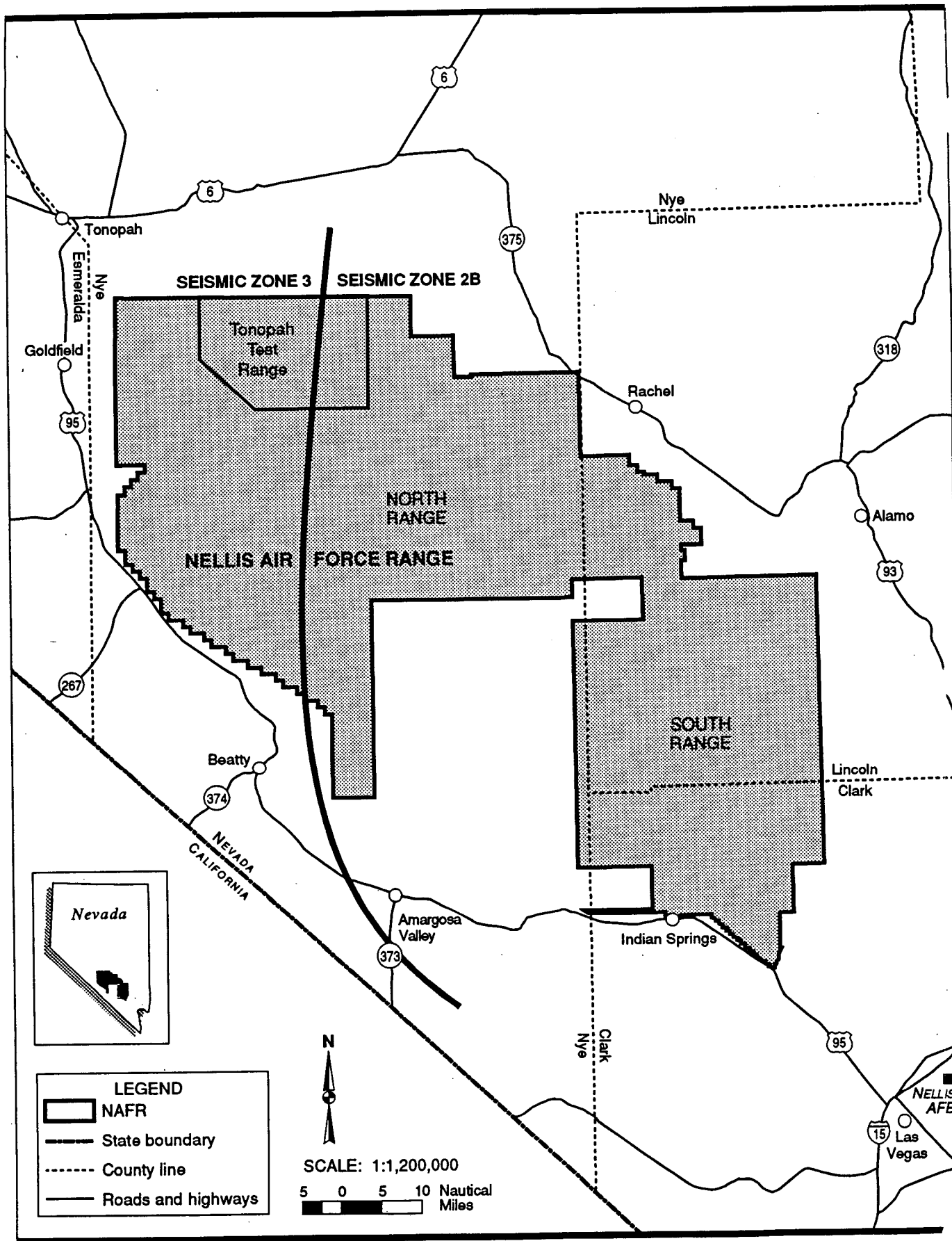


Figure 3.5-6. Seismic Zones in the NAFR Area

## ***VOLCANISM***

Several late Cenozoic silicic calderas occur on NAFR. The area containing these calderas is referred to as the southwestern Nevada volcanic field (Byers et al. 1989) (Figure 3.5-4). The Stonewall caldera, located in northwestern NAFR, is the youngest major silicic center in the area (7.5 million years). Silicic volcanism is characterized by large-volume explosive eruptions (DOE 1996a).

During the past 10 million years, low-volume, mild eruptions of basalt occurred in the region (Christiansen and Lipman 1972). These eruptions resulted in basaltic cinder cones and lava flows (Sawyer et al. 1990; Stewart 1980). The nearest examples of Quaternary (past 1.6 million years) volcanic cones and lava flows are at Crater Flat, located in southwestern NAFR (Crowe et al. 1986).

Based on an analysis of previous basaltic volcanism in the NAFR region, no evidence exists of either an increase in the rate of volcanic activity or that large-volume volcanic activity would resume (Crowe et al. 1986).

### **3.5.2 Soils**

The soils on NAFR have not been mapped in detail; however, general descriptions of soil series are available from the U.S. Department of Agriculture (USDA). NAFR consists of several general soil associations. The St. Thomas series, consisting primarily of shallow, well-drained soils that formed in colluvium and residuum from limestone and dolomite, are the primary soil types found in the mountains. These soils generally occur on hills and mountains with 8 to 75 percent slopes. The Crosgrain and Arizo soil series are the primary soil types on the fan piedmonts. The Crosgrain series are shallow, well-drained soils that formed in mixed alluvium on ballenas (older fan piedmonts), with slopes of 4 to 30 percent. The Arizo series are very deep, excessively drained soils that formed in mixed alluvium on recent alluvial fans, with slopes of 0 to 15 percent (USDA 1993).

The basin floors generally consist of the Mazuma and Ragtown soil series. The Mazuma series are very deep, well-drained soils that formed in alluvium and lacustrine materials from mixed rock sources. Mazuma soils occur on fan skirts and alluvial flats, with slopes of 0 to 15 percent. The Ragtown series are very deep, moderately well-drained soils that formed in moderately fine and fine-textured lacustrine materials from mixed rock sources. This series occurs on lake plain terraces with slopes of 0 to 4 percent (USDA 1993).

The alluvial soils that dominate the fans and basins, in conjunction with the fine soil particles from lacustrine sources are subject to excessive wind erosion. These fine-grained materials are often thrust into the airstream, resulting in fugitive dust problems. This problem is made worse by vehicle-induced soil disturbance or loss of topsoil due to wildfires or concentrated grazing activities.

Soil data are also available from cultural resource surveys (e.g., Dames & Moore 1995) and geologic studies in adjacent areas (Quade et al. 1995). Based on these studies, the soils of the South Range are aridisols developed in carbonate parent material, usually with weak, vesicular A horizons, strong cumulic B horizons, and moderate to well developed C horizons (depending on the age of the parent sediment). Strongly developed carbonate soil morphologies occur where major washes are entrenched into alluvial fans (Air Force 1997g).

In the North Ranges, A horizons are typically better developed due to more moisture compared to the South Range, and because the soils have developed on predominantly volcanic parent material. These soils typically consist of a noticeable organic component in relatively dense scrub and woodland habitats. Similar to the South Range, B horizons in the North Range have a cumulic character due to the influx of eolian silt and clay-sized particles that occurred during Quaternary time. Carbonate horizons are commonly developed in older parent material with most carbonate material originating from eolian dust (Air Force 1997g).

The creation of subsidence craters at each of the target areas at NAFR, as described in section 3.5.1, may have resulted in increased erosion due to the removal of natural topsoil in these areas. The permeability of the soils and strata underlying subsidence craters (induced by underground nuclear testing) on Pahute Mesa may have increased from natural conditions due to the shattering and fracturing of rock associated with the detonation (DOE 1996a).

Another consequence of former underground testing and aerial bombing has been contamination of soils. Pockets of radioactive contamination surround each expended underground test (DOE 1996a). Ordnance residues (e.g. napalm, fuel-air explosives, white phosphorus) have contaminated soils in the vicinity of bombing targets (Air Force 1996c). In addition, soil contamination has been identified on the NAFR from operations and maintenance spills (primarily fuels, oils, etc.). See section 3.4, Hazardous Materials and Solid Waste Management, for additional information on soil contamination.

### **3.5.3 Mineral Resources**

#### **REGULATORY COMPLIANCE**

The creation of NAFR in the 1940s withdrew large amounts of public land from mining. In accordance with the Engle Act of 1958 (43 CFR, USC 155 et seq.), all mineral exploration within land withdrawal areas must be compatible with military uses and completed under the jurisdiction of the Secretary of the Interior. In 1986, Air Force requirements to test advanced weapons and tactics eventually necessitated increased security for NAFR. Therefore, the Secretary of the Air Force was given authority for exclusive military use by enactment of PL 99-606 and the MLWA of 1986. In accordance with PL 99-606 as amended, the Secretary of the Interior must determine, at least every five years, whether it is suitable to open any of the withdrawn lands for mineral resource entry. As part of the renewal process, an environmental impact statement (EIS) must be completed, which includes a mineral resource analysis prepared by a qualified geologist.

**REGIONAL MINERAL RESOURCES**

Mining has occurred on NAFR since the 1860s. Most of the known gold and silver deposits were discovered in the early 1900s. Although mining decreased substantially after these initial discoveries, it continued sporadically until 1942 when NAFR was closed to mining. Most mining occurred in the northern part of NAFR, with most production in the Groom district (Air Force 1996b). Production from mining districts at NAFR is summarized in Table 3.5-1 and districts are outlined in Figure 3.5-7. Because more ore was almost certainly produced in some districts than was recorded, the numbers in Table 3.5-1 represent minimum production estimates (NBMG 1997).

With the exception of the Groom Mountain Range, little or no mineral exploration or related activity has been allowed in the last 50 years. The Groom Mountain area contains 1 unpatented mining claim, 16 patented mining claims, and all or portions of two oil and gas leases. Each of these claims and leases will continue to be recognized by the DOI until relinquishment, expiration, or purchase by the Air Force (Air Force 1996b; DOI 1989). Minerals discovered at NAFR include gold, silver, copper, lead, zinc, mercury, tungsten, and turquoise. In addition, commercial-grade sand, gravel, and limestone occur at NAFR. Potentially valuable deposits of sodium, potassium, alunite, and potash also occur in this area. Significant quantities of gypsum and limestone are produced from areas adjacent to NAFR (Air Force 1996b; DOI 1989).

**SITE-SPECIFIC MINERAL RESOURCES**

All or part of 25 mining districts and areas are located within NAFR. In addition, 13 smaller areas of prospecting activity have been identified. Mineral production has occurred in most of the larger areas. The smaller areas may consist of only a few concentrated prospects (NBMG 1997). A mineral inventory (NBMG 1997) summarizes the geology and mineralization at each of the primary mining districts and areas at NAFR. Locations of these districts and areas are shown on Figure 3.5-7.

**ASSESSMENT OF MINERAL AND ENERGY RESOURCE POTENTIAL**

The following assessment of mineral and energy resource potential on NAFR is based on the NBMG (1997).

**METALLIC MINERALS**

Regional geochemical data were used to define areas of mineral resource potential for precious and base metals (Figures 3.5-8 through 3.5-11). On a district level, rock sampling and field examination data were used to define specific areas of metallic resource potential (Figures 3.5-12 and 3.5-13, Tables 3.5-2 and 3.5-3).

*Gold and Silver.* Areas of gold and silver potential (Figure 3.5-8) are generally concentrated in the northern part of NAFR. Large areas of high resource potential were defined in the

Table 3.5-1. Total Production by District, NAFR

District	Ore (tons)	Gold (oz.)	Silver (oz.)	Copper (lbs.)	Lead (lbs.)	Zinc (lbs.)	Years Produced
Antelope Spring	328	157	54,024	275	454		1912-1917, 1926, 1939
Cactus Springs	200	15	3,147				1909-1910, 1915-1916, 1920, 1927, 1940-1941
Clarkdale	316	160	398				1932-1933, 1936-1938, 1940
Gold Crater	188	82	2,722		4,500		1913, 1916, 1939, 1949, 1953
Gold Reed	335	217	475				1910-1912, 1921, 1927, 1941
Groom	34,484	45	145,279	72,421	10,425,430	39,100	1915-1918, 1922-1931, 1933-1938, 1942-1956
Jamestown	1	4					1908
Mellan	20	3	2				1936
Oak Springs	26	10	667	3,832			1917, 1951
Papoose	458	1	3,029	400	301,673		
Rainstorm	39	5	918	128	42,741		1933, 1951
Silverbow*	3,524	1,346	95,976				1906-1914, 1920-1923, 1929-1936, 1940-1947, 1955
Southeastern	31		352	1,400	2,700		1940, 1947
Stonewall*	38	16	1,165				1910, 1915-1916
Tolicha	991	1,345	2,409				1923, 1929-1936, 1940
Trappmans	1	1	130				1908
Wilsons	15		527	105	993		1933
<b>TOTAL</b>	<b>40,995</b>	<b>3,407</b>	<b>311,220</b>	<b>78,561</b>	<b>10,778,491</b>	<b>39,100</b>	
<p>Notes: * Some production for Silverbow and Stonewall districts may have come from mines outside NAFR. Production for all other districts came entirely from mines within NAFR.</p> <p>Source: NBMG 1997.</p>							

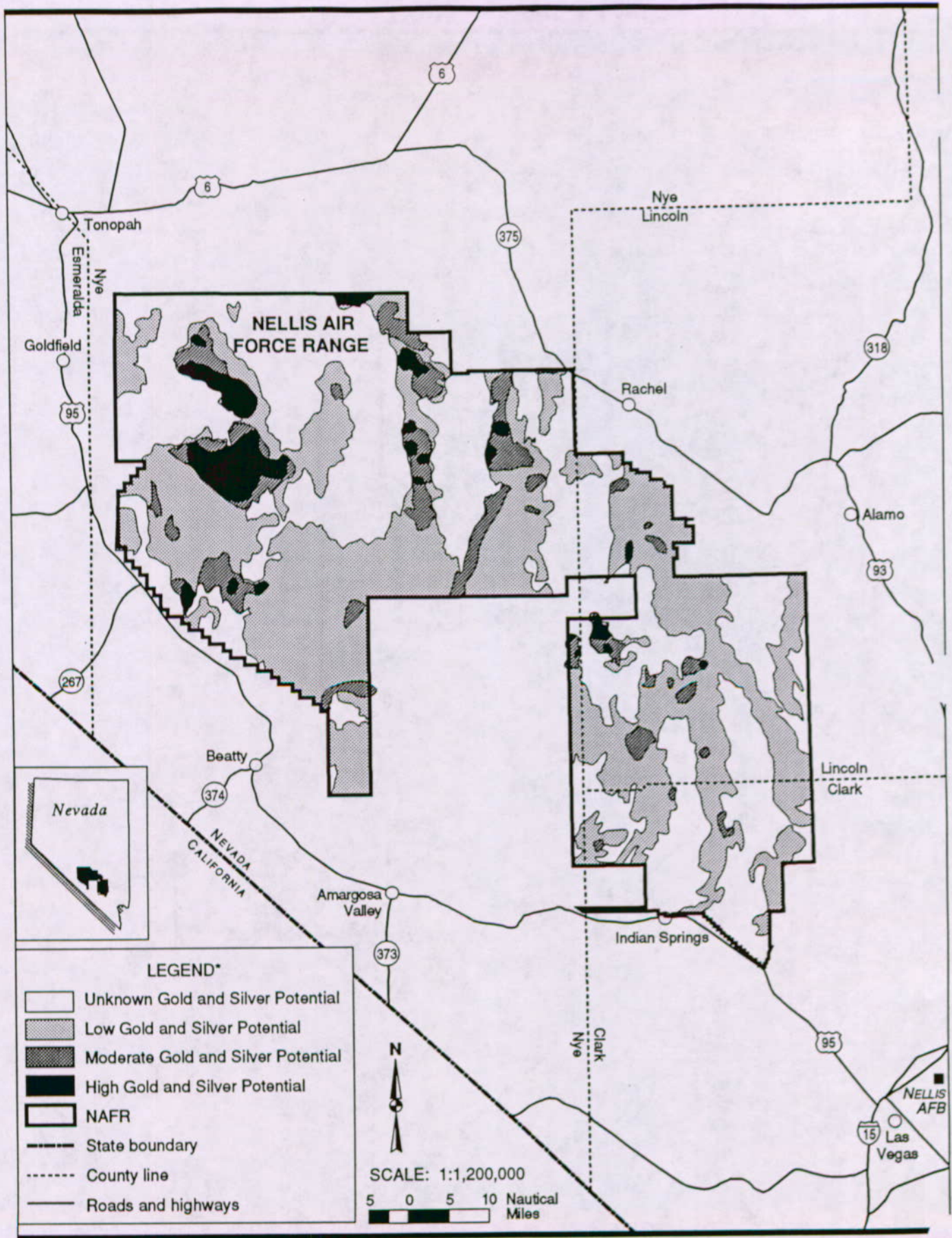


Figure 3.5-8. Areas of Gold and Silver Potential (\*as defined by stream sediment samples)

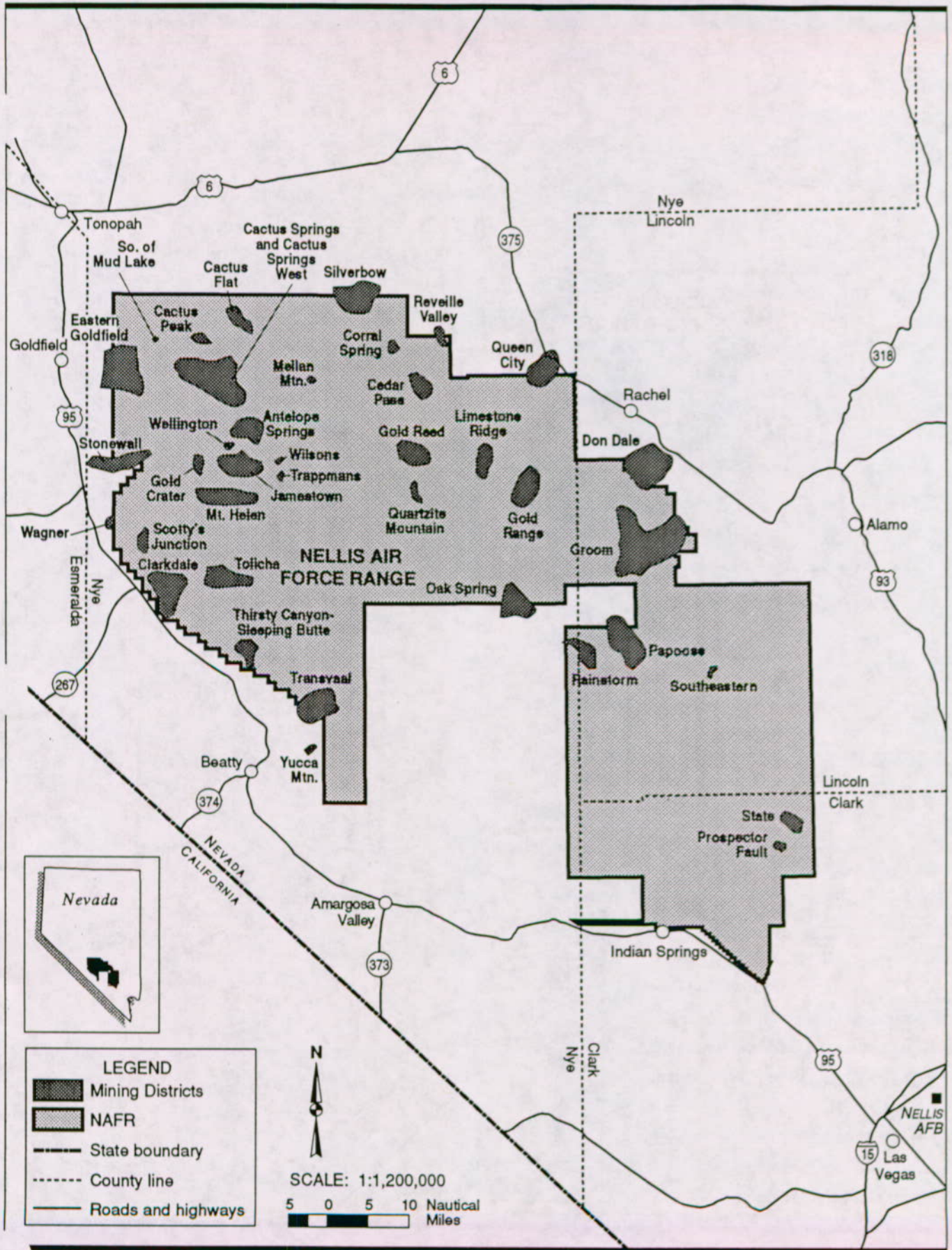


Figure 3.5-7. Mining Districts and Areas within the Nellis Air Force Range

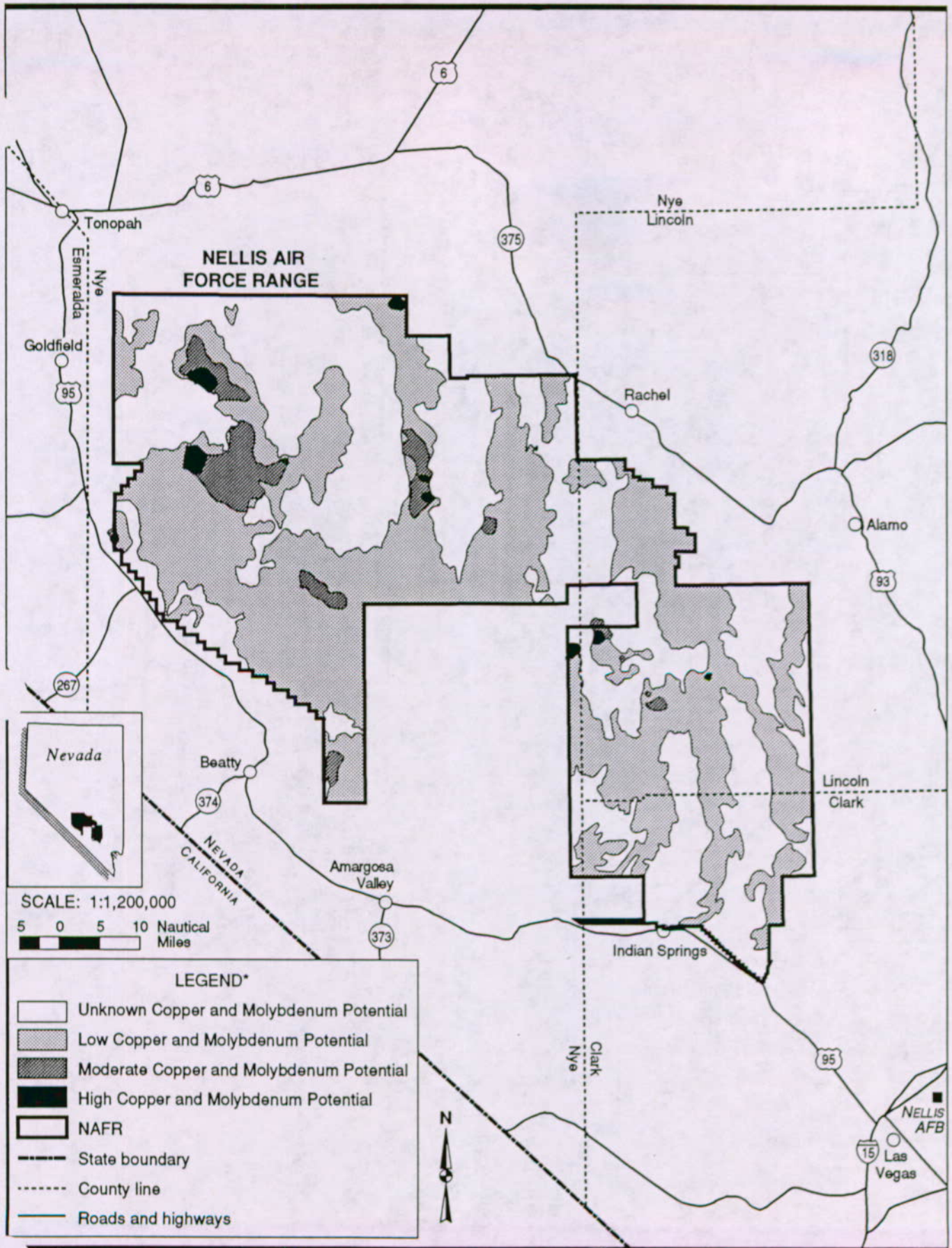


Figure 3.5-9. Areas of Copper and Molybdenum Potential (\*as defined by stream sediment samples)



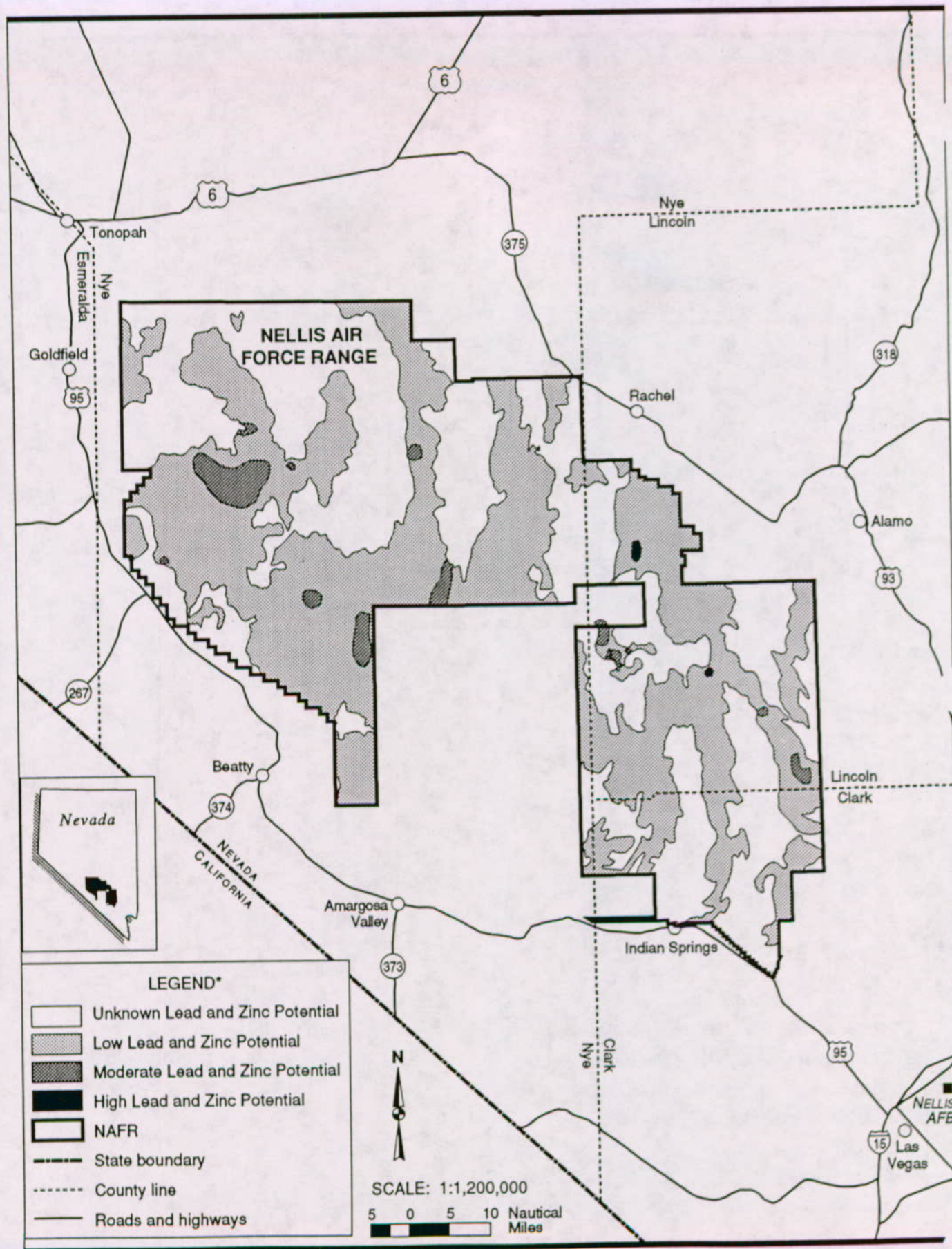


Figure 3.5-10. Areas of Lead and Zinc Potential (\*as defined by stream sediment samples)

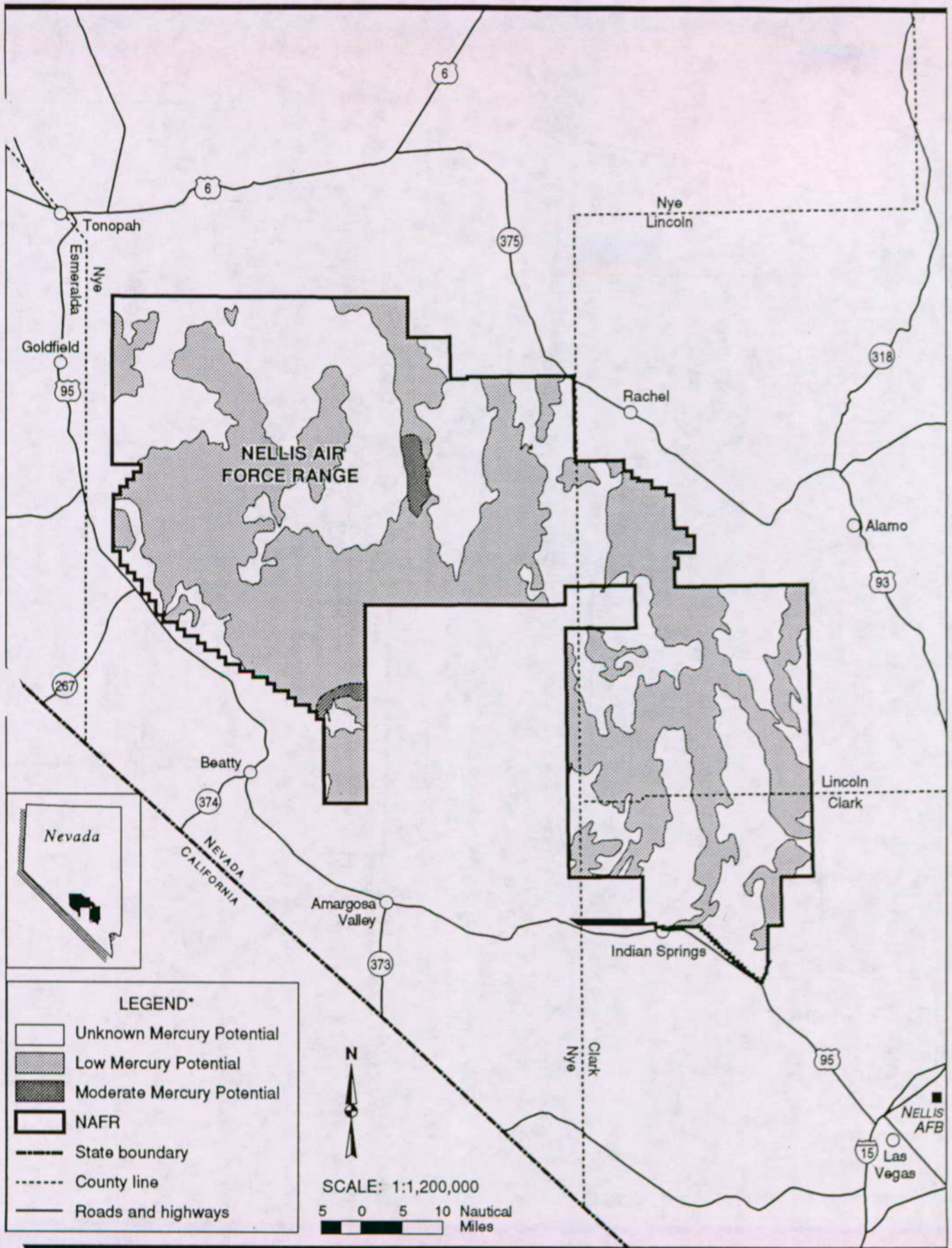


Figure 3.5-11. Areas of Mercury Potential (\*as defined by stream sediment samples)

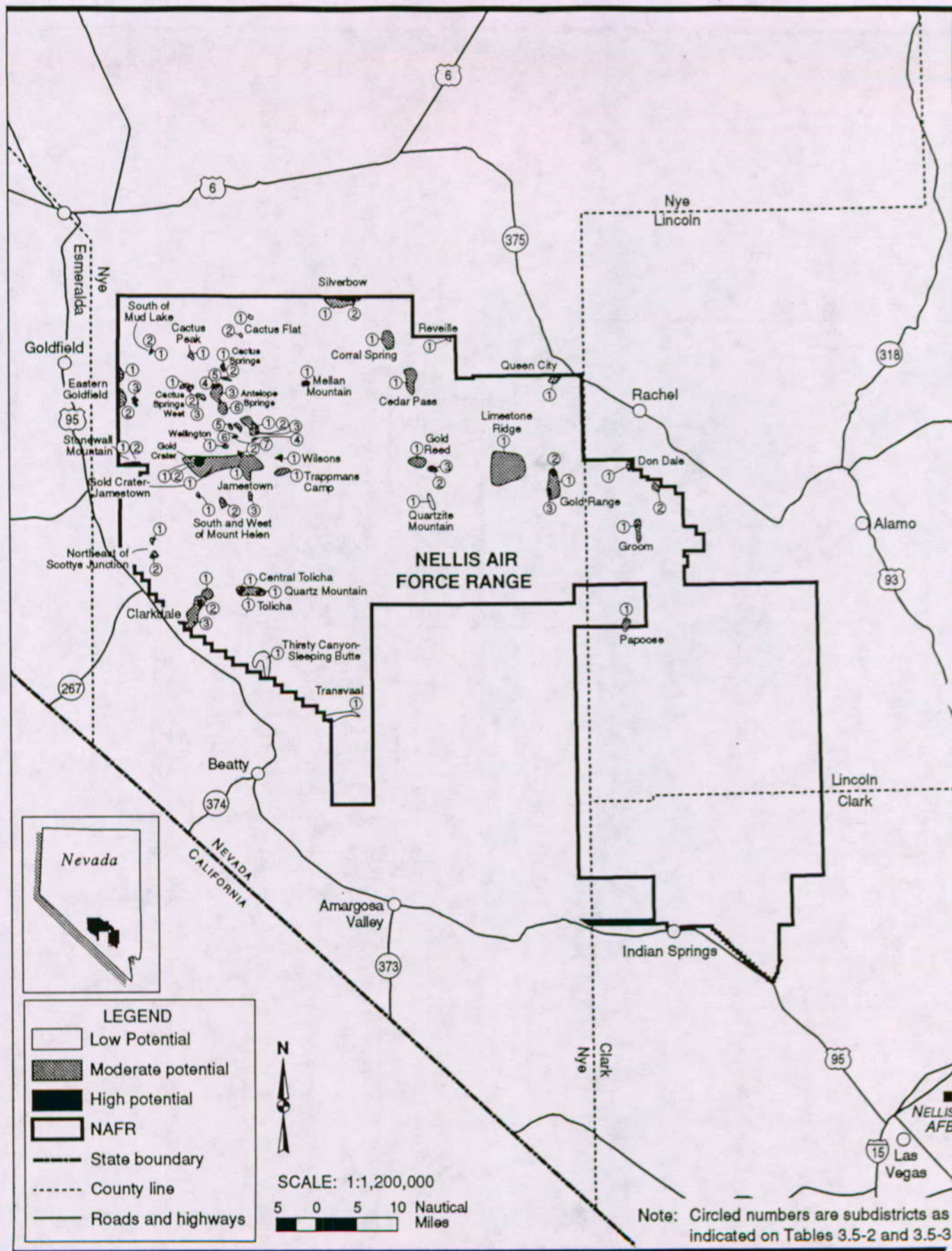


Figure 3.5-12. Precious Metals Potential, Nellis Air Force Range

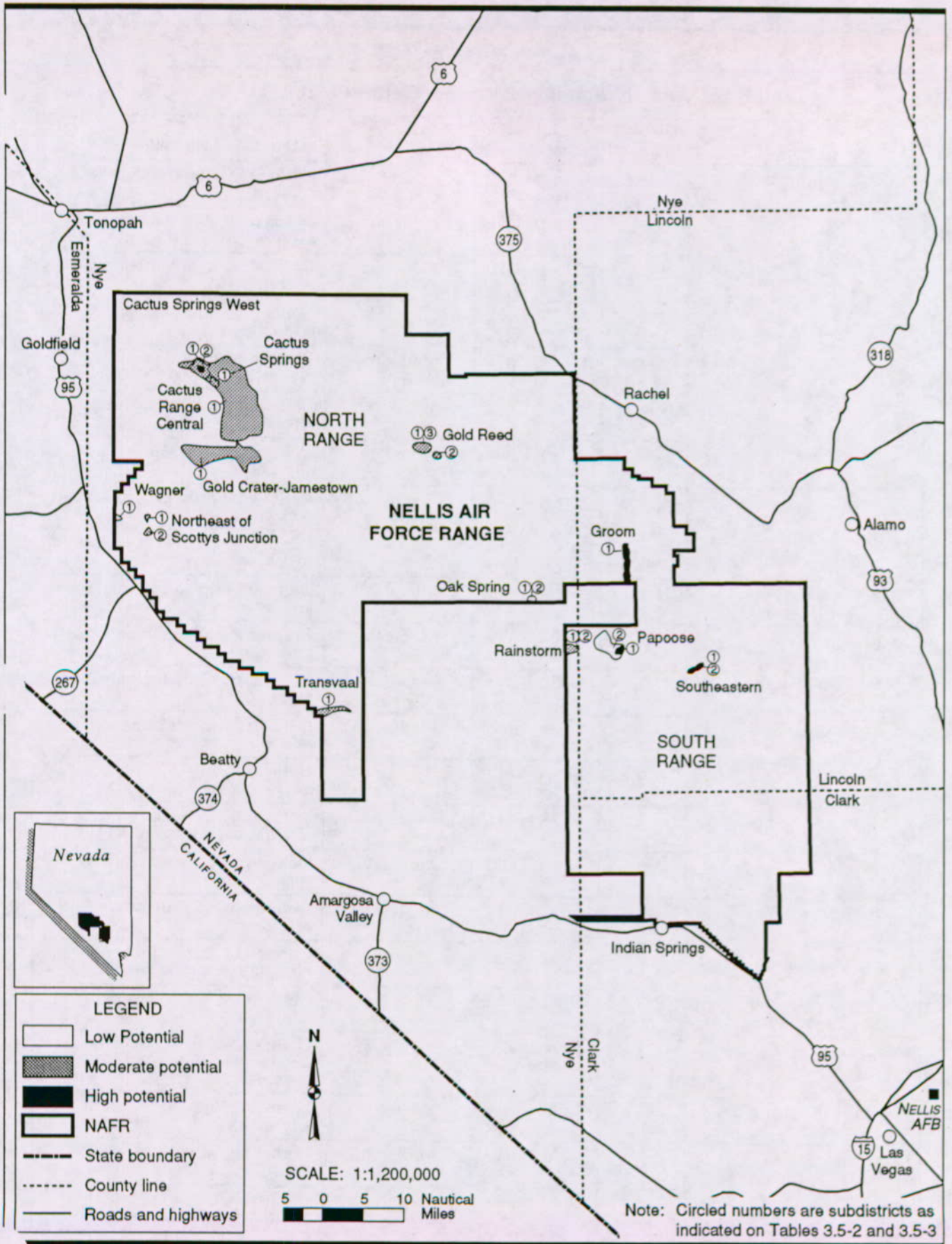


Figure 3.5-13. Base Metals Potential, Nellis Air Force Range

Table 3.5-2. Areas of Resource Potential, Precious Metals (page 1 of 3)

District	District/ Area*	Mineral Resource	Resource Potential	Comments
Antelope Springs	1	Silver, Gold dissem	Low	Defined by alteration, rock chemistry
	2	Silver, Gold vein	Moderate	Defined by mine and surface sampling
	3	Silver, Gold	Moderate	Defined by mines, prospects, alteration
	4	Silver, Gold	Moderate	Defined by mines, prospects, alteration
	5	Silver, Gold	Moderate	Defined by mines, prospects, alteration
	6	Silver, Gold	Moderate	Defined by mines, prospects, alteration
	7	Silver, Gold	Moderate	Defined by mines, prospects, alteration
Cactus Flat	1	Silver, Gold	Low	Defined by prospects, alteration, rock chemistry
	2	Silver, Gold	Low	Defined by prospects, alteration, rock chemistry
Cactus Peak	1	Gold, Silver	Moderate	Defined by color anomaly, rock alteration
Cactus Springs	1	Gold, Silver	Moderate	Defined by color anomaly, rock alteration
	2	Gold, Silver	Moderate	Defined by color anomaly, rock alteration
	3	Silver, Gold	Moderate	Defined by mines, prospects, alteration, rock chemistry
	4	Silver, Gold veins	High	Defined by mines, prospects, alteration, rock chemistry
	5	Silver, Gold	Moderate	Defined by mines, prospects, alteration, rock chemistry
	6	Silver, Gold	Moderate	Defined by prospects, alteration, rock chemistry
Cactus Springs West	1	Gold, Silver	Moderate	Defined by rock alteration, rock chemistry
	2	Gold, Silver	Moderate	Defined by mines, prospects, alteration, rock chemistry
	3	Gold, Silver	Moderate	Defined by mines, prospects, alteration, rock chemistry
Cedar Pass	1	Silver, Gold	Moderate	Defined by prospects, color anomaly, alteration, rock chemistry
Central Tolicha	1	Gold, Silver	High	Defined by mines, prospects, alteration, rock chemistry
Clarkdale	1	Gold, Silver	Moderate	Defined by alteration, rock chemistry
	2	Gold, Silver	High	Defined by mines, prospects, alteration, rock chemistry

**Table 3.5-2. Areas of Resource Potential, Precious Metals (page 2 of 3)**

<i>District</i>	<i>District/ Area*</i>	<i>Mineral Resource</i>	<i>Resource Potential</i>	<i>Comments</i>
Clarkdale (cont)	3	Gold, Silver	Moderate	Defined by mines, prospects, alteration, rock chemistry
Corral Spring	1	Gold, Silver	Moderate	Defined by prospects, alteration, rock chemistry
Don Dale	1	Silver, Gold	Moderate	Defined by prospects, rock chemistry
	2	Gold	Moderate	Defined by stratigraphy, rock chemistry
Eastern Goldfield	1	Gold, Silver	Moderate	Defined by mines, prospects, alteration, rock chemistry
	2	Gold, Silver	Moderate	Defined by mines, prospects, alteration, rock chemistry
	3	Gold, Silver	High	Defined by mines, prospects, alteration, rock chemistry
Gold Crater	1	Gold, Silver	High	Defined by alteration, rock alteration
	2	Gold, Silver	High	Defined by mines, prospects, alteration, rock chemistry
Gold Crater-Jamestown	1	Gold, Silver	Moderate	Defined by color anomaly, alteration
Gold Reed	1	Gold, Silver	Moderate	Defined by prospects, color anomaly, alteration, rock chemistry
	2	Gold, Silver	Moderate	Defined by prospects, color anomaly, alteration, rock chemistry
	3	Gold, Silver	High	Defined by prospects, color anomaly, alteration, rock chemistry
Gold Range	1	Gold, Silver	Moderate	Defined by prospects, alteration, rock chemistry
	2	Gold, Silver	Moderate	Defined by prospects, alteration, rock chemistry
	3	Gold, Silver	Moderate	Defined by prospects, alteration, rock chemistry
Groom	1	Silver, Gold	Moderate	Defined by mines, prospects, structure, rock chemistry
Jamestown	1	Gold, Silver	High	Defined by mines, prospects, alteration, rock chemistry
	2	Gold, Silver	High	Defined by mines, prospects, alteration, rock chemistry
Limestone Ridge	1	Gold	Moderate	Defined by stratigraphy, alteration, rock chemistry
Mellan Mountain	1	Gold, Silver	High	Defined by mines, prospects, rock alteration, rock chemistry
Northeast of Scotty's Junction	1	Gold, Silver	Moderate	Defined by prospects, color anomaly, rock chemistry

Table 3.5-2. Areas of Resource Potential, Precious Metals (page 3 of 3)

District	District/ Area*	Mineral Resource	Resource Potential	Comments
Northeast of Scotty's Junction (cont.)	2	Gold, Silver	Moderate	Defined by prospects, color anomaly, rock chemistry
Papoose	1	Gold	Moderate	Defined by prospects, stratigraphy, alteration, rock chemistry
Quartz Mountain	1	Gold, Silver	High	Defined by mines, prospects, alteration, rock chemistry
Quartzite Mountain	1	Silver, Gold	Low	Defined by prospects, alteration, rock chemistry
Queen City	1	Silver, Gold	Low	Defined by color anomaly, alteration, rock chemistry
Reveille Valley	1	Gold, Silver	Moderate	Defined by color anomaly, alteration
South and West of Mount Helen	1	Gold, Silver	Moderate	Defined by color anomaly, alteration, rock chemistry
	2	Gold, Silver	Moderate	Defined by color anomaly, alteration, rock chemistry
	3	Gold, Silver	Moderate	Defined by color anomaly, alteration, rock chemistry
Silverbow	1	Silver, Gold	Moderate	Defined by mines, prospects, alteration, rock chemistry
	2	Silver, Gold	High	Defined by structure, alteration, rock chemistry
South of Mud Lake	1	Silver	Low	Defined by mines, prospects, alteration, rock chemistry
	2	Silver	Moderate	Defined by mines, prospects, alteration, rock chemistry
Stonewall Mountain	1	Silver, Gold	High	Defined by prospects, alteration, rock chemistry
	2	Silver, Gold	Moderate	Defined by geology, mines, prospects
Thirsty Canyon	1	Gold, Silver	Low	Defined by alteration, rock chemistry
Tolicha	1	Gold, Silver	Moderate	Defined by color anomaly, alteration, rock chemistry
Transvaal	1	Gold, Silver	Low	Defined by alteration, rock chemistry
Trappman's Camp	1	Silver, Gold	Moderate	Defined by mines, prospects, alteration
Wellington	1	Gold, Silver	Moderate	Defined by prospects, alteration, rock chemistry
Wilsons	1	Gold, Silver	High	Defined by rock structure, color anomaly, alteration, rock chemistry

Note: \* Refer to Figures 3.5-12 and 3.5-13 for district and area locations.  
Source: NBMG 1997.

Table 3.5-3. Areas of Resource Potential, Base Metals

District	District/ Area*	Mineral Resource	Resource Potential	Comments
Cactus Range, Central	1	Cu, Mo, Au	Moderate	Multiple porphyritic intrusions; propylitic, argillic, acid-sulfate alteration
Cactus Springs	1	Zn, Pb, Ag	Moderate	Defined by stratigraphy, alteration, rock chemistry
Cactus Springs West	1	Cu, Mo	Moderate	Defined by mines, prospects, rock chemistry
	2	turquoise	High	Defined by mines, prospects, rock chemistry
Cedar Pass	1	Mo	Moderate	Defined by prospects, color anomaly, alteration, rock chemistry
Gold Crater-Jamestown	1	Cu, Mo	Moderate	Defined by alteration, mineral zoning
Gold Reed	1	Cu	Moderate	Defined by prospects, color anomaly, alteration, rock chemistry
	2	Cu	Moderate	Defined by prospects, color anomaly, alteration, rock chemistry
	3	Hg	Low	Defined by prospects, color anomaly, alteration, rock chemistry
Groom	1	Pb, Ag, Zn	High	Defined by mines, prospects, structure, rock chemistry
Northeast of Scotty's Junction	1	Cu, Mo	Moderate	Defined by alteration, rock chemistry
	2	Cu, Mo	Moderate	Defined by alteration, rock chemistry
Oak Spring	1	W	Moderate	Defined by stratigraphy, rock chemistry
	2	Pb, Ag	Moderate	Defined by prospects, rock chemistry
Papoose	1	Pb, Ag	High	Defined by mines, prospects, rock chemistry
	2	Pb, Ag	Low	Defined by mines, prospects, rock chemistry
Prospector Fault	1	Cu, Pb, Ag, Zn	Moderate	Defined by prospects, rock structure, rock chemistry
Rainstorm	1	Pb, Ag (replacement)	Moderate	Defined by mines, prospects, stratigraphy, rock chemistry
	2	Pb, Ag (vein)	Moderate	Defined by mines, prospects, stratigraphy, rock chemistry
Southeastern	1	Pb, Cu, Ag (replacement)	High	Defined by mines, prospects, stratigraphy, rock chemistry
	2	Pb, Cu, Ag (vein)	High	Defined by mines, prospects, stratigraphy, rock chemistry
Transvaal	1	Hg	Moderate	Defined by prospects, alteration, rock chemistry
Wagner	1	Cu	Low	Defined by geologic relationships.

Note: \*Refer to Figures 3.5-12 and 3.5-13 for district and area locations.

Source: NBMG 1997.



following areas: (1) Cactus Range, southeast of the Cactus Springs district, (2) in the Mount Helen area, (3) near Cedar Pass and north and south of the Gold Reed district in the Kawich Range, and (4) north of Limestone Ridge in the Belted Range (Figure 3.5-2). With the exception of the Slate district, and possibly the Prospector Fault area in the southern part of NAFR, gold and silver have been sought in every mining district within NAFR.

*Copper and Molybdenum.* The three largest areas of potential copper and molybdenum deposits include (1) the west slope of the northern Cactus Range, (2) the area extending from Gold Crater through Mount Helen to the Trappman Hills, and (3) the area surrounding Gold Reed in the southern Kawich Range (Figures 3.5-2 and 3.5-9). Mineral resource potential exists for three types of copper deposits within NAFR. In the Cactus Springs West district, rock alteration and surface trace element associations indicate potential porphyry-type copper-molybdenum mineralization. Disseminated copper mineralization could be present in high-sulfidation epithermal systems such as those present at the Jamestown and Gold Crater districts and portions of the Cactus Springs West district. In addition, polymetallic replacement deposits of copper may be present in the Wagner, Southeastern, Groom, Papoose, and Rainstorm districts.

*Lead and Zinc.* Only two areas of high potential for lead and zinc are present at NAFR: (1) the central portion of the Groom district, which is the largest known lead-producing district within NAFR, and (2) the Southeastern Mine in the northern Pintwater Range (Figures 3.5-2 and 3.5-10). The potential for lead and zinc production in the Gold Crater-Jamestown-Mount Helen area is moderate. Seven districts within NAFR produced lead; however, only one district produced zinc. The Groom district has produced both lead and zinc. The Papoose district, the second largest district on NAFR, has produced only lead. The potential exists for development of polymetallic vein or polymetallic replacement deposits of lead and/or zinc in the Groom, Papoose, Rainstorm, and Southeastern districts.

*Mercury.* The Gold Reed district in the southern Kawich Range and the Transvaal Hills south of Pahute Mesa (Figure 3.5-2) are the only known areas with mercury potential in the NAFR (Figure 3.5-11). Both of these areas coincide with areas of known mercury prospects. No large mercury-producing districts are present in the vicinity of the NAFR. The Bristol group of claims in the Gold Reed district were evaluated for mercury in the early 1930s, and a small area of shallow hot-spring alteration and possible mercury mineralization is present in the eastern part of the Transvaal district.

### ***NONMETALLIC (INDUSTRIAL) MINERALS***

Assessments of nonmetallic minerals at NAFR are based on limited information from the few nonmetallic mineral occurrences, illustrated on Figure 3.5-14, combined with regional knowledge of favorable geologic settings. Areas of nonmetallic mineral resource potential are listed in Table 3.5-4 and shown on Figures 3.5-15 through 3.5-21. Following are descriptions of specific nonmetallic minerals in the vicinity of NAFR.

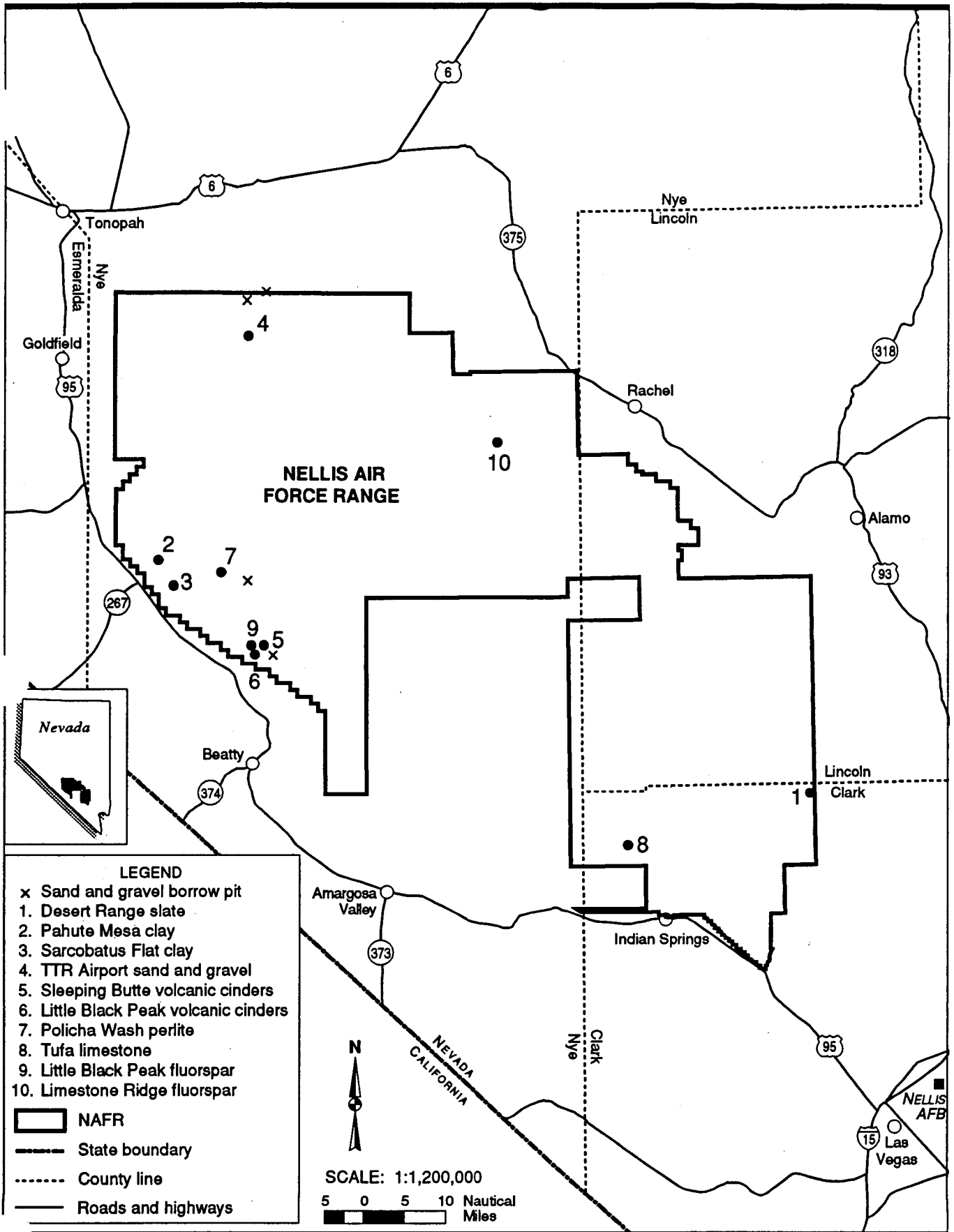


Figure 3.5-14. Industrial Mineral Deposits on the Nellis Air Force Range; Nye, Lincoln, and Clark Counties, Nevada

<b>Table 3.5-4. Areas of Resource Potential, Industrial (Nonmetallic) Minerals</b>			
<i>Mineral Resources</i>	<i>Area</i>	<i>Resource Potential</i>	<i>Comments</i>
Barite	NAFR	Low	None
Borate minerals	NAFR	Low	None
Building stone	NAFR	Moderate	Includes slate
Clay	NAFR	Moderate	Tertiary rocks
Clay	Southern NAFR	Low	Pre-Tertiary rocks
Construction aggregate	NAFR	Low	None
Dolomite	NAFR	Low	None
Fluorspar	NAFR	Low	None
Gypsum	NAFR	Low	None
Limestone, high calcium	NAFR	Low	None
Limestone, cement	Southern NAFR	Moderate	Paleozoic exposures
Limestone, cement	Area of tufa limestone	High	None
Lithium	NAFR	Low	None
Perlite	NAFR	Low	None
Pumice/ pumicite	NAFR	Low	None
Saline minerals, leasable	NAFR	Low	None
Volcanic cinders	NAFR	Moderate	Two cinder cones
Zeolites	Northern NAFR	High	None
Zeolites	Southern NAFR	Low	None
<i>Source: NBMG 1997.</i>			

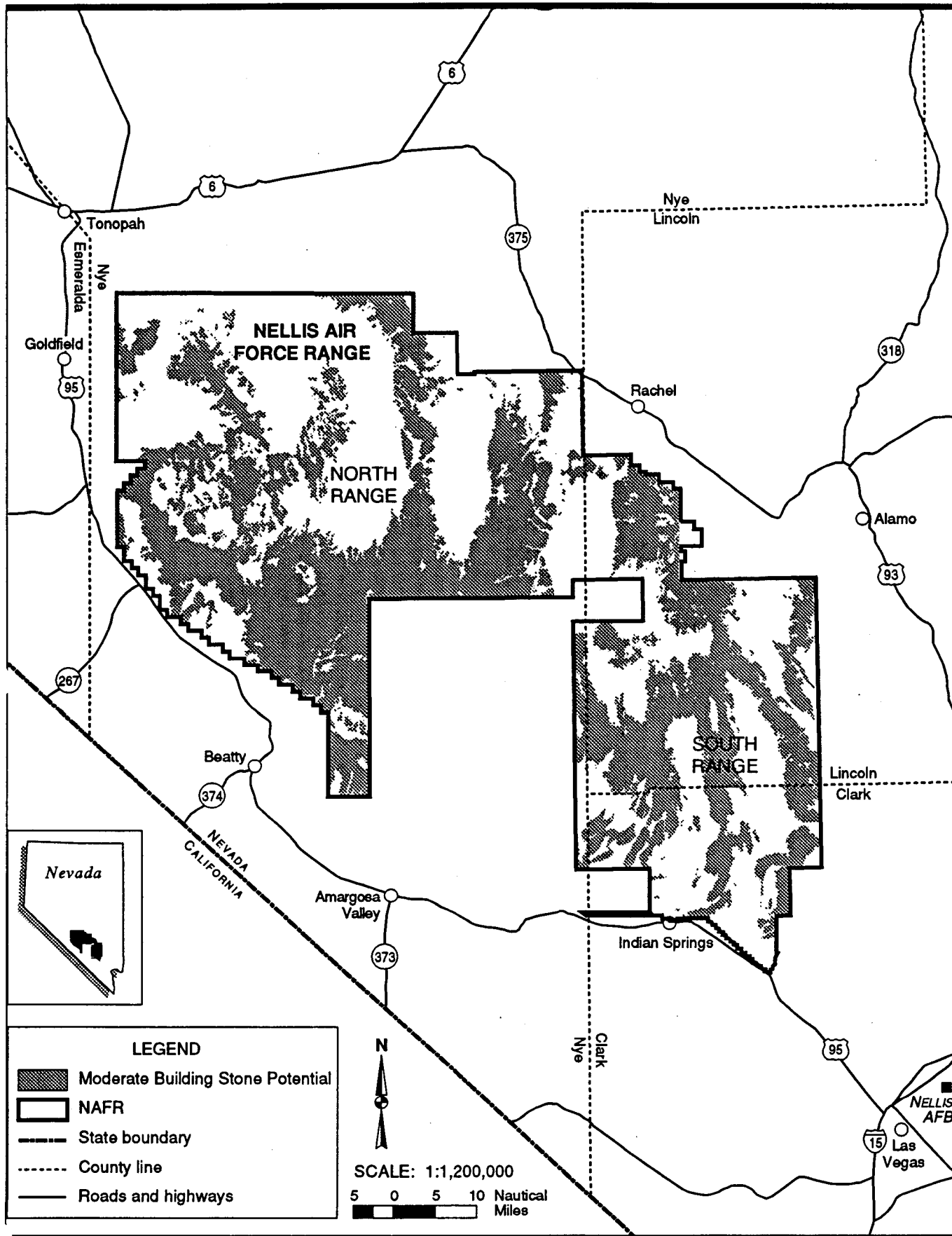


Figure 3.5-15. Areas of Building Stone Potential

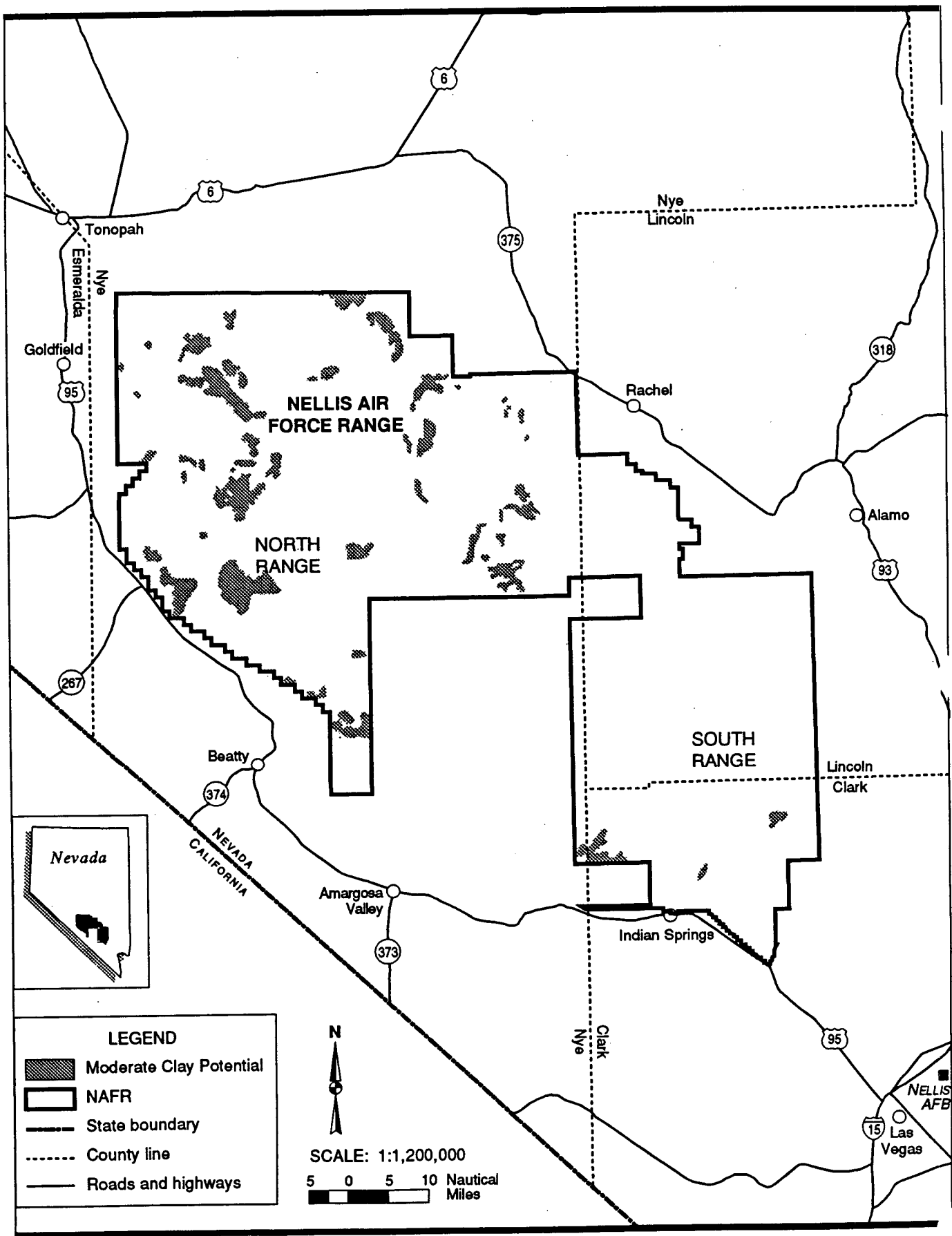


Figure 3.5-16. Areas of Clay Potential

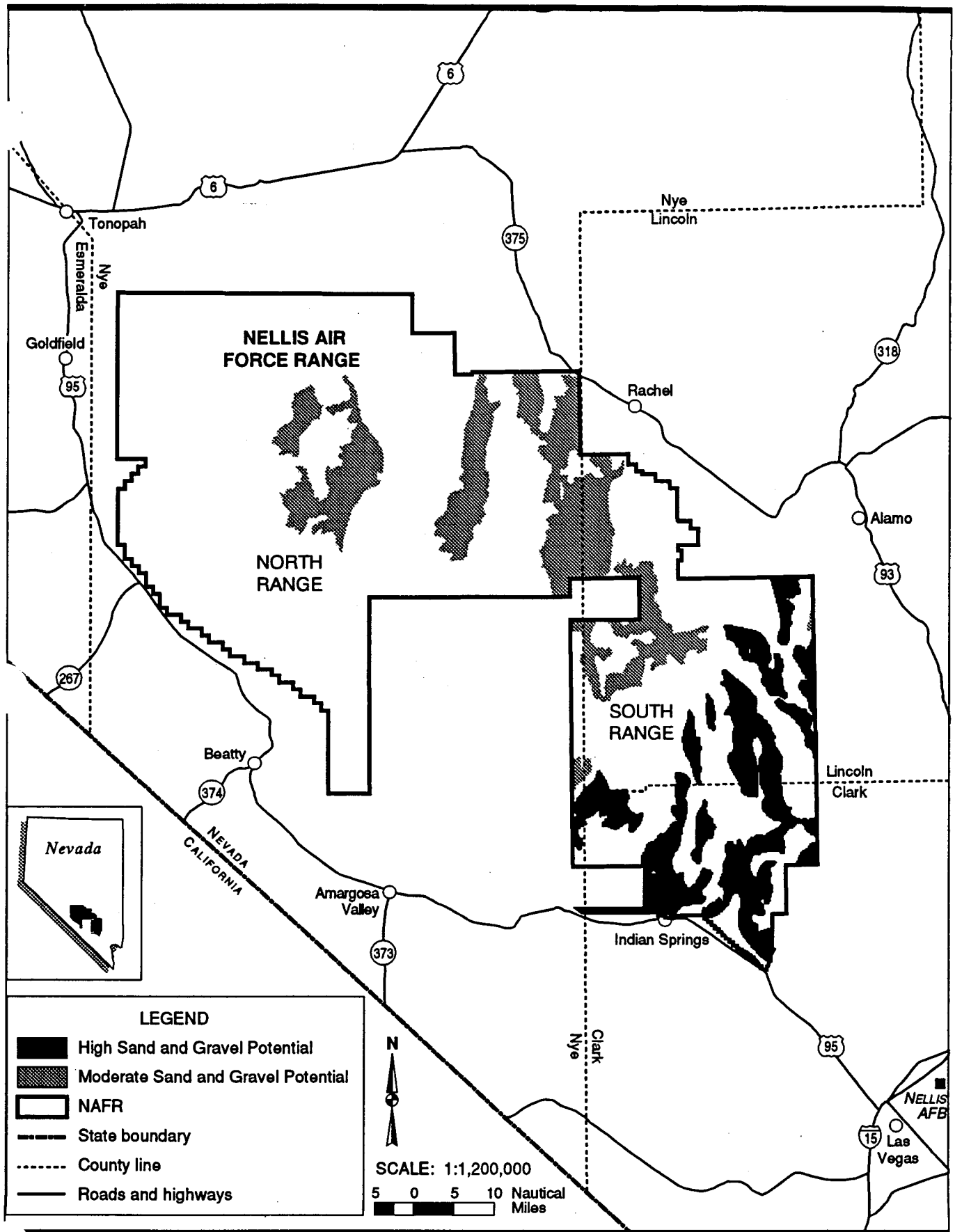
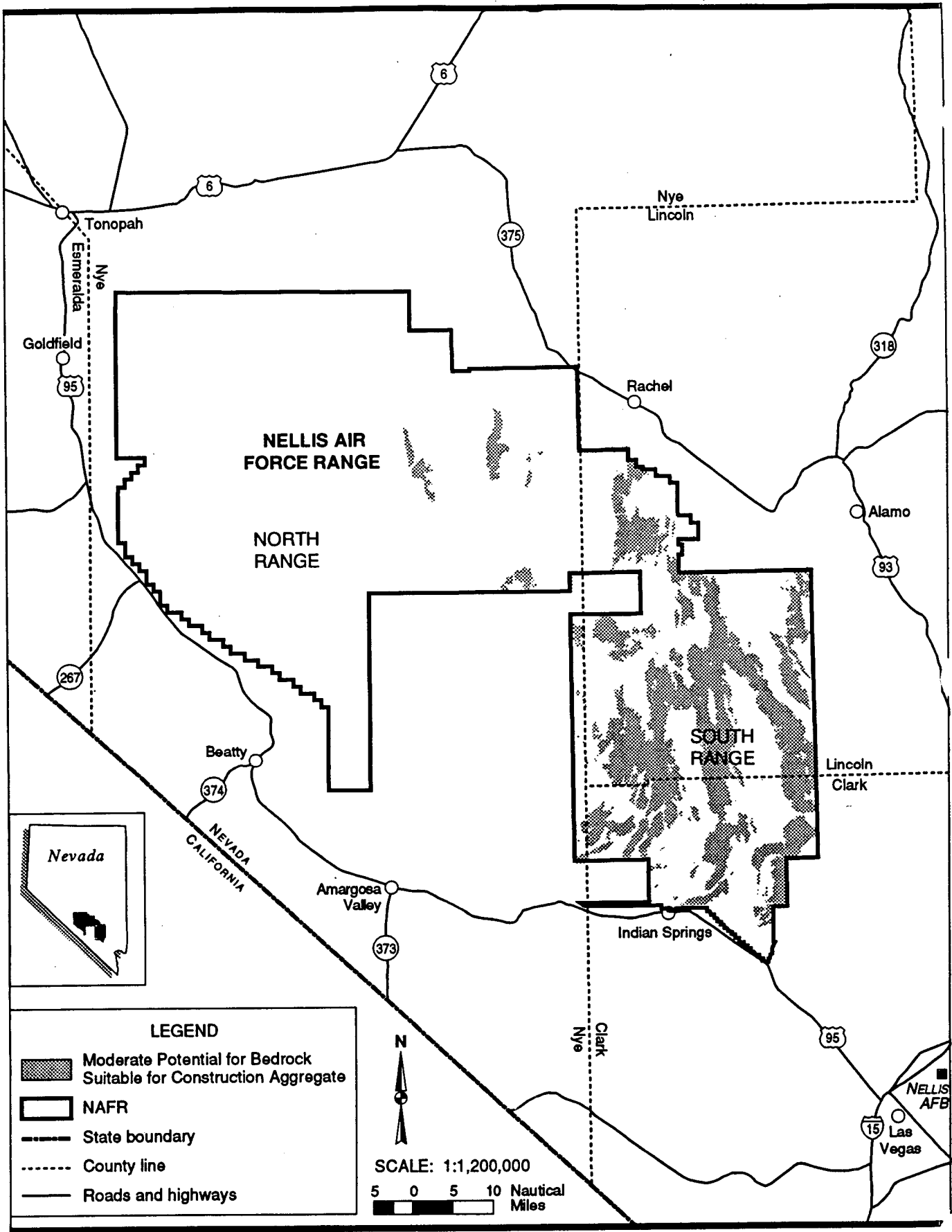


Figure 3.5-17. Areas of Sand and Gravel Potential



**Figure 3.5-18. Potential Areas of Bedrock Suitable for Construction Aggregate**

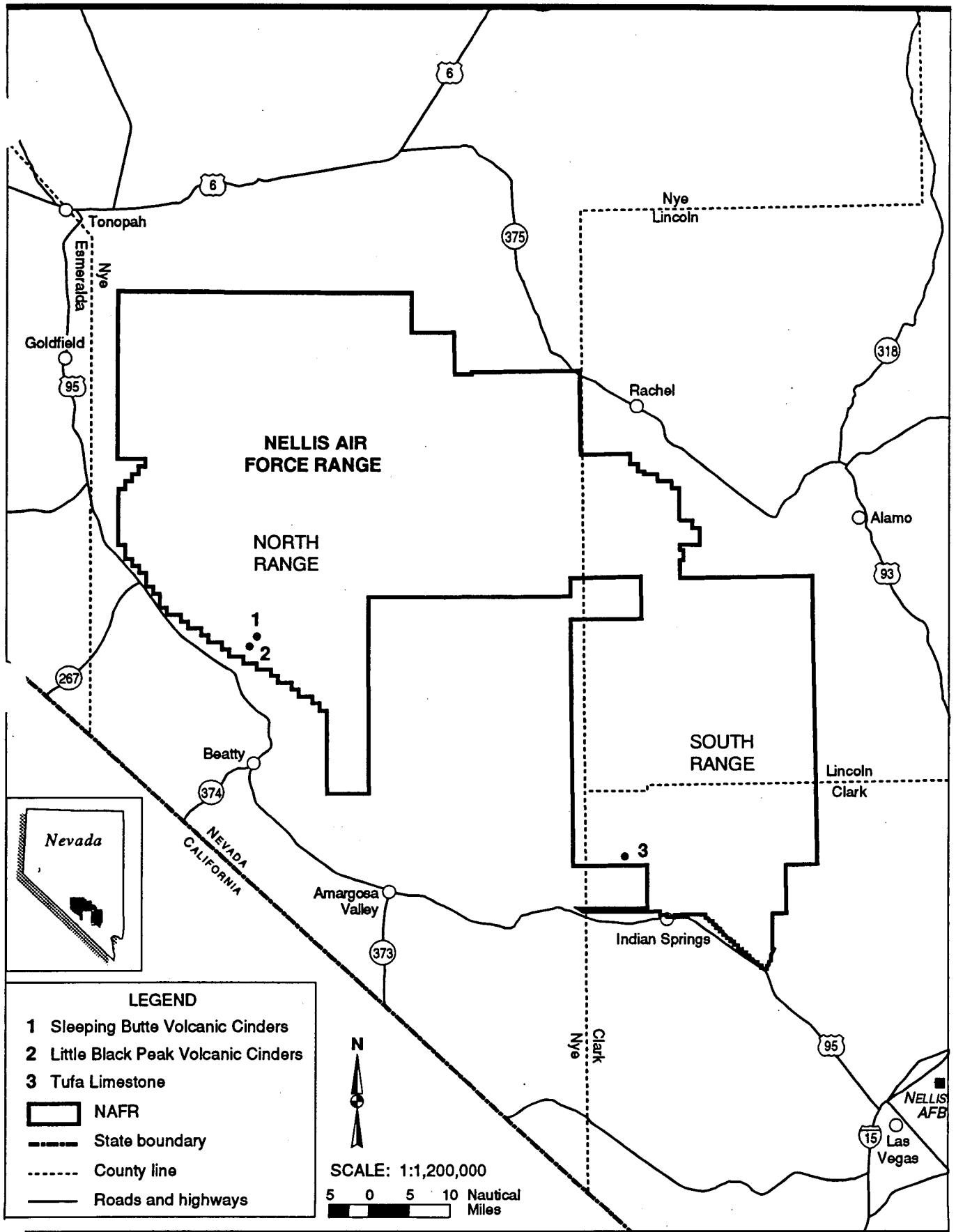


Figure 3.5-19. Areas with Moderate Potential for Volcanic Cinder and High Potential for Tufa Limestone



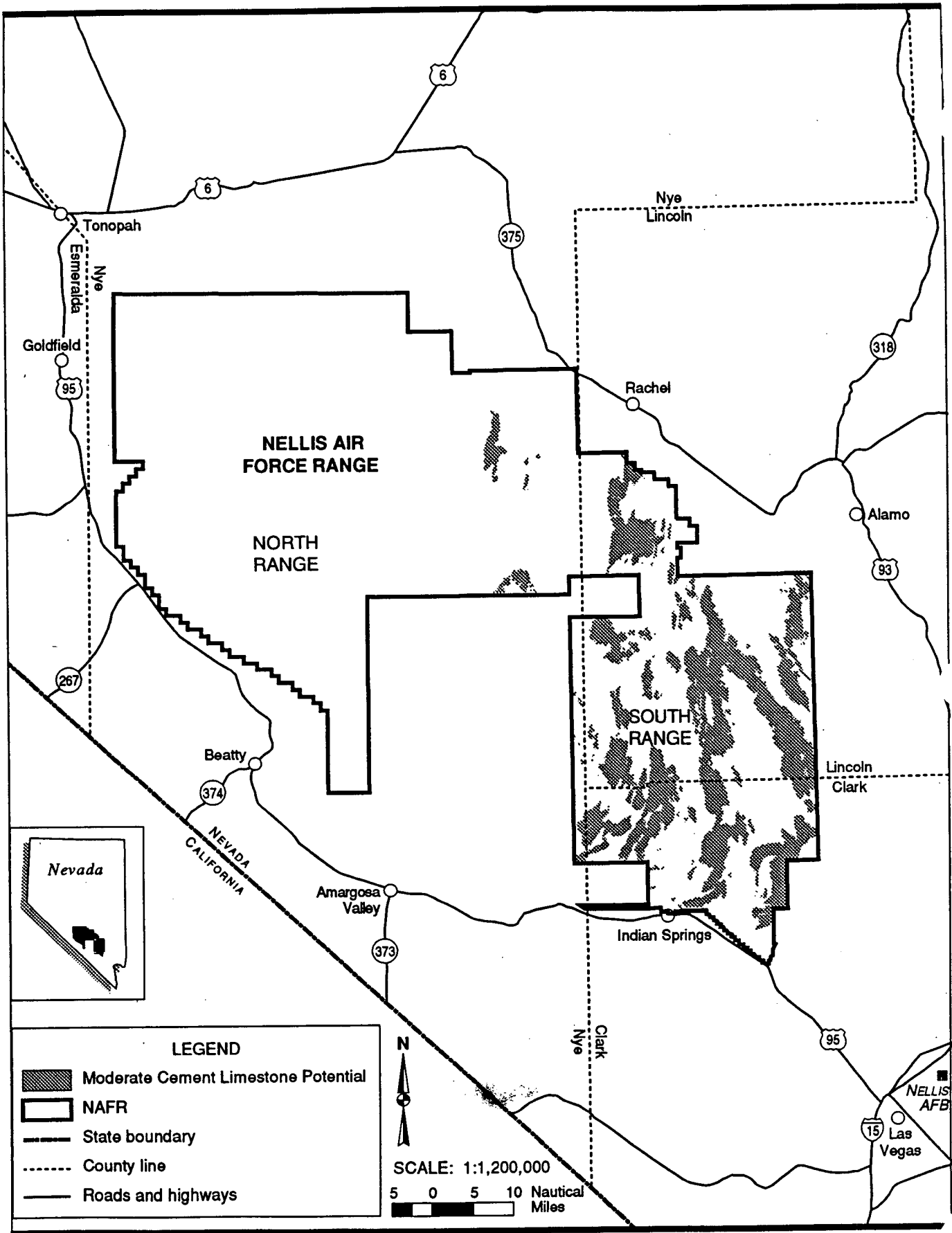


Figure 3.5-20. Areas of Cement Limestone Potential

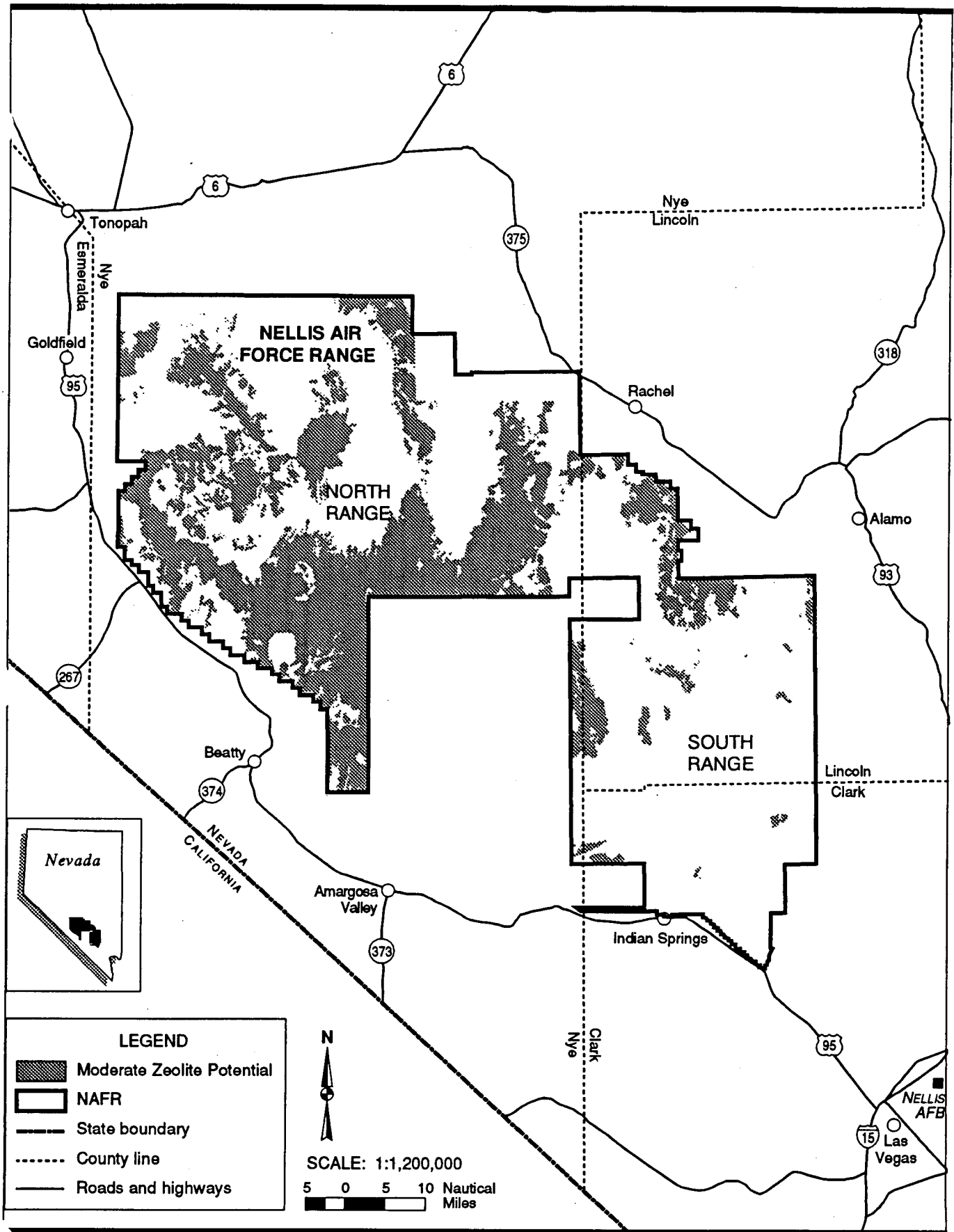


Figure 3.5-21. Areas of Zeolite Potential

*Barite.* Five deposits in the vicinity of NAFR have produced barite, including three deposits of bedded barite in Paleozoic rocks north of NAFR, and two veins of barite west of NAFR. No barite deposits are known within the boundaries of NAFR.

*Borate Minerals.* Bedded borate deposits occur in the Tertiary Horse Spring Formation in the Muddy Mountains, located approximately 43 miles southeast of NAFR. No borate deposits are known within the boundaries of NAFR.

*Building Stone.* Nevada Neanderthal Stone, a company located northeast of Beatty (Figure 3.5-2), is the only active building stone producer in the NAFR region. This company quarries and cuts 12 varieties of Miocene-age ash-flow tuff deposits from localities adjacent to NAFR to produce floor tiles, wall panels, and other stone products. These ash-flow tuffs are widespread within the southwestern part of NAFR and the potential for production exists in this area.

Slate quarries in the Desert Range (Figure 3.5-14) are the only known mining sites for building stone in the southern NAFR. Limited information is available regarding the mining history of these quarries, but "greenstone-flagstone" was reportedly produced from the Hancock Stone Quarry in this area in the 1920s. These deposits may have potential for use as structural slate in such products as floor tile or steps, or for use as decorative paving stone or flagstone. Other areas of building stone potential on NAFR are shown on Figure 3.5-15.

*Clay.* Two sites near NAFR currently mine clay. The IMV Division of Floridin Company, the largest producer of clay in Nevada, mines sepiolite, montmorillonite, saponite, and hectorite from deposits in the Ash Meadow area approximately 30 miles south of NAFR, and at the New Discovery Mine approximately 20 kilometers west of NAFR. Within NAFR, two areas of clay deposits occur along the west side of Pahute Mesa (Figure 3.5-14). Other deposits of clay minerals are probably present in northern NAFR because hydrothermally-altered volcanic rocks are common (Figure 3.5-16). However, no major sources of high-grade clay have been identified.

*Construction Aggregate.* Paleozoic rocks in southeastern NAFR contain high-quality sand and gravel and crushed stone (Figures 3.5-17 and 3.5-18). Areas of alluvium in southeastern NAFR, which include Cenozoic sedimentary detritus, have considerably lower potential because of deleterious amounts of gypsum. Large amounts of sand and gravel are also present in the valleys and alluvial fans in northern NAFR. This material consists of sound, durable welded and bedded tuff fragments; however, some inferior non-welded and bedded tuff fragments are probably also present in many areas. In addition, large areas of altered volcanic rock that contain deleterious materials such as clay minerals and reactive silica are known to be present in northern NAFR. Alluvium that contains such materials has low potential for construction aggregate.

Volcanic cinder, a relatively valuable type of construction aggregate that can be shipped long distances, occurs near the southwestern boundary of NAFR (Figure 3.5-19). The largest of these deposits forms an asymmetrical cinder cone on the north side of Sleeping Butte. Another deposit, Little Black Peak, is approximately one mile southwest of Sleeping Butte.

*Fluorspar.* Three prospects at NAFR contain fluorspar (fluorite). Purple to white fluorite occurs in veinlets in pieces of silicified welded ash-flow tuff from the dump next to a small prospect pit 1 kilometer north of Little Black Peak in southern NAFR (Figure 3.5-14). Clear to pale green fluorite cubes, up to 2 mm in diameter, form the matrix of breccia collected from the dump of the Zabriskie shaft in the Limestone Ridge area of northern NAFR (Figure 3.5-7). In addition, minor amounts of fluorite occur in a small prospect in the eastern Goldfield mining district of northern NAFR (Figure 3.5-7).

*Gypsum.* No rock with more than a few percent of gypsum has been discovered at NAFR.

*Halite and Other Saline Minerals.* No substantial deposits of evaporite minerals have been found in playas or in Tertiary sedimentary rocks at NAFR.

*Limestone and Dolomite.* Extensive exposures of Paleozoic limestone and dolomite, which are used as raw materials for lime and cement, are present at southern NAFR (Figure 3.5-20). In addition, Tertiary tufa in the Spotted Range (Figure 3.5-14) could meet specifications for cement limestone. Southern NAFR probably contains significant amounts of carbonate rock suitable for lime or cement production. These deposits are remote and their potential for economic development is low.

*Lithium.* No substantial concentrations of lithium were discovered in playas examined at NAFR. It is unlikely that a lithium-bearing brine meeting today's criteria for economic recovery is present at NAFR.

*Perlite.* A single occurrence of potentially economic perlite was found at NAFR 1 mile east of Obsidian Butte in Tolicha Wash (Figure 3.5-14). Perlite was found at several locations in an area 1 kilometer in diameter, but at each location the perlite was exposed in steep walls, rendering surface mining uneconomical because large amounts of overburden must first be removed.

*Pumice and Pumicite.* Pumice deposits have not been reported at NAFR; however, pumicite has been produced 4 miles northeast of Beatty (Figure 3.5-2). This deposit was mined at irregular intervals during the 1940s for aggregate in the manufacture of concrete blocks. No data are available on the size and reserves of the deposit. Large reserves of domestic pumice and pumicite are available for sale into a relatively stable, long-term market. Therefore, it is unlikely that new pumice or pumicite mines will be opened in the near future in the vicinity of NAFR.

*Silica.* Although the Eureka Quartzite is exposed in many areas of southern NAFR, samples indicate that the rock is generally unsuitable as a source of silica because of impurities in the rock. Quartzite samples from other units at NAFR generally have higher amounts of impurities than the Eureka Quartzite. Large amounts of silica-rich rock, which formed by nearly complete replacement of rhyolite by hydrothermal quartz, occur in the Cactus Springs West mining district (Figure 3.5-7). However, this rock carries too much alumina, probably as kaolinite and/or alunite, for commercial silica.

*Zeolites.* An active zeolite mine and other known zeolite resources are present in the region around NAFR, and similar deposits may be present at NAFR. Unmined zeolite resources in the region around NAFR include 200-foot-thick zeolitized ash-flow tuff in Beatty Wash that typically contains 75 percent clinoptilolite, and Tertiary ash-flow tuffs on Beatty Mountain that contain as much as 70 to 85 percent clinoptilolite and mordenite. These deposits are 6 miles west of NAFR.

Northern NAFR has a high potential for high-grade zeolite deposits of considerable size (Figure 3.5-21). Zeolite deposits of the type that may be present at NAFR have economic potential for uses that require only impure materials of relatively low unit value. Therefore, it is not likely that these deposits would be commercially attractive.

### **ENERGY RESOURCES**

*Uranium.* No known uranium prospects are located at NAFR. However, most of the northern part of NAFR is covered by silicic volcanic rocks, predominantly ash-flow tuffs, which contain moderate to high amounts of uranium. Uranium released from these silicic volcanic rocks during erosion may be concentrated at some sites in the same volcanic sequences or in adjacent sedimentary basins. In addition, anomalous amounts of uranium have been detected in Tertiary playa-deposits, veins, and mineralized rock from many of the mining districts in NAFR. Nevertheless, the potential of uranium mineralization in economic concentrations is low at NAFR for both volcanic and nonvolcanic deposits (Table 3.5-5) (NBMG 1997).

*Coal.* There are no reports of coal at NAFR. The area closest to NAFR where coal has been reported is 21 kilometers north of the northeast corner of NAFR. The only unit that could possibly contain any coal material is the Chainman Shale, which is present on the eastern NAFR. However, the presence of coal in this shale or at any other locality at NAFR is unlikely (Table 3.5-5) (NBMG 1997).

*Hydrocarbon Resources.* Rock type and thermal maturity suggest that the northeastern part of NAFR has potential for oil and gas and the eastern and southeastern part of NAFR has the potential for gas (NBMG 1997) (Figure 3.5-22). However, thermal maturity levels are marginally acceptable, values for both total organic carbon and hydrogen index are generally continuous, and potential source rocks are scarce. In addition, previous exploration in Nevada indicates that adequate seals and traps for commercial oil/gas accumulations are rare or non-existent. Based on these findings, the potential for hydrocarbon resources in the region is considered to be low (Table 3.5-5) (DOE 1996a; NBMG 1997). Previous investigators have also concluded low potential for hydrocarbon resources in the region (Harris et al. 1980). No occurrences of oil and gas, coal, tar sand, or oil shale in the region have been reported.

#### **3.5.4 Paleontological Resources**

Fossils are present within many sedimentary rock formations at NAFR (Kleinhampl and Ziony 1985; Longwell et al. 1965; Tschanz and Pampeyan 1970; Cornwall 1972). These fossils are

<b>Table 3.5-5. Areas of Resource Potential, Energy Minerals</b>			
<i>Mineral Resource</i>	<i>Area</i>	<i>Resource Potential</i>	<i>Comments</i>
Coal	NAFR	Low	No known occurrences; stratigraphy unfavorable
Geothermal, intermediate and high temperature	NAFR	Low	Resources possibly only at non-economic depths
Geothermal, low temperature	NAFR	Low	Shallow resources too low temperature and too remote
Oil and gas	NAFR	Low	Low source rock and preservation favorability
	NAFR	Low	Low preservation favorability, some source rock favorability
	NAFR	Moderate	Moderate source rock and preservation favorability
Uranium	Areas underlain by volcanic rocks and adjacent sedimentary basins	Low	Permissive environment, but economic concentrations unlikely
	Areas underlain by carbonate and clastic marine rocks and adjacent sedimentary basins	Low	No known occurrences; environment unfavorable
Source: NBMG 1997.			

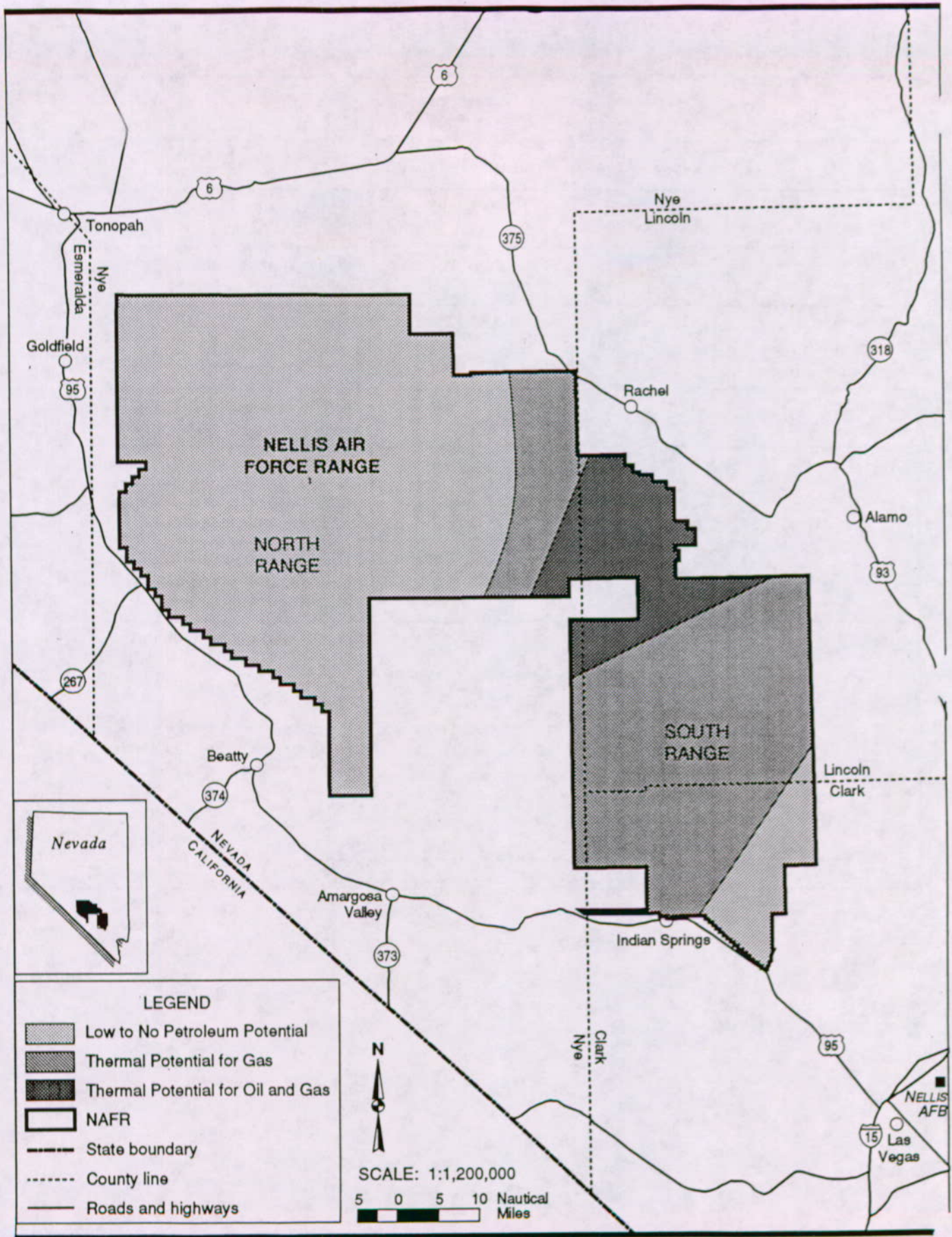


Figure 3.5-22. Petroleum Resource Potential for the Nellis Air Force Range

predominantly marine in origin; however, terrestrial plant and animal fossils also occur. Fossils are present in four general ages of sedimentary rocks, representing aquatic and terrestrial life from nearly 600 million years B.P. to the last 1.6 million years B.P. (BLM 1981).

Paleontological surveys have not been completed by the BLM at NAFR (personal communications, S. Rolf 1997; B. Reynolds 1997), but important fossil localities have been documented. Lower Paleozoic rocks (450 to 600 million years B.P.) are well exposed in the Belted Range in the northern part of NAFR (Figure 3.5-2) and contain fossils in a canyon west of Belted Peak. Other important fossils have been found in lower Paleozoic strata on the eastern side of the adjacent NTS. An important occurrence of fossils is also present in the hills northwest of the town of Mercury (BLM 1981).

Middle Paleozoic strata (300 to 440 million years B.P.) are not widely distributed in the area; however, fossil localities occur in the southern part of the adjacent NTS and in the hills between the NTS and Highway 95 (Figure 3.5-2). Upper Paleozoic (245 to 300 million years B.P.) rock outcrops are widespread at NAFR. These strata comprise the bulk of the Elena Range where fossils have been discovered (BLM 1981).

Pleistocene beds, representing the last 1 million years, outcrop along washes and alluvial fans. Although no fossils have been discovered in these materials, older gravels and sands offer possibilities of fossil occurrences because these sediments represent old terraces and stream channels where animals were probably common (BLM 1981).

### **3.5.5 American Indian Issues Concerning Earth Resources**

Earth resources, including the geology, soils and minerals of NAFR, are important to the tribal cultures represented in the CGTO. Areas of specific concern include:

- removal and exploitation of minerals that the CGTO perceives as theirs; and
- restricted access to traditional quarry sites and other mineral resources.

Geological formations are also part of American Indian cultural system, and are "significant for keeping the historic memory of American Indian people alive and for teaching children about their culture and history" (AIWS 1997). For this reason, the existing condition of earth resources on NAFR is of concern. The NARD states:

Severe disturbance of the geology and soils on large portions of the NAFR has been caused by repeated military testing . . . . These impacts have made certain areas unfit for human use. These areas have become inaccessible to American Indians for religious purposes [AIWS 1997].



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# WATER RESOURCES

**T**his discussion of water resources includes water quality standards, surface water, flooding, groundwater, and water rights within NAFR. A Water Requirements Study and a Floodplain Inventory Report have been prepared as part of the proposal to renew the NAFR land withdrawal.

The scarcity of surface water resources on NAFR is attributable to a dry regional climate characterized by low precipitation, high evaporation, low humidity, and wide extremes in daily temperatures. Average precipitation depends mainly on elevation and ranges from 4 inches on the desert floor to about 16 inches in the mountain areas. With the exception of locally intense thunderstorms that can produce flash flooding, much of the warm weather precipitation is quickly lost to the atmosphere through evaporation and transpiration.

3.6

Within the arid area of NAFR, the availability of moisture in excess of evaporation and transpiration is so limited that few perennial surface water features are present. With the exception of man-made ponds, the only perennial surface water comes from springs where the groundwater table intersects the surface. The springs flow for short stretches on the ground surface, which is underlain by bedrock. Pools at some large springs and poorly drained areas may exist around the edges of the valleys. Breen Creek is the only creek at NAFR considered to be perennial. Most surface water is only temporarily present as a result of ponding in low permeability playas and as ephemeral channel flow from infrequent precipitation and snow melt runoff. Playas are not major recharge zones due to low infiltration potential. Most surface water that reaches the playas is lost through evaporation.



*NAFR incorporates all or portions of 23 different watershed areas. The watersheds flow to playas that are not major recharge zones due to the low infiltration potential. Most NAFR targets are located in or near playas.*

## 3.6 WATER RESOURCES

This discussion for the water resources analysis includes water quality standards, surface water, flooding, groundwater, and water rights within NAFR, ROI Two. Water quality is also considered outside ROI Two wherever potential environmental consequences could occur. Special studies conducted in support of the proposed range withdrawal include a Water Requirements Study (Air Force 1998b), a Wetlands Survey Draft Report (Air Force 1996a), and a Floodplain Inventory Report (Air Force 1997a), from which much of the baseline information for this analysis has been derived.

### 3.6.1 Water Quality Standards

Criteria for water quality within the State of Nevada are contained in the Nevada Administrative Code (NAC), Chapter 445A.119, and apply to existing and designated beneficial uses of surface water bodies. Water quality standards are driven by the beneficial uses of specific water bodies. Beneficial uses include agriculture (irrigation and livestock watering), aquatic life, recreation (contact and non-contact), municipal or domestic supply, industrial supply, and wildlife propagation. There is a three tiered system of beneficial use designation of surface water resources within the NAC depending upon the size of the water body.

1. Major water bodies or rivers (including the Carson, Truckee, Walker, Colorado, and others) are specifically designated by name (in some cases by reach) and are assigned numeric standards (NAC Sections 445A.145 to 445A.225) or thresholds as well as anti-degradation criteria.
2. Smaller water bodies are classified (i.e., Class A, B, C, and D) as to the condition of the waters "as affected by discharges relating to the activities of man." Water quality standards are specified for each of the water classifications (NAC Sections 445A.124 to 445A.127).
3. Other surface waters are protected by generic standards that apply to all waters of the state (NAC Section 445A.121).

Due to the transient occurrence of surface water within the arid region of NAFR, there are no bodies of surface water present that are designated as to specific beneficial uses (i.e., categories 1 or 2 above). All surface water within the range are regulated and protected under the standards applicable to all waters of the state. However, the regulations allow for the classification of a body of public water not currently classified in the NAC if there is a permit request to discharge into that body of water. Additionally, beneficial uses of surface water on NAFR (e.g., livestock watering, domestic supply, etc.) would be subject to water quality criteria or standards specific to the use (e.g., drinking water standards for domestic supply). Sections of the NAC containing water quality standards and criteria that would apply to surface waters on NAFR are included in Appendix F.

Drinking water standards established by the USEPA under the Safe Drinking Water Act have been adopted by the State of Nevada. Drinking water quality for public supply systems is regulated by the Nevada Department of Health. Drinking water standards consist of maximum contaminant levels (MCLs) established for various water quality constituents. Primary MCLs are established to protect against adverse health effects and are enforceable on public drinking water supplies. Secondary MCLs are established for aesthetic reasons such as taste, color, or odor and are not enforceable on public drinking water supplies. Action levels are established for selected constituents that, if exceeded by a specified percentage of samples (based on the number of people served), require treatment of the water source prior to distribution to users of the supply system.

### 3.6.2 Surface Water

#### HYDROLOGY

The scarcity of surface water resources in ROI Two is attributable to a dry, regional climate that is characterized by low precipitation, high evaporation, low humidity, and wide extremes in daily temperatures. Average annual precipitation depends mainly on elevation and ranges from 4 inches on the desert floor to about 16 inches in the mountain areas. With the exception of locally intense thunderstorms that are intense enough at times to produce flash flooding, much of the warm weather precipitation is lost to the atmosphere through evaporation and transpiration within a very short period. The estimated average rate of potential evaporation within ROI Two ranges between 58 and 69 inches per year (et al. 1975).

Winter precipitation often falls as snow at higher elevations, which is more important with respect to runoff and groundwater recharge. Winter storms in the area are regional in nature. Snowpacks in the high mountains store enough moisture to permit runoff to overcome high evaporation and transpiration rates in the warmer summer months. Although days of measurable snowfall are very few in the lower elevations, snow may remain in the mountains during winter and early spring at elevations as low as 8,500 feet.

NAFR, and most of the State of Nevada, is located within the Great Basin region of the Basin and Range Physiographic Province of the U.S. This area is characterized by internally drained basins, with the exception of small parts that drain to the Colorado and Columbia Rivers. The Great Basin aquifer system extends into parts of six states. Surface water runoff in this region typically collects in the many playas found throughout the area. This is the case on NAFR where runoff collects in playas of the major valleys. Surface water runoff from the South Range predominantly collects into the Three Lake Valley, Tikaboo Valley, and Indian Springs Valley playas. Similar playas in the Kawich, Gold Flat, Cactus Flat, Groom Dry Lake, and Stonewall Flat collect and dissipate the runoff from the North Range (BLM, DOI, Air Force 1987).

Due to the arid conditions of the desert, the area is dry except during and shortly after a storm. The ephemeral waters exist in normally dry washes and playa surfaces for hours following summer storms and weeks following winter storms. Within the arid area of NAFR, the

availability of moisture in excess of evaporation and transpiration is so limited that few perennial surface water features are present. Typically, surface water is only temporarily present and is associated with ponding in the low permeability playas and channel flow from infrequent precipitation events and snow melt runoff. Playas are not major recharge zones due to low infiltration potential and most surface water that reaches the playas is lost through evaporation. With the exception of Breen Creek, NAFR has no permanent streams. Stream flow is ephemeral (short-lived) and occurs in response to precipitation events and snowmelt runoff. Streams in this area become losing streams in their lower reaches due to high rates of evaporation, transpiration, and infiltration. The area encompassed by NAFR incorporates all or portions of 21 different watershed areas (i.e., hydrographic basins), as illustrated in Figure 3.6-1a and b. The names of the basins, U.S. Geological Survey (USGS) basin numbers, watershed areas, and percentages of the total area within NAFR are listed in Table 3.6-1. The hydrographic boundaries depicted were delineated systematically by the USGS and Nevada Division of Water Resources in the late 1960s (Rush 1968; Cardinalli et al. 1968) for scientific and administrative purposes. The official hydrographic area names, numbers, and geographic boundaries continue to be used in scientific reports and Division of Water Resources administrative activities (USGS 1996).

With the exception of man-made ponds, the only perennial surface water comes from springs where the groundwater table intersects the surface and remains as (1) flows for short stretches of ground surface underlain by bedrock, (2) pools at some large springs, and (3) poorly drained areas around the edges of the valleys. Springs in the mountains discharge from perched water zones or emerge in areas where groundwater has migrated along fractures in the rocks and flows to the surface because of changes in geologic structure or material. Discharge from these springs flows along the surface for relatively short distances before infiltrating into the permeable materials. A wetlands survey (Air Force 1996a) conducted to support the range withdrawal renewal identified one stream on the entire range, Breen Creek, that could be referred to as perennial. See Figure 3.6-1a and b for surface water source locations on NAFR.

## **WATER QUALITY**

The quality of surface water in southern Nevada varies greatly. Surface water quality, especially as it pertains to springs and seeps on NAFR, is primarily controlled by the physical and chemical characteristics of the rocks through which the groundwater flows prior to discharge to the surface. Once the water reaches the surface, its quality is affected by other environmental factors such as precipitation, evapotranspiration, erosion, and chemical characteristics of the rock or soil. Due to dilution by precipitation, concentrations of dissolved solids are usually greatest during periods of low surface flow and lowest during periods of high surface flow (Air Force 1998b). Investigations conducted in the Water Requirements Study for the proposed withdrawal, revealed limited regional and no site-specific water quality data available for surface waters on NAFR (Air Force 1998b).

No analytical data is currently available addressing surface water quality as it pertains to Air Force activities on NAFR. However, an investigation of surface soils was conducted at a

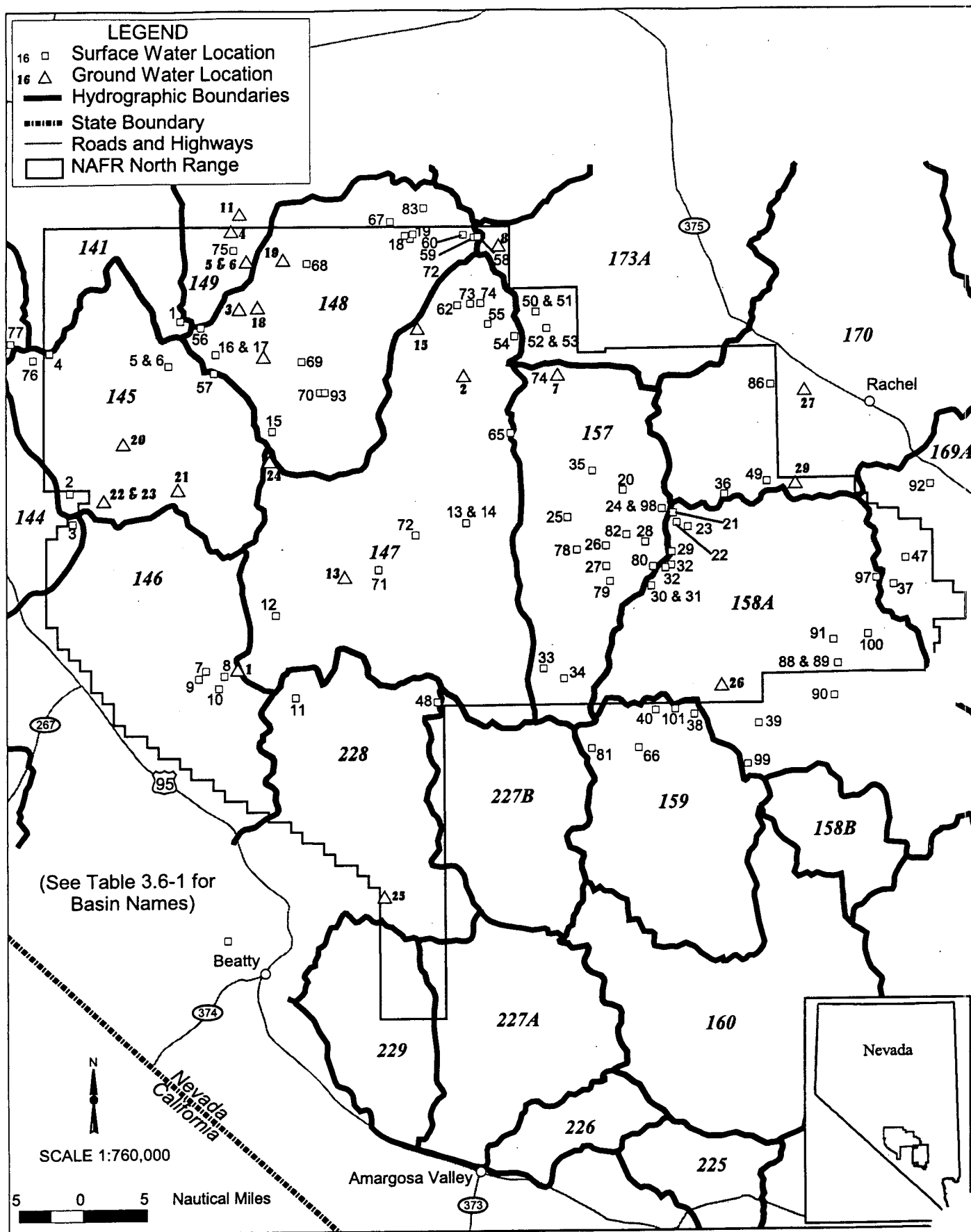


Figure 3.6-1a. Watershed Areas with Surface and Groundwater Locations for the North Range

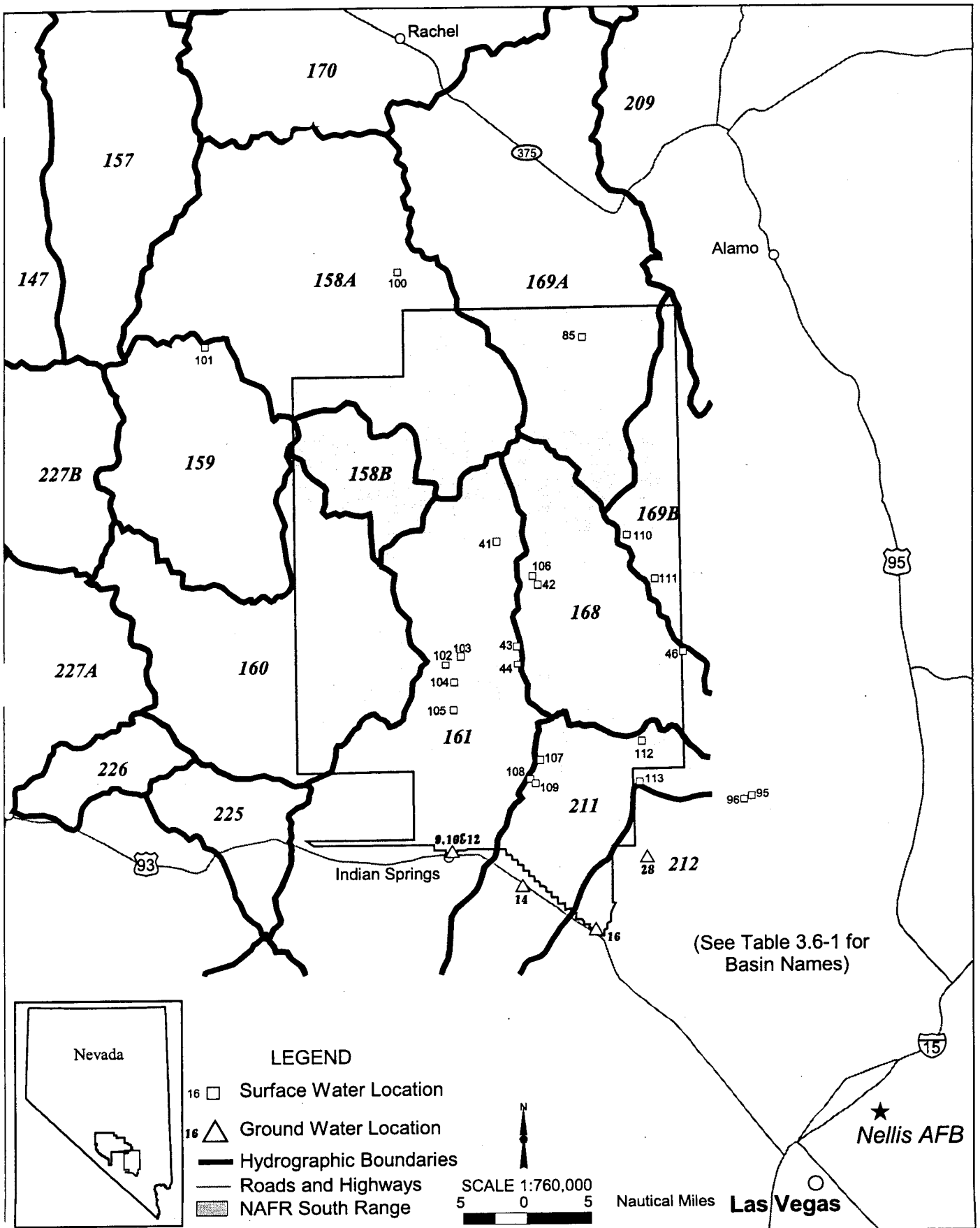


Figure 3.6-1b. Watershed Areas with Surface and Groundwater Locations for the South Range



**Table 3.6-1. Hydrographic Basins within NAFR**

<i>Basin</i>	<i>Basin No.</i>	WITHIN NAFR	
		<i>Approx. Area (mi<sup>2</sup>)</i>	<i>Percent of NAFR</i>
Ralston Valley	141	90	1.89
Lida Valley	144	15	0.31
Stonewall Flat	145	328	6.88
Sarcobatus Flat	146	345	7.24
Gold Flat	147	673	14.13
Cactus Flat	148	344	7.22
Stone Cabin Valley	149	47	0.99
Kawich Valley	157	338	7.09
Emigrant Valley	158 (A, B)	564	11.84
Yucca Flat	159	5	0.10
Frenchman Flat	160	306	6.42
Indian Spring Valley	161	373	7.83
Three Lake Valley (Northern)	168	269	5.65
Tikapoo (Tikaboo) Valley	169 (A, B)	336	7.05
Penoyer (Sand Springs) Valley	170	142	2.98
Railroad Valley (Southern)	173A	76	1.59
Three Lake Valley (Southern)	211	156	3.27
Las Vegas Valley	212	16	0.34
Fortymile Canyon	227 (A, B)	27	0.57
Oasis Valley	228	282	5.92
Crater Flat	229	33	0.69
<b>Total:</b>		<b>4,765</b>	<b>100</b>

*Source: Air Force 1998b.*

representative sampling of bombing targets to determine if practice bombing activities have caused surficial soils contamination on NAFR (Air Force 1996b). The results of the study showed that while there was contamination at the target sites, the concentrations of contaminants (e.g., explosives and heavy metals) were relatively low and that there was little risk to people or the environment from residual contamination. Precipitation would tend to transport and disperse soil contaminants, reducing the contaminant concentrations. However, targets on NAFR are located in valley bottoms such that there is negligible surface water runoff (Air Force 1996b, 1997e). In addition, contaminants tend to be immobilized by the clayey, basic soils that are prevalent on valley bottoms.

Surface water quality would also likely be impaired in areas of accelerated erosion such as areas of fine-grained alluvial basin floor soil disturbed by vehicular traffic, foot traffic, wildfires, or concentrated grazing.

A 1998 GAO Report, Environmental Protection, DOD Management Issues Related to Chaff, identified and reviewed studies by DOD and others to evaluate the environmental effects of chaff. None of the studies were found to demonstrate significant environmental effects of chaff. Studies to establish the weathering rates and chemical fate of metal coating in soils and fresh water were prepared as part of the Air Force 1997 report entitled *Environmental Effects of Self Protection Chaff and Flares*. Based on this report, there were no significant environmental consequences of long-term chaff use. The Air Force has initiated action to insure removal from the inventory of all lead-based chaff, which was formerly used by the DOD. Chaff currently used is primarily composed of fiberglass and is non-toxic. However, the Air Force is continuing to address the question on environmental effects of chaff including the breakdown of chaff in the environment, the uptake path of any chemical constituents, and any potential long-term effects.

Water discharges on the range are regulated by the NDEP, Bureau of Water Permits and Compliance (BWPC). Surface water discharges fall under the requirements of the National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act. There are currently two areas on NAFR that would be classified as "industrial" discharges, requiring a permit to discharge under the NPDES program. These would include the TTR and ISAFAF. NAFR has received authorization from the BWPC to discharge storm water from the TTR and ISAFAF, in accordance with general permit number GNV00022233.

### **3.6.3 Floodplains**

As described above, much of the warm weather precipitation is lost to the atmosphere through evaporation and transpiration within a very short period. Regional storms, which generally occur in the winter months, are typically of low intensity, but can cause significant flooding on the playa lake beds. However, locally intense summer thunderstorms within the mountainous portions of NAFR can produce flooding in the low-lying valleys. Localized thunderstorms produce high-intensity, short-duration rainfall events that can result in flash flooding. When a

major storm moves into the area, water collects as surface runoff in a short period. Consequently, the resultant floods are flash floods, having sharp peaks and short durations.

A floodplain inventory study (Air Force 1997h) was conducted in support of the proposed land withdrawal to assess the suitability of present and potential future uses of NAFR with respect to flood hazards. Conventional methods of hydrologic analysis (such as those developed by the Army Corps of Engineers, Soil Conservation Service, etc.) were not used in analyzing the flooding potential for this study. The methods used in this study are unique to the site. The study identified floodplain boundary delineations for an approximate 100-year frequency storm event for each of the major categories of landforms that influence surface water hydrology and flooding on NAFR. These categories include major playas (dry lake beds), contributing drainage areas (valley collectors), and alluvial fans. Figure 3.6-2 depicts the flood zone boundary delineations for the three major categories of landforms that influence surface water hydrology and flooding in the study area. Flood zones corresponding to dry lake beds, valley collectors, and alluvial fans are mapped as Zone I, Zone II, and Zone III, respectively.

A total of 11 major dry lake beds were identified within the boundaries of NAFR based on natural topographic divides. Watershed areas for these major playas range in size from 99 to 971 square miles.

The anticipated runoff volumes for each of these major playas were determined by multiplying the watershed area of the playa by the estimated surface water runoff depth expected to result from the 100-year, 12-hour storm event. The rainfall estimate used produced an average runoff depth of 2.12 inches. A summary of the dry lake bed watershed areas and runoff volume estimates is provided in Appendix F.

Thirty-nine major valley collectors were identified that were defined as those valleys that have relatively large drainage areas or several smaller tributaries that discharge to the main collector from upstream contributory drainage areas. Drainage areas for the major valley collectors range in size from 6 to 347 square miles. Peak discharge flows for the valley collectors were estimated based on a description of the desert basins from the literature and observed soil conditions of the drainage areas, taking into account soil characteristics, rock types, and vegetative cover. The average rainfall estimate used, based on a 100-year, 24-hour storm event, was 2.8 inches. Due to the large number of valley collectors, each individual collector was not analyzed. A representative sampling of drainages was evaluated and used to develop general guidance in estimating peak discharges for the remaining collectors based on the size of the drainage areas. A summary of the collector drainage areas is provided in Appendix F. Drainage area boundaries are depicted on Figure 3.6-1a and b.

Major alluvial fans are defined as those fans having a drainage area greater than 0.5 square mile. Based on this definition, a total of 158 drainage areas containing major fans were identified on NAFR, ranging in size from 0.5 to 60 square miles. Similar to the valley collector analyses, peak discharge flows for the alluvial fans were estimated based on soil conditions described in existing literature and field observations. Peak discharge flows were estimated for

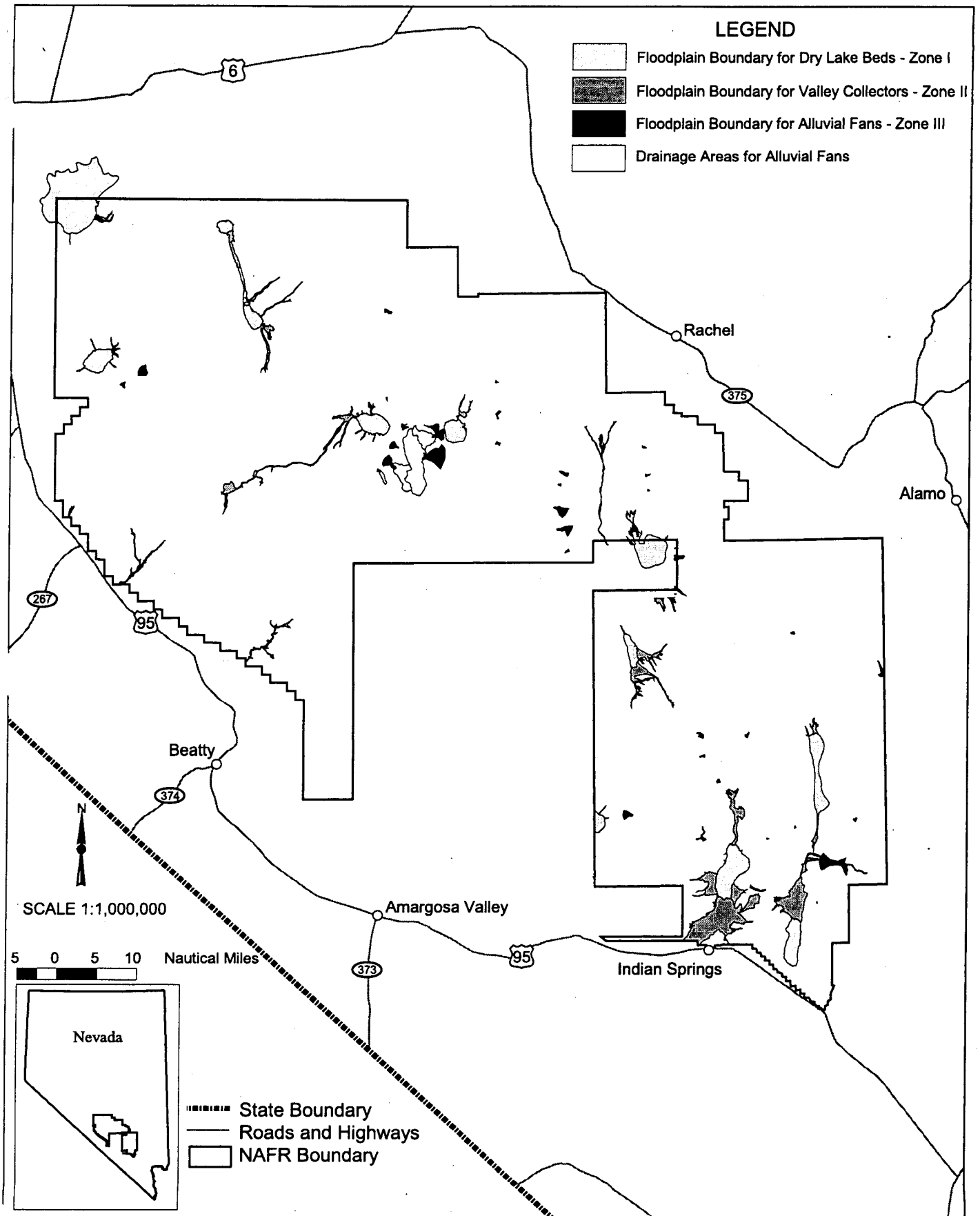


Figure 3.6-2. Floodplain Boundary Map

30 alluvial fans of varying drainage areas, which were then used to estimate peak discharges for the remaining fans based on the size of the drainage areas. The 100-year, 24-hour rainfall estimate representing the mountain areas surrounding NAFR that was used to calculate peak discharges was 3.0 inches. A summary of the alluvial fan drainage areas and peak discharge estimates for the 30 fans analyzed is presented in Appendix F.

### **3.6.4 Groundwater**

#### **HYDROGEOLOGY**

Hydrogeologic systems can be defined as local, intermediate, or regional based on the distance between recharge and discharge points. The hydrogeologic systems that collect, store, and transmit groundwater within NAFR primarily comprise regional systems that have varying degrees of interconnection. Local and intermediate flow systems may exist on NAFR within individual basins and at the multiple basin level, although available information regarding these intermediate systems is not sufficient to definitively document their presence. In addition, the local and regional hydrogeologic systems in the vicinity of NAFR may be connected with adjacent regional groundwater systems (Air Force 1998b).

Three types of aquifers underlie portions of southern Nevada and the NAFR, including (1) valley fill or alluvial aquifers, (2) volcanic bedrock aquifers, and (3) carbonate bedrock aquifers. All three of these rock types make up the hydrogeologic systems that collect, store, and transmit groundwater within NAFR (Air Force 1998b). Many of the shallow, valley fill aquifers and volcanic aquifers are not continuous due to complex faulting in the region. However, certain regions of NAFR are underlain by regional carbonate rock aquifers that have varying degrees of interconnection. With the exception of the northern margin of the North Range, the NAFR is underlain by carbonate rock aquifers of the Death Valley and Colorado aquifer systems (USGS 1998), which may be hydrologically connected to the shallower alluvial and volcanic aquifer systems on NAFR. The Death Valley regional groundwater flow system encompasses approximately 94 percent of the deep groundwater flow beneath NAFR. The valley fill or alluvial aquifer is common to both the North and South Ranges. Depth to groundwater in these basins varies widely, from a few feet to over 1,000 feet below the surface, but on the average exceeds 200 feet (Air Force 1996b). The recent uplift of the mountains in the Basin and Range region (beginning about 17 million years ago to the present), led to increased erosion, transport, and deposition of sediments derived from the carbonate and volcanic rocks that make up the mountains on NAFR. These sediments are the principal materials that make up the alluvial aquifers. In general, the coarsest materials (gravel and boulders) were deposited near the mountains, and the finer materials (sand and clay) were deposited in the central parts of the basins or in the playas (lakes at the time of deposition). As a result, the central portion of the basins are commonly confined by layers of fine lacustrine clay that have low hydraulic conductivity. However, some interfingering of fine and coarse materials occurred during deposition due to occasional storms that would carry coarse materials further from the source (USGS 1998).

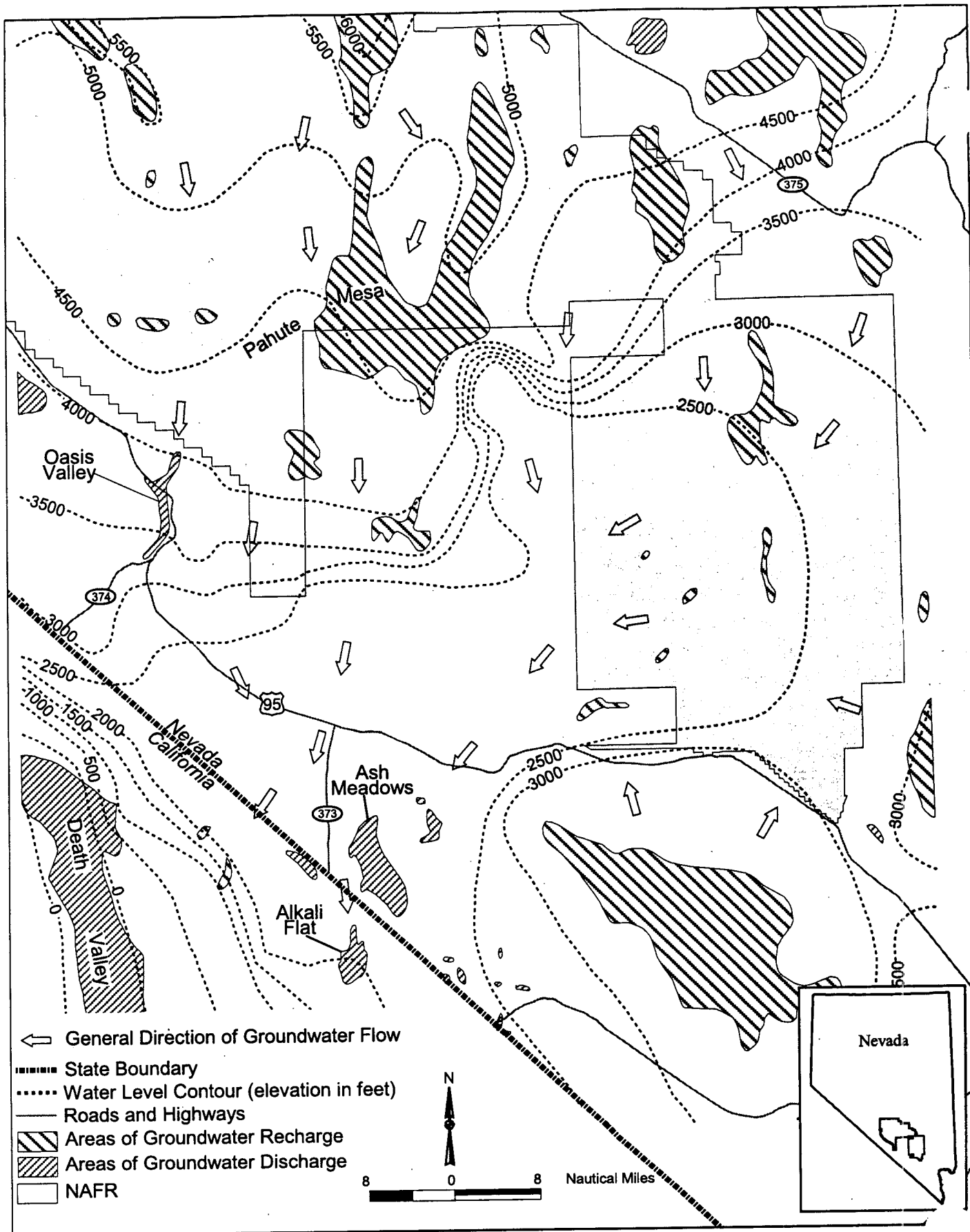
The second aquifer type present within NAFR, volcanic rock aquifers, are principally found on the North Range. The characteristics of various volcanic rock types that would allow for water storage and transmission are related to the amount of primary and secondary porosity within the rock. Primary porosity is defined as porosity that is present within the rock at the time of deposition (Bates and Jackson 1984). In volcanic rocks, this would include permeable zones of loosely consolidated cinders, created by textural differences in the rock due to gas present in the lava when the flow erupted. Secondary porosity is the porosity formed subsequent to emplacement or deposition of the rock. Secondary porosity in volcanic rocks is porosity developed after deposition such as fracturing. Where fracture systems interconnect with highly permeable rubble and cinder zones, the rock mass tends to be capable of transmitting relatively large quantities of groundwater (USGS 1997). Extensive fracturing and faulting in these rocks creates conduits for transmitting water, but these fractures are often re-cemented within the volcanic rocks on NAFR. The bedded nature of the volcanic rocks can also act as a barrier to water migration (Air Force, Navy, and DOI 1991). Other volcanic rock types that are present on the range and have water-bearing characteristics include ash-flow and ash-fall tuffs. These rocks occur in consolidated (welded) and semi-consolidated deposits and form from the flow or fall, respectively, of gas-charged ash during a volcanic eruption.

The third type of aquifer, located under most of NAFR, is the carbonate rock aquifer. The carbonate rock aquifers within the Basin and Range Province can be divided into two parts by age and composition: (1) an upper rock sequence of Late Triassic to Early Mississippian (395 million years before present [b.p.] to 190 million years b.p.) age that consists primarily of limestone with minor amounts of dolomite, interbedded with shale and sandstone; and (2) a lower sequence of limestone and dolomite of Middle Devonian to Middle Cambrian (535 million years b.p. to 420 million years b.p.) age that contains little clastic (e.g., shale, sandstone) material. Where the lower carbonate rocks are present, deep drilling data indicate that intervals of these rocks might locally extend as deep as 15,000 feet. However, this is rare at any given location due to a combination of deep erosion and structural deformation of the carbonate strata (USGS 1997). These rocks are extensively fractured and include solution openings that have resulted from dissolution of the rock by water moving through pre-existing interstices or fractures (Air Force 1998b), further enhancing their water transmitting capacity.

Groundwater flow beneath NAFR transcends individual mountain ranges in the deeper, carbonate aquifer system and is generally believed to flow to the south-southwest (Figure 3.6-3) (see Water Quality section below for more information). Flow in the local aquifer systems of individual basins mimics the surface drainage in most cases (Air Force 1996b). Therefore, groundwater flows from the surrounding highlands toward the topographic low point within the basins, similar to the flow of surface water after a storm event.

#### **RECHARGE AND DISCHARGE**

The 21 hydrographic basins wholly or partly included on NAFR represent an extensive water resource potential totaling over 49 million acre-feet of groundwater storage with a perennial yield of 93,000 acre-feet per year (AFY) (Air Force, Navy, and DOI 1991). The primary source of



**3.6-3. Regional Groundwater Flow, Recharge Areas, and Discharge Areas**

groundwater recharge on NAFR is precipitation in the form of snow or rain falling in the mountains and infiltrating into alluvial and bedrock aquifers. Mountain precipitation can infiltrate directly into aquifer outcroppings, thus providing recharge to the bedrock aquifers. The average 8 inches of precipitation annually results in a total of 2.1 million AFY of precipitation falling on the range. It has been estimated that between 3 and 7 percent of all precipitation reaches the water table through infiltration and percolation, with the remainder being lost to evaporation (Eakin et al. 1976). The Special Nevada Report (Air Force, Navy, and DOI 1991) indicates that less than 4 percent of all precipitation is estimated to reach the water table, with the remainder being lost to evaporation. This indicates that approximately 84,000 AFY of water actually reaches aquifers beneath NAFR (Air Force 1998b).

Direct evaporation of spring discharges to bare soils and subsurface outflow to adjacent aquifers are the primary types of groundwater discharge from NAFR. Discharge from springs occurs at numerous locations (Figure 3.6-1a and b), as discussed above, but does not account for a significant percentage of the total discharge from the range aquifers. Regional groundwater discharge occurs through surface springs to the south and southwest of NAFR and the NTS. See the Water Quality section below for additional information. Transpiration is limited due to the sparseness of vegetation on NAFR.

#### **WATER QUALITY**

Specific data regarding groundwater quality on NAFR is limited to analytical results from the monitoring of nine wells that are used for drinking water supply. These wells include two at ISAFAF (Wells 62-1 and 106-2), one at Point Bravo (Well 2278-1), one at Tolicha Peak Electronic Combat Range (TPECR) (Well TPECR #1), and five at TTR (Wells BLM, EH-7, EH-2, 3A, and 3B).

The MCLs for all regulated parameters have not been exceeded for any of the wells where data are available. Analytical data for these wells are included in the Water Requirements Study report (Air Force 1998b).

Extensive water quality testing has been done in the vicinity of NAFR at the NTS, including a study of water quality parameters prevalent in the three aquifer types discussed above. A summary of general water chemistry data for dissolved ions commonly found in well water samples for carbonate, volcanic, and alluvial aquifers found on the NTS is presented in Table 3.6-2.



Ions	DOMINANT ROCK TYPE OF AQUIFER		
	Alluvium	Carbonate	Volcanic
pH	7.6 - 9.0	6.6 - 8.7	7.3 - 9.1
Calcium (Ca) <sup>1</sup>	2.4 - 281	3.6 - 100	1.0 - 83.7
Magnesium (Mg) <sup>1</sup>	0.6 - 90	1.0 - 47	0.0 - 32.4
Sodium (Na) <sup>1</sup>	5.8 - 1,291	7.0 - 421	1.0 - 278
Potassium (K) <sup>1</sup>	0.0 - 12.0	1.4 - 15.5	1.1 - 21.5
Chlorine (Cl) <sup>1</sup>	3.3 - 56.2	5.0 - 33.9	3.2 - 113
Sulfate (SO <sub>4</sub> ) <sup>1</sup>	11.0 - 3,599	15.0 - 60	1.0 - 471
Bicarbonate (HCO <sub>3</sub> ) <sup>1</sup>	98 - 271	197 - 566	78 - 543
Silicon dioxide (SiO <sub>2</sub> ) <sup>1</sup>	5.1 - 74.3	5.1 - 98	0.0 - 85

Note: 1. Values are in mg/L  
 Source: Chapman and Lyles 1993.

In general, for alluvial aquifers, water quality varies between and within basins. Dissolved solids concentrations increase from the basin margins and on the slopes of alluvial fans, where the aquifers are recharged by the influx of water from the mountains, to the center of the basins (USGS 1997). In other words, the water quality is poorer at a greater distance from the recharge area (Dettinger 1992). Saline water can be found locally near thermal springs and in areas where the aquifer includes rocks containing large amounts of soluble salts, generally from evaporites. The groundwater beneath playas of smaller closed valleys may be brackish due to the high rate of direct evaporation in these basins (USGS 1997). A general characterization of the shallow aquifers on the North Range is that groundwater from these aquifers is a sodium bicarbonate type and usually has total dissolved solids (TDS) concentrations of less than 500 mg/l. Water quality within the South Range aquifers typically varies from 500 to 1,000 mg/l for TDS and is a calcium-magnesium-bicarbonate type of water (Air Force 1996b). The higher TDS range could be attributable to the presence of interbedded evaporite deposits within the carbonate aquifers, which are known to occur in certain areas of southern Nevada and cause saline contamination of otherwise fresh water. Another natural contaminant of concern is fluoride associated with volcanic tuff deposits that are prevalent throughout the region. In much of the area, fluoride concentrations in groundwater exceed the Nevada Public Health Service recommended standards for drinking water (Air Force 1998b).

Three categories of contaminants have been identified on NAFR, including (1) ordnance residues (i.e., primarily explosives), (2) operations and maintenance spills (primarily fuels, oils, etc.), and (3) radiological contamination related to the testing of nuclear devices (e.g., plutonium). In general, the contaminants exist in near-surface soils and are generally highly insoluble. The contaminants are generally not expected to migrate vertically downward to an

aquifer because the evaporation rate (58 to 69 inches/year) greatly exceeds the precipitation rate (4 inches/year in the valley floors to 16 inches/year in the highest mountains) and groundwater is generally very deep (i.e., generally in excess of 200 feet). Detection of significant groundwater contamination is limited to underground testing areas on Pahute Mesa. In these areas, contamination has been introduced over large areas and at variable depths above and below the water table. Specifically, the main test areas include Yucca Flat, Frenchman Flat, and Pahute Mesa (see Figure 3.5-2), part of which lies within NAFR. Of the 77 tests that were detonated below or near the water table on the Pahute Mesa, 24 occurred within NAFR boundaries. This portion of land, withdrawn as part of NAFR, is associated with the NTS and is under the administrative control of the DOE under a Memorandum of Understanding between DOE and the Air Force. The risks associated with groundwater contamination are being reevaluated on an on-going basis by DOE (Air Force 1997e).

Although there are few measurements or observations of contaminant occurrence, radioactive and other chemical contaminants are present near the test locations, based on the size and number of tests that have been conducted. Groundwater flow is the primary mechanism by which these contaminants can be transported significant distances away from the initial source to more accessible areas (e.g., spring discharge and groundwater withdrawal areas). Regional groundwater flow in this area is predominantly to the south, discharging south and southwest of the NTS. Analysis of water from supply wells on the NTS (one immediately adjacent to the NTS/NAFR boundary) has not detected any contaminants to date, but it is possible that in the future these or other wells withdrawing water from volcanic rocks beneath these mesas could intercept or induce movement of test-generated contaminants (USGS 1996).

The NTS and NAFR were initially chosen as locations for nuclear detonation testing due to the remoteness and interior drainage system (Great Basin). However, long-term studies of basin-and-range hydrology have identified regional aquifers that may allow radionuclides introduced into the subsurface environment to migrate beyond the NTS and NAFR boundary. Carbonate rock aquifers in this portion of Nevada form a north-south corridor, or "central corridor," that is generally laterally continuous for more than 250 miles. Groundwater generally discharges from this corridor to the south and southwest, ultimately reaching an intermediate discharge area, or Death Valley, where it is released as springflow or is evaporated or transpired. Intermediate discharge areas include Ash Meadows, Alkali Flat, and Oasis Valley (Figure 3.6-3). Radionuclides transported by regional groundwater aquifers to these discharge points may result in potential long-term impacts to surface water resources in these areas. Although the hydrology has been studied in some detail, much still remains uncertain about flow rates and directions through the fractured rock aquifers that transmit water great distances across this arid region. Estimated flow rates are highly variable and speculative. In the Pahute Mesa area, a major groundwater recharge area and the only portion of the NAFR where underground nuclear testing was completed, the definition of effective aquifers is poorly understood and the downgradient pathways are uncertain. Studies are continuing that will determine the potential for radionuclides to be transported within these aquifers and that will assist DOE in minimizing the effects of testing on the subsurface and surface hydrologic environments (USGS 1996, 1997, 1998).

Contamination from air-to-ground missions is another potential source for contamination on the range. Contamination of surface soils associated with practice bombing on NAFR was investigated at a representative sampling of bombing targets (Air Force 1996b). The study concluded that while there was contamination at the target sites, the concentrations of targeted compounds (e.g., explosives and heavy metals) were relatively low and that there was little risk to on-site workers or the public from residual contamination. It also concluded that there was little risk to groundwater quality due to the low precipitation, high evaporation, generally low solubility of the contaminants of concern, and the considerable depth to groundwater across most of the range.

Discharges of waste water or other waste streams to the ground also has the potential to affect groundwater quality. Under the authority of the Nevada Revised Statutes (NRS), Chapter 445, any discharge of water to groundwater requires a groundwater permit. In compliance with these discharge requirements, the Air Force currently holds three BWPC groundwater discharge permits: two at TTR and one at ISAFAF. All three permits are related to settling or aeration ponds associated with waste water treatment facilities. Permit requirements are imposed by the state in order to prevent degradation of groundwater quality and include the submittal of quarterly Discharge Monitoring Report Summaries.

### **3.6.5 Water Rights and Improvements**

The NRS assigns the Nevada State Engineer's Office the jurisdiction over surface and groundwater rights and appropriations. Surface water appropriations are included in NRS 533 and are based on availability and seniority of appropriations. Groundwater appropriations are covered under NRS 534 and are based on perennial yield of each basin with special provisions for temporary appropriations and adjudication of overdrafted basins. Specific standards for well drilling are further detailed in NAC 534.

#### **SURFACE WATER**

Based on available data, a total of 946.37 AFY of surface water on NAFR is currently appropriated for stock, wildlife, domestic, and irrigation purposes. Agencies of the federal government hold approximately 796.97 AFY (84 percent) of these appropriations, while the remaining 149.14 AFY (16 percent) are privately held. A majority of the surface water rights owned by the federal government have been transferred from the original owners whose principal uses of water resources were probably in support of historical mining and ranching operations. Based on specific information regarding use of surface water on NAFR obtained from the Nevada State Water Engineer's Office (NVSWEO), surface water appropriations on the range are not currently used for direct mission-support activities by the Air Force. Some surface water appropriations on NAFR currently go unused for their intended or any other purpose, which makes them available to support wild horses and other wildlife (Air Force 1998b). Table 3.6-3 provides a listing of the surface water rights and appropriations on NAFR. The location of springs and seeps on the NAFR for which there are documented surface water appropriations are depicted in Figure 3.6-1a and 1b.

## **GROUNDWATER**

Groundwater appropriations on the range are classified as either stock-watering, construction, or quasi-municipal. Records from the NVSWEO indicate that groundwater is appropriated from 25 wells located within the boundaries of NAFR, totaling 1,851.9 AFY of groundwater appropriations. Federal government agencies (e.g., Air Force, BLM, and DOE) currently hold appropriations for 22 of the 25 wells, which accounts for 98 percent (1,826.1 AFY) of these appropriations. The rights to the remaining 25.4 AFY (2 percent) are privately held for stock-watering and domestic purposes. Additional groundwater withdrawals related to direct mission support activities occur at Point Bravo (Well 2278-1) and Silver Flag Alpha (Well 2362-1). It is reported that appropriation requests for these wells have been recently submitted to the NVSWEO (Air Force 1998b). Available historical groundwater withdrawal data for use on or immediately adjacent to the range is presented in Table 3.6-4. The table represents metered groundwater withdrawal data from the three main groundwater use areas on the range. These data indicate the total average annual groundwater use in these areas is approximately 207 AFY. Only one private party holding water rights on NAFR is currently exercising these rights and appropriating water, as designated, for stock-watering purposes (Air Force 1998b). Table 3.6-5 provides a listing of the documented groundwater rights and appropriations on NAFR. The supply wells listed are depicted in Figure 3.6-1a and b.

### **3.6.6 American Indian Issues Concerning Water Resources**

Indian people from the NAFR region would like future studies of surface water to include an American Indian perspective. The CGTO considers all water sources on NAFR to be culturally significant. For example, the CGTO believes that many of the surface water sources are part of the cultural landscape and may be associated with other features of cultural importance. Springs, including mineral hot springs, are of particular significance. Access restrictions have protected some of these water sources from modern disturbance, but these same restrictions have excluded Indian people from using these sources. Other water sources were still used after the formal land withdrawal, and are included in traditional stories and beliefs.

Table 3.6-3. Surface Water Sources on NAFR (page 1 of 4)

Basin Name	Basin No.	Common Water Source Name	Ref. No.	Owner	Location	NVSWEQ APPROPRIATION INFORMATION				
						Application No.	Certificate No.	Status	Beneficial Use <sup>2</sup>	Permit Amount (AFY)
	161	Spotted #1	102	Unknown	R56E T13S S8 SW SE	Unknown	Unknown	Unknown	Wildlife	Unknown
	161	Spotted #2	103	Unknown	R56E T13S S9 NE SW	Unknown	Unknown	Unknown	Wildlife	Unknown
	161	Foggy Guzzler	104	Unknown	R36E T13S S20 SE NE	Unknown	Unknown	Unknown	Wildlife	Unknown
	161	Patches Guzzler	105	Unknown	R56E T14S S5 NE NE	Unknown	Unknown	Unknown	Wildlife	Unknown
	168	Indian Canyon Guzzler	106	Unknown	R57E T11S S35 SE SW	Unknown	Unknown	Unknown	Wildlife	Unknown
	168	Dain Peak Guzzler	107	Unknown	R57E T14S S27 SE SW	Unknown	Unknown	Unknown	Wildlife	Unknown
	211	Heaven's Well Guzzler	108	Unknown	R57E T15S S4 SE NW	Unknown	Unknown	Unknown	Wildlife	Unknown
	211	Heaven's Well Tinaja	109	Unknown	R57E T15S S3 SW SW	Unknown	Unknown	Unknown	Wildlife	Unknown
	169	Tommy Guzzler	110	Unknown	R59E T11S S17 NW SE	Unknown	Unknown	Unknown	Wildlife	Unknown
	169	Chuckwalla Guzzler	111	Unknown	R59E T12S S3 NE SW	Unknown	Unknown	Unknown	Wildlife	Unknown
	211	White Sage Guzzler	112	Unknown	R59E T14S S19 NE SW	Unknown	Unknown	Unknown	Wildlife	Unknown
	211	Blacktop Guzzler	113	Unknown	R59E T15S S7 NE NW	Unknown	Unknown	Unknown	Wildlife	Unknown
Ralston Valley	141	Unnamed Seep	1	USA/USAF	NW SE S13 T2S R45E	7357	2253	Assigned	Stock	0.9
Lida Valley	144	Stonewall Spring	2	USA/USAF	SE SE S32 T4S R44E	12362	3772	Assigned	Stock	7.2
	144	Jerome Spring	3	USA/USAF	SW SE S16 T5S R44E	5931	850	Assigned	Stock	18.1
Stonewall Flat	145	Wildhorse Spring	4	USA/USAF	SE NW S31 T2S R443	3908	1581	Assigned	Stock	2.5
	145	Alkali Spring	5	USA/USAF	SW NW S5 T3S R46E	5929	848	Assigned	Stock	18.1
	145	Alkali Spring	6	USA/USAF	SW NW S5 T3S R46E	12784	4167	Assigned	Stock	7
	145	Urania Mine Seep	57	Not filed	S10 T3S R46E	N/A	N/A	N/A	N/A	0
Stonewall Flat	145	Cane Spring	76	USA/USAF	SW SW S36 T2S R43E	3909	1582	Assigned	Stock	2.53
	145	Tognoni Spring	77	USA/USAF	SW NE S28 T2S R43E	7730	1542	Assigned	Stock	3.64
Sarcobatus Flat	146	Monte Cristo Spring	7	Lamb	SW SW S28 T7S R46E	3942	2378	Assigned	Stock	2
	146	Rock Spring	8	Cook	SE SW S26 T7S R46E	6022	851	Assigned	Stock	4.3
	146	Trappman Spring	9	Cook	NW SE S32 T7S R46E	5173	856	Assigned	Stock	10.9
	146	Tule George Spring	10	Cook	NW SE S3 T8S R46E	5540	853	Assigned	Stock	1.4
Gold Flat	147	Pillar Spring	11	Calvin	NE NE S10 T8S R46E	13283	4664	Assigned	Stock	8
	147	Larry's Seep	12	Siedentopf	NW NE S8 T7S R47E	10863	3141	Assigned	Stock	3.6
	147	Jackpot Reservoir	13	USA/USAF	SE SE S9 T5S R50E	11609	4343	Assigned	Stock	7
	147	Unknown	14	Not filed	SE SE S9 T5S R50E	N/A	N/A	N/A	N/A	0
	147	Rose Spring	54	USA/USAF	SE SE S24 T2S R50E	V02374	N/A	Vested	Stock	21.7
	147	Rose Spring	54	N/A	SE SE S24 T2S R50E	13317	N/A	Denied	Stock	0
	147	Log Spring	55	Not filed	S23 T2S R50E	N/A	N/A	N/A	N/A	0
	147	Coral Spring	62	N/A	NE NE S9 T2S R50E	13316	N/A	Denied	Stock	0

Table 3.6-3. Surface Water Sources on NAFR (page 2 of 4)

Basin Name	Basin No.	Common Water Source Name	Ref. No.	Owner	Location	NYSWEO APPROPRIATION INFORMATION				
						Application No.	Certificate No.	Status	Beneficial Use <sup>2</sup>	Permit Amount (AFY)
	147	Nixon #1	71	USA/USAF	SW NW S7 T6S R49E	V02371	N/A	Vested	Stock	18.1
	147	Nixon #2	72	USA/USAF	NE NW S27 T5S R49E	V02372	N/A	Vested	Stock	18.1
	147	Tunnel Spring	73	USA/BLM	SE SE S4 T2S R50E	V02373	N/A	Vested	Stock	7.2
Cactus Flat	148	Antelope Spring	15	USA/USAF	SW NW S4 T4S R47E	13288	4170	Assigned	Stock	4.8
	148	Antelope Spring	15	N/A	NW SW S4 T4S R47E	13467	N/A	Denied	Stock	0
Cactus Flat	148	Cactus Spring	16	USA/USAF	SE NW S34 T2S R46E	1580	377	Assigned	Stock	7.2
	148	Cactus Spring	17	USA/USAF	SE NW S34 T2S R46E	12785	4168	Assigned	Stock	7.1
	148	Silverbow Spring	18	USA/USAF	NW NE S9 T1S R49E	2376	N/A	Assigned	Stock	18.1
	148	Silverbow Spring	18	USA/USAF	NW NE S9 T1S R49E	13625	3956	Assigned	Stock	21.7
	148	Silverbow Spring	18	N/A	SW SE S4 T1S R49E	13315	N/A	Denied	Stock	0
	148	Silverbow Creek	19	USA/USAF	NW SE S4 T1S R49E	4943	1111	Assigned	Irrigation & Domestic	108.3
	148	Stealth Seep	56	Not filed	S22 T2S R46E	N/A	N/A	N/A	N/A	0
	148	Sandeen Spring	59	Not filed	S9 T1S R50E	N/A	N/A	N/A	N/A	0
	148	Thunderbird Spring	60	Not filed	S8 T1S R50E	N/A	N/A	N/A	N/A	0
	148	Sinking Springs	67	USA/USAF	SW NW S6 T1N R49E	V02367	N/A	Vested	Stock	7.2
	148	Fork Spring	68	USA/USAF	NW NW S22 T1S R47E	V02368	N/A	Vested	Stock	14.5
	148	N. Antelope Reservoir	69	USA/USAF	SE NE S2 T3S R48E	V02369	N/A	Vested	Stock	14.5
	148	Antelope Reservoir	70	USA/USAF	NW NE S19 T3S R48E	V02370	N/A	Vested	Stock	18.1
	148	Corral Spring	74	USA/BLM	NW NE S8 T1S R50E	V02375	N/A	Vested	Stock	14.5
	148	Silverbow Canyon	83	USA/USAF	NW SW S23 T1N R49E	4910	1066	Assigned	Irrigation & Domestic	144
	148	Unnamed Reservoir #2	93	N/A	NW E S19 T3S R48E	14754	N/A	Denied	Stock	N/A
Stone Cabin Valley	149	Reservoir #2	75	USA/BLM	NE NE S14 T1S R46E	12692	3521	Assigned	Stock	13.2
Kawich Valley	157	Coyote Pond	20	USA/Fallini	SE NE S5 T4S R51.5E	12692	3521	Assigned	Stock	22.4
	157	Horse Spring	21	USA/BLM	NE NE S1 T5S R52E	12044	3454	Assigned	Stock	5.3
	157	Unnamed Spring	22	USA/USAF	NW NE S7 T4S R53E	55322	14606	Assigned	Wildlife	4.6
Kawich Valley	157	Unnamed Spring	23	USA/USAF	SE SE S8 T5S R53E	55321	14605	Assigned	Wildlife	9
	157	Kawich Tank	25	USA/Fallini	NW SW S13 T5S R51E	11865	3297	Assigned	Stock	21.7
	157	Lamb's Pond	26	USA/USAF	NE NE S24 T5S R51E	11669	3266	Assigned	Stock	4.6
	157	Sundown Reservoir	27	USA/USAF	NE SE S36 T5S R51E	11606	3259	Assigned	Stock	4.6
	157	Wildcat Spring	28	USA/USAF	SE SW S31 T5S R53E	3887	690	Assigned	Stock	2.2
	157	Gold Spring	29	USA/USAF	SW SW S1 T6S R52E	12043	3453	Assigned	Stock	4.7

Table 3.6-3. Surface Water Sources on NAFR (page 3 of 4)

Basin Name	Basin No.	Common Water Source Name	Ref. No.	Owner	Location	NVSWEQ APPROPRIATION INFORMATION				
						Application No.	Certificate No.	Status	Beneficial Use <sup>2</sup>	Permit Amount (AFY)
	157	Indian Spring	39	Lamb	NW NW S11 T6S R52E	2359	208	Assigned	Stock & Domestic	2.8
	157	Indian Spring	31	USA/USAF	SW NW S11 T6S R52E	11608	3261	Assigned	Stock	4.6
	157	Johnnie's Water	32	Watkins	SE SE S12 T6S R52E	3746	334	Assigned	Stock	18.1
	157	Johnnie's Spring	33	N/A	SE SE S12 T6S R52E	3894	N/A	Denied	Stock & Domestic	0
	157	Black Rock Spring	33	USA/USAF	NW SE S22 T7S R51E	11625	3263	Assigned	Stock	4.6
	157	Kihbab Spring	34	USA/USAF	NE NE S35 T7S R51E	11660	3284	Assigned	Stock	4.6
	157	Antelope Reservoir	35	USA/Fallini	SW SW S29 T4S R51E	11626	3536	Assigned	Stock	4.3
	157	Granite Spring	65	N/A	NE NE S12 T4S R50E	13318	N/A	Denied	Stock	0
	157	Live Oak Spring	81	USA/USAF	SE SE S7 T8S R51 1/2E	11610	3262	Assigned	Stock	4.56
	157	Pony Spring	82	USA/USAF	SW NW S26 T5S R52E	11668	3265	Assigned	Stock	4.56
Emigrant Valley (A&B)	158	Chalk Spring	36	USA/USAF	SW SE S5 T5S R54E	3889	688	Assigned	Stock	0.2
	158	Tub Spring	38	USA/Army	SW NE S20 T8S R53E	3744	332	Assigned	Stock	18.1
	158	Cane Spring	39	Lincoln Land	SW NW S17 T9S R56E	6842	779	Assigned	Stock	22.4
Emigrant Valley (A&B)	158	Miners Spring	88	USA/USAF	S25 T7S R55E	V01379	N/A	Vested	Stock	36.24
	158	Disappointment Spring	89	USA/USAF	S25 T7S R55E	V01370	N/A	Vested	Stock	36.24
	158	Belted Reservoir #2	90	USA/USAF	SE NE S11 T8S R55E	10595	3130	Assigned	Stock & Domestic	5
	158	Nanquinta Reservoir #1	91	USA/USAF	NE NE S14 T7S R55E	10594	3129	Assigned	Stock & Domestic	5
	158	Reservoir #4	99	USA/USAF	NW NW S10 T9S R54E	10597	2845	Assigned	Stock	5
	158	Cane Spring	100	USA/USAF	SE SW S25 T7S R55E	V01375	N/A	Vested	Stock	72.4
Yucca Flat	159	Wire Grass Spring	40	USA/BLM	NE NE S18 T8S R53E	3743	376	Assigned	Stock & Domestic	18.1
	159	White Rock Spring	66	USA/ARMY	NE NE S4 T9S R52E	3896	692	Assigned	Stock	4.3
	159	Oak Springs	101	USA/ARMY	SW SW S13 T8S R52E	3745	333	Assigned	Stock	18.1
Indian Springs Valley	161	Quartz Spring	41	USA/USAF	SE NW S20 T11S R57E	11642	3371	Assigned	Stock	0.7
	161	Tim Spring	43	USA/USFWS	NE SW S4 T13S R57E	13521	3787	Assigned	Stock	0.7
	161	Sand Spring	44	USA/USFWS	NE NW S15 T13S R57E	13520	3786	Assigned	Stock	
Three Lake Valley (Northern)	168	Indian Spring Canyon	42	USA/USFWS	NE NW S2 T12S R57E	12631	3535	Assigned	Stock	7.2

Table 3.6-3. Surface Water Sources on NAFR (page 4 of 4)

Basin Name	Basin No.	Common Water Source Name	Ref. No.	Owner	Location	NYSWEO APPROPRIATION INFORMATION				
						Application No.	Certificate No.	Status	Beneficial Use <sup>2</sup>	Permit Amount (AFY)
	168	Shale Cut Spring	45	USA/BLM	NE SW S1 T13S R59E	3253	2620	Assigned	Stock & Domestic	2.2
	168	White Rock Spring	46	USA/USAF	NW SE S12 T13S R59E	3254	2621	Assigned	Stock	2.2
Tikapoo Valley (A&B)	169	Rock Spring	37	D4 ENT/PR	NE NW S29 T6S R56E	57083	14625	Assigned	Stock	1.7
	169	Quail Spring	47	D4 ENT/PR	SE SW S9 T6S R56E	57083	14608	Assigned	Stock	1.8
	169	Summit Spring Drainage	48	USA/BLM	NE SW S15 T8S R58E	4730	897	Assigned	Stock	18.1
	169	Crescent Valley Wash	84	USA/USAF	S T9S R59E	4333	N/A	Withdrawn	Stock	0
Tikapoo Valley (A&B)	169	Tule Spring	87	N/A	SE NW S27 T4S R58E	4746	1983	Assigned	Stock	
	169	Indian Spring	92	N/A	SE SE S2 T5S R56E	V01372	N/A	Vested	Stock	72.3
	169	Cattle Spring	97	USA/USAF	SW NE S21 T5S R56E	V01367	N/A	Vested	Stock	72.4
	169	Cliff Spring	98	USA/USAF	NW SW S29 T5S R56E	V01369	N/A	Vested	Stock	18.1
Penoyer (Sand Springs Valley)	170	Cliff Spring	24	USA/USAF	NW NE S14 T5S R52E	11605	3258	Assigned	Stock	4.56
	170	Cliff Spring	24	LAMB	NW NE S14 T5S R52E	2357	350	Assigned	Stock & Domestic	7.2
	170	Beck Spring	49	USA/BLM	NE NE S2 T5S R54E	3888	689	Assigned	Stock	1.1
	170	Pink Hills Reservoir	86	USA/BLM	NE SW S21 T3S R54E	11693	N/A	Withdrawn	Stock & Domestic	N/A
Railroad Valley (A)	173	Summer Spring	50	FALLINI	NW NW S16 T2S R51E	5662	949	Assigned	Stock	14.5
	173	Summer Spring	51	FALLINI	NW NW S16 T2S R51E	13541	3659	Assigned	Stock	14.5
	173	Cedar Spring	52	FALLINI	NW NW S22 T2S R51E	13542	3660	Assigned	Stock	18.1
	173	Cedar Spring	53	FALLINI	NW SW S22 T2S R51E	23501	8133	Assigned	Stock	18.1
	173	Phantom Spring	58	Not Filed	S14 T1S R50E	N/A	N/A	N/A	N/A	0
	173	Shirley Spring	79	USA/USAF	NE SE S16 T6S R52E	11607	3260	N/A	Stock	4.56
Three Lake Valley (Southern)	211	Unnamed	95	USA/USFWS	NE SE S12 T15S R60E	12630	3530	Assigned	Wildlife	0.72
	211	Unnamed	96	USA/USFWS	SW NE S11 T15S R60E	12633	3531	Assigned	Wildlife	0.72
Oasis Valley	228	Unnamed	94	USA/BLM	SW SE S26 T11S R46E	25628	8454	Assigned	Municipal	3.61

Notes: 1. See Figure 3.6-1a and 1b.  
2. Nonspecific term used to describe beneficial use of the water.

Source: Mariah 1996 (Map #s 1-62), Air Force 1997g (Map #63-79), personal communication, Major Jeff Shea 1998 (Map #100-115).



<b>Table 3.6-4. Annual Metered Historic Groundwater Use</b>				
<i>Location</i>	<i>Well Name</i>	ACRE-FEET PER YEAR		
		<i>1995 Water Use</i>	<i>1996 Water Use</i>	<i>1997 Water Use</i>
TTR – Man Camp	BLM, EH-7	33.6	37.5	70.8
TTR – Industrial Area	3A, 3B, EH-2	69.2	47.5	35.7
TECR – O&M Compound	TECR #1	24.5	27.3	43.6
TPECR	TPECR #1	8.94	16.9	9.41
Indian Springs - AFAF	62-1, 106-2	87.3	91.1	97.4
Point Bravo	2278-1	6.67	7.5	7.4
Silver Flag Alpha	2362-1	0.6	1.24	1.01
<b>Total</b>		<b>230.81</b>	<b>229.04</b>	<b>265.32</b>
<i>Source: Air Force 1998b.</i>				

Table 3.6-5. Groundwater Sources on NAFR (page 1 of 3)

Common Water Source/Name	Reference No.	Location	Owner	County		Basin	NYSWEO APPROPRIATION INFORMATION			
				County	Basin		Application Number	Certificate No.	Status*	Beneficial Use
<b>Active Production Wells<sup>1</sup></b>										
Tolicha Peak	1	NW NW S25 T7 R46E	USA/USAF	Nye	146	48429	13619	Assigned	Municipal	14
Site 4	2	SW NW S5 T3S R50E	USA/USAF	Nye	148	54178	Pending	Assigned	Municipal	61.4
EH #2	3	NE NW S12 T2S R46E	USA/USAF	Nye	148	50169	14160	Assigned	Municipal	24.3
EH #7	4	NW NE S2 T1S R46E	USA/USAF	Nye	149	53885	14093	Assigned	Municipal	147
3A	5	SE SE S13 T1S R46E	USA/USAF	Nye	149	58150	14286	Assigned	Municipal	460
3B	6	NE SE S13 T1S R46E	USA/USAF	Nye	149	58149	14285	Assigned	Municipal	320
Camp's Well	7	SE SW S11 T1S R51E	USA/FALLINI	Nye	157	12143	3253	Assigned	Stock	23.9
Georges Water	8	SE SW S11 T1S R50E	FALLINI	Nye	173A	11862	3132	Assigned	Stock	23.2
62-1	9	S5 T16S R56E	USA/USAF	Clark	161	51573	13637	Assigned	Municipal	68
62-1 Additional	9	S5T16S R56E	USA/USAF	Clark	161	64234	Pending	Appl. Filed	Industrial	18.32
106-2	10	S8 T16S R56E	USA/USAF	Clark	161	51572	13636	Assigned	Municipal	35.5
106-2 Additional	10	S8 T16S R56E	USA/USAF	Clark	161	64236	Pending	Appl. Filed	Industrial	50.75
BLM	11	NE SW S25 T1N R46E	USA/USAF	Nye	149	56916	14097	Assigned	Municipal	23
ISAF AF Well 3	12	S8 T16S R56E	USA/USAF	Clark	161	64235	Pending	Appl. Filed	Industrial	20
Gold Flats #2	13	SW SE S9 T6S R48E	USA/USAF	Nye	147	64237	Pending	Appl. Filed	Industrial	11
Point Bravo	14	NE NE S29 T16S R57E	USA/USAF	Clark	211	62502	Pending	Appl. Filed	Municipal	10
O & M	15	NW SE S22 T2S R49E	USA/USAF	Nye	147	62503	Pending	Appl. Filed	Municipal	350
Silver Flag Alpha	16	NE SW S14 T17S R58E	USA/USAF	Clark	212	63001	Pending	Appl. Filed	Municipal	4.5
Rollercoaster	17	SW NE S32 T2S R47E	N/A	Nye	148	62682	N/A	Withdrawn	Municipal	N/A
Sandia Well 6	18	NE NE S & T2S R47E	N/A	Nye	148	62684	N/A	Withdrawn	Municipal	N/A
Sandia Area 9	19	NE SW S-15 T1S R47E	N/A	Nye	148	62683	N/A	Withdrawn	Municipal	N/A
<b>Inactive Production Wells<sup>2</sup></b>										
Desert Well	20	NE SE S15 T4S R45E	USA/USAF	NYE	145	13284	4169	Assigned	Stock	7.02
Gold Crater	21	SE SW S36 T4S R45E	USA/USAF	NYE	145	13289	4171	Assigned	Stock	5
Yellow Tiger	22	SW SW S1 T5S R44E	USA/USAF	Nye	145	8977	2201	Assigned	Stock	2.2
Yellow Tiger	22	NW SW S1 T5S R44E	COLVIN	Nye	145	12707	7726	Assigned	Stock	2.2
Sulphide	24	SW NW S21 T4S R47E	USA/USAF	Nye	147	13365	4172	Assigned	Stock	12

Table 3.6-5. Groundwater Sources on NAFR (page 2 of 3)

Common Water Source/Name	Reference No.	Location	Owner	County	Basin	NVSWEQ APPROPRIATION INFORMATION				
						Application Number	Certificate No.	Status <sup>4</sup>	Beneficial Use	Permit Amount (AFY)
Stager's	25	SE SE S17 T10S R49E	USA/USAF	Nye	228	9606	2295	Assigned	Stock	1.5
Naquinta Valley	26	NE NE S6 T8S R54E	USA/USAF	Nye	158A	10590	3192	Assigned	Stock	12.32
South Western	27	NE NW S25 T3S R54E	USA/BLM	Lincoln	170	12541	3216	Assigned	Stock	5.8
Cow Camp	28	N/A	N/A	N/A	212	N/A	N/A	N/A	N/A	N/A
<b>Other/Unused Potential Groundwater Sources<sup>3</sup></b>										
Sulphide	29	SW NW S21 T4S R47E	USA/USAF	Nye	147	13468	N/A	Denied	Stock	0
ISAF/Well 3	30	SW NW S2 T6S R49E	USA/USAF	Clark	161	51574	N/A	Canceled	Municipal	0
Gold Flats #1	31	SW NW S2 T6S R49E	USA/USAF	Nye	147	13216	N/A	Denied	Stock	0
EH #1	32	NW NW S7T2S R47E	USA/USAF	Nye	148	50166	N/A	Canceled	Municipal	0
1A	33	NE NW S1 T1S R46E	USA/USAF	Nye	149	50168	N/A	Canceled	Municipal	0
Sandia 1	34	N/A	N/A	Nye	148	Not Filed	N/A	N/A	Monitoring	0
Oak Spring Butte	35	SE NW S6 T8S R54E	N/A	Nye	158A	10644	N/A	Canceled	Municipal	0
Cactus Flats #2	36	SE SE S31 R1N R46E	USA/USAF	Nye	149	2364	N/A	N/A	Construction	0
Gold Flats #2	37	SE SE S9 T6S R48E	USA/USAF	Nye	147	13215	N/A	Denied	Stock	0
Gold Flats #2A	37	SE SE S9 T6S R48E	USA/USAF	Nye	147	11873	N/A	Denied	Stock	0
Salsbury Well	38	SW NW S18 T6S R48E	USA/USAF	Nye	147	13287	N/A	Denied	Stock	0
Kawich	39	SE NW S25 T2S R51E	USA/USAF	Nye	173A	45467	N/A	Denied	Commercial	0
Lambs Well	40	N/A	USA/USAF	Nye	157	N/A	N/A	N/A	Stock	0
Dead Horse	41	N/A	USA/USAF	Nye	148	Not Filed	N/A	N/A	Stock	0
Mine Well	42	N/A	USA/USAF	Nye	226	Not Filed	N/A	N/A	Mining	0
Hammel Mine	43	N/A	N/A	Nye	226	Not Filed	N/A	N/A	Mining	0
Mellan	44	N/A	N/A	Nye	145	Not Filed	N/A	N/A	Stock	0
Civet Cat Mine	45	N/A	N/A	Nye	146	Not Filed	N/A	N/A	Monitoring	0
Civet Cat Cave	46	N/A	N/A	Nye	146	Not Filed	N/A	N/A	Monitoring	0
Sandia 5	47	N/A	N/A	Nye	148	Not Filed	N/A	N/A	Monitoring	0
TTR 3BB	48	NE SE S13 T1S R46E	N/A	Nye	149	Not Filed	N/A	N/A	Monitoring	0
EH-4	49	N/A	N/A	Nye	148	Not Filed	N/A	N/A	Monitoring	0
EH-6	50	N/A	N/A	Nye	149	Not Filed	N/A	N/A	Monitoring	0

Table 3.6-5. Groundwater Sources on NAFR (page 3 of 3)

Common Water Source/Name	Reference No.	Location	Owner	County	Basin	NVSWEQ APPROPRIATION INFORMATION				
						Application Number	Certificate No.	Status <sup>a</sup>	Beneficial Use	Permit Amount (AFY)
MW-20	51	N/A	N/A	Clark	161	Not Filed	N/A	N/A	Monitoring	0
MW-21	52	N/A	N/A	Clark	161	Not Filed	N/A	N/A	Monitoring	0
MW-22	53	N/A	N/A	Clark	161	Not Filed	N/A	N/A	Monitoring	0
Sandia 2	54	N/A	N/A	Nye	148	Not Filed	N/A	N/A	Monitoring	0
Sandia 4	55	N/A	N/A	Nye	148	Not Filed	N/A	N/A	Monitoring	0
Alpha #2	56	N/A	N/A	Clark	211	Not Filed	N/A	N/A	Monitoring	0
Alpha #3	57	N/A	N/A	Clark	211	Not Filed	N/A	N/A	Monitoring	0
TTR Fire Pit #1	58	N/A	N/A	Nye	149	Not Filed	N/A	N/A	Monitoring	0
TTR Fire Pit #2	59	N/A	N/A	Nye	149	Not Filed	N/A	N/A	Monitoring	0
TTR Fire Pit #3	60	N/A	N/A	Nye	149	Not Filed	N/A	N/A	Monitoring	0
TTR Landfill	61	N/A	N/A	Nye	148	Not Filed	N/A	N/A	Monitoring	0
TTR Landfill	62	N/A	N/A	Nye	148	Not Filed	N/A	N/A	Monitoring	0

Notes:

1. Active wells currently being used for stock, quasi-municipal, or industrial purposes.
2. These wells are on NAFR and have Appropriated water rights but are currently inactive.
3. These water sources are not used but are potential sources of water.
4. Assigned = Permitted with a Certificate of Beneficial Use Wells.  
 Appl. Filed = Permitted with Certificate of Beneficial Use not yet filed.  
 Withdrawn = Application withdrawn by applicant from NVSWEQ.  
 Denied = Well in which application has been denied by NVSWEQ.  
 N/A = Not applicable and/or information not available.

Source: Air Force 1998b.

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# AIR QUALITY

**A**ir quality is determined by the concentration of various pollutants in the atmosphere. The lower the concentration of pollutants, the better the overall air quality. Air pollutants are either solid, liquid, or gaseous and come from many different sources. For example:

- Stationary or point sources are primarily commercial or industrial sources such as power generators. NAFR has sources scattered throughout the range.
- Mobile sources include cars, planes, trucks, and other vehicles. There is little ground vehicle activity on NAFR.
- Natural sources are wildfires, wind-blown dust, and pollens. Exposed surface areas in ROI One contribute to these pollutants.

Existing air quality at NAFR and in the supporting MOAs is generally considered very good due to NAFR being a remote, unpopulated location with limited pollutant sources.



## AIR QUALITY



*Fugitive dust is created by vehicles traveling on unpaved roads within NAFR or by wind effects on exposed soil.*



*Ordnance delivery is another source of fugitive dust at target areas within NAFR.*

The EPA designates attainment areas as having air quality better than the National Ambient Air Quality Standards (NAAQS), and nonattainment areas as having air quality worse than the NAAQS. The criteria for nonattainment designation varies by pollutant: (1) an area is in nonattainment for O<sub>3</sub> if its NAAQS has been exceeded more than three discontinuous times in 3 years, and (2) an area is in nonattainment for any other pollutant, such as CO or PM<sub>10</sub>, if its NAAQS has been exceeded more than once per year. Pollutants in an area are often designated as unclassified when there are insufficient ambient air quality data for the EPA to form a basis for attainment status.

The majority of NAFR is located in portions of Nye, Lincoln, and Clark counties. The entire NAFR area is unclassified for the state and national standards. A small portion of the SE corner of NAFR is in "serious" non-attainment for CO and PM<sub>10</sub>. However, portions of Clark County are designated as a "serious" CO nonattainment area and a "serious" PM<sub>10</sub> nonattainment area. The CO nonattainment problem occurs within the Las Vegas Metropolitan area and is due to vehicular emissions. Elevated levels of PM<sub>10</sub> mainly occur from fugitive dust within the metropolitan Las Vegas area.

## 3.7 AIR QUALITY

Air quality in the project area and surrounding region would be affected by emissions from the proposed action and alternatives. The following sections describe the existing conditions related to air quality, including (1) description of resource, (2) region of influence, (3) regional climate, (4) baseline air quality and emissions, and (5) applicable air quality rules and regulations.

### 3.7.1 Description of Resource

Air quality in a given location is defined by the concentration of various pollutants in the atmosphere, generally expressed in units of parts per million (ppm) or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The significance of a pollutant concentration is determined by comparing it to federal and/or state ambient air quality standards. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The federal standards are established by the USEPA and termed the National Ambient Air Quality Standards (NAAQS). The NAAQS are defined as the maximum acceptable concentrations that, depending on the pollutant, may not be equaled or exceeded more than once per year, except for annual standards, which may never be exceeded. These standards include concentrations for ozone ( $\text{O}_3$ ), carbon monoxide (CO), nitrogen dioxide ( $\text{NO}_2$ ), sulfur dioxide ( $\text{SO}_2$ ), particulate matter less than 10 microns in diameter ( $\text{PM}_{10}$ ), particulate matter less than 2.5 microns in diameter ( $\text{PM}_{2.5}$ ), and lead (Pb). Within the Nevada project region, the NDEP, Bureau of Air Quality, has adopted the NAAQS to regulate air pollutant levels within the state, with the following exceptions and additions: (1) the state annual  $\text{SO}_2$  standard is more stringent than the national standard; (2) Nevada has added an 8-hour CO standard specific to elevations greater than 5,000 feet above mean sea level; and (3) Nevada has added standards for visibility impairment and 1-hour hydrogen sulfide ( $\text{H}_2\text{S}$ ) concentrations. The national and state ambient air quality standards are shown in Table 3.7-1.

The pollutants considered in the impact analysis of this LEIS include volatile organic compounds (VOC),  $\text{O}_3$ , CO, nitrogen oxides ( $\text{NO}_x$ ),  $\text{NO}_2$ ,  $\text{SO}_2$ ,  $\text{PM}_{10}$ , and  $\text{PM}_{2.5}$ . Nitrogen oxides and VOC are considered as precursor emissions that form  $\text{O}_3$ . Airborne emissions of lead and  $\text{H}_2\text{S}$  are not addressed in this LEIS because there are no known significant lead or  $\text{H}_2\text{S}$  emission sources in the region or associated with the project and its alternatives.

### 3.7.2 Region of Influence

Identifying the ROI for air quality requires knowledge of (1) the types of pollutants being emitted, (2) location(s) of the emissions source(s) (for stationary sources) or areal extent of emissions (for mobile sources), (3) emission rates of the pollutant sources, (4) the proximity of project emission sources to other emission sources, and (5) local and regional meteorological conditions. The ROI for emissions of inert pollutants (pollutants other than  $\text{O}_3$ , its precursors, and  $\text{NO}_2$ ) is generally limited to a few miles downwind from the source. The ROIs for  $\text{O}_3$  and



Table 3.7-1. National and Nevada Ambient Air Quality Standards

Pollutant	Averaging Time	Nevada Standards (a)	NATIONAL STANDARDS (a)	
			Primary (b,c)	Secondary (b,d)
Ozone (O <sub>3</sub> )	1-hour	0.12 ppm (235 µg/m <sup>3</sup> )	0.12 ppm (235 µg/m <sup>3</sup> )	Same as primary
	8-hour	0.08 ppm (160 µg/m <sup>3</sup> )	0.08 ppm (160 µg/m <sup>3</sup> )	Same as primary
Carbon monoxide (CO)	8-hour	9 ppm <sup>e</sup> (10 mg/m <sup>3</sup> ) 6 ppm <sup>f</sup> (6.67 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )	—
	1-hour	35 ppm (40 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	—
Nitrogen dioxide (NO <sub>2</sub> )	Annual	0.053 ppm (100 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	Same as primary
Sulfur dioxide (SO <sub>2</sub> )	Annual	0.02 ppm (60 µg/m <sup>3</sup> )	0.03 ppm (80 µg/m <sup>3</sup> )	—
	24-hour	0.14 ppm (365 µg/m <sup>3</sup> )	0.14 ppm (365 µg/m <sup>3</sup> )	—
	3-hour	—	—	0.5 ppm (1,300 µg/m <sup>3</sup> )
Suspended Particulate Matter (PM <sub>10</sub> )	Annual	50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	Same as primary
	24-hour	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Same as primary
Suspended Particulate Matter (PM <sub>2.5</sub> )	Annual	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	Same as primary
	24-hour	65 µg/m <sup>3</sup>	65 µg/m <sup>3</sup>	Same as primary
Lead (Pb)	Calendar quarter	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	Same as primary
Visibility	Observation	In sufficient amount to reduce the prevailing visibility to less than 30 miles when humidity is less than 70%	—	—
Hydrogen sulfide (H <sub>2</sub> S)	1-hour	112 µg/m <sup>3</sup>	—	—

Notes: (a) Standards, other than 1-hour O<sub>3</sub>, 8-hour O<sub>3</sub>, 24-hour PM<sub>10</sub>, 24-hour PM<sub>2.5</sub>, and those based on annual averages, are not to be exceeded more than once a year. The 1-hour O<sub>3</sub> 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. The 8-hour O<sub>3</sub> standard is attained when the 3-year average of the annual 4th-highest daily maximum 8-hour concentrations is below 0.08 ppm. The 24-hour PM<sub>10</sub> standard is attained when the 3-year average of the 99th percentile 24-hour concentrations is below 150 µg/m<sup>3</sup>. The 24-hour PM<sub>2.5</sub> standard is attained when the 3-year average of the 98th percentile 24-hour concentrations is below 65 µg/m<sup>3</sup>.

(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units are given in parenthesis.

(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

(d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

(e) Applies at elevations less than 5,000 feet above mean sea level.

(f) Applies at elevations equal to or greater than 5,000 feet above mean sea level.

NO<sub>2</sub> generally extend much farther downwind than the ROI for inert pollutants: in the presence of solar radiation, the maximum effect of precursor emissions on O<sub>3</sub> formation levels, and the transformation of NO<sub>x</sub> emissions to NO<sub>2</sub>, usually occur several hours after their emission and, therefore, many miles from the source.

The air quality analyses will consider impacts in each of the three ROIs, but the primary area of focus will be ROI Three, since this region encompasses the other two ROIs and contains or affects non-military receptors. The ROI Three boundary is defined by the boundary of the NAFR complex airspace. Potential receptors (such as non-military population, non-military facilities, and Class I natural areas) are located within ROI Two, ROI Three, and outside of ROI Three within approximately 50 miles. ROI Two is closed to public access.

### **3.7.3 Climate**

The climate in the area of the NRC is affected by two main sources of air movement. From fall through spring the area is influenced by Pacific air movements that come across the Sierra Nevada mountains. In summer to early fall winds from Mexico predominate in the area.

Annual precipitation depends mainly on elevation and varies on the average from 4 inches on the desert floor to about 12 inches in the higher mesa areas. Winter precipitation often falls as snow (at higher elevations), whereas summer rains are often associated with thunderstorms, which are intense enough at times to produce local flash flooding. Approximately 15 to 30 thunderstorms occur at a given location in the NRC during the course of a year (NOAA 1980).

The hottest months of the year are July and August. Daily temperatures rise into the 90s and drop to the 50s at night, with average monthly temperatures of about 76°F. The average monthly winter temperature is between 31 and 41°F. The relative humidity averages 58 percent in the early morning, and dips to an average daily low of 25 percent by late afternoon (BLM 1981).

An assessment of the meteorological potential for pollution can be made quantitatively using the results of Holzworth's studies (1972). However, because of the variable terrain over the range complex, significant deviations from average values can occur. Mixing heights average about 1,100 feet in the morning and 8,000 feet in the afternoon. Wind speeds range from 9 to 11 miles per hour (mph) in the morning to 11 to 13 mph in the afternoon. With moderate to strong insolation throughout the year, stability ranges from slightly unstable to moderately unstable from midmorning to late afternoon and becomes neutral in the early evening hours. Overall, dispersion characteristics are good to fair. The highest potential for poor dispersion will exist in valleys; however, even here, wind direction must be considered in individual cases to correctly characterize the situation. The highest potential for poor dispersion exists during the winter months from December through February, due to the persistence of strong surface-based temperature inversions (BLM 1981).

### 3.7.4 Regulatory Setting

The federal Clean Air Act of 1970 (CAA) initiated the first air quality regulations. This act established the NAAQS and delegated the enforcement of air pollution regulations to the states. Within the NRC, the NDEP Bureau of Air Quality regulates sources of air pollution. However, mobile sources of emissions, such as inflight aircraft, are not subject to regulation. The following is a summary of the air pollution rules and regulations that apply to the project and its related activities.

#### FEDERAL REGULATIONS

##### STATE IMPLEMENTATION PLAN

The CAA requires each state to prepare and maintain a State Implementation Plan (SIP), detailing how the state will maintain air quality within attainment areas (as discussed below) and how it will bring nonattainment areas into compliance with the NAAQS within mandated time frames. The requirements and compliance dates for reaching attainment are based on the severity of the standard violation.

##### PREVENTION OF SIGNIFICANT DETERIORATION

The CAA established Prevention of Significant Deterioration (PSD) regulations to protect the air quality in regions that already meet the NAAQS. The major requirement of the PSD regulations is that the air quality impacts from new or modified PSD sources in combination with impacts from other PSD sources must not exceed the maximum allowable incremental increases for NO<sub>2</sub>, PM<sub>10</sub>, or SO<sub>2</sub>, as identified in Table 3.7-2.

Pollutant	Averaging Time	PSD INCREMENTS ( $\mu\text{G}/\text{M}^3$ )	
		Class I	Class II
Nitrogen Dioxide	Annual	2.5	25
PM <sub>10</sub>	Annual	4	17
	24-Hour	8	30
Sulfur Dioxide	Annual	2	20
	24-Hour	5	91
	3-Hour	25	512

Certain national parks, monuments, and wilderness areas have been identified as Class I areas, where any appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. There are three PSD Class I areas within 50 miles of the NAFR and/or NRC airspace. The Great Basin National Park on the eastern border of Nevada is approximately 45 miles northeast of the eastern corner of the NRC

airspace. The closest Class I area in Utah, Zion National Park, is approximately 37 miles east of the NRC. The northeast corner of Death Valley National Park, which overlaps the California/Nevada border within 50 miles is located approximately 10 miles from the southwestern portion of the NAFR. In addition, the Grand Canyon National Park Class I area is located approximately 55 miles east of the southeastern portion of the NRC and 75 miles from the NAFR. The Lake Mead National Recreation Area, which is not a Class I area, is located approximately 23 miles from the nearest portion of the NRC and 28 miles from the southeastern corner of the NAFR South Range.

#### ***VISIBILITY IMPAIRMENT***

The impact of project aircraft emissions on visibility is also an issue with regard to federal Class I areas. Section 169A of the CAA, as amended in 1977, states that it is a national goal to prevent any further impairment of visibility within Class I areas from manmade sources of air pollution. Visibility impairment is defined as (1) a reduction in regional visual range and (2) temporary atmospheric discoloration or plume blight. Therefore, the potential for visibility impacts to occur from inflight project aircraft will be addressed in section 4.7 of this LEIS.

#### ***CONFORMITY DETERMINATION***

The 1990 Clean Air Act Amendments (CAAA) state that a federal agency cannot support an activity unless the agency determines that the activity will conform to the most recent USEPA-approved SIP within the region of the proposed action. This means that federally supported or funded activities will not (1) cause or contribute to any new air quality standard violation; (2) increase the frequency or severity of any existing standard violation; or (3) delay the timely attainment of any standard or any required interim emission reductions or other milestones in any area. In accordance with Section 176(c) of the 1990 CAA, the USEPA promulgated the final conformity rule for general rule federal actions in the November 30, 1993 *Federal Register*. Under the rule, certain actions are explicitly given exemptions from preparing conformity determinations while others are assumed to be in conformity if total project emissions are below *de minimis* levels. The renewal of the NAFR withdrawal falls within the exemption provisions of these regulations regarding legislative actions and continuing operations.

#### ***FEDERAL OPERATING PERMIT (TITLE V)***

Title V of the 1990 CAAA required the USEPA to develop a federal operating permit program for "major" stationary sources of air pollutants (i.e., any source with emissions above certain regulatory thresholds, plus those falling under certain source-specific regulations). The draft USEPA Title V permit rule (also known as the Part 70 regulation) was promulgated in June 1992. Each state was required to develop its own Title V permit regulations that follow the federal rule. The Title V permit program defines what qualifies as a major source facility and the conditions under which the facility must prepare annual emission reports and/or monitor criteria pollutants and hazardous air pollutant emissions. NAFR has applied for Title V permits

for ground-based operations at the TPECR and at Area 10 and the Operating & Maintenance (O&M) Compound located at TTR.

## LOCAL REGULATIONS

*Air Quality Attainment Plans.* The Clark County Air Pollution Control District (CCAPCD) has prepared two planning documents to demonstrate attainment of the NAAQS for CO and PM<sub>10</sub> in Clark County: (1) *CO Air Quality Implementation Plan for the Las Vegas Valley Nonattainment Area, Clark County, Nevada* (Clark County Board of Commissioners 1995) and (2) *Draft PM (PM<sub>10</sub>) Air Quality Implementation Plan for the Las Vegas Valley Nonattainment Area, Clark County, Nevada* (Clark County Board of Commissioners 1997). In addition, the CCAPCD is in the process of performing a Title V update to reflect changes in air quality attainment requirements. Measures to control aircraft emissions have not been required in the attainment planning process.

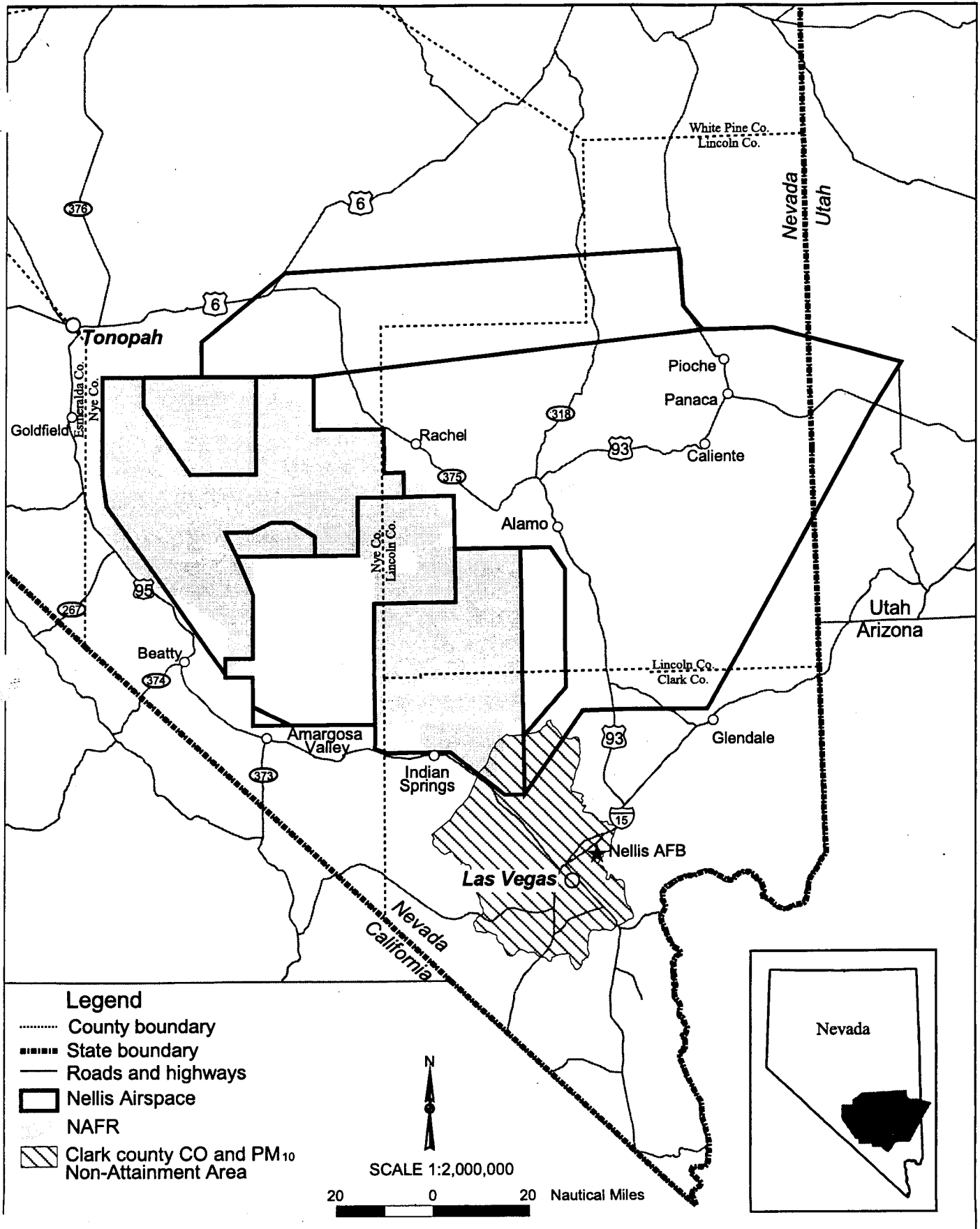
*CCAPCD Rules and Regulation.* The CCAPCD has developed rules and regulations to regulate stationary sources of air pollution.

### 3.7.5 Baseline Air Quality and Emissions

The USEPA designates all areas of the U.S. as having air quality better than (attainment) or worse than (nonattainment) the NAAQS. The criteria for nonattainment designation varies by pollutant: (1) an area is in nonattainment for O<sub>3</sub> if its NAAQS has been exceeded more than three discontinuous times in a 3-year period; (2) an area is in nonattainment for any other pollutant if its NAAQS has been exceeded more than once in a year. Pollutants in an area are often designated as unclassified when there are insufficient ambient air quality data for the USEPA to form a basis for attainment status.

The majority of the NAFR is on lands that have been designated as "unclassified" with reference to state and federal standards for criteria pollutants. However, a small portion of the southeast corner of NAFR is in "serious" nonattainment for CO and PM<sub>10</sub>. In addition, nearby portions of Clark County are also designated as "serious" CO and PM<sub>10</sub> nonattainment areas (40 CFR Part 81.329). The CO nonattainment problem occurs within the Las Vegas Metropolitan area and is due to vehicular emissions within congested roadways. Elevated levels of PM<sub>10</sub> mainly occur from fugitive dust within the metropolitan Las Vegas area. The boundaries of the CO and PM<sub>10</sub> nonattainment area, as shown in Figure 3.7-1, correspond with the boundaries of Hydrographic Basin 212.

Table 3.7-3 provides a summary of baseline emissions associated with this action. The table includes emissions from ground-based sources operating at Nellis AFB and within NAFR, emissions from aircraft operations at Nellis AFB (below 3,000 feet AGL), and emissions from aircraft operating in the NRC airspace (LEIS ROI Three). The data for ground-based sources at Nellis AFB were obtained from an inventory report prepared for the base (Radian 1996). Emissions from ground-based sources for NAFR were obtained from both an inventory report for the TTR (Radian 1997), and from calculations of NAFR generator emissions, vehicle fuel



**Figure 3.7-1. Relationship of Clark County CO and PM<sub>10</sub> Non-Attainment Area to NAFR and NRC Airspace**

combustion emissions, and vehicle road dust (as shown in Appendix I using source data from Appendix A). The Nellis AFB aircraft emissions were obtained from an inventory report prepared by Radian (1995), while the aircraft emissions for the NRC were obtained from the document, *Environmental Assessment for Supersonic Flight over the Nellis Range Complex* (Air Force 1994b). These data presented in Table 3.7-3 will be used for comparative purposes to evaluate the potential magnitude of impact resulting from changes in level of activity that would occur from the proposed action and alternatives.

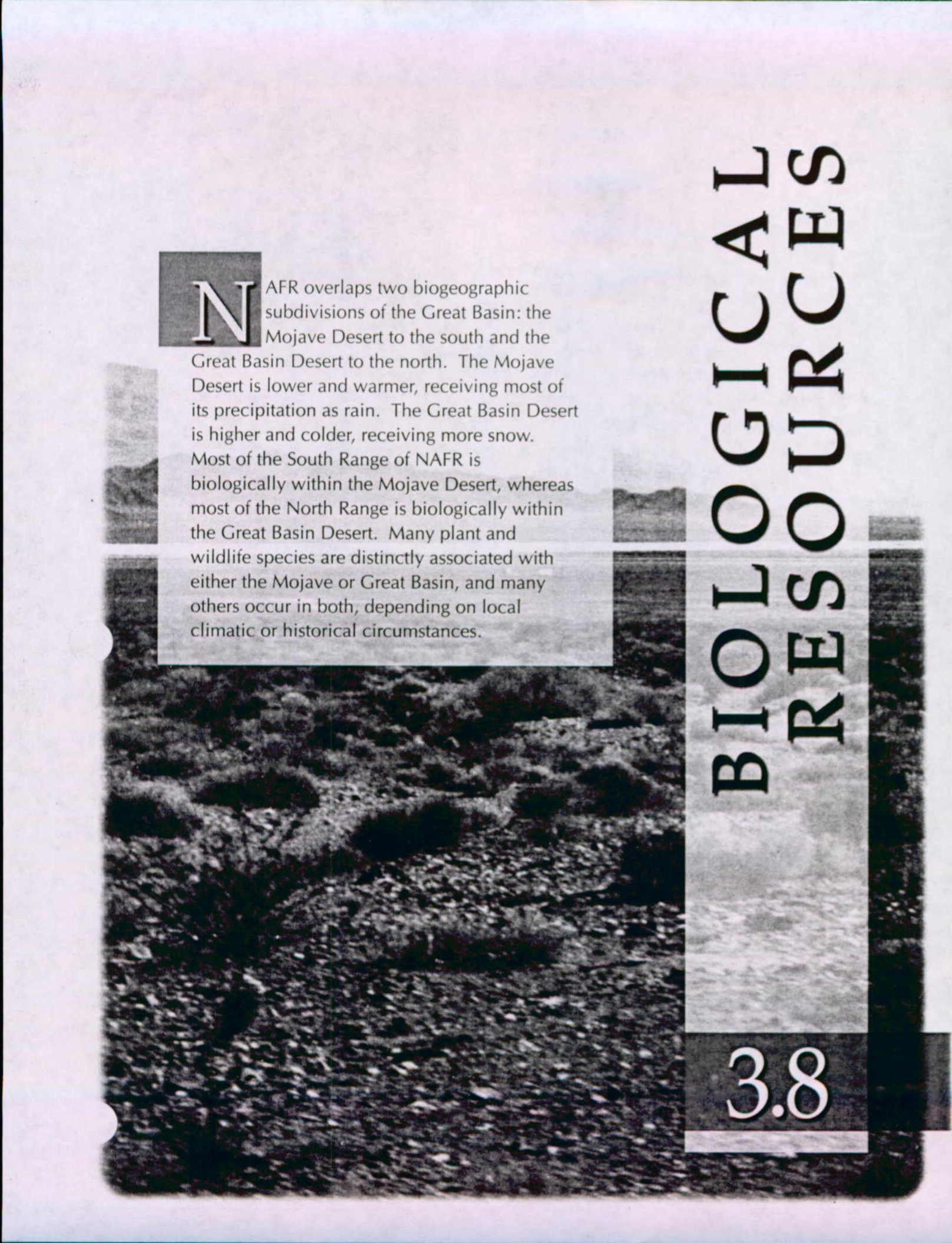
<i>Location</i>	<i>CO</i>	<i>NO<sub>x</sub></i>	<i>PM<sub>10</sub></i>	<i>SO<sub>2</sub></i>	<i>VOC</i>
Nellis AFB (ground based) <sup>(1)</sup>	1,805	339	34	34	228
Nellis AFB (aircraft only) <sup>(2)</sup>	839	320	30	338	305
TTR (ground based) <sup>(3)</sup>	875	1,587	108	105	206
NAFR (ground-based) <sup>(4)</sup>	554	245	6,084	13	78
Nellis Range Complex (aircraft only) <sup>(5)</sup>	695	8,983	230	214	52

*Notes:*

1. Includes stationary source, AGE, and portable I.C. engine emissions from Nellis AFB, Main Base Areas I, II, and III, as reported in the *Nellis AFB 1995 Air Emissions Inventory Report* (Radian 1996). Also includes motor vehicle emissions from the *Nellis AFB 1994 Air Emissions Inventory Report* (Radian 1995).
2. Includes landing and takeoff (LTO) and touch-and-go (TGO) emissions from all phases of aircraft operations at Nellis AFB (Radian 1995).
3. Includes ground-based emissions from all non-exempt sources associated with the three operating facilities at the TTR (within the NAFR), i.e., Area 10, the O&M Compound, and the TPECR, as reported in the *1995 Air Emissions Inventory for Tonopah Test Range*, (Radian 1997).
4. Includes fuel combustion emissions from generators and vehicles operating in the NAFR, as well as road dust emissions from vehicle miles traveled over paved and unpaved roads in the NAFR (see Appendix I).
5. Represents aircraft emissions that occur in airspace over the NRC. Data obtained from the *Environmental Assessment for Supersonic Flight over the Nellis Range Complex* (Air Force 1994a).

### 3.7.6 American Indian Issues Concerning Air Quality

In the view of American Indians from the NAFR region, radiation and other actions can cause the living air to die by consuming the oxygen and disturbing the spirituality necessary for life (AIWS 1997). They believe that dead air will not support life and can cause airplanes to crash. Also, the damage that can result from exposure to radiation goes beyond the physical effects of the radiation itself, and is traced by Indian people to the air's loss of its spiritual power.



**N**AFR overlaps two biogeographic subdivisions of the Great Basin: the Mojave Desert to the south and the Great Basin Desert to the north. The Mojave Desert is lower and warmer, receiving most of its precipitation as rain. The Great Basin Desert is higher and colder, receiving more snow. Most of the South Range of NAFR is biologically within the Mojave Desert, whereas most of the North Range is biologically within the Great Basin Desert. Many plant and wildlife species are distinctly associated with either the Mojave or Great Basin, and many others occur in both, depending on local climatic or historical circumstances.

# BIOLOGICAL RESOURCES

3.8



## BIOLOGICAL RESOURCES

In this LEIS, existing biological resources on NAFR are grouped into the following categories:

- **Vegetation.** The native vegetation of NAFR consists primarily of desert scrub communities at low to mid-elevations, mixed shrub and woodland communities at mid- to upper elevations, and small patches of forest vegetation on the highest peaks and ridgelines.
- **Wildlife.** Wildlife on NAFR includes species that are primarily associated with Mojave Desert and Great Basin scrub and woodland habitats. A variety of migratory and widely distributed species are also associated with the limited water resources such as desert springs, wildlife "guzzlers," seasonally flooded playas, and artificial ponds that exist on the range. Resident and migratory wildlife include several species having special status or otherwise considered sensitive by state and federal governments.
- **Aquatic and Wetland Habitats.** Aquatic and wetland habitats are extremely limited on NAFR. The surface water resources consist of known seeps, springs, ponds, and one creek. Waterfowl in small numbers may use playas at Mud Lake, Cactus Flat, Gold Flat, Indian Springs Valley and Three Lakes Valley during years when these areas are sufficiently flooded.
- **Special Status Species.** Special Status Species include federally listed, proposed, and candidate threatened and endangered plant and wildlife species. Other special status species include federal and state species identified by virtue of rarity or recreational importance.



*The desert tortoise is a special status species that inhabits lower elevations of the South Range.*



*Wild horses are a non-native species that inhabit large areas of the North Range and compete with native species for water and vegetation.*

## 3.8 BIOLOGICAL RESOURCES

### 3.8.1 Overview

NAFR is part of a regional landscape that encompasses surrounding public lands, the DNWR, and the NTS as well as NAFR. This larger landscape has similar physiographic, topographic, hydrographic, and geologic features that result in similar flora and fauna.

In many respects NAFR constitutes an ecological island that provides protected, relatively undisturbed areas for animals, plants, and natural communities indigenous to the Mojave and Great Basin ecoregions. Biological data available on NAFR suggest that biological resources on NAFR are in good ecological condition. Although some areas have been substantially disturbed by military operations, DOE tests, and the presence of wild horses, the vast majority of NAFR represents an ecological island that sustains viable populations of plants and animals that are directly or indirectly affected by population, commercial, and recreational growth in areas outside NAFR.

This Biological Resources section includes both native and naturalized plants and animals and the habitats in which they occur. For purposes of this LEIS, Biological Resources are subdivided into Vegetation, Wildlife, Aquatic and Wetland Habitats, and Special Status Species; each is addressed in a separate subsection below. The geographical scope of this analysis is confined to NAFR and directly associated airspace, corresponding to areas wherein impacts associated with the proposed action or alternatives are reasonably likely to occur (refer to Chapter 2.0 for maps of NAFR and descriptions of existing and proposed actions).

Parts of NAFR overlap the zone of transition between the Mojave and Great Basin deserts. The Basin-and-Range topography of NAFR (see below) includes low- to mid-elevation mountain ranges and valleys that are oriented north-south across the transition, allowing plant and animal dispersal between the two deserts. The scarcity of roads across NAFR contributes to a high degree of continuity between habitats, with minimal disruption of plant dispersal and animal migration. Combining as it does the plants and animals of the two deserts, NAFR supports a high diversity of species, although species diversity within communities at any one location is generally low. NAFR is isolated from livestock grazing (although wild horses have severely impacted parts of the North Range) and land development, and has experienced a limited extent of land disturbance from military activities (only about 3 percent of the land is subject to ground disturbance by military training).

NAFR is generally within the Great Basin, a physiographic region with no external drainage characterized by "basin and range" topography, in which hydrographically isolated basins or valleys are separated by north-south trending mountain ranges. NAFR overlaps two biogeographic subdivisions of the Great Basin: the Mojave Desert to the south and the Great Basin Desert to the north. The Mojave Desert is lower and warmer, receiving most of its precipitation as rain, whereas the Great Basin Desert is higher and colder, receiving more snow. The transition between the two deserts occurs very broadly along the 37th parallel (Beatley 1976; The Nature

Conservancy [TNC] 1995). As a result, most of the South Range of NAFR is within the Mojave Desert, whereas most of the North Range is within the Great Basin Desert. However, although many plant and wildlife species are distinctly associated with either the Mojave or Great Basin Desert, many others occur in both deserts, depending on local climate, soils, or historical circumstances. The resulting biotic communities encountered on NAFR consist of some typical Mojave or Great Basin Desert associations, but others that are mixed, transitional, or widely distributed, and best described simply in terms of their constituent species.

Facilities and airspace associated with the use of NAFR include the ISAFAF, which is included as part of South Range, the TTR in the North Range, the MOA (Desert and Reveille), and the MTRs that provide aircraft entry and exit to and from different parts of the range. The MOA airspace comprises a number of subunits where different types of training occur. The areas that are outside of NAFR but subject to overflight extend around the northern to eastern boundaries of the range (refer to Chapter 2.0 for descriptions). The MOA airspace spans Great Basin Desert habitats in the north, and extends over the Great Basin Desert-Mojave Desert transition in the east. The eastern part of this area is hydrographically outside of the Great Basin, with drainage to the Colorado River via the Virgin River, Meadow Valley Wash, and the Muddy River (into which flows the White River through Pahranaagat Valley). Vegetation and wildlife habitats are essentially similar to those occurring westward within the Great Basin, except for the inclusion of more extensive wetland and riparian habitats.

### **3.8.2 Vegetation**

The vegetation of NAFR is described in the Integrated Natural Resources Management Plan (INRMP) Air Force 1997g), which is a primary source of information for this section. Additional sources include the Intermountain Flora (Cronquist et al. 1972), unpublished studies conducted for the Air Force as part of the MX missile program in the late 1970s-early 1980s (Air Force 1981), and recent surveys by TNC (1994, 1995, 1996). Unpublished studies by USFWS (Ackerman 1981) provided the basis for much of TNC's recent work. A comprehensive vegetation map has yet to be prepared for NAFR, although work on an updated classification of the vegetation has been initiated by TNC (1994, 1995, 1997). Appendix G provides a generalized map of potential vegetation (i.e., under undisturbed conditions) that is indicative of the major vegetation types on undisturbed lands on NAFR and in the region. The description of vegetation types and communities that follows is based in part on Beatley's (1976) studies of the NTS and adjacent areas. Reference has also been made to Brown's (1982) vegetation-based classification of biotic communities and to recent environmental documents covering NAFR (BLM 1992a; Dames & Moore 1996; TNC 1994, 1995, 1997) to avoid potential confusion regarding the definition of vegetation and habitat types. The convention followed throughout this document is to refer to vegetation or plant community types by dominant species (e.g., black sagebrush or creosote-bur sage) and physiognomy (i.e., scrub [shrub-dominated] or woodland [tree-dominated]).

The native vegetation of NAFR consists primarily of desert scrub communities at low to mid elevations and mixed shrub and woodland communities at mid- to upper elevations. Montane shrub communities dominate the highest elevations except for small patches of forest vegetation,

which are limited to the highest mountain peaks and ridgelines. Some vegetation communities are strongly limited to, and may even be considered indicators of, either the Mojave or Great Basin Desert, whereas others are transitional or occur in both deserts where conditions are suitable (Turner 1982). Native herbaceous species are prevalent as winter annuals in the Mojave Desert, whereas native perennial grasses also occur as an understory element of mid- to upper elevation scrub and woodland communities in the Great Basin Desert (Turner 1982). Non-woody range weeds like halogeton (*Halogeton glomeratus*), tumbleweed (*Salsola tragus*), and non-native grasses, including cheatgrass (*Bromus tectorum*) in the Great Basin and red brome (*Bromus madritensis* ssp. *rubens*) in the Mojave Desert, are locally abundant on disturbed sites and commonly occur in desert scrub (Air Force 1997g). Wetland vegetation is extremely localized around water sources, as discussed in section 3.8. 4.

The South and North Ranges, and MOA airspace, are discussed separately in the following subsections.

### **3.8.2.1 SOUTH RANGE**

The South Range lies in the northeastern portion of the Mojave Desert. Vast areas of the basins and bajadas (composed of coalescing alluvial fans) in the Mojave Desert, below an elevation of approximately 4,000 feet, often support a scrub community dominated by creosote bush (*Larrea tridentata*), with which white bur-sage (*Ambrosia dumosa*) is commonly co-dominant. Additional associates include saltbushes (*Atriplex* spp.), ephedras (*Ephedra* spp.), brittlebush (*Encelia virginensis*), desert mallow (*Sphaeralcea ambigua*), cacti (*Opuntia* spp.), and Mojave yucca (*Yucca schidigera*). This community typifies Mojave Desert scrub vegetation.

At upper elevations within this range, Joshua tree (*Yucca brevifolia*) occurs and often forms a distinctive Mojave Desert woodland community. While it is rarely the dominant species in terms of numbers or cover in these communities, the Joshua tree's proportionate biomass in the local area may be appreciable, and its mature height of up to 20 feet contributes to its visual domination over the surrounding low shrubs.

Where soils are especially alkaline and clayey, as on valley bottoms and dry lake beds (playas) at the lowest elevations, saltbush, especially four-wing saltbush (*Atriplex canescens*) and shadscale (*A. confertifolia*), dominate the vegetation, making them the characteristic species in the saltbush community, which is also commonly referred to as salt desert or shadscale scrub. The saltbush community is especially prevalent in a broad transition zone between the Mojave Desert and Great Basin. The introduced salt cedar (*Tamarix ramosissima*) occasionally occurs on playa margins and in desert washes on the South Range.

Mixed scrub vegetation typical of the Mojave Desert occurs on ISAFAF, where several associations including creosote bush, bur-sage, saltbush, and Joshua tree can be distinguished (Dames & Moore 1996).

At higher elevations in the Mojave Desert, approximately 4,000 to 6,000 feet, the blackbrush community may predominate. This community includes blackbrush (*Coleogyne ramosissima*),

ephedras, turpentine-broom (*Thamnosma montana*), and range ratany (*Krameria parvifolia*). Current research suggests that the blackbrush community was more widespread in previous centuries and is currently experiencing widespread range reduction (Lei, in press).

Above 5,000-6,000 feet, pinyon-juniper or Great Basin conifer woodland is typical of the higher elevations throughout the Great Basin Desert and occurs more locally in parts of the Mojave Desert regions. At these higher elevations, increased precipitation and lowered temperatures permit the development of this woodland type, consisting of trees or large shrubs less than 45 feet in height. Single leaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*) are the dominant woody species. On the South Range, blackbrush is a frequent understory dominant. Other shrub associates include joint fir (*Ephedra viridis*), rabbitbrush (*Chrysothamnus* spp.), and (primarily on the North Range) sagebrush (*Artemisia* spp.). Mixed sagebrush-pinyon-juniper communities are more typical of the mountains of the North Range and elsewhere in the Great Basin desert. Although much more widespread in the lowlands during the last glacial age, post-glacial warming and drying trends have led to the restriction of pinyon-juniper woodland to the highest mountains of the South Range (Spaulding 1985, 1990).

### 3.8.2.2 NORTH RANGE

The southwestern part of the North Range is transitional between the Mojave Desert and Great Basin and supports a mixture of community types, including creosote bush scrub, Joshua tree woodland, pinyon-juniper woodland, a transitional mixed desert scrub community, Great Basin sagebrush (*Artemisia tridentata*) scrub, black sagebrush (*Artemisia nova*) scrub, and a sparsely vegetated rock outcrop community (TNC 1995). Northward, the North Range is within the Great Basin Desert, a floristic region defined by Shreve (1942) as being typified by sagebrush and saltbush vegetation north of about the latitude of Beatty, Nevada. In this region winter temperatures are too low to support plants such as creosote bush that are typical of the warmer deserts of the southwest.

The hydrographic Great Basin was described and named by J.C. Fremont in 1844. Fremont recognized that the valley floors he encountered while crossing over multiple mountain ranges on his east-west travels did not have hydrologic outlets, a condition called endorheic (Hubbs et al. 1974). The Great Basin is a collection of endorheic basins that lie between the north-south trending mountain ranges. Most of the precipitation that falls, the bulk of it as snow, remains in the region until it is absorbed into the ground or evaporated, but is not transported out of the region by surface flow. Though warm in the summer and possessing low relative humidity throughout the year, low temperatures and typically strong winds during the winter make this one of the coldest desert regions in the United States.

The vegetation of the basin floors of the North Range is typified by shadscale and greasewood (*Sarcobatus vermiculatus*). Either of these halophytic (salt-tolerant) shrubs may occur in relatively monotypic stands, or may include winter fat (*Krasheninnikovia* [= *Ceratoides*, *Eurotia*] *lanata*) and green molly (*Kochia americana*) as co-dominants. Most of the middle and upper elevation bajadas are dominated by the sagebrush-pinyon-juniper community. Additional species that occur in this

community include: rabbitbrush species, joint fir, and occasional Joshua trees. Scattered Utah juniper can occur on the flanks of hills near the upper limit of sagebrush vegetation. The blackbrush community reaches its northernmost limit on upper bajadas below the west face of the central Groom Range mountains (Beatley 1976). Elsewhere, blackbrush vegetation occurs in the southerly portions of the North Range as a transitional community between the shadscale community and sagebrush-pinyon-juniper community.

The dominant vegetation type in the North Range mountains above approximately 5,000 feet elevation is pinyon-juniper woodland, with big sagebrush dominating the shrub layer. White fir (*Abies concolor*) occurs at elevations above approximately 8,000 feet on Bald Mountain in the Groom Range (Beatley 1976) and elsewhere on North Range, with single-leaf pinyon and limber pine (*Pinus flexilis*).

Historically, wild horses have concentrated around water sources and have severely impacted the vegetation for many miles around areas that provide accessible water (Air Force 1997g). The effects of horse grazing are strongest where the vegetation provides palatable forage species, e.g., in salt desert scrub vegetation of the Kawich Valley (Air Force 1997g). Current utilization levels are projected to be light to moderate (35 to 45 percent [USFWS 1998]). On the TTR, DOE has fenced areas known as "Clean Slate Sites" that restrict people and animals from contaminated areas. The Clean Slate exclosures have taller shrubs and grasses than adjacent grazed sites, and species abundance between the grazed and ungrazed sites appears quite different. Plants outside the exclosures are smaller, which is an indicator of reduced vigor resulting from heavy use, versus no use inside the exclosure. However, with the utilization being reduced to a light to moderate rate, full recovery of plant vigor and production is expected. A joint Air Force-BLM program to construct horse exclosures around seeps and springs that are outside the Wild Horse Management Area is in progress and should allow surrounding vegetation to recover and improve the quality of surface water for other types of wildlife.

### **3.8.2.3 LANDS BENEATH MOA AIRSPACE**

The northern to northeastern parts of the MOA airspace overlie Great Basin Desert vegetation characterized by shadscale and sagebrush scrub in the valleys and pinyon-juniper woodland (often with sagebrush as a dominant understory) on the mountains, between elevations of 6,000 and 8,000 feet. The southern parts of the MOA airspace overlie creosote bush and shadscale scrub in the valleys and on lower mountain slopes, with pinyon-juniper woodland on the mountains. The higher mountain ranges (e.g., the Kawich, Quinn, Bristol, and Sheep ranges) provide extensive areas above 8,000 feet in elevation and support montane coniferous forests of white fir (*Abies concolor*) and limber pine (*Pinus flexilis*), with lesser amounts of ponderosa pine (*Pinus ponderosa*) (Cronquist et al. 1972). Other noteworthy vegetation includes an unusually extensive ponderosa pine forest on the Highland Range, and bristlecone pines in the Sheep Range, Quinn Canyon Range, and on Irish Mountain (Charlet 1996).

Desert spring and marsh habitats are relatively abundant along the White River and Pahrangat Valley (into which the river flows). Riparian (streambank) scrub and woodland vegetation,

including willows (*Salix* spp.) and cottonwoods (*Populus fremontii*), occurs along the White River-Pahranagat Valley, Meadow Valley Wash, and sporadically along mountain streams. As on the South Range, low-elevation desert springs and washes often support a riparian desert scrub association.

### 3.8.3 Wildlife

Information regarding wildlife species' presence in different habitats or specific regions of NAFR is principally based on data provided in the draft INRMP (Air Force 1997g), reports on specific resources produced for the Nellis Environmental Management Directorate (Air Force 1997g, 1997b), and NAFR Resource Plan and Environmental Impact Statement (BLM 1989). Information on the MOA airspace areas comes from unpublished reports prepared as part of the NEPA evaluation of the MX Missile program (Air Force 1981).

#### 3.8.3.1 SOUTH RANGE

Wildlife in the vicinity of the South Range includes species that are primarily associated with Mojave Desert scrub and woodland habitats (see section 3.8.2). A variety of migratory and widely distributed species also occur in limited numbers where surface water is available (see section 3.8.4). Resident and migratory wildlife include several species having special status or otherwise considered sensitive by state and federal governments (section 3.8.5, Special Status).

Common mammals of the South Range include coyote (*Canis latrans*), badger (*Taxidea taxus*), black-tailed jackrabbit (*Lepus californicus*), and desert kit fox (*Vulpes macrotis*). These species can be found in all habitat types in low numbers, predominately in areas without heavy human disturbance. Desert bighorn sheep (*Ovis canadensis nelsoni*) prefer the roughest and remotest habitat on or near the mountain tops, although this species will move farther down the slopes during the winter. Wild burros (*Equus asinus*), which escaped or were released periodically over the last 200 years, are found in low numbers within the creosote bush scrub habitat. Mule deer (*Odocoileus hemionus*), mountain lion (*Felis concolor*), and bobcat (*Lynx rufus*) occur in the mountains of the South Range, although these large mammals are more numerous on the North Range.

Common small mammals include whitetailed antelope squirrel (*Ammospermophilus leucurus*), Merriam's kangaroo rat (*Dipodomys merriami*), longtailed pocket mouse (*Perognathus formosus*), cactus mouse (*Peromyscus eremicus*) and southern grasshopper mouse (*Onychomys torridus*). These rodent species are normally found in loose sandy soils in areas with creosote bushes whereas the canyon mouse (*Peromyscus crinitus*) and desert woodrat (*Neotoma lepida*) are associated with rocky soils, canyons, and Joshua trees.

There are up to 20 species of bats occurring on NAFR. Initial survey results are discussed under section 3.8.3.2, North Range, where most of the survey work was done.

An Air Force-commissioned bird survey in 1996 (Air Force 1997b) documented the presence of 114 avian species on NAFR. The report summarized avian use of the desert scrub and higher elevation woodland communities as relatively low through much of the year, particularly for wintering and

breeding. Springs and ponds supported the greatest number of birds although the wetland habitat makes up only a small proportion of NAFR.

Birds present throughout the South Range include the common raven (*Corvus corax*), which is found throughout all habitat types, horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), mourning dove (*Zenaida macroura*), sage sparrow (*Amphispiza belli*), black-throated sparrow (*Amphispiza bilineata*), burrowing owl (*Athene (=Speotyto) cunicularia*), greater roadrunner (*Geococcyx californianus*), lesser nighthawk (*Chordeiles acutipennis*), and, depending on water sources, Gambel's quail (*Callipepla gambelii*). All of the foregoing are regularly present in creosote scrub. The variety of bird species normally increases where Joshua trees, riparian vegetation, or large cacti are present. The cactus wren (*Campylorhynchus brunneicapillus*) is associated with stands of cholla cactus. Scott's oriole (*Icterus spurius*) are occasionally observed nesting in Joshua trees, and phainopepla (*Phainopepla nitens*), ash-throated flycatcher (*Myiarchus cinerascens*) and black-tailed gnatcatchers (*Polioptila melanura*) are associated with riparian scrub habitat that may occur around springs.

Raptors are found in a variety of habitats and include red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*) and, on rare occasions, the peregrine falcon (*Falco peregrinus*). Up to 18 species of raptors are expected to use NAFR during the winter. Raptors that are expected to breed on NAFR include ferruginous hawk, red-tailed hawk, sharp-shinned hawk, Cooper's hawk, golden eagle, and six species of owls (Air Force 1997b).

Bird species that are associated with urbanized areas include house finch (*Carpodacus neomexicanus*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and white-crowned sparrow (*Zonotrichia leucophrys*). Several migratory songbirds such as yellow-rumped warbler (*Dendroica coronata*), Townsend's warbler (*Dendroica townsendi*), and orange-crowned warbler (*Vermivora celata*) will use the habitat surrounding the desert springs and open water habitats during migration and occasionally for nesting, making this habitat a valuable resource in an otherwise dry and sparsely vegetated area. Gambel's quail (*Callipepla gambelii*) is also commonly associated with water sources in desert scrub habitats.

Reptiles are especially adapted to drought conditions and extreme temperatures and are therefore well represented in this area. The most notable reptile species found in the Mojave creosote scrub habitat is the desert tortoise (*Gopherus (=Xerobates) agassizii*). Lizard species include side-blotched lizard (*Uta stansburiana*), California whiptail, (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), desert spiny lizard (*Sceloporus magister*), desert night lizard (*Xantusia vigilis*), chuckwalla lizard (*Sauromalus obesus*), and desert horned lizard (*Phrynosoma platyrhinos*). Snakes include the coachwhip (*Masticophis flagellum*), western patch-nosed snake (*Salvadora hexalepis*), gopher snake (*Pituophis melanoleucus*), western shovel-nosed snake (*Chionactis occipitalis*), and the Mojave rattlesnake (*Crotalus scutulatus*).

The limited surface water habitat and desert springs habitat within the South Range provide extremely valuable resources for wildlife species. The diversity of plants and insects found in



these normally well-vegetated areas provide an important food base to a variety of wildlife species. This habitat is especially important for migrating birds. More common bird species nest and forage in the vegetation year-round while mammals and reptiles forage and make their homes within the understory. Two species of amphibians, the western spadefoot toad (*Scaphiopus hammondi*) and the western toad (*Bufo boreas*) may occur near natural or man-made bodies of water. There are no native fish populations on NAFR.

The dry lakes or playas located on the South Range are dry most of the time and provide little resources for most wildlife species. In some years, however, during the rainy season these areas contain water and may support limited food resources for small numbers of migratory waterfowl and shorebirds.

### 3.8.3.2 NORTH RANGE

Wildlife in the vicinity of the North Range includes species that are primarily associated with Great Basin montane scrub, pinyon-juniper woodland, Great Basin desert scrub, desert springs and open water habitats. These habitats support numerous wildlife species including several species considered sensitive by state and federal governments (section 3.8.5, Sensitive Species).

Most of the North Range comprises Great Basin habitats, the exceptions being in the southwestern corner, which is part of the transition between Mojave and Great Basin deserts (section 3.8.2). As a result, some habitats described in the South Range section (Mojave Desert scrub and playas) are also present on the North Range, and conversely, some of the habitats described as being Great Basin habitats (Great Basin conifer woodland and Great Basin montane scrub) are present on the South Range at higher elevations. Many (but not all) wildlife species associated with these habitats will occur regardless of North or South Range distinctions. As a result, wildlife species associated with Mojave Desert habitats found in the North Range are similar to those described above in the South Range section.

Most of the common larger mammal species such as coyote, skunk, badger, and black-tailed jackrabbit that occur in the South Range habitats are similarly found in the North Range Great Basin habitats. A population of bighorn sheep occurs on Stonewall Mountain. In addition, the rougher, more densely vegetated regions in the higher elevations of the North Range also support mountain lion, bobcat, and mule deer. Pronghorn antelope (*Antilocapra americana*) and wild horses (*Equus caballus*), however, occur predominantly in desert scrub communities found in the North Range, particularly in Cactus Flat, on alluvial fans bordering Breen Creek, and in the Kawich Valley. The rodents of the Great Basin desert scrub habitat differ from those of the southern desert and include the pallid kangaroo mouse (*Microdipodops pallidus*), dark kangaroo mouse (*M. megacephalus*), sagebrush vole (*Lagurus curtatus*) and chisel-toothed kangaroo rat (*Dipodomys microps*).

Several bat species are documented on the range in a NAFR-commissioned bat survey report (Air Force 1997c). Six species of bats, of the 20 species potentially occurring in the area, were documented on NAFR including long-legged myotis (*M. volans*), fringe-tailed myotis (*M. thysanodes*), California myotis (*Myotis californicus*), pipistrelle (*Pipistrellus hesperus*), Townsend's

big-eared bat (*Plecotus townsendii*), and pallid bat (*Antrozous pallidus*). The California myotis was the most widespread and commonly observed species in the report and was found in all habitats that were sampled, including desert scrub, grassland, and woodland. Pallid bats were observed in only desert scrub communities and fringe-tailed and Townsend's big-eared bats were described as occupying a range of habitats from desert scrub to pinyon-juniper woodland. All of the bat species on NAFR primarily use caves, abandoned mines, trees, and abandoned buildings for roosts. Several abandoned mine shafts were documented as having bats presently roosting in them. Although these species may be present throughout the NRC, their preferred foraging and roost habitat is usually near open water or desert springs habitat.

Bird species typical of the sagebrush community include the sage thrasher (*Oreoscoptes montanus*), sage sparrow, and horned lark. Other species observed less frequently include the green-tailed towhee (*Pipilo chlorurus*), mourning dove, greater roadrunner, common nighthawk, western meadowlark (*Sturnella neglecta*), and common raven. Chukars (*Alectoris chukar*) have been introduced into the area and survive in rocky habitat and desert scrub near freshwater habitat. Raptors regularly observed in the area are similar to those found in the Mojave desert scrub habitat with Swainson's (*Buteo swainsoni*) and ferruginous (*B. regalis*) hawks slightly more common in the north.

The pinyon-juniper woodland supports the greatest bird diversities in the region. During spring, species such as the blue-gray gnatcatcher (*Polioptila caerulea*), gray vireo (*Vireo vicinior*), and black-throated gray warbler (*Dendroica nigrescens*) forage on insects in the dense vegetation. Plain titmouse (*Parus inornatus*), gray flycatchers (*Empidonax wrightii*), pinyon jays (*Gymnorhinus cyanocephalus*), Townsend's solitaire (*Myadestes townsendi*), and house finch are year-round residents of this habitat.

Reptiles are less abundant in the North Range, which is colder than the Mojave Desert Scrub habitat. Some reptile species found in the North Range are also observed in the South Range (side-blotched and whiptail lizards). Additional reptile species or subspecies common to the Great Basin habitats include sagebrush lizard (*Sceloporus graciosus*), leopard lizard (*Gambelia wisilenii*), and Great Basin (*Crotalus viridis luteosus*) and Hopi (*C. v. nuntius*) rattlesnakes. Amphibians on the North Range are restricted to areas in the vicinity of water and include the Great Basin spadefoot toad (*Scaphiopus intermontanus*).

### **3.8.3.3 LANDS BENEATH MOA AIRSPACE**

The foregoing discussion of wildlife on the North Range is generally applicable to the MOA airspace, which overlies similar habitats, with qualifiers as noted below.

- Mule deer use of mountain ranges under the MOA airspace appears to be somewhat greater than on the North Range, with important winter range habitat in the Coal Valley and at lower elevations on the Kawich Range (Air Force 1981).

- Bighorn sheep occur on most of the mountain ranges that are overlapped by the MOA airspace east of the land withdrawal area, including on the Sheep and East Desert ranges that are part of the DNWR (Air Force 1981; USFWS 1998).
- Pronghorn antelope occur primarily under the northwestern part of the MOA airspace, with key habitat areas, including winter range and/or breeding grounds, along the foothills and adjacent valleys of the Kawich, Reveille, and Quinn ranges (Air Force 1981).
- Important waterfowl habitats under the MOA airspace include Bear Paw Lake in the north; and along the White River-Pahranagat Valley-Muddy River drainages (including the Key-Pittman Wildlife Management Area and Pahranagat National Wildlife Refuge) and Meadow Valley Wash in the southeastern part (Air Force 1981).

### **3.8.4 Aquatic and Wetland Habitats**

#### **3.8.4.1 NORTH AND SOUTH RANGE**

Aquatic and wetland habitats are extremely limited on NAFR. The major surface water resources, consisting of known seeps, springs, ponds (both natural and artificial), and one intermittent stream (Breen Creek) on the range were evaluated in 1996 (Air Force 1996c; 1997g). These water resources are shown in Figures 3.8-1a and 1b and on Table 3.8-1. Additional information on the surface waters of NAFR was compiled in the Water Requirements Study for NAFR (Air Force 1998b), as discussed in section 3.6 (Figure 3.6-1, Table 3.6-3). Additional data on water resources in and around Emigrant Valley were obtained from BLM (1995). Appendix G provides additional information, including plant and wildlife species, current conditions, and potential jurisdictional status under Section 404 of the CWA. Playas and other seasonally or ephemerally wet areas have not been systematically investigated, but some playas may be used in the spring by migratory birds (Air Force 1981; Dames & Moore 1996). During some years, migratory waterfowl may use areas at Mud Lake, Cactus Flat, and Gold Flat on the North Range; and Indian Springs Valley and Three Lakes Valley on the South Range (Air Force 1981).

The wetland inventory conducted on NAFR focused primarily on the current and potential value of existing surface water resources to wildlife. Most of NAFR's surface waters are heavily impacted by wild horses or human alteration. This limits their value to wildlife, and it makes an assessment of their jurisdictional status problematic (Air Force 1996c). A joint Air Force-BLM program to create horse exclosures around water sources while maintaining access for other types of wildlife should improve the quality of water resources for wildlife on NAFR.

The primary functions of these surface waters on NAFR are as wildlife habitat, providing a critical resource that is limiting to many wildlife species living in or migrating through this arid environment. Groundwater recharge is another important function provided by Breen Creek. Aquatic biota associated with NAFR's surface waters have not been sampled. Native fishes are not known or expected to occur because of the lack of perennial pools of water of sufficient extent to sustain populations during drought. Native amphibian or invertebrate taxa could be present but

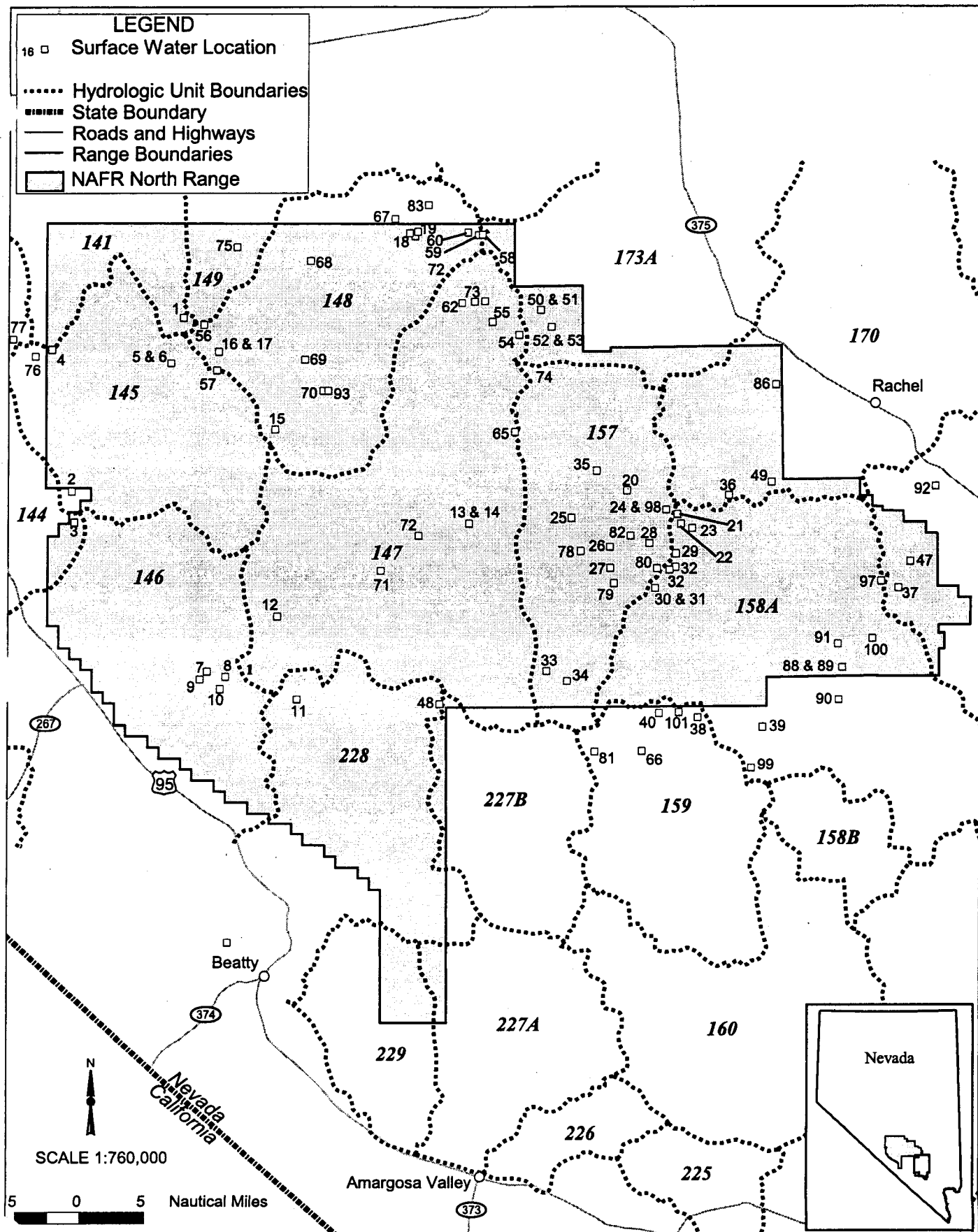
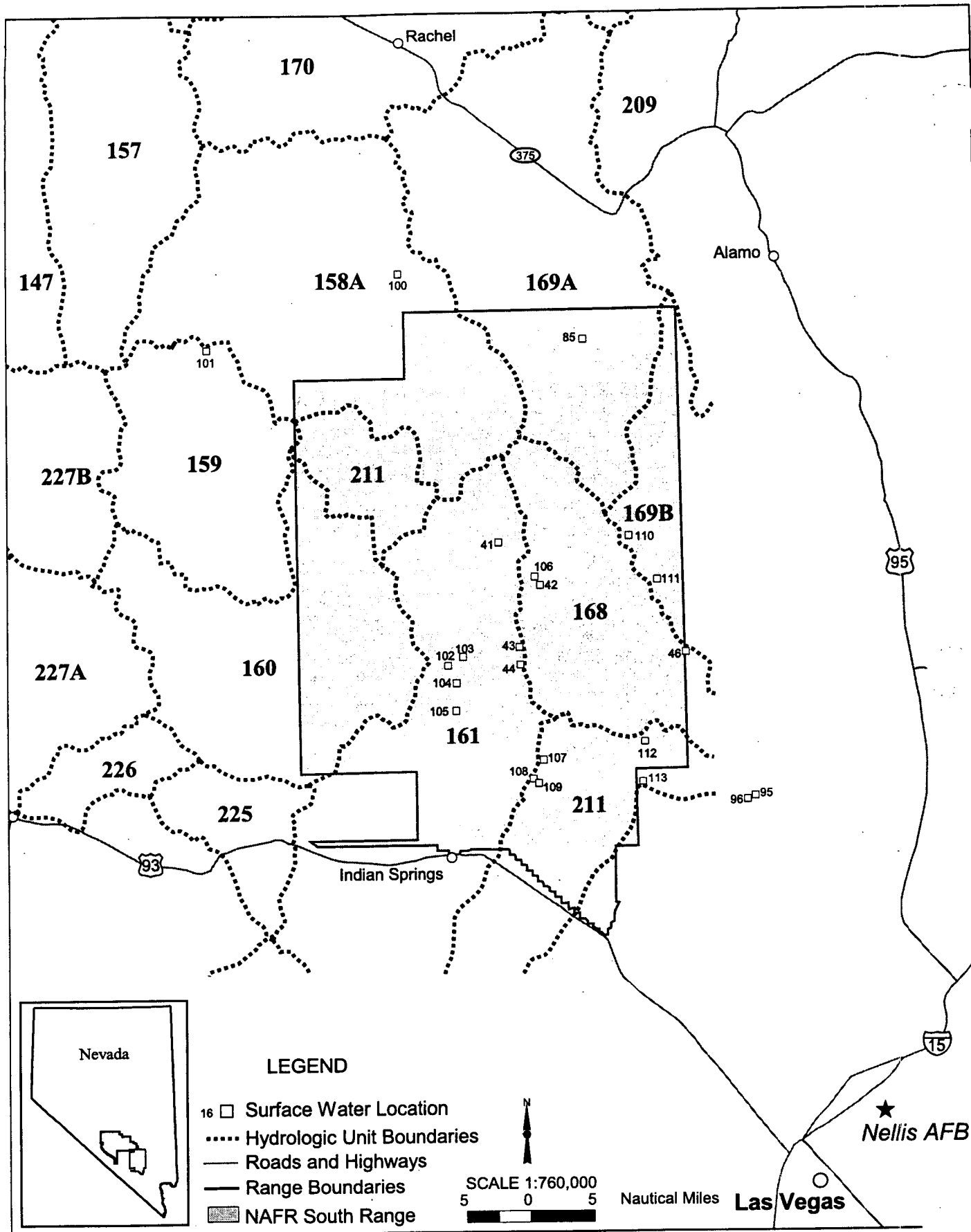


Figure 3.8-1a. Surface Water Resources on the North Range



**Figure 3.8-1b. Surface Water Resources on the South Range**

Table 3.8-1. Surface Water Sources on NAFR (page 1 of 3)

Basin Name	Basin No.	Common Water Source Name	Ref. No.	Owner	Location	NVSWEQ APPROPRIATION INFORMATION				
						Application No.	Certificate No.	Status	Beneficial Use <sup>2</sup>	Permit Amount (AFY)
	161	Spotted #1	102	Unknown	R56E T13S S8 SW SE	Unknown	Unknown	Unknown	Unknown	Unknown
	161	Spotted #2	103	Unknown	R56E T13S S9 NE SW	Unknown	Unknown	Unknown	Unknown	Unknown
	161	Foggy Guzzler	104	Unknown	R56E T13S S20 SE NE	Unknown	Unknown	Unknown	Unknown	Unknown
	161	Patches Guzzler	105	Unknown	R56E T14S S5 NE NE	Unknown	Unknown	Unknown	Unknown	Unknown
	168	Indian Canyon Guzzler	106	Unknown	R57E T11S S35 SE SW	Unknown	Unknown	Unknown	Unknown	Unknown
	168	Dain Peak Guzzler	107	Unknown	R57E T14S S27 SE SW	Unknown	Unknown	Unknown	Unknown	Unknown
	211	Heaven's Well Guzzler	108	Unknown	R57E T15S S4 SE NW	Unknown	Unknown	Unknown	Unknown	Unknown
	211	Heaven's Well Tinaja	109	Unknown	R57E T15S S3 SW SW	Unknown	Unknown	Unknown	Unknown	Unknown
	169	Tommy Guzzler	110	Unknown	R59E T11S S17 NW SE	Unknown	Unknown	Unknown	Unknown	Unknown
	169	Chuckwalla Guzzler	111	Unknown	R59E T12S S3 NE SW	Unknown	Unknown	Unknown	Unknown	Unknown
	211	White Sage Guzzler	112	Unknown	R59E T14S S19 NE SW	Unknown	Unknown	Unknown	Unknown	Unknown
Ralston Valley	211	Blacktop Guzzler	113	Unknown	R59E T15S S7 NE NW	Unknown	Unknown	Unknown	Unknown	Unknown
Lida Valley	141	Unnamed Seep	1	USA/USAF	NW SE S13 T2S R45E	7357	2253	Assigned	Stock	0.9
	144	Stonewall Spring	2	USA/USAF	SE SE S32 T4S R44E	12362	3772	Assigned	Stock	7.2
	144	Jerome Spring	3	USA/USAF	SW SE S16 T5S R44E	5931	850	Assigned	Stock	18.1
Stonewall Flat	145	Wildhorse Spring	4	USA/USAF	SE NW S31 T2S R443	3908	1581	Assigned	Stock	2.5
	145	Alkali Spring	5	USA/USAF	SW NW S5 T3S R46E	5929	848	Assigned	Stock	18.1
	145	Alkali Spring	6	USA/USAF	SW NW S5 T3S R46E	12784	4167	Assigned	Stock	7
	145	Urania Mine Seep	7	Not filed	S10 T3S R46E	N/A	N/A	N/A	N/A	0
Stonewall Flat	145	Cane Spring	56	USA/USAF	SW SW S36 T2S R43E	3909	1582	Assigned	Stock	2.53
	145	Tognoni Spring	77	USA/USAF	SW NE S28 T2S R43E	7730	1542	Assigned	Stock	3.64
Sarcobatus Flat	146	Monte Cristo Spring	7	Lamb	SW SW S28 T7S R46E	3942	2378	Assigned	Stock	2
	146	Rock Spring	8	Cook	SE SW S26 T7S R46E	6022	851	Assigned	Stock	4.3
	146	Trappman Spring	9	Cook	NW SE S32 T7S R46E	5173	856	Assigned	Stock	10.9
	146	Tule George Spring	10	Cook	NW SE S3 T8S R46E	5540	853	Assigned	Stock	1.4
Gold Flat	147	Pillar Spring	11	Calvin	NE NE S10 T8S R46E	13283	4664	Assigned	Stock	8
	147	Larry's Seep	12	Siedentopf	NW NE S8 T7S R47E	10863	3141	Assigned	Stock	3.6
	147	Jackpot Reservoir	13	USA/USAF	SE SE S9 T5S R50E	11609	4943	Assigned	Stock	7
	147	Unknown	14	Not filed	SE SE S9 T5S R50E	N/A	N/A	N/A	N/A	0
	147	Rose Spring	54	USA/USAF	SE SE S24 T2S R50E	V02374	N/A	Vested	Stock	21.7
	147	Rose Spring	54	N/A	SE SE S24 T2S R50E	13317	N/A	Denied	Stock	0
	147	Log Spring	55	Not filed	S23 T2S R50E	N/A	N/A	N/A	N/A	0
	147	Coral Spring	62	N/A	NE NE S9 T2S R50E	13316	N/A	Denied	Stock	0
	147	Nixon #1	71	USA/USAF	SW NW S7 T6S R49E	V02371	N/A	Vested	Stock	18.1
	147	Nixon #2	72	USA/USAF	NE NW S27 T5S R49E	V02372	N/A	Vested	Stock	18.1
	147	Tunnel Spring	73	USA/BLM	SE SE S4 T2S R50E	V02373	N/A	Vested	Stock	7.2
Cactus Flat	148	Antelope Spring	15	USA/USAF	SW NW S4 T4S R47E	13288	4170	Assigned	Stock	4.8
	148	Antelope Spring	15	N/A	NW SW S4 T4S R47E	13467	N/A	Denied	Stock	0
Cactus Flat	148	Cactus Spring	16	USA/USAF	SE NW S34 T2S R46E	1580	377	Assigned	Stock	7.2
	148	Cactus Spring	17	USA/USAF	SE NW S34 T2S R46E	12785	4168	Assigned	Stock	7.1
	148	Silverbow Spring	18	USA/USAF	NW NE S9 T1S R49E	2376	N/A	Assigned	Stock	18.1
	148	Silverbow Spring	18	USA/USAF	NW NE S9 T1S R49E	13625	3956	Assigned	Stock	21.7
	148	Silverbow Spring	18	N/A	SW SE S4 T1S R49E	13315	N/A	Denied	Stock	0

Table 3.8-1. Surface Water Resources on NAFR (page 2 of 3)

Basin Name	Basin No.	Common Water Source Name	Ref. No.	Owner	Location	NVSWEQ APPROPRIATION INFORMATION				
						Application No.	Certificate No.	Status	Beneficial Use <sup>2</sup>	Permit Amount (AFY)
	148	Silverbow Creek	19	USA/USAF	NW SE S4 T1S R49E	4943	1111	Assigned	Irrigation & Domestic	108.3
	148	Stealth Seep	56	Not filed	S22 T2S R46E	N/A	N/A	N/A	N/A	0
	148	Sandeen Spring	59	Not filed	S9 T1S R50E	N/A	N/A	N/A	N/A	0
	148	Thunderbird Spring	60	Not filed	S8 T1S R50E	N/A	N/A	N/A	N/A	0
	148	Stinking Springs	67	USA/USAF	SW NW S6 T1N R49E	V02367	N/A	Vested	Stock	7.2
	148	Fork Spring	68	USA/USAF	NW NW S22 T1S R47E	V02368	N/A	Vested	Stock	14.5
	148	N. Antelope Reservoir	69	USA/USAF	SE NE S2 T3S R48E	V02369	N/A	Vested	Stock	14.5
	148	Antelope Reservoir	70	USA/USAF	NW NE S19 T3S R48E	V02370	N/A	Vested	Stock	18.1
	148	Corral Spring	74	USA/BLM	NW NE S8 T1S R50E	V02375	N/A	Vested	Stock	14.5
	148	Silverbow Canyon	83	USA/USAF	NW SW S23 T1N R49E	4910	1066	Assigned	Irrigation & Domestic	144
	148	Unnamed Reservoir #2	93	N/A	NW E S19 T3S R48E	14754	N/A	Denied	Stock	N/A
Stone Cabin Valley	149	Reservoir #2	75	USA/BLM	NE NE S14 T1S R46E	12692	3521	Assigned	Stock	13.2
Kawich Valley	157	Coyote Pond	20	USA/Fallini	SE NE S5 T4S R51.5E	12692	3521	Assigned	Stock	22.4
	157	Horse Spring	21	USA/BLM	NE NE S1 T5S R52E	12044	3454	Assigned	Stock	5.3
	157	Unnamed Spring	22	USA/USAF	NW NE S7 T4S R53E	55322	14606	Assigned	Wildlife	4.6
Kawich Valley	157	Unnamed Spring	23	USA/USAF	SE SE S8 T5S R53E	55321	14605	Assigned	Wildlife	9
	157	Kawich Tank	25	USA/Fallini	NW SW S13 T5S R51E	11865	3297	Assigned	Stock	21.7
	157	Lamb's Pond	26	USA/USAF	NE NE S24 T5S R51E	11669	3266	Assigned	Stock	4.6
	157	Sundown Reservoir	27	USA/USAF	NE SE S36 T5S R51E	11606	3259	Assigned	Stock	4.6
	157	Wildcat Spring	28	USA/USAF	SE SW S31 T5S R53E	3887	690	Assigned	Stock	2.2
	157	Gold Spring	29	USA/USAF	SW SW S1 T6S R52E	12043	3453	Assigned	Stock	4.7
	157	Indian Spring	39	Lamb	NW NW S11 T6S R52E	2359	208	Assigned	Stock & Domestic	2.8
	157	Indian Spring	31	USA/USAF	SW NW S11 T6S R52E	11608	3261	Assigned	Stock	4.6
	157	Johnnie's Water	32	Watkins	SE SE S12 T6S R52E	3746	334	Assigned	Stock	18.1
	157	Johnnie's Spring	33	N/A	SE SE S12 T6S R52E	3894	N/A	Denied	Stock & Domestic	0
	157	Black Rock Spring	33	USA/USAF	NW SE S22 T7S R51E	11625	3263	Assigned	Stock	4.6
	157	Khibab Spring	34	USA/USAF	NE NE S35 T7S R51E	11660	3284	Assigned	Stock	4.6
	157	Antelope Reservoir	35	USA/Fallini	SW SW S29 T4S R51E	11626	3536	Assigned	Stock	4.3
	157	Granite Spring	65	N/A	NE NE S12 T4S R50E	13318	N/A	Denied	Stock	0
	157	Live Oak Spring	81	USA/USAF	SE SE S7 T8S R51 1/2E	11610	3262	Assigned	Stock	4.56
	157	Pony Spring	82	USA/USAF	SW NW S26 T5S R52E	11668	3265	Assigned	Stock	4.56
	158	Chalk Spring	36	USA/USAF	SW SE S5 T5S R54E	3889	688	Assigned	Stock	0.2
Emigrant Valley (A&B)	158	Tub Spring	38	USA/Army	SW NE S20 T8S R53E	3744	332	Assigned	Stock	18.1
	158	Cane Spring	39	Lincoln Land	SW NW S17 T9S R56E	6842	779	Assigned	Stock	22.4
	158	Miners Spring	88	USA/USAF	S25 T7S R55E	V01379	N/A	Vested	Stock	36.24
	158	Disappointment Spring	89	USA/USAF	S25 T7S R55E	V01370	N/A	Vested	Stock	36.24
	158	Bolted Reservoir #2	90	USA/USAF	SE NE S11 T8S R55E	10595	3130	Assigned	Stock & Domestic	5

**Table 3.8-1. Surface Water Sources on NAFR (page 3 of 3)**

Basin Name	Basin No.	Common Water Source Name	Ref. No.	Owner	Location	NVSWEQ APPROPRIATION INFORMATION				
						Application No.	Certificate No.	Status	Beneficial Use <sup>2</sup>	Permit Amount (AFY)
Emigrant Valley (A&B)	158	Nanquinta Reservoir #1	91	USA/USAF	NE NE S14 T7S R55E	10594	3129	Assigned	Stock & Domestic	5
	158	Reservoir #4	99	USA/USAF	NW NW S10 T9S R54E	10597	2845	Assigned	Stock	5
Yucca Flat	158	Cane Spring	100	USA/USAF	SE SW S25 T7S R55E	V01375	N/A	Vested	Stock	72.4
	159	Wire Grass Spring	40	USA/BLM	NE NE S18 T8S R53E	3743	376	Assigned	Stock & Domestic	18.1
	159	White Rock Spring	66	USA/ARMY	NE NE S4 T9S R52E	3896	692	Assigned	Stock	4.3
	159	Oak Springs	101	USA/ARMY	SW SW S13 T8S R52E	3745	333	Assigned	Stock	18.1
Indian Springs Valley	161	Quartz Spring	41	USA/USAF	SE NW S20 T11S R57E	11642	3371	Assigned	Stock	0.7
	161	Tim Spring	43	USA/USFWS	NE SW S4 T13S R57E	13521	3787	Assigned	Stock	0.7
Three Lake Valley (Northern)	161	Sand Spring	44	USA/USFWS	NE NW S15 T13S R57E	13520	3786	Assigned	Stock	7.2
	168	Indian Spring Canyon	42	USA/USFWS	NE NW S2 T12S R57E	12631	3535	Assigned	Stock	7.2
	168	Shale Cut Spring	45	USA/BLM	NE SW S1 T13S R59E	3253	2620	Assigned	Stock & Domestic	2.2
Tikapoo Valley (A&B)	168	White Rock Spring	46	USA/USAF	NW SE S12 T13S R59E	3254	2621	Assigned	Stock	2.2
	169	Rock Spring	37	D4 ENT/PR	NE NW S29 T6S R56E	57083	14625	Assigned	Stock	1.7
	169	Quail Spring	47	D4 ENT/PR	SE SW S9 T6S R56E	57083	14608	Assigned	Stock	1.8
	169	Summit Spring Drainage	48	USA/BLM	NE SW S15 T8S R58E	4730	897	Assigned	Stock	18.1
Tikapoo Valley (A&B)	169	Crescent Valley Wash	84	USA/USAF	S T9S R59E	4333	N/A	Withdrawn	Stock	0
	169	Tule Spring	87	N/A	SE NW S27 T4S R58E	4746	1983	Assigned	Stock	72.3
	169	Indian Spring	92	N/A	SE SE S2 T5S R56E	V01372	N/A	Vested	Stock	72.4
	169	Cattle Spring	97	USA/USAF	SW NE S21 T5S R56E	V01367	N/A	Vested	Stock	72.4
Penoyer (Sand Springs Valley)	169	Cliff Spring	98	USA/USAF	NW SW S29 T5S R56E	V01369	N/A	Vested	Stock	18.1
	170	Cliff Spring	24	USA/USAF	NW NE S14 T5S R52E	11605	3258	Assigned	Stock	4.56
	170	Cliff Spring	24	LAMB	NW NE S14 T5S R52E	2357	350	Assigned	Stock & Domestic	7.2
	170	Beck Spring	49	USA/BLM	NE NE S2 T5S R54E	3888	689	Assigned	Stock	1.1
	170	Pink Hills Reservoir	86	USA/BLM	NE SW S21 T3S R54E	11693	N/A	Withdrawn	Stock & Domestic	N/A
Railroad Valley (A)	173	Summer Spring	50	FALLINI	NW NW S16 T2S R51E	5662	949	Assigned	Stock	14.5
	173	Summer Spring	51	FALLINI	NW NW S16 T2S R51E	13541	3659	Assigned	Stock	14.5
	173	Cedar Spring	52	FALLINI	NW NW S22 T2S R51E	13542	3660	Assigned	Stock	18.1
	173	Cedar Spring	53	FALLINI	NW SW S22 T2S R51E	23501	8133	Assigned	Stock	18.1
	173	Phantom Spring	58	Not Filed	S14 T1S R50E	N/A	N/A	N/A	Stock	0
Three Lake Valley (S)	173	Shirley Spring	79	USA/USAF	NE SE S16 T6S R52E	11607	3260	N/A	Stock	4.56
	211	Unnamed	95	USA/USFWS	NE SE S12 T15S R60E	12630	3530	Assigned	Wildlife	0.72
Oasis Valley	211	Unnamed	96	USA/USFWS	SW NE S11 T15S R60E	12633	3531	Assigned	Wildlife	0.72
	228	Unnamed	94	USA/BLM	SW SE S26 T11S R46E	25628	8454	Assigned	Municipal	3.61

Notes:  
 1. See Figure 3.6-1a and 1b.  
 2. Nonspecific term used to describe beneficial use of the water.  
 Source: Mariah 1996 (Map #s 1-62), Air Force 1997g (Map #63-79), personal communication, Major Jeff Shea 1998 (Map #100-115).



are largely unknown. As discussed previously in section 3.8.3, migratory and resident birds and resident large mammals rely heavily on surface water.

#### 3.8.4.2 LANDS BENEATH MOA AIRSPACE

The MOA airspace overlies important aquatic and wetland habitats associated with the White River and, downstream, the Pahranaagat Valley and Muddy River (Air Force 1981). Several unique and federally protected species of fishes, as well as a number of endemic aquatic insects, occur in the large, thermal springs of Pahranaagat Valley (Air Force 1981). The Meadow Valley Wash contains a narrow perennial stream that flows south into the Muddy River at Moapa. There is well-developed riparian vegetation along the banks in several areas and the stream supports beaver and native fishes (Air Force 1981). Elsewhere, habitat for fishes is limited to sections of Cherry Creek and Cottonwood Creek of the Quinn Range that support brook and/or rainbow trout (Air Force 1981). Bear Paw Lake, a seasonally flooded playa, is a major waterfowl use area (Air Force 1981).

#### 3.8.5 Special Status Species

This section addresses special status species that are known or likely to occur on NAFR. Included are state and/or federally listed, proposed, and candidate threatened and endangered species, federal species of concern (former candidates), and other species that are of concern by virtue of rarity or socioeconomic importance (e.g., game animals).

##### 3.8.5.1 PLANTS

Table 3.8-2 summarizes existing data on the occurrence of special status plant species on NAFR. The list includes federally listed, proposed, candidate, and federal concern species, including former USFWS category 2 candidate plants and plants included on the Nevada BLM Sensitive Species List (Appendix G); as well as plants identified by TNC (1997) as "imperiled" in Nevada or throughout their range. Appendix G provides mapped locations of species confirmed on NAFR. There are no federally listed threatened or endangered plants known or likely to occur on NAFR. A USFWS species of concern, Clokey eggvetch (*Astragalus oophorus* var. *clokeyanus*), that was previously known only from the Spring Mountains, was discovered on NAFR on the Belted Range and could occur elsewhere on NAFR. One species listed by the Nevada Department of Forestry as critically endangered, Beatley's milkvetch (*Astragalus beatleyae*), occurs on NAFR on Pahute Mesa.

Other special status plants whose occurrence on NAFR has been recently confirmed by TNC (1997) and DOE (1996a) include the following, all of which are federal species of concern:

- Eastwood's milkvetch (*Asclepias eastwoodiana*)
- Merriam bearpoppy (also known as bear poppy, bearpaw poppy) (*Arctomecon merriami*)
- Ackerman milkvetch (*Astragalus ackermanii*)
- Sheep Range milkvetch (*Astragalus amphioxus* var. *musimonum*)

**Table 3.8-2. Special Status Plant Species Known or Likely to Occur on NAFR and Under Associated Airspace<sup>1</sup>**  
(page 1 of 6)

Scientific Name Common Name	Regulatory Status <sup>2</sup>	Heritage Rank <sup>3</sup>	Description, Flowering Period	Distribution and Habitat (reference)
<i>Arctomecon californica</i> Las Vegas bearpoppy	SOC, CE		Cespitose perennial herb, with 6-20 yellow flowers on each stalk; flowers April-May	Clark County; reported on NAFR. On barren slopes, flats, and hummocks, often on gypsum soils, in creosote bush scrub, 1,310-2,760 feet (Mozingo and Williams 1980).
<i>Arctomecon merriami</i> Merriam's bearpoppy	SOC, BLM	G3S2	Clumped perennial herb, with white flowers borne singly on stalks; flowers April-June	Clark, Lincoln, and Nye counties, on NAFR (40 populations on South Range, incl. ISAFAP), MOA airspace (Kane Springs Wash). Shallow gravelly soils, limestone outcrops, flats and dry lake beds, in various Mojave Desert scrub communities, 2,000-6,300 feet (Mozingo and Williams 1980; Air Force 1981; Dames & Moore 1996; TNC 1997).
<i>Arenaria stenomeres</i> Meadow Valley sandwort		G1S1	Clumped perennial herb; flowers in May	Clark and Lincoln counties, under MOA airspace (Las Vegas Range, S. Meadow Valley Mts.). On barren limestone cliffs and steep, rocky slopes, 3,300-3,600 feet (Mozingo and Williams 1980; Air Force 1981).
<i>Asclepias eastwoodiana</i> Eastwood milkweed	SOC, BLM	G2S2	Low, few-stemmed perennial herb from woody caudex; flowers May-June	Esmeralda, Lander, Nye Counties; reported on NAFR (Tonopah Test Range [DOE 1996]). Occurs in low alkaline clay hills or shallow, gravelly drainages, in shadscale scrub, 5,300-6,900 feet (Mozingo and Williams 1980).
<i>Astragalus ackermanii</i> Ackerman milkvetch	SOC	G2S2	Tufted perennial from woody taproot; flowers April-June	Clark and Lincoln counties, on NAFR (Sheep and Pintwater ranges). Ledges and crevices of limestone cliffs, 4,000-6,200 feet (Air Force 1981; TNC 1997).
<i>Astragalus aequalis</i> Clokey milkvetch	SOC, BLM	G2S2	Erect perennial herb; flowers May-June	Clark County, in Spring Mts but unconfirmed on NAFR. On dry gravelly hillsides and open ridges, limestone, in pinyon-juniper woodland, yellow pine forest, 5,905-8,400 feet (Mozingo and Williams 1980; Air Force 1981).
<i>Astragalus amphioxus</i> var. <i>musimonum</i> Sheep Range milkvetch	SOC, BLM	G5T2S2	Low tufted perennial herb; flowers April-June	Clark County, on NAFR (Desert Range), under MOA airspace (Las Vegas, Sheep, and East Desert ranges). On dry limestone bajadas, gentle slopes, disturbed areas, in mixed Mojave Desert scrub and pinyon-juniper woodland, 4,400-6,400 feet (Mozingo and Williams 1980; Air Force 1981; TNC 1997).
<i>Astragalus beatleyae</i> Beatley milkvetch	SOC/CE	G2S2	Dwarf, cespitose perennial herb; flowers in May	Nye County, on NAFR (N and E Pahute Mesa). On shallow, gravelly rhyolitic tuff soils, in barren areas, mixed scrub, and pinyon-juniper woodland, 5,600-6,800 feet (Mozingo and Williams 1980; TNC 1997).
<i>Astragalus eurylobus</i> Peck Station milkvetch	SOC, BLM	G2S2	Description unavailable; flowers April-June	Lincoln County, under MOA airspace (vicinity of Peck Station). On alkali clay hills at 4,650-4,950 feet (TNC 1995).

**Table 3.8-2. Special Status Plant Species Known or Likely to Occur on NAFR and Under Associated Airspace<sup>1</sup>**  
(page 2 of 6)

Scientific Name Common Name	Regulatory Status <sup>2</sup>	Heritage Rank <sup>3</sup>	Description, Flowering Period	Distribution and Habitat (reference)
<i>Astragalus funereus</i> Black woolypod	SOC, BLM	G2S2	Mat-forming perennial herb; flowers March-May	Nye County; reported on NAFR and NTS below Yucca Mountain in Beatty Wash. On steep, gravelly slopes of volcanic tuff, occasionally on limestone scree, in barren areas and shadscale scrub, 3,200-7,680 feet (Beatley 1976; Mozingo and Williams 1980; TNC 1997).
<i>Astragalus gilmanii</i> Gilman milkvetch	SOC, BLM	G3S1	Winter annual; flowers in May	Nye County, on NAFR (N Emigrant Valley, Groom Range). On volcanic tuff, in blackbrush scrub, pinyon-juniper woodland, 5,300-6,200 feet (Air Force 1985; BLM 1992; TNC 1997).
<i>Astragalus mohavensis</i> var. <i>hemigyris</i> Half-ring pod milkvetch	SOC, CE	G3T2S2	Bushy perennial herb; flowers April-June	Clark County, in Spring Mountains; Lincoln County, on NAFR (Desert Range). On limestone ledges and gravelly hillsides, with creosote, juniper, 3,400-6,070 feet (Mozingo and Williams 1980; Air Force 1981; TNC 1997).
<i>Astragalus oophorus</i> var. <i>clokeyanus</i> Clokey eggvetch	SOC		Low, slender perennial herb; flowers June-July	Clark County, in NW Spring Mountains (S slope below Wheeler Pass); Nye County, on NAFR (Belted Range). On NAFR in washes bordering pinyon-juniper; elsewhere on ridges and slopes in gravelly limestone soil, in sagebrush scrub, pinyon-juniper woodland, and montane forest; 6,800-9,100 feet (Mozingo and Williams 1980; TNC 1997).
<i>Astragalus oophorus</i> var. <i>lonchocalyx</i> Long-calyx milkvetch	SOC, BLM	G4T1S1	Low, slender perennial herb; flowers May-July	Lincoln County, N Wilson Creek Range but unconfirmed on NAFR or MOA airspace. On dry gravelly hillsides and stony flats, limestone, in pinyon-juniper woodland, associated with sagebrush, 6,000-8,500 feet (Mozingo and Williams 1980; Air Force 1981).
<i>Astragalus remotus</i> Remote milkvetch	SOC, BLM	G1S1	Perennial herb to subshrub; flowers April-June	Clark County, Spring Mountains and Bird Spring Range, unconfirmed on NAFR. In washes, in blackbrush scrub, 4,000-6,000 feet (TNC 1995; BRRC 1998).
<i>Astragalus uncialis</i> Currant milkvetch	SOC, BLM	G2S1	Small, tufted perennial; flowers in May	Northeastern Nye County, unconfirmed on NAFR or MOA airspace. On dry knolls and slopes, saline sand or limestone gravel, in shadscale scrub, 5,300-6,050 feet (Mozingo and Williams 1980).
<i>Camissonia megalantha</i> Cane Spring evening primrose	SOC	G2S2	Annual herb; flowers in May or June-Oct	Nye County; on NTS at Cane Spring, reported on NAFR (Tonopah Test Range [DOE 1996]). In washes on volcanic soils and on a talus seepage slope at Cane Spring, in shadscale scrub (Beatley 1976; TNC 1995).
<i>Castilleja martinii</i> var. <i>clokeyi</i> Clokey paintbrush	SOC	G3T2S2	Perennial herb; flowers June-July	Nye County, presumed to occur elsewhere, on NAFR (TNC 1995). On mountains in sagebrush scrub, pinyon-juniper woodland, ponderosa pine-white fir forest, 6,200-9,000 feet (Beatley 1976, TNC 1995).

Table 3.8-2. Special Status Plant Species Known or Likely to Occur on NAFR and Under Associated Airspace<sup>1</sup>  
(page 3 of 6)

Scientific Name Common Name	Regulatory Status <sup>2</sup>	Heritage Rank <sup>3</sup>	Description, Flowering Period	Distribution and Habitat (reference)
<i>Chrysothamnus eremobius</i> Remote rabbitbrush	SOC, BLM	G1S1	Low shrub; flowers Sept-Oct	Clark County, on NAFR (Sheep and Pintwater ranges). On limestone cliffs, in sagebrush and blackbrush scrub, 4,600-7,000 feet (TNC 1997).
<i>Cryptantha welskii</i> Welsh's cat's-eye	SOC, BLM	G1S1	Description unavailable; flowers in May	Distribution unavailable; unconfirmed on NAFR; reported as occurring on alluvial fans, in sagebrush-blackbrush scrub, above 5,000 feet (TNC 1995).
<i>Cymopterus ripleyi</i> var. <i>saniculoides</i> Sanicle biscuitroot	SOC, BLM	G1S1	Perennial herb; flowers April-June	Lincoln and Nye counties, on NAFR (Tonopah Test Range, Groom Range, Kawich Valley), under MOA airspace (Pahrangat Valley). On sand dunes, sandy soil, volcanic tuff, in shadscale scrub, 3,900-6,800 feet (Air Force 1981; DOE 1996; TNC 1997).
<i>Epilobium nevadense</i> Nevada willowherb	SOC, BLM	G2S2	Low, shrubby perennial, with erect stems arising from prostrate branches; flowers July-Sept.	Clark County, Spring Mountains, unconfirmed on NAFR. On limestone talus slopes, in coniferous forest, 7,450-9,200 feet (Mozingo and Williams 1980).
<i>Erigeron ovinus</i> Sheep fleabane	SOC, BLM	G1S1	Perennial herb from taproot; flowers in June	Clark and Lincoln counties, on NAFR and under MOA airspace (Sheep and Desert ranges, N Pahrangat Range, Groom Range, Mt. Irish. On limestone outcrops in pinyon-juniper woodland, 6,200-8,400 feet (Air Force 1981, 1985; TNC 1997).
<i>Frasera gypsicola</i> Sunnyside green gentian	SOC, CE	G2S2	Perennial herb arising from short, wide root crown; flowers June-July	Northeastern Nye County, unconfirmed on NAFR or MOA airspace. On mineralized clay (fine, self-rising soil encrusted with mineral salts), in sagebrush scrub, 4,950-5,190 feet (Mozingo and Williams 1980).
<i>Frasera palutensis</i> Pahute green gentian	SOC, BLM	G2S2	Low, spreading perennial herb arising from woody rootstocks; flowers May-July	Nye County, SE rim of Pahute Mesa on NTS, reportedly occurs on NAFR (Tonopah Test Range [DOE 1996]). On gravelly slopes and valley bottoms, in pinyon-juniper woodland, 7,200-7,900 feet (Beatley 1976; Mozingo and Williams 1980).
<i>Galium hildendiae</i> ssp. <i>kingstonense</i> Kingston bedstraw	SOC, BLM	G4T2S2	Dioecious, mat-forming, weak-stemmed perennial subshrub; flowers in June	Nye County, S Belted Range below Oak Spring Butte on NTS, unconfirmed on NAFR. On loose, rocky soil in ravines and gullies, in sagebrush scrub, pinyon-juniper woodland, 5,500-6,500 feet (Beatley 1976; Mozingo and Williams 1980).
<i>Gilia heterostylus</i> (no common name)			Annual herb; flowers April-June	Newly discovered species, on NAFR in loose sands, creosote bush scrub, 5,000 feet (TNC 1995).

Table 3.8-2. Special Status Plant Species Known or Likely to Occur on NAFR  
and Under Associated Airspace<sup>1</sup>  
(page 4 of 6)

Scientific Name Common Name	Regulatory Status <sup>2</sup>	Heritage Rank <sup>3</sup>	Description, Flowering Period	Distribution and Habitat (reference)
<i>Glossopetalon clokeyi</i> Clokey greasewood	SOC	G1S1	Small shrub; flowers May-June	Clark County, unconfirmed on NAFR. On limestone cliffs in sagebrush scrub, pinyon-juniper woodland, 4,000-6,500 feet (Mozingo and Williams 1980; TNC 1995).
<i>Jamesia tetrapetala</i> Waxflower	SOC, BLM	G2S2	Shrub; flowers May-June	Distribution unavailable; unconfirmed on NAFR. In pinyon-juniper woodland above 5,000 feet (TNC 1995).
<i>Lathyrus hitchcockianus</i> Mojave sweetpea		G2S2	Diffuse perennial herb; flowers April-May.	Nye County, on NTS but not known from NAFR or related overflight areas. In washes, canyon bottoms, in sagebrush, pinyon-juniper woodland, 4,500-5,200 feet (TNC 1995).
<i>Lewisia maguirei</i> Maguire biscuitroot	SOC	G1S1	Fleshy perennial with succulent taproot; flowers in June	Northeastern Nye County, MOA airspace (Cherry Creek Summit in Quinn Canyon Range). On limestone scree slopes, loose soil, in pinyon-juniper woodland, 7,500-7,800 feet (Mozingo and Williams 1980; Air Force 1981).
<i>Penstemon arenarius</i> Nevada dune penstemon	SOC, BLM	G2S2	Shrubby perennial; flowers May-June	Nye, Mineral, and Churchill Counties, occurs south of Tolicha Peak near NAFR boundary. In sandy areas, sometimes with dark gravel pavement, in shadscale scrub, 3,990-4,400 feet (Beatley 1976; Mozingo and Williams 1980; Air Force 1981).
<i>Penstemon bicolor</i> ssp. <i>roseus</i> Rosy bicolored penstemon	SOC	G2T2 S2	Tall perennial herb; flowers May-June	Clark County, Dry Lake Valley but unconfirmed on NAFR or Desert MOA. On gravelly washes, roadsides, in Mojave Desert scrub associations, 1,970-5,480 feet (Mozingo and Williams 1980; Air Force 1981).
<i>Penstemon fruticiformis</i> ssp. <i>amargosae</i> Amargosa penstemon	SOC, BLM	G3T2S2	Many-branched perennial from woody base; flowers April-June	Western Clark and southern Nye counties, unconfirmed on NAFR. In sandy or gravelly washes, in Mojave Desert scrub associations, 3,300-5,200 feet (Mozingo and Williams 1980).
<i>Penstemon pahuteensis</i> Pahute Mesa beardtongue	SOC, BLM	G2S2	Perennial herb arising from root crown; flowers June-July	Clark, Lincoln and Nye counties, on NAFR(Pahute Mesa), Stonewall Mountain. On loose soil, rocky areas; in barren areas and pinyon-juniper woodland, 5,800-7,500 feet (Mozingo and Williams 1980; Air Force 1981; BLM and Air Force 1987; TNC 1997).
<i>Penstemon pudicus</i> Bashful beardtongue	SOC, BLM	G1S1	Perennial arising from woody base; flowers June-July	Nye County, on Kawich Peak under MOA airspace. On steep mountain slopes and ridges, in pinyon-juniper woodland and montane scrub, 7,600-9,200 feet (Beatley 1976; Mozingo and Williams 1980).

**Table 3.8-2. Special Status Plant Species Known or Likely to Occur on NAFR and Under Associated Airspace<sup>1</sup>**  
(page 5 of 6)

Scientific Name Common Name	Regulatory Status <sup>2</sup>	Heritage Rank <sup>3</sup>	Description, Flowering Period	Distribution and Habitat (reference)
<i>Phacelia beatleyae</i> Beatley's phacelia	SOC, BLM	G2S2	Diminutive annual herb; flowers April-May	Lincoln and Nye Counties, on NAFR (Halfpint Range, W Emigrant Valley), NTS. On gravel or volcanic tuff, along washes and in canyons, also on slopes. In barren areas, creosote bush scrub, shadscale scrub, 2,500-5,800 feet (Beatley 1976; Mozingo and Williams 1980; TNC 1997).
<i>Phacelia parishii</i> Parish's phacelia	SOC, BLM		Low-spreading annual herb; flowers in May	Clark, Lincoln, and Nye counties, on NAFR (Indian Springs Valley, Three Lakes Valley); also on NTS (below Mercury Ridge, S Frenchman Flat Playas, shadscale scrub, 3,000-3,200 feet (Beatley 1976; TNC 1997).
<i>Porophyllum pygmaeum</i> Pygmy pore leaf	SOC, BLM	G1S1	Perennial herb; flowers April-May	Clark, Lincoln, and Nye counties, on NAFR (Desert and Sheep ranges). In limestone washes, in blackbrush scrub/Joshua tree woodland, 3,000-4,000 feet (TNC 1997).
<i>Salvia dorrii</i> var. <i>clokeyi</i> Clokey mountain sage	SOC, BLM	G5T2S2	Shrub; flowers May-July	Distribution unavailable; unconfirmed on NAFR. On limestone in alpine meadows above 9,000 feet (TNC 1997).
<i>Sclerocactus blainei</i> Blaine pincushion	SOC, BLM	G1S1	Pincushion cactus; flowers May-June	On NAFR. On alluvial fans, in sagebrush, >3,500 feet (TNC 1997).
<i>Sclerocactus schlesseri</i> Schlessers pincushion	SOC, BLM, CE	G1S1	Pincushion cactus; flowers May-June	Distribution unavailable, unconfirmed on NAFR. On sand with cryptogamic crust, in sagebrush scrub, 3,000 feet (TNC 1997).
<i>Selaginella utahensis</i> Utah spikeweed	SOC	G2S2	Much branched, loosely clumped perennial (non-flowering)	Clark County, unconfirmed on NAFR or in MOA airspace. Known only from steep sandstone cliffs in desert chaparral vegetation, 4,000-6,500 feet (Mozingo and Williams 1980).
<i>Silene nachtingerae</i> Nachtinger catchfly	SOC, BLM	G2S2	Herb, flowers in June.	Reported as occurring on NAFR, on limestone peaks in pinyon-juniper woodland, above 6,000 feet (TNC 1997).
<i>Smelowskia holmgrenii</i> Holmgren smelowskia	SOC		Tufted perennial with branching crown; flowers June-August	Northern Nye, southern Lander counties, unconfirmed on NAFR or MOA airspace. On cliffs, talus of schist, crevices in calcareous rocks, in montane herb associations, 6,500-11,000 feet (Mozingo and Williams 1980).
<i>Sphaeralcea caespitosa</i> Tufted globe mallow	SOC, BLM	G3S2	Perennial herb from thick, woody crown; flowers May-June	Northeastern Nye County, unconfirmed on NAFR or MOA airspace. On gravelly or sandy limestone soil, in shadscale scrub, 5,000-6,500 feet (Mozingo and Williams 1980).
<i>Townsendia jonesii</i> var. <i>tumulosa</i> Charleston ground-daisy	SOC, BLM	G2T2S2	Rosette-forming perennial; flowers March-June	Clark County, Spring and Sheep ranges; under MOA airspace but unconfirmed on NAFR. On ridges, slopes, saddles, washes and open sites, in montane coniferous forest, 6,500-10,000 feet (Mozingo and Williams 1980; Air Force 1981).

**Table 3.8-2. Special Status Plant Species Known or Likely to Occur on NAFR  
and Under Associated Airspace<sup>1</sup>**  
(page 6 of 6)

<b>Scientific Name Common Name</b>	<b>Regulatory Status<sup>2</sup></b>	<b>Heritage Rank<sup>3</sup></b>	<b>Description, Flowering Period</b>	<b>Distribution and Habitat (reference)</b>
<i>Trifolium andinum</i> var. <i>podocephalum</i> Currant Summit clover	SOC, BLM	G3T1S1	Perennial herb	Unconfirmed on NAFR (other data unavailable) (TNC 1995)
<i>Trifolium rollinsii</i> Rollins clover	SOC	G4T2S2	Perennial herb	Nye County, Toiyabe Range, unconfirmed on NAFR (TNC 1995; BRRC 1997).

1. Based on correspondence from U.S. Fish and Wildlife Service, December 2, 1996, supplemented with additional information compiled by The Nature Conservancy (TNC 1997). Includes species that are known or likely to occur on NAFR and adjacent training areas and which are federally listed, proposed, or candidate threatened or endangered species; federal species of concern; are ranked by The Nature Conservancy (TNC 1997) as critically imperiled; or have been recently discovered on NAFR and are not known to occur elsewhere. See TNC (1995), BLM and Air Force (1987) for additional endemic plant taxa.

2. Status abbreviated as follows:

Federal Status

FC = Candidate for federal listing as threatened or endangered

SOC = Federal Species of Concern, indicating former candidate status and potential for reconsideration in the future.

BLM = listed on Nevada BLM Sensitive Species List (4/97).

State Status

CE = Listed as Critically Endangered by the Nevada Division of Forestry

3. TNC Rankings (TNC 1997) abbreviated as follows:

G = Global rank indicator, based on worldwide distribution at the species level

T = Trinomial rank indicator, based on worldwide distribution at the infraspecific level

S = State rank indicator, based on distribution within Nevada at the lowest taxonomic level

1 = Critically imperiled due to extreme rarity, imminent threats, or biological factors

2 = Imperiled due to rarity or other demonstrable factors

3 = Rare and local throughout its range, or with very restricted range, or otherwise vulnerable to extinction

4 = Apparently secure, though frequently quite rare in parts of its range, especially at the periphery

5 = Demonstrably secure, though frequently quite rare in parts of its range, especially at the periphery

- Funeral Mountain milkvetch (*Astragalus funereus*)
- Gilman milkvetch (*Astragalus gilmanii*)
- Half-ring pod milkvetch (*Astragalus mohavensis* var. *hemigyris*)
- Remote rabbitbrush (*Chrysothamnus eremobius*)
- Sanicle biscuitroot (*Cymopterus ripleyi* var. *saniculoides*)
- Sheep fleabane (*Erigeron ovinus*)
- Pahute Mesa beardtongue (*Penstemon pahutensis*)
- Beatley's phacelia (*Phacelia beatleyae*)
- Parish's phacelia (*Phacelia parishii*)
- Pygmy pore leaf (*Porophyllum pygmaeum*)

Occurrences of these species on NAFR are shown in Figure 3.8-2.

### **3.8.5.2 FISH AND WILDLIFE**

#### ***LISTED, PROPOSED, AND CANDIDATE SPECIES***

Wildlife species discussed in this section are state and federally listed or proposed for listing as threatened or endangered, or are candidates for listing, and are known or expected to occur on NAFR (Table 3.8-3).

#### ***Desert Tortoise***

The Mojave Desert population of the desert tortoise was listed as threatened by the USFWS on April 2, 1990. The decline of this species has been attributed to disease, predation from increased raven populations, collecting, vehicle mortalities, and habitat degradation,

destruction, and fragmentation. The desert tortoise is the only federally listed wildlife species that is resident year-round on NAFR.

The species' range in Clark County is located primarily within the Mojave desert scrub habitat at elevations generally below 4,000 feet. Desert tortoises are expected to occur primarily in the Mojave desert scrub habitat on the South Range. Desert tortoises occur in flat areas, washes, bajadas and valleys and are found in a variety of plant communities including Joshua tree, Mojave yucca, creosote bush, and salt bush scrub, on a variety of soil types.

This species is active primarily in spring (early March through May) and in fall and remains underground in burrows during extremely hot (June through early September) or cold temperatures (October through late February). Tortoises may emerge from their burrows on warm winter days or during the cooler parts of the day during the summer. Tortoise diet includes herbaceous perennial and annual forbs, grasses, and fresh pads and buds of some species of cacti.



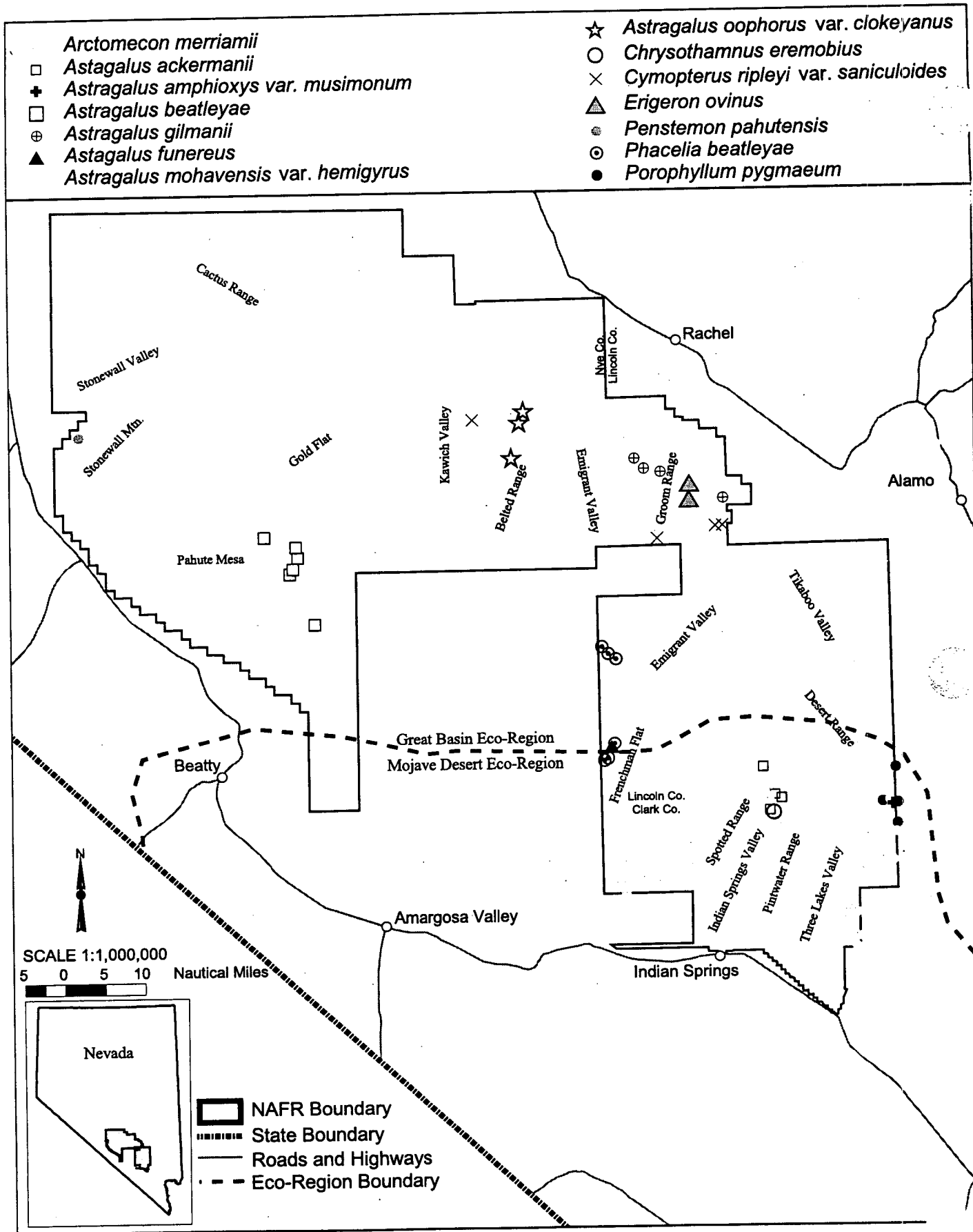


Figure 3.8-2. Occurrence of Special Status Plants on NAFR

**Table 3.8-3. Special Status Wildlife Species Known or Likely to Occur on NAFR and Under Associated Airspace (page 1 of 3)**

Species	STATUS		Occurrence on Range, Overflight Areas
	Federal	State	
<i>Threatened or Endangered Species</i>			
Peregrine falcon ( <i>Falco peregrinus</i> )	E	E	Expected as a rare transient. No records of breeding on NAFR.
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	T	E	Occasional migrant and winter visitor, expected only in low numbers on NAFR; Pahrnagat Valley is a wintering area.
Desert tortoise ( <i>Gopherus agassizii</i> )	T	T	Present in low densities throughout Mojave Desert scrub habitat.
White River Springfish ( <i>Crenichthys baileyi baileyi</i> )	E	-	Under MOA airspace, in Pahrnagat Valley (Lincoln Co.) springs, Muddy River near Moapa, Clark Co.
Hiko White River Springfish ( <i>Crenichthys baileyi grandis</i> )	E	-	Under MOA airspace, in Pahrnagat Valley springs, Lincoln Co.
Pahrump poolfish ( <i>Empetrichthys latos latos</i> )	E	CE	Under MOA airspace at Corn Creek Springs, Clark Co.
Pahrnagat Roundtail Chub ( <i>Gila robusta jordani</i> )	E	CE	Under MOA airspace, in Ash Spring outflow in Pahrnagat Valley, Lincoln Co.
Big Spring Spinedace ( <i>Lepidoma mollispinis pratensis</i> )	T	P	Under MOA airspace, near Panaca in Coyote Canyon, Meadow Valley Wash drainage, Lincoln Co.
Moapa Dace ( <i>Moapa coriacea</i> )	E	CE	Under MOA airspace in Muddy River N of Moapa, Clark Co.
<i>Special Status Species</i>			
Pygmy rabbit ( <i>Brachylagus idahoensis</i> )	SOC		Found in sagebrush communities where stands are dense, alluvial habitat is preferred. Potentially occurs on NAFR.
Hidden Forest Uinta chipmunk ( <i>Eutamias umbrinus nevadensis</i> )	SOC		Sheep Mountains - Hidden Forest at 7,700-8,500 feet, overflowed by MOA airspace.
Pahrnagat Valley montane vole ( <i>Microtus montanus fucosus</i> )	BLM		Found in grassy areas near springs, restricted to Pahrnagat Valley.
Spotted bat ( <i>Euderma maculatum</i> )	SOC	T	Found in various habitats from desert to mountain coniferous forest but always in association with nearby high cliff faces. Observed on the NTS and potentially occurs on NAFR.
Greater western mastiff bat ( <i>Eumops perotis californicus</i> )	SOC		Inhabits rugged canyons with caves, rock crevices, also in buildings. In Nevada, not known to occur north of Las Vegas and therefore unlikely on NAFR.
Allen's big-eared bat ( <i>Idionycteris phyllotis</i> )	SOC, BLM		Typically associated with pine and oak forests. Roosts in caves. Potentially occurs on NAFR.

**Table 3.8-3 Special Status Wildlife Species Known or Likely to Occur on NAFR and Under Associated Airspace**  
(page 2 of 3)

Species	STATUS		Occurrence on Range, Overflight Areas
	Federal	State	
California leaf-nosed bat ( <i>Macrotus californicus</i> )	SOC, BLM		Colonial, roosts in caves and abandoned buildings. Southern boundary of NAFR is the northernmost boundary of this species' range making occurrence on NAFR unlikely.
Western small-footed myotis ( <i>Myotis ciliolabrum</i> )	SOC, BLM		Occurs in a variety of habitats but most common in arid environments. Roosts primarily in caves, buildings, mines or crevices. Observed on the NTS and potentially occurs on NAFR.
Long-eared myotis ( <i>Myotis evotis</i> )	SOC, BLM		Occurs primarily in forests but also less frequently in sage and chaparral habitats. Roosts in cracks in cliffs, hollow trees, caves, mines and buildings. Observed on the NTS and potentially occurs on NAFR.
Fringed myotis ( <i>Myotis thysanodes</i> )	SOC, BLM		Found in desert scrub, shrub-steppe, oak-pinyon and coniferous forest habitats. Roosts in caves, rock crevices and buildings. Observed on NAFR.
Cave myotis ( <i>Myotis velifer brevis</i> )	SOC, BLM		Reaches northern limit in southern Clark County; not known or expected on NAFR. Maternity and nursery colonies in mines, caves, under bridges, migrates south during winter.
Long-legged myotis ( <i>Myotis volans</i> )	SOC, BLM		Typically associated with montane forests but also found in riparian and desert habitats. Roosts in rock crevices in cliffs, cracks in ground, behind loose bark on trees and in buildings. Observed on NAFR.
Yuma myotis ( <i>Myotis yumanensis</i> )	SOC, BLM		Found in areas with trees adjacent to open water. Roosts in caves, tunnels and buildings. Potentially occurs infrequently on NAFR due to little overlap of this species' range and NAFR.
Big free-tailed bat ( <i>Nyctinomops macrotis</i> )	SOC		Occurs in rugged mountainous country; may roost in buildings. Possible on NAFR.
Townsend's big-eared bat ( <i>Plecotus townsendii</i> )	SOC, BLM		Roosts in caves, mines and buildings. Observed on NAFR.
Least bittern ( <i>Ixobrychus exilis hesperis</i> )	SOC		Observed in wetlands of Pahranaagat Valley. Expected in small ponds on NAFR infrequently in small numbers
White-faced ibis ( <i>Plegadis chihi</i> )	SOC		Observed in wetlands of Pahranaagat Valley. Expected in small ponds on NAFR infrequently in small numbers.
Northern goshawk ( <i>Accipiter gentilis</i> )	SOC		Spring and fall migrant in low numbers. No records of breeding on NAFR.
Ferruginous hawk ( <i>Buteo regalis</i> )	SOC		Spring and fall migrant and winter visitor in low numbers. No records of breeding on NAFR.

**Table 3.8-3 Special Status Wildlife Species Known or Likely to Occur  
on NAFR and Under Associated Airspace  
(page 3 of 3)**

Species	STATUS		Occurrence on Range, Overflight Areas
	Federal	State	
Black tern ( <i>Chlidonias niger</i> )	SOC BLM		Observed at wetlands in Pahranaagat Valley. Spring and fall migrant and summer visitor to the region and possibly the NAFR.
Burrowing owl ( <i>Athene cunicularia</i> )	SOC	P	A spring and fall migrant and breeder on the NAFR. Recorded on NAFR in Great Basin desert scrub and expected in slightly disturbed areas.
Phainopepla ( <i>Phainopepla nitens</i> )	BLM	P	A permanent resident of Mojave Desert scrub and desert spring habitats. Observed on NAFR.
Banded Gila monster ( <i>Heloderma suspectum cinctum</i> )		T	Mojave desert scrub habitats in southernmost Nevada.
Chuckwalla ( <i>Sauromalus obesus</i> )	SOC, BLM		Expected in rocky hillsides and rock outcrops within the Mojave Desert scrub community.
Mormon White River Springfish ( <i>Crenichthys baileyi thermophilus</i> )	SOC, BLM	-	Under MOA airspace, in White River-Pahranaagat Valley, Lincoln Co.
Pahranaagat pebblesnail ( <i>Fluminicola merriami</i> )	SOC, BLM		Under MOA airspace in Pahranaagat Valley
Desert monkey grasshopper ( <i>Psychomastix deserticola</i> )	SOC		Listed by USFWS as potentially occurring on NAFR
Pahranaagat naucorid bug ( <i>Pelocoris shoshone shoshone</i> )	SOC, BLM		Under MOA airspace in Pahranaagat Valley
White River wood nymph ( <i>Cercyonis pegala ssp.</i> )	BLM		Under MOA airspace in White River Valley
Notes:	E Endangered T Threatened SOC Federal Species of Concern BLM Nevada BLM Sensitive Species List CE Listed as Critically Endangered by Nevada Department of Wildlife P Protected by the Nevada Division of Wildlife		
Sources:	Air Force 1981, 1994a, 1997g, 1997, 1997e; Burt and Grossenheider 1980; Hall 1946, 1981.		

Females lay one clutch of eggs between April and July and most young hatch in fall, although some clutches may overwinter and hatch in the spring.

Predators on adult desert tortoises include kit fox, badger, coyote, bobcat, mountain lion, and golden eagle. Juvenile tortoises are more likely than adults to be preyed upon by these same predators and also by ravens, skunks, and some species of snakes. Tortoises are preyed upon primarily during times when other food items are scarce. Because of their low density, tortoises are not a primary food source for these predators, but are taken opportunistically.

Based on standardized sign-census techniques, tortoise population densities at the target sites on the South Range are very low to low, relative to other parts of the tortoise's range (USFWS 1997). The USFWS Biological Opinion, issued on February 5, 1997 (amending the earlier Biological Opinion issued on July 19, 1994), estimated that the continuation of current weapons testing and training would degrade a total of approximately 971 acres of disturbed desert tortoise habitat associated with target impact zones, and that this would affect 12 desert tortoises annually (2 killed or injured and 10 captured and removed or displaced). However, the USFWS determined that the continued activities on NAFR would not jeopardize the continued existence of the Mojave population of desert tortoise.

Terms and conditions are included in the Biological Opinion, and are required in order to minimize the take of desert tortoises due to training activities. These include (but are not limited to): a maximum speed limit of 25 mph during the tortoise's active season (March 1 through October 31); the use of a qualified desert tortoise biologist, or, where it is unsafe for the biologist, properly trained explosive ordnance disposal (EOD) personnel, to relocate tortoises away from hazards associated with EOD activities, according to the approved protocol; monitoring and maintaining a tortoise-proof fence at Target 62-6; the prohibition of off-highway vehicle use except for ordnance disposal and removal; implementing a vegetation rehabilitation plan for about 140 acres of degraded tortoise habitat; the transferral of \$50,000 to the Desert Tortoise Habitat Conservation Fund administered by Clark County; and a training program for all contractors and employees to inform them of desert tortoises and the measures required to protect the species.

### *Peregrine Falcon*

The peregrine falcon is a medium-sized, extremely fast-flying bird of prey that is state and federally listed as endangered. This species eats small to medium-sized birds that it catches in flight. Nests are normally located on ledges or "potholes" in cliffs, usually near large bodies of water. This species forages in open country on smaller birds, especially waterfowl and shorebirds. Its nationwide decline in numbers is attributed largely to pesticide contamination of the food chain, illegal capture by falconers, and general human disturbances. Recent reintroduction efforts in many parts of the United States have been relatively successful and numbers are increasing slowly.

The peregrine falcon is an uncommon spring and fall migrant and winter visitor throughout the NRC region and is expected to occur sporadically in low numbers (Air Force 1997b). Peregrine

falcons could be attracted to playas during some years when concentrations of waterfowl or shorebirds are present due to heavy rains or runoff from rapid snow melts.

### ***Bald Eagle***

The bald eagle (*Haliaeetus leucocephalus*) winters in desert valleys in eastern Nevada and along major waterways throughout the state and is federally listed as threatened. The bald eagle typically feeds on fish, but also feeds on black-tailed jackrabbits and carrion in desert habitats. Eagles roost, frequently in groups, in tall trees located in canyons and occasionally in planted groves. The species decline is attributed to habitat loss, human disturbance, pesticide poisoning through the food chain, and shooting. Legislative protection and the curtailment of DDT use have resulted in a significant recovery of bald eagles.

This species is expected to occur on NAFR only sporadically and in small numbers (Air Force 1997d), most likely as a migrant or winter visitor.

### ***OTHER LISTED SPECIES THAT OCCUR UNDER THE MOA AIRSPACE***

Several listed fish species occur under the MOA airspace outside of NAFR, specifically in the White River and Pahrangat Valley (see Table 3.8-3).

### ***OTHER SPECIAL INTEREST SPECIES***

Wildlife species discussed in this section are (1) USFWS species of concern (generally former Category 2 candidates for listing) and Nevada BLM Sensitive Species; (2) species with special interest due to their being large game animals; or (3) wild horses and burros (protected by the Wild Free-Roaming Horse and Burro Protection Act of 1971).

### ***USFWS Species of Concern and Nevada BLM Sensitive Species***

On February 28, 1996, the USFWS revised their list of candidate species under the Endangered Species Act to include only those species for which there is enough information to support a listing proposal. Species that were previously designated as C1 became "candidate" species, and many former C2 species were removed from candidacy and are now referred to as "species of concern." The Nevada State Office of the USFWS has provided a list of species of concern that may occur on NAFR; these species are included in Table 3.8-3. It should be noted that this category does not confer any specific legal protection. However, the Nellis Environmental Management Directorate gives consideration to species of concern in ongoing management of the range and as part of NEPA compliance.

Nevada BLM Sensitive Species are species designated by the State Director, in cooperation with the Nevada Department of Conservation and Natural Resources, that are not already Federally listed, proposed, or candidate species, or State-listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Appendix G.3 includes the complete Nevada BLM

Sensitive Species List as of April 1997, plus a list of proposed additions. All of the vertebrate taxa on the BLM Sensitive Species List that are likely to occur on NAFR or under associated airspace are included in Table 3.8-3; most of these are also USFWS species of concern.

Species of concern and BLM sensitive species that are known or likely to occur on NAFR include 15 species of mammals (12 of which are bats), 7 species of birds, and 2 species of reptiles (Table 3.8-3). According to the bird survey report (Air Force 1997b), a majority of these avian species are expected to occur on NAFR only seasonally in small numbers. The phainopepla is the only common year-round resident, and burrowing owl and ferruginous hawk may breed on NAFR in small numbers. Due to the lack of small mammal surveys there is no evidence concerning the presence of the pygmy rabbit on NAFR. The Hidden Forest Uinta chipmunk is reported in the INRMP (Air Force 1997g) as being present only in elevations above 7,700 feet in the Sheep Mountains. The bat survey report (Air Force 1997a) documents the presence of three sensitive species of bats on NAFR, Townsend's big-eared bat, fringed myotis, and long-legged myotis. Other bat species such as the western small-footed myotis, spotted bat, and the long-eared myotis have been observed on the NTS and are likely to occur on NAFR.

### *Game Animals*

Figure 3.8-3 summarizes big game areas within the NAFR.

Within the Great Basin communities on NAFR, pronghorn antelope inhabit valleys and higher elevation plateaus but can also be found in areas of open pinyon-juniper woodland. They are not generally considered migratory but do move seasonally to locate adequate forage and water. This species requires open expanses with unobstructed views and is primarily found in elevation ranging from 4,000 to 6,000 feet. Available water must be within approximately 1 to 5 miles. Breeding occurs between late July and early October and young are born in the spring. The distribution of pronghorn antelope and other big game is shown in Figure 3.8-3.

Pronghorn antelope are regularly observed east of Cactus Flat on the North Range (Air Force 1997a) and main concentrations are found in the northern portion of Cactus Flat and all of Kawich Valley, with occasional sightings near Stonewall Mountain (BLM 1989). The pronghorn antelope population, estimated as less than 100 animals in 1977 (BLM, DOI, and Air Force 1987), and as 200 animals in the mid-1980s (DOI 1989), is currently on the rise due to the reduction of the wild horse population (Air Force 1997g).

Bighorn sheep were historically found in most of the mountain ranges in Nevada. Hunting, predation by mountain lions, competition with livestock grazing, and diseases spread by domestic sheep have been factors in the decline of this species within its range. In the arid Great Basin and Mojave communities, bighorn sheep are restricted to areas within 2 miles of water during the summer. The need to remain close to water decreases during the remainder of the year, and, as a result, bighorns are found in higher elevations in summer and often select lower elevations in late winter. Regardless of temperatures and water availability, however, bighorn sheep use areas that provide adequate escape cover. The sheep probably select lower elevations for a variety of reasons. First, cooler temperatures and increased humidity reduce water requirements, thus the

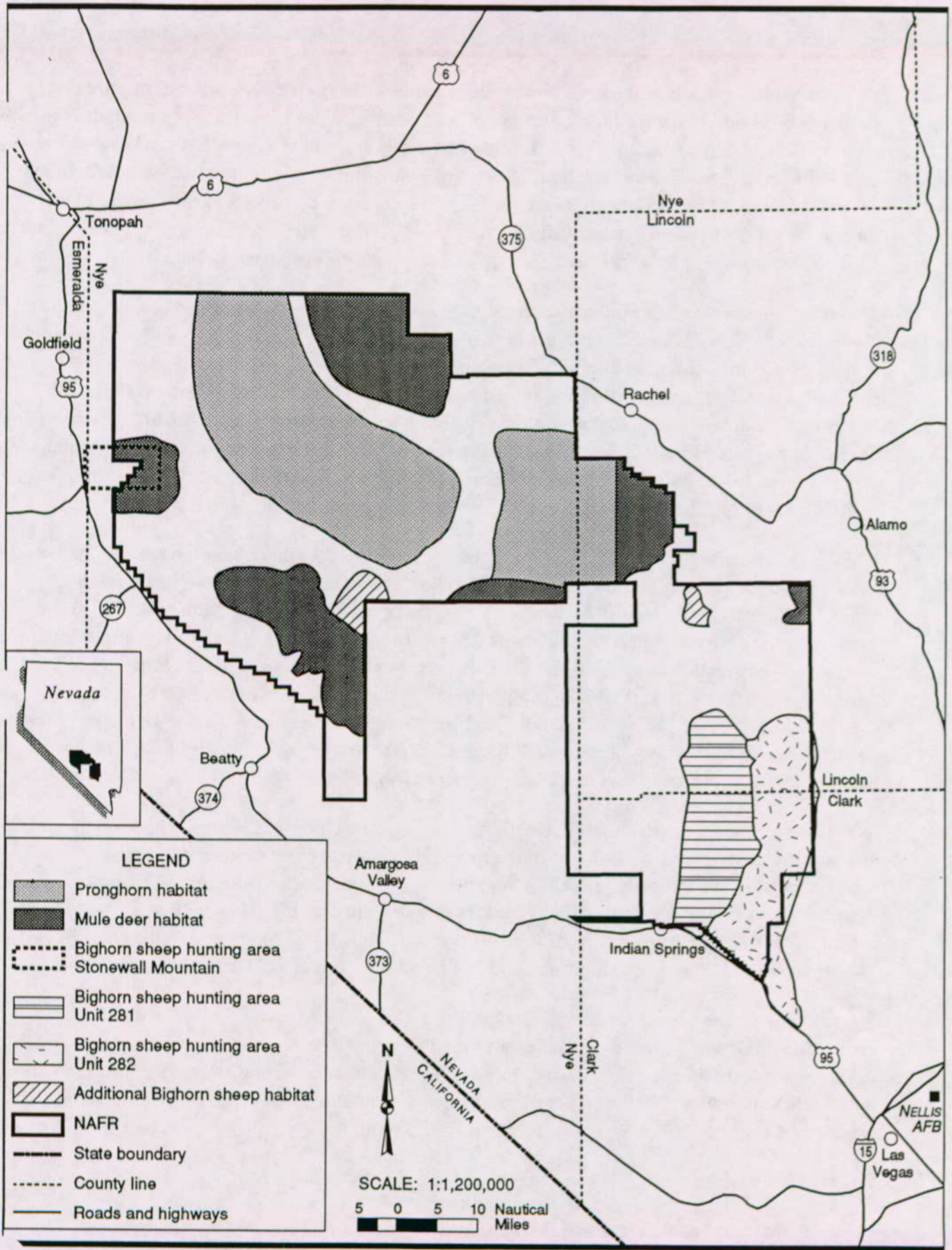


Figure 3.8-3. Big Game Areas within the Nellis Air Force Range



sheep can move farther from permanent water supplies. Second, the water they require can probably be obtained from a larger number of sources, including rain and snow melt, during winter. Also, green herbaceous growth contains a large amount of water that can be used in metabolic processes. Finally, green forage at lower elevations has a higher nutrient content than dormant forage plants at higher elevation. The intake of high-quality forage by pregnant ewes during the late winter and/or early spring months should benefit reproductive success. Bighorn sheep breed in July and August and most young are born in February and March.

This species exhibits a high fidelity to traditional ranges. Current populations of desert bighorn sheep on NAFR are located around the higher elevations on the South Range that overlap portions of the DNWR, including the Spotted, Pintwater, and Desert ranges (USFWS 1998). Desert bighorn sheep also occur near Stonewall Mountain and on the east side of Pahute Mesa on the North Range. Other areas on NAFR that could be expected to support this species include Tolicha Peak, Quartz Mountain, Thirsty Canyon, and the Cactus Range (Air Force 1997a). Desert mountain ranges east of NAFR but under MOA airspace also support desert bighorn sheep, including relatively large numbers in the Sheep and East Desert ranges that are part of the DNWR.

USFWS (1998) survey data indicate that populations of desert bighorn sheep have declined on the DNWR since the 1980s. Based on 1997 data, USFWS estimates a population of 143 sheep in the Pintwater Range, with an adult sex ratio of 0.85 ram per ewe, and production of 0.35 lamb per ewe. The corresponding estimates for the Desert Range are 65 sheep, 0.31 ram per ewe, and 0.31 lamb per ewe. A population of 50 to 60 sheep has been reestablished in the Spotted Range (USFWS 1998). Elsewhere on NAFR, 83 desert bighorn sheep were observed on a one-day survey conducted on January 27, 1995. Most of the sheep were recorded along the western part of the Pahute Mesa in the vicinity of Stonewall Mountain (NDOW 1995). Forty-eight desert bighorn sheep were observed in a similar survey conducted in 1997 (NDOW 1997a).

Mule deer are widely distributed in North America. In the Great Basin area, deer were historically sparse, and grazing by livestock may have resulted in a lower seral stage, increasing the abundance of browse species and allowing mule deer populations to expand. The present distribution of mule deer throughout NAFR is primarily in regions of higher elevations. Mule deer are found in the area surrounding Tolicha Peak; on the Kawich, Groom, and Belted ranges; on Pahute Mesa and Stonewall Mountain; and in the Fallout Hills (DOI 1989; Air Force 1997g).

The mule deer range is divided into seasonal use areas. Summer range includes the higher elevation where water and forage is more available during dry, hot months. During the winter, cold temperatures and snow force deer to lower elevations where they often concentrate in areas with sufficient food and cover. Deer migrate between these seasonal use areas along well established routes. Breeding occurs in fall and early winter.

### ***Wild Horses and Burros***

Horses were native to this continent but became extinct approximately 15,000 years ago. Those present today in the western United States are the result of introductions by Europeans as early as the 1500s. Burros were never native to North America. Their current presence in the western

United States is the result of mining activities in the 1800s. As mining began to decline in the late 19th century, many of these animals were abandoned. Both horses and burros are extremely adaptive and compete with native species such as mule deer, pronghorn, and bighorn sheep. The impacts to water resources and forage on NAFR has been severe in accessible areas at lower elevations. The NAFR Wetlands Survey Report (Air Force 1996c) describes wild horses as the most likely source of impact to NAFR spring resources. The Nevada Wild Horse Range (NWHR) Herd Management Area Plan proposes measures to protect NAFR water resources that include exclusion, restoration, monitoring, and artificial water delivery systems.

Figure 3.8-4 presents the extent of distribution of wild horses during different seasons and the livestock grazing allotments within NAFR.

Wild horses and burros are protected under Public Law 92-195, the Wild Free-Roaming Horse and Burro Act of 1971. Under this act, the BLM and USFS are charged with managing and protecting these animals. With protection, wild horses and burro populations began increasing at a rapid rate. BLM estimated 17,000 horses and burros were present on public lands in 1971 when the Act was passed and by 1976 there were roughly 50,000 animals. The NWHR (Figure 3.10-2) was established in 1962 and is managed by the BLM. The population of wild horses on the NWHR in 1963 was estimated at 200 horses. Their population size was estimated throughout NAFR at close to 5,000 individuals in 1987 (Air Force 1997g) and 8,000-10,000 head in the early 1990s (personal communication, McFadden 1998). The wild horse gather of July 1997 left a total of 526 horses, with a sex ratio of 1 stallion to 3 mares (personal communication, McFadden 1998). Horses are still able to move long distances from the defined NWHR. Future plans include repeated "gatherings" every 3 to 4 years to remove horses from the range and maintain a population size between 600 to 1,000 head, which is the current Appropriate Management Level (AML) for the entire North Range.

The burro population was estimated at 69 individuals in 1980 and increased to a maximum of 195 individuals in 1982. Removals resulted in a decrease of the population so that by 1987 only four burros were recorded on NAFR (Air Force 1997g). Ten to 12 burros were observed on NAFR during the April 1997 aerial surveys (personal communication, McFadden 1997).

### **3.8.6 American Indian Issues Concerning Biological Resources**

Traditional use of plants and animals is an important aspect of American Indian culture. The loss of important species dates to the time of Euroamerican contact with American Indians in the area. At least 364 plants and at least 170 animals important to traditional cultural practices are present on or near NAFR.

The CGTO considers environmental restoration and management programs to be beneficial to traditional cultural resources, although, "specific actions will have direct local impacts" (AIWS 1997).

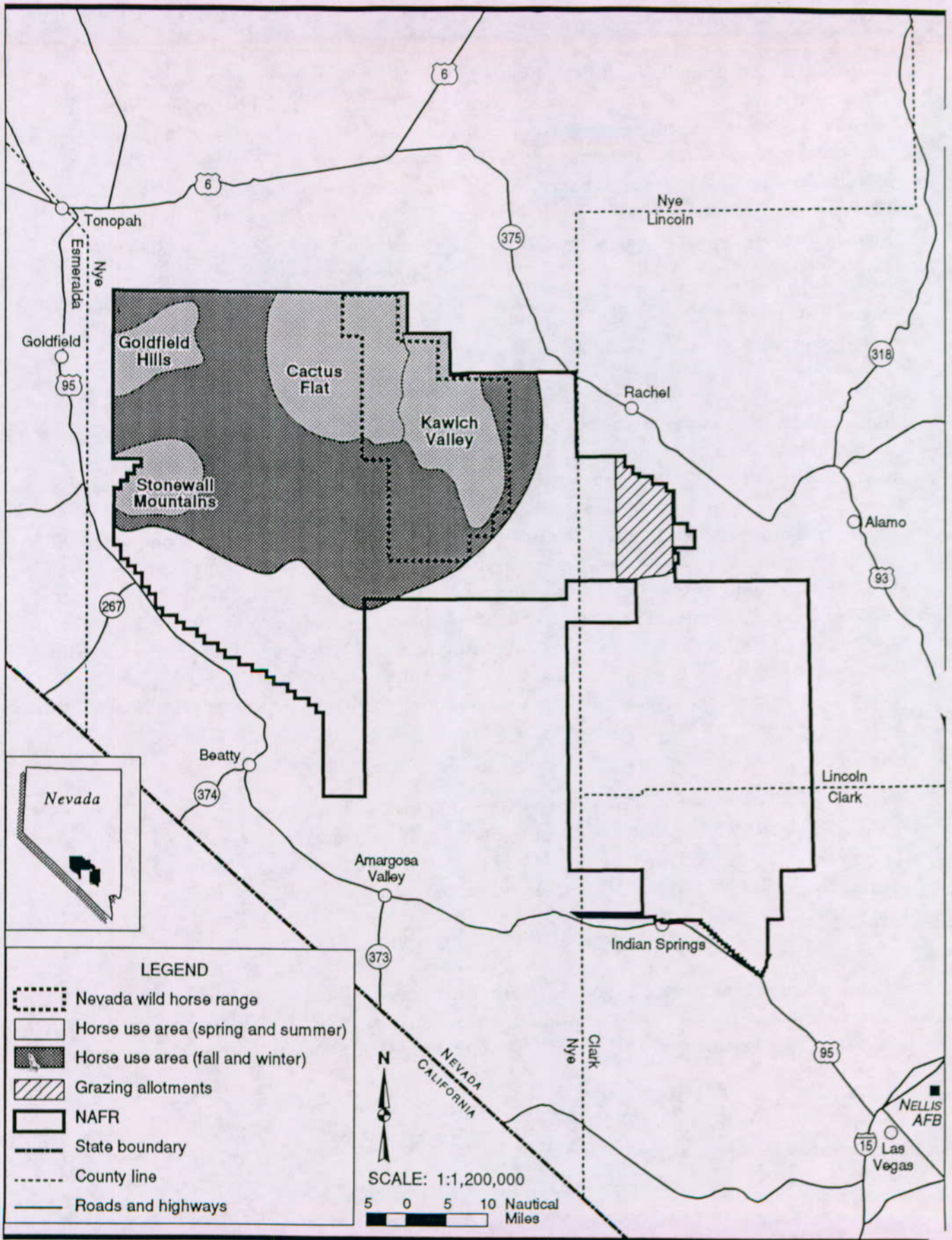


Figure 3.8-4. Wild Horse Range, Use Areas, and Livestock Grazing Allotments within the Nellis Air Force Range

# CULTURAL RESOURCES

**C**ultural resources are sites, buildings, districts, or objects that are important to a culture or community. Cultural resources are divided into three groups:

- Archaeological resources
- Architectural resources
- Traditional cultural resources

Archaeological resources include sites that provide enhanced understanding of prehistoric and historic events. Original tent areas at Indian Springs are examples of historic archaeological resources.

Architectural resources are standing buildings, facilities and other structures. Cabins, outhouses, and other buildings in historic mining towns are examples of architectural resources.

American Indians value traditional cultural resources because of their importance to history, customs, and beliefs. These resources link the community to its past and help American Indians protect their cultural identity. Archaeological sites, rock art, and sacred sites can be of traditional cultural resources.

## CULTURAL RESOURCES

Federal law protects archaeological, architectural and traditional cultural resources if they meet the government's criteria for being listed on the National Register of Historic Places (NRHP) or if they are of special importance to American Indian groups. Federal Preservation Officers, archaeologists, American Indians, and historians work together to decide which resources are eligible for listing on the NRHP. To be listed, a cultural resource must meet at least one of the significance criteria listed below:

- association with events that have made a significant contribution to the broad patterns of our history
- association with the lives of persons significant in our past
- embodiment of the distinctive characteristics of a type, period, or method of construction, or representation of the work of a master, or possession of high artistic values, or representation of a significant and distinguishable entity whose components may lack individual distinction
- yield, or likelihood to yield, information important in history.

*NAFR has restricted access for safety and security reasons. This has contributed to preservation of significant historic and early American Indian resources that qualify for the NRHP.*

A significant cultural resource must also have integrity of location, design, setting, materials, workmanship, feeling, and association



## 3.9 CULTURAL RESOURCES

### 3.9.1 Definition of Resource

Cultural resources are districts, sites, buildings, structures, or objects considered to be important to a culture, subculture, or community for scientific, traditional, religious or any other reason. For this LEIS, cultural resources are divided into three major categories: archaeological resources, architectural resources, and traditional cultural resources. Cultural resources for all three categories occur in ROI One where direct impacts could occur; in ROI Two where aircraft noise occurs but where access restrictions have contributed to resource protection; and in ROI Three where aircraft noise can occur.

Archaeological resources are locations where human activity has measurably altered the earth (e.g., hearths, rock alignments, foundations) or left deposits of physical remains (e.g., arrowheads, bottles). The term "prehistoric" is commonly understood to mean cultural resources that predate the beginning of written records. In southern Nevada, these resources are associated with American Indians before contact with Euroamericans, and range from isolated stone tools and rock alignments to complex habitation and rock art sites. The term "historic" is generally meant to include any cultural resource that postdates Euroamerican contact with American Indians. Historic archaeological resources in southern Nevada include campsites; the remains of roads, railroads, power lines, fences, and trails; collapsed buildings; dumps; and a variety of other features.

For the purposes of this LEIS, the terms "American Indian" and "early American Indian" are used rather than prehistoric, except where a law or regulation is quoted. "American Indian" is used in this document in preference to "Native American," following the example set by the AIWS (1997).

The distinction between early American Indian and historic time periods is now viewed as somewhat arbitrary since members of the American Indian population in southern Nevada, while performing some traditional activities, may still create artifacts and features that archaeologists might unintentionally label as "prehistoric." Furthermore, many American Indians do not distinguish "prehistoric" from "historic," but instead, based on their oral traditions, see one long continuous history.

The term "historic" will be retained in this LEIS for all archaeological sites that clearly post-date Euroamerican contact with American Indians. Most of these date to the 19th and 20th centuries and are of Euroamerican origin.

Archaeological resources are usually further classified as either sites or isolates on the basis of quantity, density, and type of cultural material. Over the years of recording cultural resources in southern Nevada and on NAFR, the distinction between sites and isolates has changed. Today on NAFR, archaeological sites are defined as having two or more artifacts or a feature, while isolates contain only one artifact and have no features. The purpose of such a distinction

is tied to management of cultural resources. Isolates contain relatively little scientific information. Many sites and isolates recorded on NAFR in the past do not fit these definitions.

For this LEIS, architectural resources are defined as standing buildings, facilities and other structures potentially having historical, aesthetic, or scientific significance. On NAFR, all known architectural resources are historic in age. Early American Indian rock alignments and similar features are considered archaeological resources.

Traditional cultural resources are resources associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community. In Nevada these are usually associated with modern American Indian groups. Traditional American Indian resources may include archaeological resources; locations of important historic events; sacred areas; sources of raw material used to produce tools and sacred objects; traditional hunting, gathering, or meeting areas; native plants or animals; prominent topographic features; and other elements of the natural environment. American Indians may consider these resources essential for the persistence of their traditional culture.

Under federal regulation (36 CFR 60.4), only significant cultural resources warrant consideration with regard to adverse impacts resulting from a federal undertaking. Significant archaeological, architectural, and traditional cultural resources include those that are listed in, or determined eligible for nomination to, the National Register of Historic Places (NRHP), which was created by the National Historic Preservation Act (NHPA). The significance of archaeological and architectural resources must be evaluated according to NRHP eligibility criteria (36 CFR 60.4). Determinations of eligibility are made by the lead federal agency (in the case of the Nellis LEIS, this would be the Air Force) in consultation with the State Historic Preservation Officer (SHPO). According to these criteria, "significance" is present in districts, sites, buildings, structures, and objects:

- a) "that are associated with events that have made a significant contribution to the broad patterns of our history; or
- b) that are associated with the lives of persons significant in our past; or
- c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d) that have yielded, or may be likely to yield, information important in prehistory or history." (36 CFR 60.4)

An archaeological or architectural resource that is eligible to the NRHP is called a historic property. To be listed in or determined eligible for nomination to the NRHP, a cultural resource must meet at least one of the above criteria and must also possess integrity. Integrity

is defined as the authenticity of a resource's historic identity as evidenced by the survival of physical characteristics that existed during the resource's period of occupation or use. The NRHP recognizes seven aspects or qualities that, in various combinations, define integrity: location, design, setting, materials, workmanship, feeling, and association. Integrity of location means that the cultural resource has not been moved. Integrity of design, materials, and workmanship means that the resource's original building materials, plan, shape, and design elements remain intact. Integrity of setting means that the surrounding landscape remains largely as it was during the resource's period of significance. Integrity of feeling and association means that the resource retains a link to an earlier time and place and is able to evoke that era.

Significant archaeological or architectural resources usually must be at least 50 years old; however, certain structures associated with more recent, exceptionally important historic events (e.g., the Cold War or the development of nuclear energy) also may be considered eligible for nomination to the NRHP. Cultural resources are also usually considered eligible in the context of existing knowledge about the region, culture, property type or other set of characteristics represented by the resource. The existing knowledge is often summarized into historic contexts. Historic contexts organize information so that specific research questions can be pursued and the resulting information interpreted. Archaeological isolates, because of their small size and limited information potential, are not considered eligible for nomination to the NRHP by the Nevada SHPO.

Certain categories of traditional cultural resources, such as ancestral settlements or petroglyph and pictograph sites, may be protected through their eligibility to the NRHP. For this LEIS, if a traditional cultural resource has been determined to be eligible for nomination to the NRHP, it is called a traditional cultural property (TCP). On the other hand, natural features and spiritual locations may not be addressed in historic preservation legislation if their historic use cannot be documented; if the resource does not have an integral relationship to traditional cultural practices and beliefs; if the present condition is such that the relationships no longer survive; if the resource's boundaries cannot be delineated; or if the resource does not meet the NRHP significance and integrity criteria listed above.

However, even though a traditional cultural resource may not be considered significant according to NRHP criteria, it may still have importance to a particular group, such as an American Indian tribe or band. The management of some traditional cultural resources may also be affected by provisions of the Native American Graves Protection and Repatriation Act (NAGPRA), American Indian Religious Freedom Act (AIRFA) and EO 13007, Indian Sacred Sites.

Also, a single traditional cultural resource may be important for more than one reason. For example, one piñon camp on NAFR may be important to American Indians as (1) a spiritual location; (2) a link to the group's ethnic identity; (3) a location to teach children about traditional beliefs and practices; (4) a former living site; (5) a traditional use site; (6) a meeting place for subsistence, social or ceremonial purposes such as marriages or communal rabbit



hunts; and (7) a location traditionally considered the property of one group (personal communication, Myhrer 1997).

### 3.9.2 Jurisdictional Responsibilities

The Air Force is not the only federal agency responsible for cultural resource management on NAFR. The NHPA requires all federal agencies to weigh historic preservation and balance it with other public interests, including the agencies' missions. Two sections of the NHPA are especially pertinent to the proposed NAFR military land withdrawal renewal. Section 110 of the NHPA requires action on the part of an agency to preserve historic properties owned or controlled by the agency. This includes identification, evaluation, NRHP nomination and protection of historic properties. Section 106 of the NHPA requires that federal agencies take into account the effects of any undertaking on historic properties (ACHP and GSA 1994).

When a single federal agency has jurisdiction over land or an undertaking, then that agency is responsible for all aspects of the NHPA, including complying with Sections 106 and 110. However, when more than one federal agency is involved in land management or an undertaking, responsibility for complying with NHPA is usually resolved through an MOU. Some MOUs specify interagency cooperation (Air Force 1997i).

Although the BLM has overall management responsibility for the portions of NAFR not included in the DNWR (managed by USFWS), the land withdrawal gives the Air Force jurisdiction (Air Force 1997i). The Air Force has responsibility for Section 106 actions on NAFR. The Air Force also conducts all Section 110 activities and NAGPRA consultation on the North Range portion of the NAFR. On the South Range lands within the DNWR, the USFWS conducts Section 110 activities and NAGPRA consultation. Other agencies have responsibilities as outlined in Memoranda of Agreement or Understanding and Letters of Agreement (Air Force 1996a). For example, on the North and South Ranges, those areas not jointly used by the Air Force and another agency (e.g., DOE or USFWS) are the sole responsibility of the Air Force. These responsibilities include compliance with both Sections 106 and 110 of the NHPA.

On the North Range, DOE manages the TTR and Pahute Mesa. DOE is responsible for all aspects of cultural resource management within the lands under its jurisdiction. Also on the North Range, the NWHR is managed under an MOU between the Air Force and BLM.

### 3.9.3 Methods

At the inception of the environmental impact analysis process (EIAP) for the Air Force withdrawal renewal, the Air Force initiated consultation with the Nevada SHPO. The Air Force noted that one of its requirements, under AFI 32-7065, *Cultural Resources Management*, would be the development of a cultural resource management plan (CRMP) for NAFR. As part of the CRMP preparation, in 1995 and 1996 the Air Force completed a comprehensive literature review, examining records at the Southern Nevada Repository for Site Records, Museum of Natural History, University of Nevada at Las Vegas (UNLV); the Nellis AFB Environmental

Management Directorate; and Federal Register volumes. Discussions were held with records managers at the Las Vegas District BLM; Nevada State Museum and Historical Society Special Collections of the James R. Dickinson Library; Realty Records at the U.S. Army Corps of Engineers, Los Angeles District; and the office of the Nellis AFB historian. From these sources, the Air Force compiled a list of cultural resources recorded within Nellis AFB and NAFR (Air Force 1997c). Thus, it was not necessary to repeat the process for the LEIS. The CRMP (Air Force 1997c) provides most of the baseline information necessary for this LEIS. The CRMP discusses types of areas where cultural resources are expected and presents historic contexts for the NRHP eligibility evaluation of cultural resources.

The existing information about cultural resources on NAFR has several limitations. First, according to the CRMP (Air Force 1997c), several hundred cultural resources recorded in the past as archaeological sites would today be considered isolates by the Air Force and the Nevada SHPO. By definition, this automatically excludes them from NRHP eligibility. However, some of the isolates could potentially still be considered significant traditional cultural resources. Second, most records for cultural resources on NAFR do not include enough information to evaluate their NRHP eligibility. Finally, approximately half the site records do not meet modern site recording standards. Thus, although over 1,800 cultural resources are recorded on NAFR, perhaps fewer than 1,200 would be considered sites by today's standards, and of these, fewer than 600 have been adequately documented to evaluate NRHP eligibility (Air Force 1997c).

General information on the numbers of previously recorded cultural resources beneath the affected airspace outside of NAFR was obtained from the Southern Nevada Repository for Site Records, Museum of Natural History, UNLV.

Despite some deficiencies, enough data exist to characterize archaeological and architectural resources on NAFR and on the land under the MOA airspace. Although there are problems with consistency, the data show that there are numerous documented cultural resources, many of which are potentially eligible for nomination to the NRHP. Thousands of unrecorded sites also exist in the area.

In the NARD (AIWS 1997) created for use with the Nellis LEIS, representatives of American Indian groups have discussed traditional cultural resources. The NARD was prepared by representatives of the Southern Paiute, Western Shoshone, Owens Valley Paiute and Shoshone, and the Las Vegas Indian Center. They represent the CGTO, which is made up of the following tribes and official American Indian organizations (AIWS 1997):

- Southern Paiute
  - Kaibab Paiute Tribe, Arizona
  - Paiute Indian Tribes of Utah
  - Moapa Band of Paiutes, Nevada
  - Las Vegas Paiute Tribe, Nevada

- Pahrump Paiute Tribe, Nevada
- Chemehuevi Paiute Tribe, California
- Colorado River Indian Tribes, Arizona
  
- Western Shoshone
  - Duckwater Shoshone Tribe, Nevada
  - Ely Shoshone Tribe, Nevada
  - Yomba Shoshone Tribe, Nevada
  - Timbisha Shoshone Tribe, California
  
- Owens Valley Paiute and Shoshone
  - Benton Paiute Tribe, California
  - Bishop Paiute Tribe, California
  - Big Pine Paiute Tribe, California
  - Lone Pine Paiute Tribe, California
  - Fort Independence Paiute Tribe, California
  
- Mojave
  - Fort Mojave Indian Tribe, Arizona
  
- Other Official Indian Organizations
  - Las Vegas Indian Center, Nevada

The Air Force is presently corresponding with American Indians on the location of specific traditional cultural resources on NAFR. American Indians have identified a number of sensitive areas throughout southern Nevada. "Cultural resources are not limited to archaeological or historical remains of native ancestors, but include all natural resources, as well as geological formations contained throughout the region ... [including] plants and animals ... [and] natural landforms [that] mark locations that are significant for keeping the historic memory of American Indian people alive and for teaching children about their culture (AIWS 1997). Traditional cultural resources may include physical features of the environment, such as springs and caves, or biological features, such as nesting areas, that would typically not be recorded by archaeologists. The NARD (AIWS 1997) also points out that the significance of an archaeological resource, as measured by archaeologists using NRHP criteria, will not necessarily correspond to the resource's spiritual significance to an American Indian. Important plant and animal resources are listed and described in the NARD (AIWS 1997).

Consultation between the Air Force and the CGTO are part of the Native American Interaction Program (NAIP) initiated by the Air Force (Air Force 1997c). A primary purpose of the Native American Interaction Program is for the Air Force to establish working relationships with regional tribal members. This should facilitate the Air Force's compliance with laws pertaining to American Indian rights concerning traditional cultural resources and archaeological

resources located on Nellis lands, including NAFR. Including American Indians in identifying and evaluating resources, and in reviewing environmental documents is expected to create a stronger method of regular formal and informal consultation. It provides American Indians with a forum to request access to certain resources and still allows the Air Force to consider mission safety and security requirements.

Another purpose of the NAIP is to identify specific areas and locations to be designated for TCP protection. This would help the Air Force plan range management to consider the importance of the traditional cultural resources. The CGTO is concerned that sharing detailed traditional cultural resource information with non-Indians could expose the cultural resources to vandalism or other disturbances (AIWS 1997). The Air Force understands the importance of this information, and is committed to confidentiality.

### **3.9.4 Regional Overview**

#### **3.9.4.1 EARLY AMERICAN INDIAN HISTORY**

Human inhabitants of the southern Great Basin 10,000 to 7,000 years ago lived in a wetter, more lush environment than exists there today, although as the period ended the Pleistocene lakes were drying and the climate was becoming more arid (Warren and Crabtree 1986; Air Force 1997c). Subsistence centered around hunting, especially big game species. This early period is characterized by stemmed, leaf-shaped, and lanceolate points. Sites from this period are scarce, and generally consist of low density scatters of stone flakes and tools. They are often located along rivers, streams and the margins of playas or lakes.

An extremely arid environment characterized the period from 7,000 to 4,000 years ago. Sites from this period are still located along stream channels, but now they also appear more commonly at springs, quarry areas, and rockshelters. Short-stemmed projectile points are typical of this period. The presence of grinding stones may indicate increased reliance on plant foods to supplement a diet that included deer, antelope, rabbit, tortoise, and chuckwalla (Warren and Crabtree 1986; Air Force 1997c).

From 4,000 to 1,500 years ago, a moister climate accompanied a change in settlement. Occupation sites are located in valley bottoms. Sites are also found in rockshelters. In some caves rock art depicts bighorn sheep pursued by hunters using spear throwers and darts. The artifact assemblage includes a variety of projectile points, mortars and pestles, and an increase in groundstone artifacts. Perishable artifacts found in dry caves include baskets, sandals, cordage, and figurines made from split twigs (Warren and Crabtree 1986; Air Force 1997c).

Sites from 1,500 to 800 years ago are found along rivers and along the lakes that formed as a result of the slightly moister climate of this period. People still practiced general seasonal movement through environments that would not support more permanent settlement. Artifacts include smaller projectile points, probably reflecting a change from spear thrower and dart to bow-and-arrow. During this period there was a strong influence from cultures located farther east, including the introduction of agriculture. This influence is reflected in artifacts and

features, such as slab-lined pits, pottery, and food-grinding implements. There is also evidence for wide-spread trade (Warren and Crabtree 1986; Air Force 1997c).

From 800 to 150 years ago, the Southwest influence waned. Small projectile points, twined and coiled basketry, and ceramics resemble those associated with the 19th century American Indians of the region. During this period, trade continued, although the focus shifted to the California coast. The period was characterized by hunting and collecting, and seasonal movement to different environmental zones. Cultivation was practiced in some areas. The end of this period was marked by Euroamerican settlement, and the removal of most American Indians to reservations (Warren and Crabtree 1986; Air Force 1997c).

#### **3.9.4.2 RECENT AMERICAN INDIAN HISTORY AND EARLY EUROAMERICAN HISTORY**

The recent American Indian history of southern Nevada is documented in the written records of Euroamerican explorers and in the reports of ethnographers who worked with the Mojave, the Chemehuevi, the Southern Paiute, and the Western Shoshone, and the Owens Valley Paiutes and Shoshones.

When Spanish missionaries entered southern Nevada in the 18th century, they were guided by the Mojave people who lived in villages along the lower Colorado River (Bancroft 1981). The Mojave people are known to have lived in the Mohave Valley since before contact with Euroamericans (Stewart 1983). They raised maize, beans, pumpkins and melons in the bottomlands of the river. Crops were supplemented by wild plants, fishing, and hunting. This way of life continued until the 1820s when Euroamerican fur traders, trappers, and explorers began traveling through the area. Tensions between the two cultures escalated until the late 1850s when a U.S. military outpost, Fort Mojave, was established and the native inhabitants were defeated (Stewart 1983). The Mojave people now live primarily in two areas along the Colorado River: The Mojave at Fort Mojave Reservation in the Mohave Valley, and the Mohave at the Colorado River Reservation farther south (Stewart 1983).

A Spanish mission route through southern Nevada, from Black Canyon to Goodsprings and Mesquite Valley, was established in 1829. This route, known as the Old Spanish Trail, passed through the Las Vegas Valley south of NAFR (Elliott 1987). It was used regularly by Mexican traders of livestock and other goods. Some traders captured native women and children, primarily Southern Paiutes, and sold them into slavery in New Mexico. Mormon settlement in southern Nevada ended the slave trade and Mormon missions were established among the Moapa and Las Vegas people (Kelly and Fowler 1986). Eventually Mormon settlements displaced Southern Paiutes from their favored lands for gathering and growing crops of maize, beans, pumpkins, and melons. Southern Paiutes retaliated with raids against settlements and travelers. In 1872, the Moapa Reservation, covering approximately 2,496,000 acres, was established north of the Old Spanish Trail. The reservation was expanded in 1874 and the Utah Southern Paiute agreed to move to the Moapa Reservation along with the Moapa people. The reservation was reduced to approximately 1,000 acres in 1875 (Kelly and Fowler 1986), and expanded to more than approximately 70,000 acres in 1980.

During the 19th century, the nomadic Chemehuevi people (Miller 1983) moved into Mojave lands along the river. They assumed lifeways similar to the Mojave people and farmed along the river in what became known as the Chemehuevi Valley. During the 1800s, the Chemehuevi came into conflict both with Euroamerican settlers and with Mojave people. The U.S. government attempted to move the Chemehuevi to the Colorado River Reservation, but residual conflicts with the Mojave people, also residing there, prevented this until the early 20th century. A separate Chemehuevi reservation was established in 1907 on the Colorado River north of Parker, Arizona (Kelly and Fowler 1986). A few families in the Chemehuevi Valley were successful cattle ranchers until 1939 when Parker Dam was built and most of their lands flooded (Kelly and Fowler 1986). The Chemehuevi now reside on the Colorado River Reservation near Parker, Arizona as members of one Colorado River Indian Tribe, and on the Chemehuevi Reservation at Lake Havasu.

The Southern Paiute and Western Shoshone people who lived in southern Nevada at the time of Euroamerican settlement spoke dialects of a common language. They led a nomadic life, traveling to collect seasonally available plants, animals, and water. In winter, family groups gathered at camps in sheltered locations where they stored winter food supplies like bulbs, seeds, agave root, mesquite pods, and piñon nuts. In spring, the camp dispersed in search of early greens and tubers. Animal resources included rabbit, tortoise, chuckwalla, a variety of small rodents, lizards and insects. Antelope, bighorn sheep, deer and elk were taken when available (Air Force 1997g).

Oral histories describe the locations of Western Shoshone winter villages and encampments, dating to the late 1800s, on or near what is now NAFR (Steward 1938). These included one and two family settlements, as well as several clusters of winter villages and encampments (Air Force 1997c). Western Shoshone reservations were established north of the Nellis area in Nye County at Duckwater and Yomba.

Steward (1938) recorded winter village and camp locations of some western Shoshone groups in southern Nevada. None were located in what is now the South Range. Four were on the North Range. Several others of these were outside the boundary of the North Range.

### **3.9.4.3 EUROAMERICAN HISTORY**

Although the Spanish explored the area that was to become the southwestern United States beginning in the early 16th century, there were no known expeditions through southern Nevada until an attempt to establish a trade route between Yuma, Arizona, and the California coastal missions. This route saw limited use after the Quechan uprising of A.D. 1781. The Spanish did not reestablish a presence in southern Nevada until 1829, when the more successful Spanish Trail was established (Air Force 1997c). This trail ran south of NAFR.

The first Euroamericans to have crossed Nevada in pursuit of furs were in the party of Jedediah Strong Smith in 1826-1827. Although their exact route is uncertain, they probably passed north of NAFR. Smith returned in 1828 and crossed the region to the south, near the Colorado River. Other expeditions, including a Hudson's Bay Fur Company party led by Peter Skene Ogden

and the Walker-Bonneville expedition, entered the Great Basin from the northeast, and stayed well north of the NAFR region. The pace of exploration picked up in the 1840s and 1850s, as John C. Fremont and others traveled through the area (Air Force 1997c; Elliott 1987).

After the explorers came prospectors and settlers. Members of the loosely organized Death Valley, or Manley, group (Elliott 1987) traversed the NAFR in late 1849. Their path through the North Range area crossed between the Belted and Groom ranges to what is now called Emigrant Valley. A group led by Brier passed Tippihah Spring and through Fortymile Canyon. This trail, known later as the Emigrant Trail or Brier Route, became part of the route for mail service between Salt Lake City and Los Angeles, with relay stations at Whiterock Spring and Fortymile Canyon (Elliott 1987).

The Mormons traversed the NAFR region as part of their explorations for areas to settle, eventually establishing the Mormon Road between Salt Lake City and San Bernardino. They built the Mormon Fort in 1855 along the road at Las Vegas, with other settlements at Callville, Goodsprings, and Moapa (Air Force 1997c, Elliott 1987).

Among the Euroamerican settlers in the NAFR region were those who came in search of mineral resources. They were soon followed by traders and merchants with goods and services to support the miners. Other expeditions explored transportation routes between mining districts and supply centers. The Army also explored this portion of the West, and the General Land Office conducted cadastral surveys (Air Force 1997c, Elliott 1987).

The mining industry began a major expansion in the NAFR region in the early 1900s, when railroads, motor vehicles and roads improved access to processing locations and markets. Copper, gold, gypsum, lead, limestone, magnetite, manganese, mercury, sand, silver, tungsten, turquoise, and zinc have all been mined on or near NAFR (Air Force 1996g).

Las Vegas began in 1905 as a small town along the San Pedro, Los Angeles and Salt Lake (SPLA&SL) Railroad (Elliott 1987). It was linked to the Tonopah and Goldfield lines in 1906 and 1907. The Las Vegas and Tonopah (LV&T) Railroad crossed what would become the southern periphery of the South Range, east of Indian Springs. Other railroads in the region (that do not cross NAFR) were the Tonopah & Tidewater and the Bullfrog & Goldfield. In addition to Las Vegas, Indian Springs station provided supplies to the NAFR region. Large-scale ranching was practiced throughout much of NAFR. On the North Range, Gold Flat and the Pahute and Rainier mesa areas in particular were known as grazing locations (Elliott 1987). The South Range also supported ranching activities.

The mining boom in the region of Tonopah and points south went bust early in the 1910s, with the result that many towns and railroads suffered economic setbacks (Elliott 1987).

In Nevada, gambling was legalized in 1931. Jobs provided by the Works Projects Administration made significant contributions to the employment of workers, and in southern Nevada, construction of Hoover Dam had a major effect on the economy (Air Force 1997c, Elliott 1987). However, when the dam was finished in 1935, the result was massive

unemployment and a slumping economy. It would take World War II to bring the state back to economic health (Air Force 1997c). Supplying minerals and other earth resources for the war effort formed a significant portion of the resurgent economy.

Beginning in October 1940, the land that was to become NAFR was gradually accumulated through EOs, the first of which, E.O. 8578, was issued by President Franklin D. Roosevelt. The original range was augmented by additional public land transfers (Air Force 1997c). The central portion of the range was transferred over the period from 1952 to 1967 to the Atomic Energy Commission to form the NTS. This split NAFR into the North and South Ranges (Office of History 1994).

Grazing had been allowed to continue on the range from its inception in 1940, but between 1959 and 1965 the Air Force extinguished all remaining grazing privileges and mineral rights. Grazing on the land withdrawn in 1986 continued until those permits expired or were purchased by the Air Force. With the withdrawal of the Groom Range and Safety and Security Buffer grazing in these areas also ended (Air Force 1997i). Mining claims within the Groom Mountain Withdrawal (PLO-100-338) continue to be recognized (see section 3.10.1)

NRC and NAFR provided the airspace and ground targets to support air combat training provided by NAFB. The Air Force forged cooperative agreements with DOE, USFWS and BLM to make use of NAFR more efficient (Air Force 1994b).

### **3.9.5 Nellis Range Complex**

#### **3.9.5.1 ARCHAEOLOGICAL RESOURCES**

Approximately 5,000 archaeological resources have been recorded under MOAs that define the limits of the airspace associated with NAFR. These consist of an estimated 600 within Clark County, 2,400 within Lincoln County, and about 2,000 within Nye County. Within Clark County, only one of these archaeological sites is listed on the NRHP. The site is located on NAFR as well as under the airspace. In Lincoln County, two archaeological districts are listed on the NRHP. In Nye County, one NRHP site is located under the airspace, within the boundaries of the NTS (NRHP 1996). Most of the recorded archaeological sites have not been evaluated for NRHP eligibility (personal communication, Myhrer 1997).

Because most of the land within the NRC has not been surveyed for cultural resources, it is likely that tens of thousands of archaeological sites remain to be discovered. A significant portion of these undiscovered sites are probably eligible for nomination to the NRHP.

#### **3.9.5.2 ARCHITECTURAL RESOURCES**

Mining settlements, supply depots, and early use of Nellis AFB all yielded structures that are architectural resources, some of which are potentially NRHP-eligible. The airspace of NRC (ROI Three) overlies more than 100 known historic ghost towns, with most containing architectural features. At least 15 mining districts are within NAFR itself and are considered



eligible for nomination to the NRHP (Air Force 1997c). Also within NAFR is a portion of the LV&T Railroad bed and at least three historic roads.

Thirteen Cold War cultural resources related to Weapons and Tactics Center operations and the Threat Facility training program have been documented on Nellis AFB (Lowe et al. 1994), under the MOA airspace, but outside NAFR. Two of these (a maintenance hangar and the weapons school) are NRHP-eligible (Air Force 1997c).

One NRHP-listed building in Clark County is located under the existing MOAs. Lincoln County has one historical district and three buildings under the airspace that are on the NRHP.

### **3.9.5.3 TRADITIONAL CULTURAL RESOURCES**

From the perspective of Indian people, traditional cultural resources can be viewed as interdependent combinations of plants, animals, minerals, and the elements. These resources are bound together by function and proximity (Stoffle et al. 1996) and by their use and relationship to the people (AIWS 1997). Traditional cultural resources identified in the region around NAFR (AIWS 1997) include a range of environmental elements. These resources include places of power and ceremony such as the center of the Southern Paiute holy land, rock art locations, quarrying locations, mineral springs used for curing, locations of food and medicinal plants, and important crossroads of trails used by Indian people (AIWS 1997). The core area of a large Indian agricultural district is located just outside NAFR but partially under its associated airspace. In this district, lands next to springs and streams were farmed, while the nearby uplands were used for pine nut gathering and hunting. The area was a gathering place for trade and ceremonies, and local hot springs were used for curing (AIWS 1997).

The NARD (AIWS 1997) identifies 12 such general areas. The specific locations of these areas are not presented in this document in the interest of maintaining confidentiality. Those that occur within the NRC but at least partly outside NAFR include the following:

**Area 10.** This area is not on NAFR, but is under the associated airspace. It includes hot and cold springs, rock art, and over 100 sites (AIWS 1997).

**Area 11.** This area is located primarily outside both NAFR and NRC airspace, but NAFR may include portions of it. Within this area Indian people collected food, farmed, and conducted trade and ceremonies (AIWS 1997).

**Area 12.** Located far from NAFR, but still within the airspace boundaries, this area includes 10 plant species, animal species, and rock shelters identified by American Indians (AIWS 1997).

### **3.9.6 Nellis Air Force Range**

#### **3.9.6.1 ARCHAEOLOGICAL RESOURCES**

Although there have been over 60 years of archaeological investigations on NAFR, most work has occurred in the past two decades. Approximately 2.3 percent of NAFR has been surveyed for the presence of cultural resources. Over 1800 cultural resources have been identified and recorded since the 1930s, including early American Indian village sites, historic mining towns and smaller sites and isolates. Table 3.9-1 summarizes the survey coverage by range. The number of acres surveyed is compared to the total number of acres in each area, percentage of area surveyed, and the number of cultural resources found.

The results of some previous surveys may not accurately represent the number, density or patterning of all cultural resources on NAFR. Many of the large-scale surveys conducted in the past used techniques that are no longer considered adequate by Nellis AFB staff. For example, cultural resource recording standards of the past did not specifically require collecting the variety of site and environmental data necessary today to evaluate the NRHP eligibility of a resource. These earlier techniques included surveying areas known or expected to contain significant cultural resources, with the result that many important resources were identified. Smaller sites or sites in areas of low site density were less likely to be documented. Nonetheless, the variable quality of the data, older survey records and reports still provide enough information about NAFR cultural resources to make general statements about resource densities, condition, and sensitivity for the presence of previously unrecorded cultural resources throughout the range. More recent surveys provide the data necessary to evaluate NRHP eligibility, and many have been conducted in areas used by the Air Force.

On the North Range, about 2.7 percent of its approximately 1.9 million acres have been examined for cultural resources. Over 1,300 cultural resources have been recorded, with densities of known cultural resources ranging from five cultural resources per 100 acres on TTR to one resource per 100 acres on Range 71. At this time, no data are available on the NRHP eligibility status of these cultural resources. Resources located away from direct impact areas (e.g., away from targets and roads) are relatively undisturbed by military or any other recent human activities.

The South Range has received less survey coverage. About 1.5 percent of the 1.2 million-acre area has been examined for cultural resources. Over 540 cultural resources have been located. Site densities vary more here than on the North Range, ranging from probably less than one per 100 acres on Range 61 where no cultural resources were found in a survey of 480 acres, to over five cultural resources per 100 acres on Range 63. No data are available on how many may be eligible for nomination to the NRHP. As on the North Range, cultural resources located away from direct impact areas are generally undisturbed.

Based on available cultural resource data collected over many years, the sensitivity of different areas on NAFR for the presence of significant cultural resources varies from high to low. For

Table 3.9-1. Percent Surveyed and Cultural Resources by Area

AREA	TOTAL ACRES	ACRES SURVEYED	PERCENT SURVEYED	NUMBER OF RESOURCES	ESTIMATED RESOURCE DENSITY PER ACRE
<b>NAFR: North</b>					
Range 71	196,920	4,364	2.2	47	0.011
Range 74	361,440	11,146	3.1	198	0.018
Range 75	149,240	12,443	8.3	307	0.025
Range 76	211,760	8,333	3.9	183	0.022
EC East	160,560	3,117	1.9	65	0.021
EC South (includes Yucca Mountain)	264,960	3,963	1.5	92	0.023
EC West	220,160	N/A	N/A	N/A	
Tolicha Peak ECR	25,600	N/A	N/A	N/A	
Tonopah Test Range (includes TECR)	335,000	7,973	2.4	406	0.051
<b>Total NAFR North</b>	<b>1,925,640</b>	<b>51,339</b>	<b>2.7</b>	<b>1,298</b>	
<b>NAFR: South</b>					
Indian Springs AFAF	1,600	1,600	100	5	0.003
Range 61	191,160	480	0.3	0	0.000
Range 62	188,960	3,321	1.8	55	0.017
Range 63	160,920	4,373	2.7	236	0.054
Range 64	353,500	1,983	0.6	71	0.036
Range 65	117,760	4,726	4.0	182	0.039
<b>Total NAFR South</b>	<b>1,013,900</b>	<b>16,483</b>	<b>1.6</b>	<b>549</b>	
<b>Total NAFR</b>	<b>2,939,540<sup>1</sup></b>	<b>67,822</b>	<b>2.3</b>	<b>1,847</b>	

Notes: 1. Does not include FAC Alpha, FAC Bravo, Pahute Alpha and Pahute Bravo

Source: Air Force 1997c.

example, areas considered sensitive for early American Indian resources include mountain ranges and adjacent valleys, stream banks and floodplains, springs, piñon-juniper woodlands, mesquite groves, and playa margins. Areas with lower sensitivity for the presence of significant cultural resources may include dry lake beds.

NAFR is large enough to encompass a huge number of sites, many of them relatively undisturbed by recent human activity. Its boundaries include known archaeological resources from every phase of southern Nevada's history. Early American Indian archaeological site types on NAFR include the following:

- scatters of flakes from making stone tools (these vary widely in size, with little or no accumulation of cultural sediment);
- sites that indicate specialized activities such as food processing;
- housepits;
- rockshelters;
- stone quarries; and
- Numic winter villages.

Several of the Euroamerican settlements that emerged during southern Nevada's mining period lie within the existing NAFR. Most of the mines have not operated since the establishment of NAFR in the 1940s. In the North Range, as many as 50 mines were opened, many of them accompanied by towns. Many other mining-related sites, such as temporary camps, mine entrances (adits), prospects and other features, have been recorded throughout the area. There were fewer mines on the South Range. Many of the mines and associated facilities on NAFR may be both historic archaeological and architectural resources. In the South Range, three mining districts — Arrowhead, Papoose, and Slate — included a number of mines and settlements.

About 15 miles of the LV&T railroad bed crosses the South Range. Construction campsites are situated along the right-of-way. Of the 150-mile railroad bed, the 15 miles on the South Range have been considered the most intact by archaeologists. In places outside NAFR, the old railroad bed forms the subfoundation for U.S. Highway 95. Also, the only site on NAFR listed on the NRHP is Tim Springs in the South Range.

### **3.9.6.2 ARCHITECTURAL RESOURCES**

Some mining settlements and supply depots possess structures that are architectural resources. Of over 50 sites in at least 15 districts on NAFR, at least several could have historic architectural resources that may be eligible for nomination to the NRHP (Air Force 1997c; 1997i).

### 3.9.6.3 TRADITIONAL CULTURAL RESOURCES

Traditional cultural resources identified on NAFR by the CGTO include a range of traditionally used plants and animals, trails and certain geographic areas (AIWS 1997). Areas specifically identified in the NARD as important on NAFR include (AIWS 1997):

- areas where trails converged;
- rock art sites;
- quarry locations;
- power rocks and locations;
- landscape features such as specific peaks or ranges, hot springs, meadows and valleys, and caves;
- land that supports specific species such as eagles, hawks, mountain lion, deer, lizards, snakes, and insects;
- agricultural areas;
- gathering places for trade, ceremonial, or resource collecting; and
- medicine areas.

The NARD (AIWS 1997) identifies 12 such general areas. The specific locations of these areas are not presented in this document in the interest of maintaining confidentiality. Those that occur completely or partially within NAFR include the following:

**Area 1.** The traditional resources in this area include 42 traditional-use plants, traditional-use animals such as hawks and eagles, power places, rock art, and burial sites.

**Area 2.** This area contains six identified plant locations with 42 traditional-use plants similar to those found in Area 1. Traditional-use animals such as eagles and hawks are present, as is a "unique species of ant valued for both food and medicine." An important trail, used in the recent memory of Indian people, passes through the area. Places of power and ceremony have also been identified within this group of resources.

**Area 3.** This area has been identified as containing such traditional-use animals as mountain lions, deer, and hawks, as well as 10 traditional-use plants. Major campsites served as gathering places for groups from distant communities. Intergroup activities included rabbit drives, dances, and ceremonies. A number of rockshelters considered significant by Indian people are also found in this area.

**Area 4.** Caves in this area are spiritually important to the Southern Paiute people. Area caves are included in traditional Indian songs and stories and are related to other significant traditional locations outside the range.

**Area 5.** This area includes landscapes and ecosystems described in traditional stories.

**Area 6.** This area includes a variety of resources, including a power rock, rock art panels, rock shelters and raw material used in production of stone tools.

**Area 7.** Within this area at least 15 camps were identified. It is also known for its abundance of resources. Ethnographic studies indicated that the people who lived here had close ties with those in the surrounding valleys and ranges (Steward 1938).

**Area 8.** Oral history indicates that this area contains a variety of resources, although there has been no formal study of the specific area.

**Area 9.** Ethnographic research from the 1930s (Steward 1938) indicates there may be important traditional cultural resources within this area, although there has been no formal study.

**Area 11.** This area is located primarily outside both NAFR and NRC airspace, but NAFR may include a portion of it. Within this area Indian people collected food, farmed, and conducted trade and ceremonies.

**Areas 10 and 12.** These areas are not on the range.

### **3.9.6.3 EXISTING DISTURBED AREAS**

#### ***ARCHAEOLOGICAL RESOURCES***

Archaeological resources are known to be located within the disturbed areas on NAFR, i.e., those areas that are specifically subject to activities such as target practice, use and maintenance of facilities, roads or utilities. Most targets areas have not been surveyed for cultural resources. While artifacts and features are rare on the playas, where vegetation is generally absent due to the saline nature of the soil, lithic scatters and temporary processing sites are found on the margins of the lake.

#### ***ARCHITECTURAL RESOURCES***

Some historic architectural resources may be located within disturbed areas on NAFR. Again, it is likely that because target areas have been used for many years, architectural resources that may be located within these areas have been either destroyed, damaged, or covered with unexploded ordnance that makes the data inaccessible to researchers.

***TRADITIONAL CULTURAL RESOURCES***

TCPs have not been identified within the designated target areas on the clear, saline portions of the dry lake playa beds. Based on a lack of vegetation and the extremely flat topography in these playa areas, it is unlikely that significant traditional cultural resources would be identified.

**E**xisting lands on NAFR have primarily been used for military testing and training since the 1940s. Transportation routes on NAFR support military activities.

Prior to creation of NAFR, mining occurred within the range. Minerals found within NAFR included gold, silver, copper, lead, zinc, mercury, tungsten, turquoise, commercial-grade sand, gravel, and limestone. Adjacent to the range, significant quantities of gypsum and limestone are produced. Over half the mining districts located within NAFR have had some historic output. In 1997, BLM determined that no lands within NAFR were suitable for opening to mineral exploration and development.

Historical grazing use of NAFR was primarily in the North Range. The scarce supply of water resources and limited amounts of quality forage for livestock curtailed extensive use of the South Range for grazing. Between 1949 and 1965, all grazing and mineral rights within the range were extinguished. NAFR is closed to grazing except in those areas where it was authorized at the time of the 1986 withdrawal.

# LAND USE AND TRANSPORTATION

3.10



## LAND USE AND TRANSPORTATION



*Most transportation routes on NAFR support access to targets and associated facilities. Gravel roads are typical and are infrequently traveled.*

**O**verlapping management areas on NAFR include the following:

- **Tonopah Test Range (TTR).** TTR is managed by Sandia Corporation under contract to DOE. Facilities and roads on TTR are used by the Air Force as an integral part of the Air Test and Training Mission. The management and land use of TTR is compatible with overall activities on NAFR.
- **Pahute Mesa.** Located on the North Range adjacent to the NTS, Pahute Mesa is managed by the DOE. Pahute Mesa contains multiple nuclear weapons testing sites with associated contamination. The Air Force makes limited use of the mesa for threat emitter sites and also uses the airspace for tracking. DOE includes the management of Pahute Mesa within the NTS sphere of activity and essentially treats it as an extension of the NTS.

*The NAFR-developed areas of TTR and Indian Springs, including the tower pictured here, are supported by operations and maintenance capabilities at Nellis AFB.*



*Use and public access to the joint-use area of the Desert National Wildlife Range (DNWR) and NAFR is restricted by an MOU between the Air Force and the Department of the Interior (DOI).*

## 3.10 LAND USE AND TRANSPORTATION

Land use generally refers to human management of land, often for residential or economic purposes. It also refers to use of land for preservation or protection of natural resources such as wildlife habitat, vegetation, or unique features. Human land uses include residential, commercial, industrial, agricultural, or recreational uses, while some natural features are protected under designations such as national parks, national forests, wilderness areas, or other designated areas. Land use is considered within ROI Three outside NAFR, and within ROI Two where access is restricted. All land use in ROI One consists of military activity as described in Chapter 2.0. Wilderness areas are discussed in section 3.11 and recreation areas are discussed in section 3.12.

This section summarizes material presented in the *Land Use Study for Nellis Air Force Range* (Air Force 1997i). The attributes of land use described in this section include general land use and ownership, land management plans, special use areas, and transportation resources. Land ownership is a categorization of land according to type of owner. The major land ownership categories described in this section include federal, state, and private. Federal lands are further designated as BLM, USFS, USFWS, DOE, and DOD managed. Land use is generally regulated or influenced by management plans, policies, ordinances, and regulations that determine the types of uses allowed in particular areas and that protect specially designated areas and environmentally sensitive uses. Special use areas are identified by various agencies as requiring particular management attention. Transportation resources consist of the infrastructure and equipment used for the movement of people and materials. Particular emphasis for this analysis is given to the road and rail networks in the region. Airport facilities are discussed in section 3.1, Airspace.

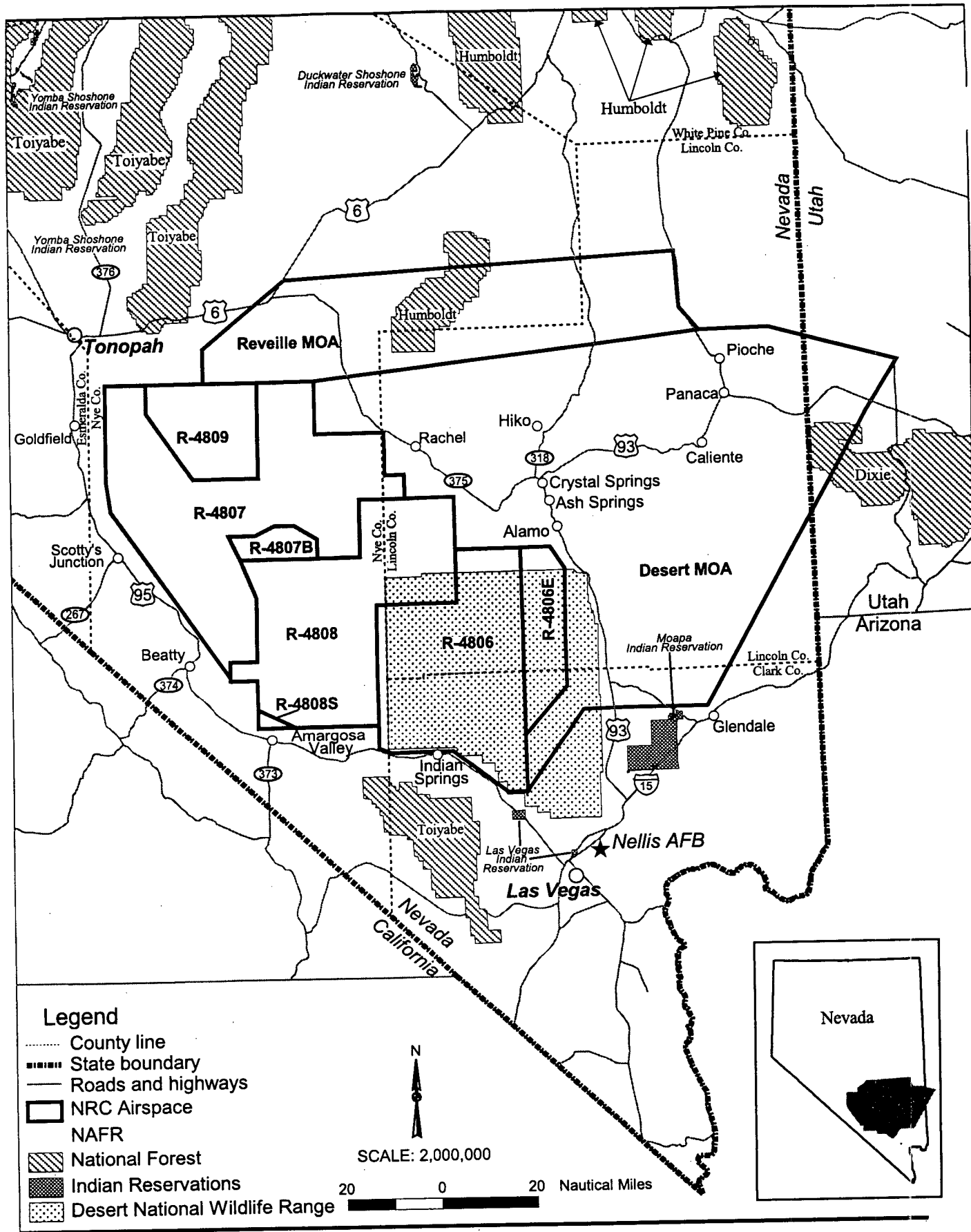
### 3.10.1 General Land Use and Ownership

#### 3.10.1.1 NAFR LANDS (ROI TWO)

Land encompassed by NAFR was once used primarily for mining and some grazing, until establishment of the range in the 1940s. Since then, the land has been used for military purposes, although some mining and controlled recreational activities are permitted and continue to occur within the confines of the range. The land also provides habitat for wild horses, bighorn sheep, desert tortoise, and other wildlife species. BLM, through Air Force concurrence, has granted limited rights-of-way in the range for specific purposes (Figure 3.10-1).

#### **MINING**

Prior to the 1940s during periods of active mineral exploration and extraction, minerals found within NAFR included gold, silver, copper, lead, zinc, mercury, tungsten, and turquoise (BLM 1989). Commercial-grade sand, gravel, and limestone have all also been found within the



**Figure 3.10-1. Land Ownership and Communities under Nellis Military Airspace**

range. Adjacent to the range, significant quantities of gypsum and limestone are produced. Total mineral production in the area is not known; however, over half the mining districts located within NAFR have had some mining activity (BLM 1981).

Mining of the lands comprising NAFR and surrounding region began in the mid-1860s (USGS and U.S. Bureau of Mines 1978) and continued sporadically through the 1930s. Withdrawal of the lands for the range in 1940 suspended all mining activity. Between 1949 and 1965, under the authority of the Air Force Real Estate Directive 592.2, dated September 21, 1954, all mineral rights and grazing privileges within the range boundaries of that period were purchased and extinguished. Very little mining activity took place within the range until 1986, when the Groom Mountain Addition was withdrawn. This area included one unpatented mining claim, 16 patented mining claims, and all or portions of two oil and gas leases. The oil and gas leases have since expired, but the mining claims (listed in Table 3.10-1) continue to be recognized. Figure 3.5-7 shows the locations of mining districts within the NAFR area.

In 1997, BLM determined that, due to the continued safety and security concerns of the Air Force, no lands currently withdrawn could be opened to mineral exploration and development. In the future, if any existing mineral rights are eliminated by relinquishment, expiration, or purchase by the Air Force, they will revert to the U.S. As required by the MLWA of 1986, at 5-year intervals, the Secretary of the Interior will determine, with Air Force concurrence, which lands within NAFR are suitable to open for operation under the Mining Law of 1872; the Mineral Lands Leasing Act of 1920, as amended; the Mineral Leasing Act for Acquired Lands of 1947; the Geothermal Steam Act of 1970; or any one or more of such acts (BLM 1992a).

The Air Force has completed an assessment of the mineral and energy resources on NAFR as part of the land renewal process. This *Mineral and Energy Resources* Report (NBMG 1997) was conducted to provide an assessment of all extractable energy and mineral resources on property managed by the Air Force in southeastern Nevada that are subject to the provisions of the MLWA of 1986. The assessment conforms to mineral assessment guidelines and procedures required by the BLM.

### **GRAZING**

Historical agricultural use of NAFR is associated with cattle ranching activities, primarily in the North Range area. The scarce supply of water resources and limited amounts of quality forage for livestock in the south historically has curtailed extensive use of the South Range area for grazing.

From the 1940s, cattlemen were allowed to use the lands comprising NAFR for grazing; but between 1949 and 1965, under the authority of the Air Force Real Estate Directive 592.2 (described above), grazing and mineral rights within the range were not renewed; however, trespass grazing continued through the 1970s. NAFR is still closed to grazing and ranching, except in those areas where it was authorized at the time of the Groom Mountain Range withdrawal.

Table 3.10-1. Mining Claims

District	Claim Name	Mineral Survey Number	Patent Number	Patent Date	Owner of Record	Comments
Don Dale	Cadwalader Millisite	41 B	3379	September 10, 1879	D/I Enterprises, Inc., c/o Steve Medlin, Alamo, Nevada	The Cadwalader lode claim that was associated with this millisite is located in the Tern Plute district. BLM records show location to be in sec. 6, T5S, R55-1/2 E.
	Sterling Millisite	57 B	9368	June 1884	Reland Johnson, Box 652, Farmington, Utah	The Sterling lode claim that was associated with this millisite is located in the Tern Plute district.
Gold Crater	Black Eagle	2788	31381	November 27, 1908	United States of America, Commander, LA District Corps of Engineers, P.O. Box 2711, Los Angeles, California 90053	BLM survey plats locate M.S. 2788 high on the hill south of the Gold Crater mines. During field work, two patent corners were found in the central part of the district about 1.6 km to the north; M.S. is mislocated on the BLM plats.
	Manxman Peacock	2788	31381	November 27, 1908		
Goldfield	Nancy Donaldson	3198	284077	July 15, 1912	William B. Golden, P.O. Box 2010, Sparks, Nevada 89432	According to the BLM mineral survey plats, this claim group lies across the NAFR boundary but was excluded from the NAFR; the NAFR fence swings east around the excluded ground.
	Nancy Donaldson No. 1	3198	284077	July 15, 1912		
Goldfield	Nancy Donaldson No. 2	3198	284077	July 15, 1912		
	Eclipse	3217	83152	October 11, 1909	Pacific Gold Corp., 4518 Whitsett Avenue, Studio City, California 91604	BLM plats locate M.S. 3217 in sec. 12, T3S, R44E, east of the Goldfield Hills. It appears that the survey tie for the claim is linked to the wrong section corner, the claims, therefore, are actually located west of the NAFR boundary.
Groom	Revenue	3217	83152	October 11, 1909		Patented claims at the Groom Mine have been held by the Sheahan family since 1885.
	Conception	37	1660	February 10, 1876	D R. Sheahan, M.F. Sheahan, H. Patrick, A.B. Sheahan, J.F. Sears, T. Sears, B.V. Cline, W. Wheatley Estate, c/o Dan Sheahan, 2460 E. Flamingo Rd., Las Vegas, Nevada 89109	
Jamestown	White Lake	37	1660	February 10, 1876		
	Conception No. 2	38	1661	February 10, 1876		
	White Lake No. 2	38	1661	February 10, 1876		
	Bride	4658	1034979	February 20, 1930		
	South End	4658	1034979	February 20, 1930		
	South End Fraction	4658	1034979	February 20, 1930		
	Southern Groom	4659	1055957	July 6, 1932		
	Groom mine lode group	none	none	not patented		Assessment work was filed for 1995.
	Daisy	3962	285880	July 23, 1912	Fuetsch Nuclear Mines Inc., c/o Carl F. Fuetsch, 860 Crocker Way, Reno, Nevada 89509	Claims of M.S. 3962 were acquired from Nye County in 1970 by the Fuetsch family. The claims are currently leased to the Air Force.
	Silverbow	Last Chance	3962	285880	July 23, 1912	
Mohawk		3962	285880	July 23, 1912		
Golden Chariot No. 1		3971	296554	October 15, 1912		Claims of the M.S. 3971 have been owned by the Fuetsch family since 1908. The claims are currently leased to the Air Force.
Silverbow	Golden Chariot No. 2	3971	296554	October 15, 1912		
	Golden Chariot No. 3	3971	296554	October 15, 1912		
Silverbow	Blue Horse	4457	1001726	May 15, 1927	Ruth and Randall Dugan, M. Kinneberg, and J.D. Kinneberg, 511 W. Flynn Lane, Phoenix, Arizona 85013	The Blue Horse claim overlaps the NAFR boundary, but the Range fence follows the claim outline and excludes it from inclusion in the NAFR.
	South Eastern	2214A	43581	June 8, 1907	Last owner of record, Teledyne, Inc. (1977)	BLM plats show M.S. 4268 located in secs. 29, 30, 31, and 32, T9S, R58E instead of the actual location in secs. 33 and 34, T9S, R57E. Lincoln County records show no trace of these claims.
Southeastern	South Eastern	2214 A	43581	June 8, 1907		
	South Eastern No. 1	2214 A	43581	June 8, 1907		
	South Eastern No. 2	2214 A	43581	June 8, 1907		
Wagner	South Eastern No. 3	2214 A	43581	June 8, 1907		
	Ish	3679	251234	March 12, 1912	Dulwick, J.W. and Eleanor, 1648 W. Tamarisk, Phoenix, Arizona 85041	There are 18 claims in M.S. 3679, only one, the Ish, extends into the NAFR. The overlap is a triangular sliver of land about 30 m wide at the south end. BLM patent plats show M.S. 4268 located at the mine workings at Wellington. No ownership is shown in the current Nye County assessors records although they were in County ownership between 1930 and 1986.
Wellington	Hope Next	4268	572555	March 16, 1917	Last owner of record was Nye County (1986)	
	Hope Now	4268	572555	March 16, 1917		

The Safety and Security Buffer area affected two grazing allotments: the entire Naquinta Springs allotment (approximately 52,425 acres) and a portion of the Bald Mountain allotment (approximately 37,175 acres of the total approximately 269,723 acres). At the time of the withdrawal, the Naquinta Springs allotment was inactive and the Bald Mountain allotment was active. The status of these allotments has remained unchanged since the time of withdrawal. No additional grazing privileges have been awarded within NAFR since the 1986 withdrawal. To keep domestic livestock off the range, BLM, in cooperation with the Air Force, has installed fencing along much of the perimeter of the range boundaries.

#### ***RECREATION***

Access restrictions on NAFR preclude all unrestricted recreational opportunities in the area. Controlled hunts are allowed to occur on the range each year for bighorn sheep. For further information on recreational uses of NAFR, refer to section 3.12, Recreation.

#### ***WILDLIFE WATERING***

The range provides habitat to various forms of wildlife. Wildlife watering facilities and springs are maintained within the range to supplement natural water sources used by wildlife and wild horses. Seventeen of these watering facilities are located within the joint-use area of DNWR (depicted in Figure 3.10-1), and all are maintained by the USFWS for wildlife located on DNWR. For a full description of wildlife resources and their management, refer to section 3.8, Biological Resources.

#### ***RIGHTS-OF-WAY***

BLM has granted rights-of-way to the owners of existing valid mining claims to provide access to their claims; access is restricted to pre-arranged and scheduled visits for working and maintaining of the mining claims. Rights-of-way have also been granted to utility companies for three electrical power transmission lines and a telephone line.

The DOE maintains a right-of-way over the portion of NAFR that includes Yucca Mountain for the purpose of site characterization.

#### ***MEMORANDA AND OTHER AGREEMENTS***

The Air Force and the USFWS have formalized an agreement for the management and use of lands withdrawn for both the DNWR and NAFR. This overlapping withdrawal includes approximately 826,000 acres of land in the NAFR South Range. An MOU between the DOI (for USFWS) and Air Force delineates the rights and responsibilities of the two agencies with regard to the overlapping withdrawals. The restrictions on the Air Force include a minimum altitude for all activities except weapons delivery and landing or take offs. According to the MOU, delivery of air-to-ground ordnance is to be confined to approximately 100,000 acres. These are

principally confined to lands below 3,600 feet altitude in the Indian Springs Valley and 4,000 feet in the Three Lakes Valley.

Two land-management overlays have been established to protect specific resources on or adjacent to the North Range. 1) Public Land Order (PLO) 6802 (published September 25, 1990) precludes mining and mineral leasing for a period of 12 years to maintain the physical integrity of the subsurface environment in support of site characterization at the DOE Yucca Mountain. 2) The BLM entered into a cooperative agreement in 1974 to maintain and manage the populations of wild horses within the NWHR on the NAFR. This area is shown in Figure 3.10-2.

An MOU between the Air Force and DOE outlines restrictions of overflight of restricted airspace in R-4808N and Pahute Mesa by military aircraft. A letter of agreement (LOA) between the Air Force and DOE defines functional areas of responsibility and cost sharing between the parties of the agreement. The LOA covers Area 10 in the TTR.

The Air Force and the DOE have several MOUs, other documents, and agreements that delineate the roles and responsibilities regarding lands within the NAFR. These include agreements regarding the use and restrictions to TTR, Pahute Mesa, and lands contaminated by nuclear device testing. Examples include:

- A letter of agreement serves as the basis for operations of all weapons testing at the TTR by Sandia National Laboratory for Albuquerque Operations of the DOE.
- The lands of Pahute Mesa were used for underground nuclear test events that resulted in surface and subsurface contamination. An MOU between the Air Force and DOE/Nevada Operations serves as the basis for current and future use of the lands and compliance with federal environmental regulations effective July 1998.
- Some of the lands in Stonewall Flats were contaminated by the Double Tracks experiment. An MOU between the Air Force and the DOE defines the authority and responsibility with respect to protection of and access to Stonewall Flats Area.

### **3.10.1.2 LANDS UNDER ASSOCIATED AIRSPACE (ROI THREE)**

Outside of NAFR, land use consists primarily of federal land managed by BLM for multiple use. BLM authorizes livestock grazing within units delineated as grazing allotments on nearly all BLM land in the vicinity of NAFR. In addition to grazing, federal lands managed by BLM are used for mining and recreation. Various mining claims and prospects are located throughout the region. The area also offers recreational opportunities such as hunting, hiking, bird watching, and off-highway vehicle activities.

Other federal lands adjacent to NAFR-associated airspace include portions of Dixie National Forest and Humboldt National Forest, which are managed by the USFS. Land use in the national forests consists of grazing, recreation, wildlife and wildlife habitat preservation, timber

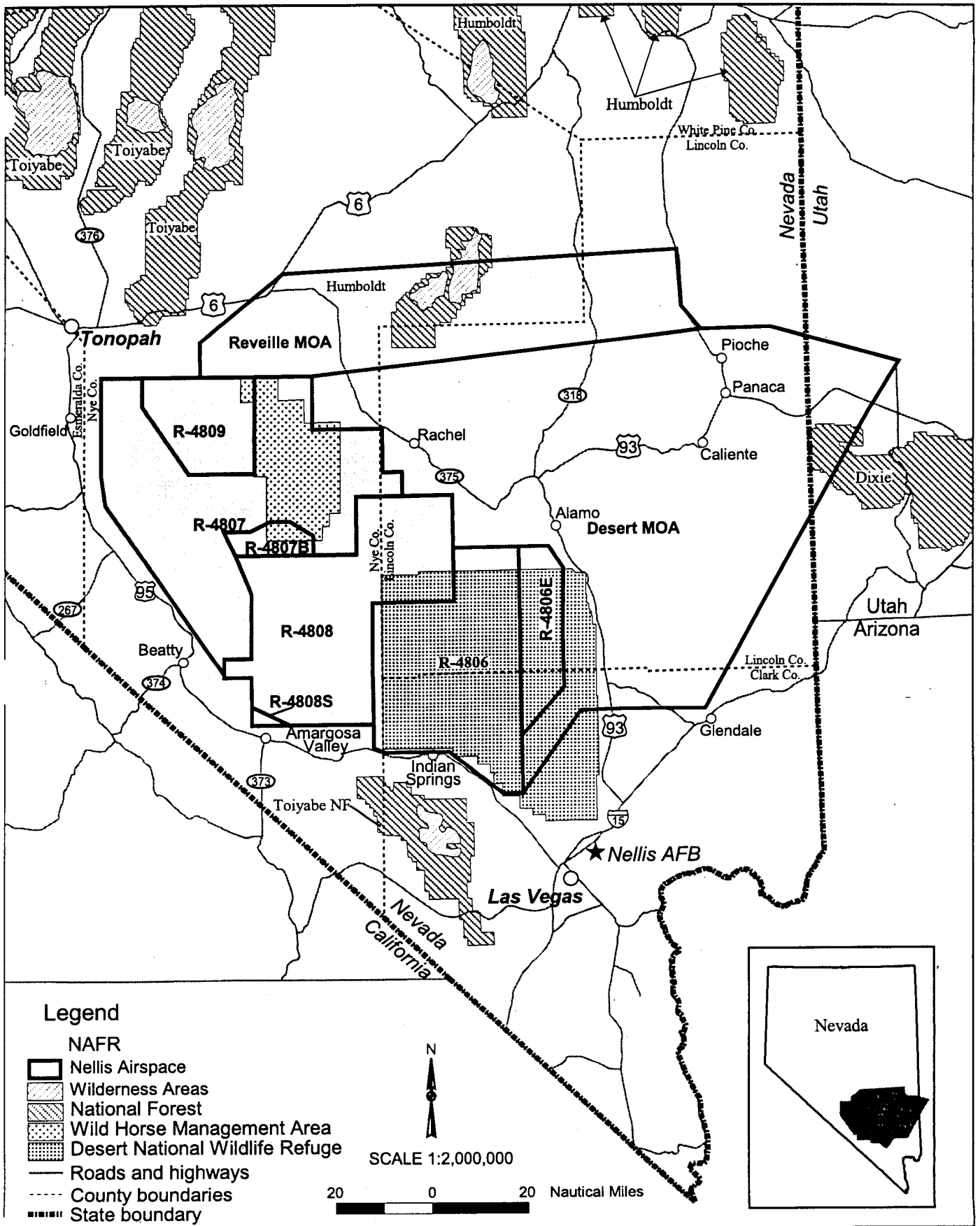


Figure 3.10-2. Special Use Areas under Nellis Military Airspace



production, and mining (USFS 1985). The State of Nevada maintains two state parks and one state recreation area adjacent to NAFR-associated airspace.

Sections of privately owned land occur outside NAFR boundaries, the largest of which is associated with the northern portions of the Las Vegas metropolitan area. Industrial land uses are located around the residential areas and along the Union Pacific Railroad (BLM 1990a). Other communities, including private land holdings, are located along the roadways surrounding NAFR (Figure 3.10-1).

### **3.10.2 Land Management Plans**

#### **3.10.2.1 NAFR LANDS (ROI 2)**

BLM's guiding principle of multiple use extends to the use of federal lands withdrawn for national defense and security, which, although not available for public use, remain under BLM's jurisdiction and management with the exception of DNWR lands withdrawn to the USFWS. All uses, policies, and programs within the withdrawn lands must meet federal requirements mandated and administered through BLM. In accordance with the Federal Land Policy and Management Act (FLPMA), NEPA, and MLWA of 1986, BLM developed the *Nellis Air Force Range Resource Plan and Record of Decision* (BLM 1992c) to guide management of lands comprising NAFR. The plan was directed at "improving rangeland vegetative conditions and wildlife habitat by achieving and maintaining a thriving ecological balance for the wild horse population on the planning area" (BLM 1992c). Management objectives within the plan were derived for the following resources: vegetation, wildlife habitat, wild horses, visual resources, Area of Critical Environmental Concern (ACEC), access, minerals, soil, water, and air resources, forestry, livestock grazing, cultural and paleontological resources, recreation, wilderness and natural areas, and fire management.

As the federal agency responsible for protection, management, and control of wild horses and burros using federal lands, BLM, in cooperation with the Air Force, designated lands within NAFR as a wild horse management area (refer to Figure 3.10-2). A Cooperative Agreement between BLM and the Air Force, signed in 1974 and provided in Appendix C, provides direction and procedures for the care and management of the wild horse population that roams the area.

Grazing occurs on NAFR within the Bald Mountain Allotment in accordance with the *Caliente Management Framework Plan* (BLM 1980). The Domestic Livestock Grazing Management Program (BLM 1979) defines management guidelines derived for the following resources: visual, cultural, paleontological, recreational, agricultural, mineral, social, economics, forest, wildlife, land use controls and constraints, and livestock grazing. Grazing allotments are named according to the adjacent mountain range.

A Five-Party Cooperative Agreement (provided in Appendix C) between the Air Force, USFWS, BLM, Nevada State Clearinghouse, and the DOE was implemented with the goal of forming a working group to manage the natural resources within the Great Basin and Mojave Desert ecosystems using a biodiversity, conservation, and ecosystem-based approach.

An MOU between the DOD and the State of Nevada Clearinghouse defines the policies and relationship between state and local governments and the Air Force. It requires the Air Force to notify the state concerning any land and air use changes on NAFR and its adjacent lands.

### **3.10.2.2 LANDS UNDER THE ASSOCIATED AIRSPACE (ROI 3)**

Most of the lands under the NAFR associated airspace consist of federal lands managed by BLM (Figure 3.10-1). BLM is guided by the principles of multiple use and sustained yield and a recognized need to protect and enhance the natural and human environment. Within each state, BLM manages lands in units referred to as districts or field offices. These associated airspace lands encompass lands within the Las Vegas Field Office, the Battle Mountain Field Office, and the Ely District in Nevada. Management of these lands is guided by the *Caliente Management Framework Plan* (BLM 1980). The BLM is amending the Caliente Management Framework Plan (MFP) specifically to address the management of threatened Desert Tortoise habitat (personal communication, McGinty 1998). The Caliente MFP is intended to guide resource management for 20 to 25 years, addressing all relevant activities and managing these activities by incorporating a balanced multiple use approach.

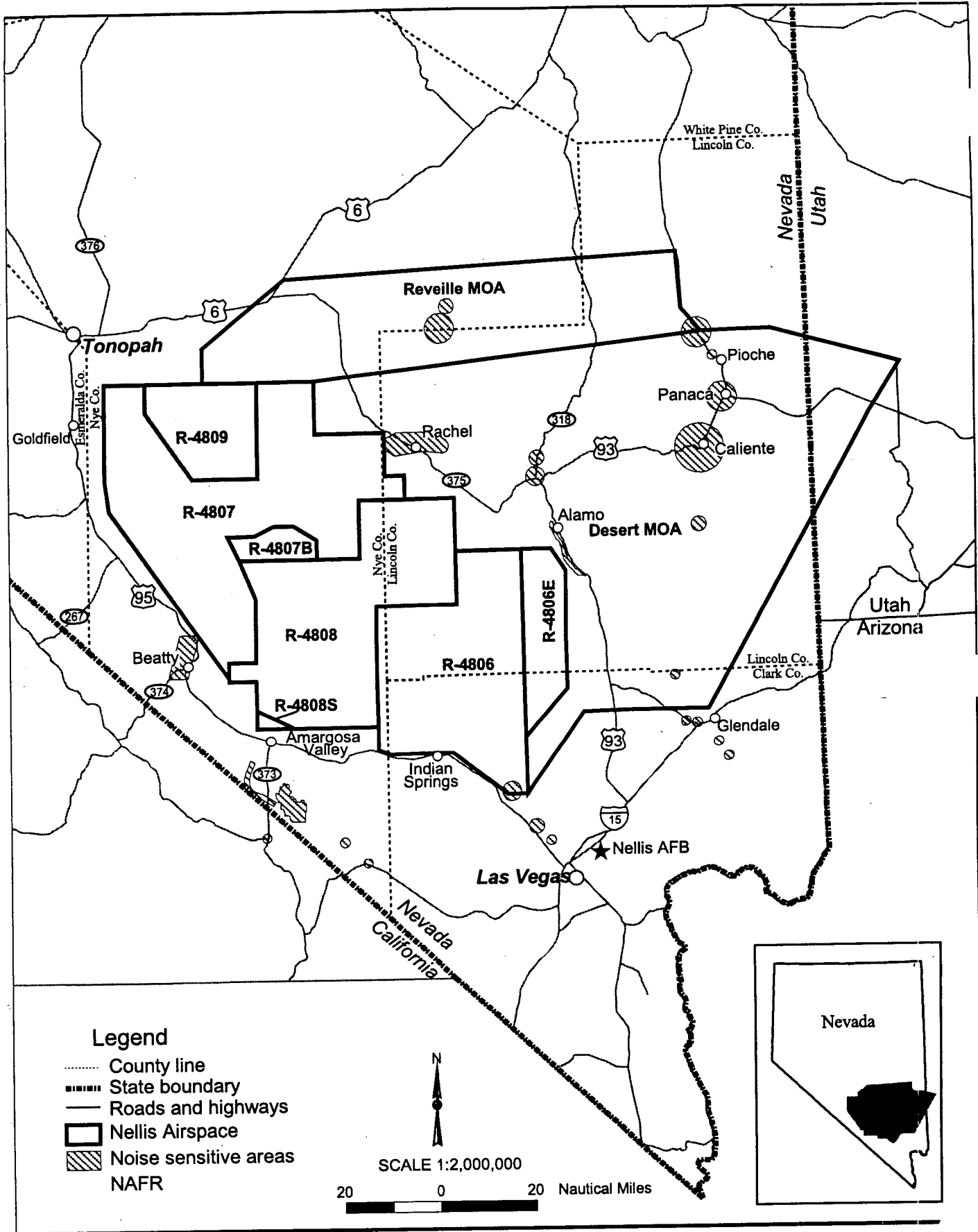
The Air Force has identified noise-sensitive areas under NRC airspace and surrounding NAFR. These sensitive areas are excluded from aircraft operations. These lands primarily include federal lands managed by the BLM. Municipalities and private lands are also included. These noise-sensitive areas are depicted on Figure 3.10-3.

### **3.10.3 Special Use Areas**

#### **3.10.3.1 NAFR LANDS**

##### ***DESERT NATIONAL WILDLIFE RANGE***

The DNWR was established by EO 7373 of President Franklin D. Roosevelt on May 20, 1936, primarily for the preservation of the desert bighorn sheep in its natural environment. Originally named the Desert Game Range under the joint jurisdiction of the Division of Biological Survey (later the Bureau of Sport Fisheries and Wildlife), and now the USFWS and the BLM, it contained a total of approximately 2,250,000 acres, including lands both north and south of U.S. Highway 95. PLO 4079, issued on August 26, 1966 and corrected on September 23, 1966, revoked EO 7373, changed the name to DNWR, reduced its size to the current approximately 1,588,000 acres, and transferred sole administration to the USFWS. Its southernmost boundary is about one half mile from the city limits of Las Vegas, as shown in Figure 3.10-2. The use of DNWR for military purposes began during World War II when portions of the area near Indian Springs were identified as suitable for military training, and a



**Figure 3.10-3. Noise Sensitive Areas**

proclamation by President Roosevelt designated the area for such use. The Secretary of the Interior granted permission to DOD for military use of the area until the end of the Korean War. Use of the area for military training activities has continued to the present.

Use and public access to the joint-use area of DNWR and NAFR is restricted by an MOU between the Air Force and the DOI and further, by PL 99-606 as amended (Appendix C). All grazing rights or privileges within the joint-use area of DNWR have been eliminated through purchase or termination of permits. A description of recreational opportunities available in DNWR is provided in section 3.12, Recreation. A description of wildlife resources and their management within DNWR is provided in section 3.8, Biological Resources. A description of Wilderness Study Areas (WSAs) within DNWR is provided in section 3.11, Wilderness and Wilderness Study Areas.

#### ***TIMBER MOUNTAIN CALDERA NATIONAL NATURAL LANDMARK***

The Timber Mountain Caldera, located adjacent to and overlapping the northwest portion of the Nevada Test Site, has been designated, by the Secretary of the Interior, as a National Natural Landmark. The area, with its associated volcanic features is one of the best examples of a caldera (Figure 3.10-4).

#### ***WILD HORSE MANAGEMENT AREA***

The Wild Horse and Burro Act of 1971 (16 U.S.C. 1331-1340), and regulations of the Secretary of the Interior (43 CFR Part 4700) place the responsibility for protection, management, and control of wild free-roaming horses and burros with BLM when such animals use federal lands administered by BLM as all or part of their habitat. Wild Horse Management Areas (HMAs) are established to maintain populations of wild horses. HMAs delimit areas within which specified numbers of wild horses are protected from overpopulation and harassment. Management tools include periodic monitoring of population numbers, water sources, distribution patterns, and the condition of adults and foals. In accordance with these regulations, BLM, with Air Force concurrence (as outlined in a cooperative agreement provided in Appendix C), established a HMA within the confines of NAFR to facilitate management of the wild horses and burros that use land within the range (Figure 3.10-2).

#### ***DESERT TORTOISE MANAGEMENT AREA***

An area within the range has been designated for special management of the desert tortoise in compliance with USFWS's Biological Opinion dated February 1997. A description of this area is provided in section 3.8, Biological Resources.

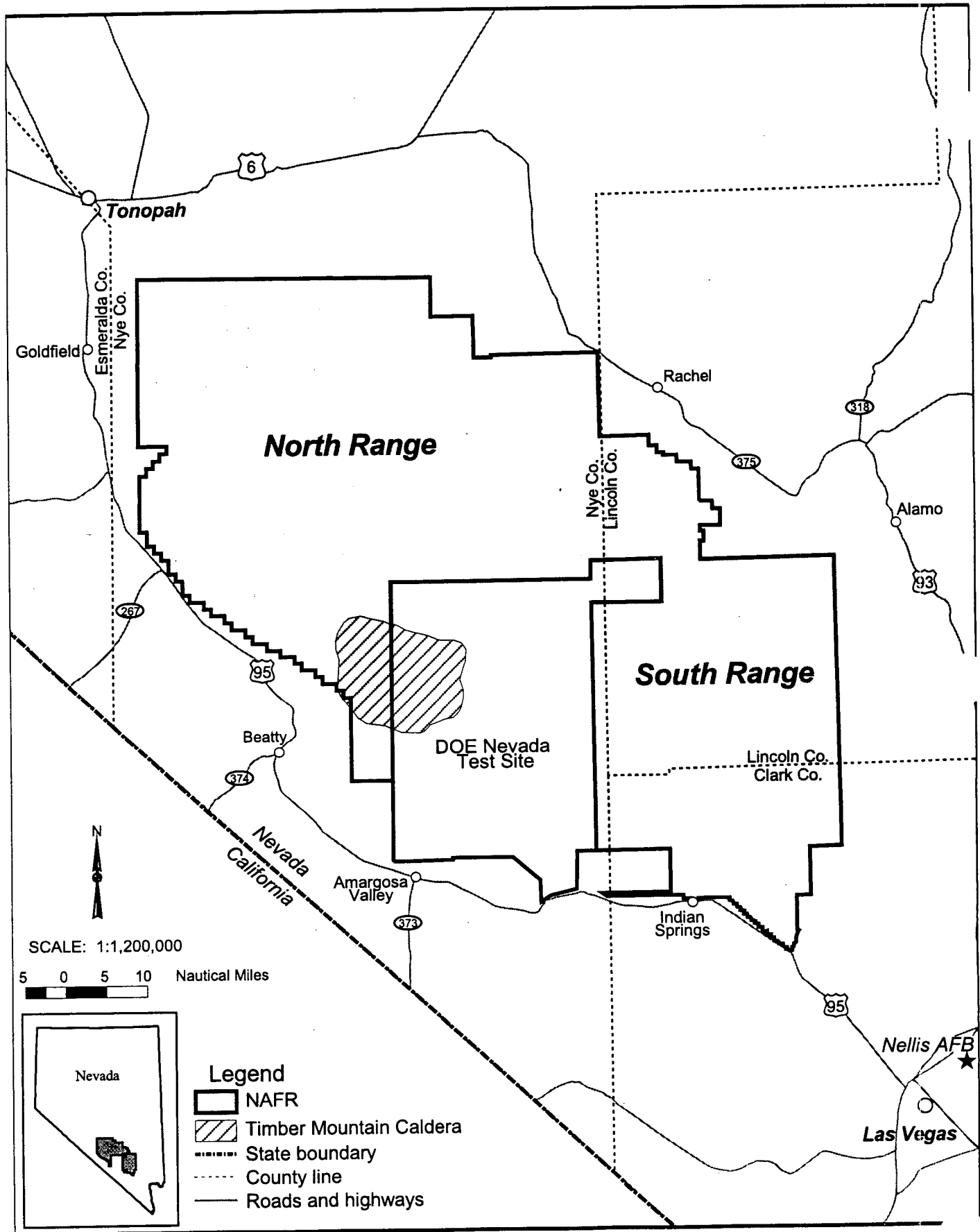


Figure 3.10-4. Timber Mountain Caldera

3.10-12

### **3.10.4 Transportation Resources**

#### **3.10.4.1 NAFR LANDS**

Figure 1-3 depicts the major roads on NAFR, other roads and trails are too numerous to depict on this type of figure. With the exception of access to DOE administered sites by employees and contractors and rights-of-way provided to owners of mining claims and grazing permits within NAFR, public access onto the range is prohibited.

#### **3.10.4.2 LANDS UNDER ASSOCIATED AIRSPACE**

Interstate 15 (I-15), the largest highway in the area, is oriented in a northeast-southwest direction through Las Vegas. Three U.S. Highways and one state highway surround the NAFR. U.S. Highway 93, sharing a segment of road with I-15, is northeast of Las Vegas along the eastern boundary of the range and meets with Nevada State Highway 375 in Crystal Springs. Northwest out of Crystal Springs, State Highway 375 connects with U.S. Highway 6 at Warm Springs, which provides access to the City of Tonopah just north of the range. U.S. Highway 95 is south out of Tonopah along the western boundary of NAFR and completes the circle, intersecting with U.S. Highway 93 in Las Vegas.

Union Pacific Rail service runs east of the ROI through southeastern Nevada providing freight service to the City of Las Vegas.

Commercial air service is provided via the Las Vegas, McCarran Airport. No other airport in the region is serviced by scheduled airlines.

#### ***OTHER SPECIAL USE AREAS***

Special use areas under the associated airspace include National Wildlife Refuges and Management Areas, and State Parks and Recreation Areas.

Units of the National Wildlife Refuge System are designated and managed by the USFWS "to administer a national network of lands and water for conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations." The Pahrnagat and Moapa Valley National Wildlife Refuges are located under the associated airspace. In addition, the Key Pittman Wildlife Management Area is also located within these lands. Section 3.8, Biological Resources, provides a full description of these areas.

Cathedral Gorge State Park, Beaver Dam State Park, and Echo Canyon State Recreation Areas are all located under the associated airspace. A discussion of these areas is provided in section 3.12.

### **3.10.5 American Indian Issues Concerning Land Use and Transportation**

Members of the CGTO consider all aspects of the land to be interconnected. Some uses of the land by the military, other agencies, or the public may preclude certain American Indian practices. The CGTO considers the "natural condition" of the Nellis lands to be what existed before Euroamerican contact (AIWS 1997), or possibly before A.D. 1492. Specific issues include the following:

- Centrality. The lands are central to American Indian culture in the region.
- Land-disturbing activities stemming from Euroamerican use of the land, including military use, rendered it unusable for Indian people.
- Withdrawal of the NAFR offered protection for some traditional cultural resources, reducing vandalism, looting, grazing, and other types of disturbance.
- Dry lakes are part of culturally important hydrological areas. They are also commonly used for live ordnance target areas on NAFR.

The NARD states:

American Indians believe a monetary value cannot be placed on lands. Indian people do not recognize boundaries other than their traditional territories. Land was traditionally respected for its ability to sustain the people economically, spiritually, and socially. American Indian perspectives on land use should be incorporated into all federal agency programs and activities that will potentially transform the natural landscape of traditional Indian land or impact its biological resources (AIWS 1997).



**W**

ilderness designation is intended to preserve areas in a primitive state that have little evidence of human activity.

The Wilderness Act of 1964 identified criteria for evaluating those areas and gave direction on how a designated wilderness should be managed. In general, use of mechanized vehicles or other motorized equipment, landing of aircraft, and construction of structures and roads are prohibited in wilderness areas.

Section 603(c) of the FLPMA requires wilderness reviews on roadless public lands of 5,000 or more acres and roadless islands to determine which are suitable for wilderness designation. Under the NRC, two wilderness areas have been designated and a number of Wilderness Study Areas (WSAs) have been identified.

# WILDERNESS AND WILDERNESS STUDY AREAS

3.11



## WILDERNESS AND WILDERNESS STUDY AREAS

Each federal agency is responsible for evaluating, nominating, and protecting potential wilderness areas within the lands they manage. In 1975, the U.S. Fish and Wildlife Service (USFWS) proposed

approximately 88 percent of the Desert National Wildlife Range (DNWR) for inclusion in the National Wilderness Preservation System. Areas excluded from the wilderness proposal included land on which NAFR target facilities are located. Aircraft operations over DNWR are generally 2,000 feet above ground level, except for special training missions. In 1979, DOI and BLM stated that the wilderness designation of the majority of the DNWR will not affect the Air Force's use of NAFR for bombing and gunnery practice and that continued military use, as described in the Memorandum of Understanding (MOU) between the USFWS and the Air Force, will not preclude the USFWS from managing the area to protect wilderness qualities.

BLM has inventoried federal lands under its jurisdiction and identified 20 WSAs under the NRC. Each WSA includes wilderness qualities such as naturalness, size, solitude, and special features. Additional wilderness quality factors evaluated by BLM include multiple resource benefits, balancing the geographic distribution of wilderness areas, diversity of natural systems, and manageability. Pending Congressional review of WSAs, BLM manages each WSA as *de facto* wilderness to not impair its suitability for wilderness designation.



*Areas that contain permanent evidence of human activity, such as power lines or roads, do not meet wilderness quality factors.*

### 3.11 WILDERNESS AND WILDERNESS STUDY AREAS

This section addresses wilderness and Wilderness Study Areas (WSAs) present within ROI Three, identifies their attributes, and discusses applicable management practices.

The objective of the Wilderness Act of 1964 (PL 88-57) is "to assure that an increasing population accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States." The Act established a National Wilderness Preservation System to be "administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness . . . to provide for the protection of these areas and the preservation of their wilderness character." The Act mandated the USFS, the NPS, and the USFWS to review their lands for potential wilderness areas.

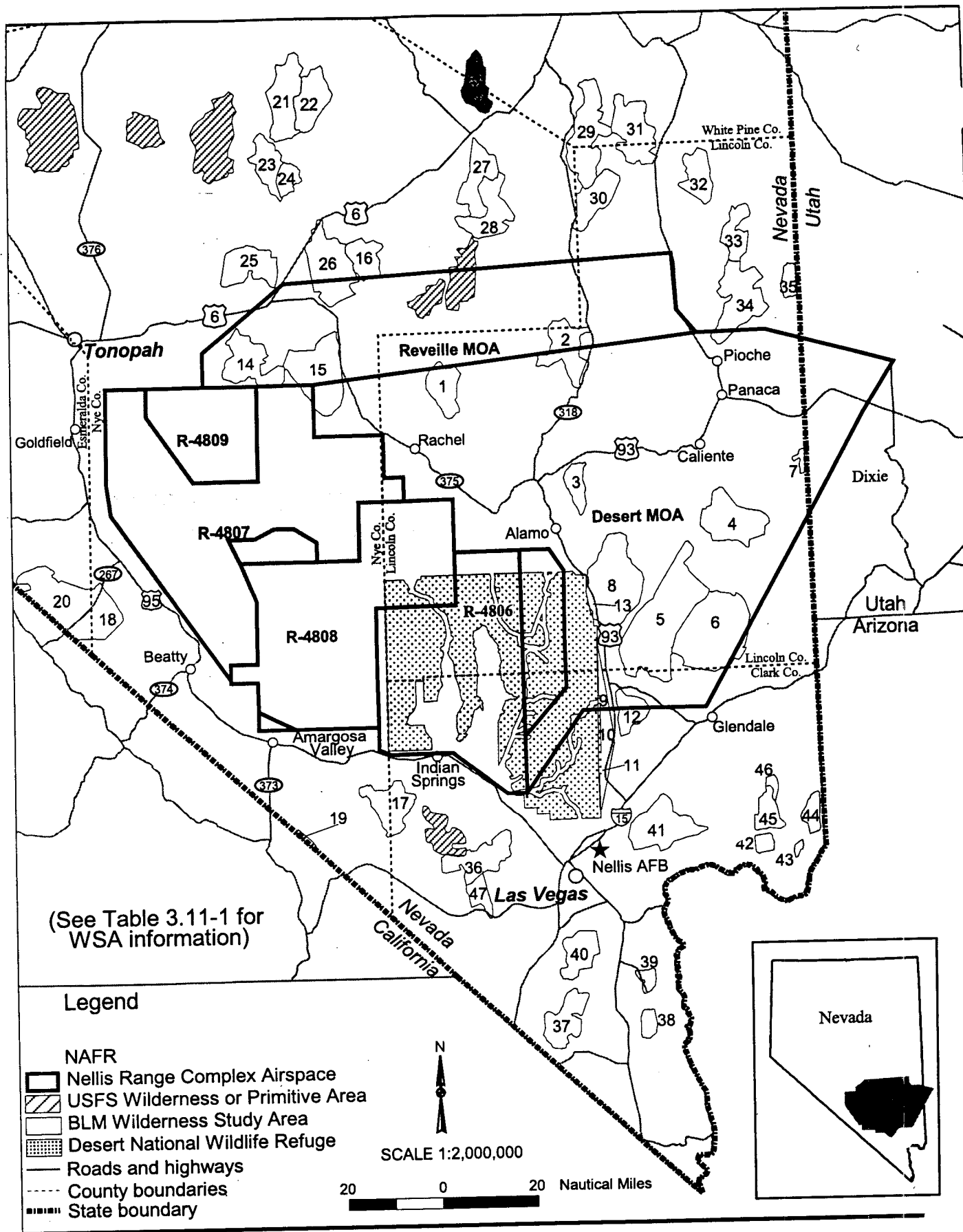
Wilderness designation is intended to preserve areas in a primitive state that have little evidence of human activity. The Wilderness Act of 1964 identified criteria for evaluating those areas and gave direction on how designated wilderness should be managed. Subject to certain exemptions, use of motor vehicles or other motorized equipment, landing of aircraft, and construction of structures and roads are prohibited in wilderness areas.

Management direction for wilderness in the National Wildlife Refuge System comes from the Wilderness Act, the National Wildlife Refuge System Administration Act of 1966 and supplemental amendments, the Alaskan National Interest Lands Conservation Act of 1980, and other legislation establishing individual units of the refuge system. These lands are implemented by published regulations for Wilderness Preservation and Management (50 CFR, part 35), DOI guides, and agency national policy for wilderness management (Hendee et al. 1990).

Congress passed the FLPMA in 1976, which mandated in Section 603(c) that the BLM also conduct a wilderness review. The BLM performed wilderness reviews on roadless public lands of approximately 5,000 or more acres and roadless islands to determine which were suitable for wilderness designation. The result of this review was the identification of WSAs. BLM submitted recommendations for designation of these lands to the Secretary of the Interior for eventual Congressional action. Because the Congressional review process is still underway, BLM manages WSAs as *de facto* wilderness so as not to impair their suitability for wilderness designation.

#### 3.11.1 Wilderness and Wilderness Study Areas within ROI Three

This subsection identifies wilderness and WSAs and their attributes. Figure 3.11-1 depicts the location of these areas within the ROI.



**Figure 3.11-1. Wilderness and Wilderness Study Areas under Nellis Military Airspace**

## **U.S. FISH AND WILDLIFE SERVICE**

In 1975, the USFWS proposed approximately 88 percent of the DNWR (depicted in Figure 3.11-1) for inclusion in the National Wilderness Preservation System. Areas excluded from the wilderness proposal included lands on which NAFR target facilities are located. Target areas are generally located in valleys below 4,000 feet (below 3,600 feet in Three Lakes Valley). The proposed wilderness area within DNWR is currently managed as *de facto* wilderness so as not to impair its wilderness qualities. Aircraft operations, where practical, are generally restricted to a minimum of 2,000 feet above ground level, except for special training missions (BLM, DOI, and Air Force 1987). The *Public Land Withdrawal Environmental Impact Statement* (BLM, DOI, and Air Force 1987) states that the wilderness designation will not affect the Air Force's use of NAFR for bombing and gunnery practice and that continued military use, as described in the MOU between the USFWS and the Air Force will not preclude the USFWS from managing the area as *de facto* wilderness.

## **U.S. FOREST SERVICE**

There are no designated wilderness areas on NAFR. One USFS Wilderness area is south of the NRC. The approximately 43,000-acre Mount Charleston Wilderness is located in the recently established Spring Mountain National Recreation Area in the Toiyabe National Forest. The two USFS wilderness areas under, or partially under, the NRC airspace are the Quinn Canyon and Grant Range Wilderness areas. These are located in the Humboldt National Forest and are approximately 27,000 acres and 50,000 acres, respectively.

## **BUREAU OF LAND MANAGEMENT**

There are 20 WSAs managed by the BLM under or adjacent to the NAFR Complex. These are listed in Table 3.11-1. Additional WSAs in southern Nevada are listed in Table 3.11-2.

This subsection identifies attributes for each WSA within the ROI. Wilderness attributes include naturalness, opportunities for solitude, opportunities for primitive and unconfined recreation, special features, and size.

An area is considered natural if it appears to have been affected primarily by the forces of nature and human impact is substantially unnoticeable. Solitude refers to "the state of being alone or remote for habitation or a secluded place." Opportunities for primitive and unconfined recreation experience are defined as "activities that provide dispersed, undeveloped recreation which does not require facilities or motorized equipment" (BLM 1991a). Special features are not legally required as wilderness attributes; however geologic structures, important cultural or historic features, or unique wildlife habitat may enhance an area's overall wilderness quality. The area's overall size affects wilderness recommendation. Generally, larger areas have the capability to absorb the impacts of transitory sights and sounds; may have more natural and special features; and greater opportunities for solitude or primitive recreation.

**Table 3.11-1. Wilderness Recommendations for Wilderness Study Areas in Close Proximity to NAFR**  
(Page 1 of 2)

Figure Number <sup>1</sup>	District	State	WSA	EIS	Report Number	Suitable for Wilderness		Non-Suitable for Wilderness		Wilderness Attributes (Suitable for Wilderness)		
						(Acres)	(Acres)	(Acres)	(Acres)	Nat	Sol	Rec
1	Ely	NV	Worthington Mountains	Schell Resource Area Study FEIS 1987	NV-040-242	26,587	21,046	G	O	O		
2	Ely	NV	Weepah Springs	Schell Resource Area Study FEIS 1987	NV-040-246	50,499	10,638	O	O	G		
3	Ely	NV	South Pahroc Range	Caliente Wilderness Study FEIS 1989	NV-050-132	28,395	205	G-O	O	O		
4	Ely	NV	Clover Mountains	Caliente Wilderness Study FEIS 1989	NV-050-139	84,875	60	O	O	O		
5	Ely/Las Vegas	NV	Meadow Valley Range	Caliente Wilderness Study FEIS 1989	NV-050-156	97,180	88,564	G	O	O		
6	Ely/Las Vegas	NV	Mormon Mountains	Caliente Wilderness Study FEIS 1989	NV-050-161	123,130	39,757	G	O	O		
7	Ely / Cedar City	NV/UT	Tunnel Spring (Cougar Canyon)	Utah Statewide Wilderness Study FEIS 1990	NV-050-166/ UT-040-123	6,408	9,560	G	O	G		
8	Ely	NV	Delamar Mountains	Caliente Wilderness Study FEIS 1989	NV-050-177	0	126,257	G-L	G-L	G-L		
9	Ely / Las Vegas	NV	Fish & Wildlife 1	Nevada Contiguous Lands Wilderness Study FEIS 1990	NV-050-201	0	11,090	G	L	L		
10	Las Vegas	NV	Fish & Wildlife 2	Nevada Contiguous Lands Wilderness Study FEIS 1990	NV-050-216	0	17,242	G	L	L		
11	Las Vegas	NV	Fish & Wildlife 3	Nevada Contiguous Lands Wilderness Study FEIS 1990	NV-050-217	0	22,002	G	L	L		

**Table 3.11-1. Wilderness Recommendations for Wilderness Study Areas in Close Proximity to NAFR**  
(Page 2 of 2)

Figure Number <sup>1</sup>	District	State	WSA	EIS	Report Number	Suitable for Wilderness (Acres)	Non-Suitable for Wilderness (Acres)	Wilderness Attributes (Suitable for Wilderness)			
								Nat	Sol	Rec	Spe
12	Las Vegas	NV	Arrow Canyon Range	Clark County Study FEIS 1987	NV-050-215	0	32,853	G-L	O	G	G
13	Ely	NV	Evergreen ABC	Nevada Contiguous Lands Study FEIS 1990	NV-050-1R-16	0	2,694	G	L	L	L
14	Battle Mtn.	NV	Kawich	Tonopah Resource Area Study FEIS 1987	NV-060-019	0	54,320	G	O	G	G
15	Battle Mtn.	NV	South Reveille	Tonopah Resource Area Study FEIS 1987	NV-060-112	33,000	73,200	G	O	O	No
16	Battle Mtn.	NV	The Wall	Tonopah Resource Area Study FEIS 1987	NV-060-163	30,320	7,680	G	O	O	G
17	Las Vegas	NV	Mt. Stirling	Clark County Study FEIS 1987	NV-050-401	50,682	19,050	G	O	O	G
18	Battle Mtn.	NV	Grapevine Mountains	Esmeralda-Southern Nye Study FEIS 1987	NV-060-355	23,150	43,650	O	O	O	G
19	Las Vegas	NV	Resting Springs	Nye Study FEIS 1987	NV-050-460	0	3,850	G	O	L	None
20	Battle Mtn.	NV	Queer Mt.	Nye Study FEIS 1987	NV-060-354	46,650	38,900	O	O	O	G

Notes: O = Outstanding, G = Good, L = Low

1. Number corresponds to Figure 3.11-1, Wilderness and Wilderness Study Areas under Nellis Military Airspace.

Source: BLM 1991c

**Table 3.11-2. Wilderness Recommendation for Wilderness Study Areas  
(Additional Wilderness Study Areas in Southern Nevada)**

			<i>Suitable for Wilderness</i>	<i>Non-Suitable for Wilderness</i>
<i>Figure Number<sup>1</sup></i>	<i>WSA</i>	<i>Report Number</i>	<i>(Acres)</i>	<i>(Acres)</i>
21	Antelope Range	NV-060-231/241	30,086	0
22	Park Range	NV-040-154	22,766	1,972
23	Fandango	NV-060-190	4,382	12,643
24	Morey Peak	NV-060-191	2,670	5,928
25	Rawhide Mountain	NV-060-059	25,800	0
26	Palisade Mesa	NV-060-142/162	23,233	16,716
27	Blue Eagle	NV-060-158/199	0	23,181
28	Riordian's Wall	NV-040-166	0	26,463
29	South Egan Range	NV-040-168	0	38,225
30	Far South Egans	NV-040-172	599	15,533
31	Mt. Grafton	NV-040-169	17,741	13,058
32	Fortification Range	NV-040-177	17,632	0
33	Table Mountain	NV-040-197	15,093	0
34	Parsnip Peak	NV-040-206	13,884	22,991
35	White Rock Range	NV-040-202	0	6,685
36	La Madre Mountains	NV-050-412	8,510	17,696
37	South McCullough Mountains	NV-050-435	14,680	8,226
38	Ireteba Peaks	NV-050-438	6,014	0
39	El Dorado	NV-050-423	4,826	0
40	North McCullough Mountains	NV-050-425	19,253	0
41	Muddy Mountains	NV-050-229	18,783	16,056
42	Garrett Buttes	NV-050-235	4,713	0
43	Jumbo Springs	NV-050-236	1,470	0
44	—	AZ-010-17	8,170	0
45	Million Hills	NV-050-233	5,729	5,984
46	Lime Canyon	NV-050-231	2,614	0
47	Pine Creek	NV-050-414	0	9,248

*Note:* Number corresponds to Figure 3.11-1. Wilderness and Wilderness Study Areas under Nellis Military Airspace.  
*Source:* BLM 1991c

The Nevada Wilderness Study Report includes the recommendations and rationale for those WSAs in Nevada. The WSAs were identified through the wilderness inventory process and analyzed in separate EISs. The report focused on key study issues including impacts on wilderness values; impacts on the exploration for and development of mineral and energy resources; impacts on recreational off-highway vehicle use; impacts on grazing facility maintenance and construction; impacts on vegetation manipulation projects; and impacts on woodland product harvest.

The Nellis Air Force Range Resource Plan (BLM 1992) evaluated 2.2 million acres of NAFR withdrawn land, the lands that are not part of DNWR, for wilderness characteristics. As a part of that study, the BLM determined that none of the lands considered contained any land that meets the minimum criteria for WSA designation.

Table 3.11-1 lists the WSAs under or partially under the NRC. The table summarizes each WSA's attributes and identifies those WSAs that contain areas that BLM has recommended as suitable for wilderness designation. This table also shows acreages within the WSAs that BLM has recommended not suitable for wilderness designation.

The BLM recognized that solitude was potentially adversely affected in three WSAs by frequent military overflight. These WSAs are Worthington Mountains, Mormon Mountains, and Tunnel Spring (Cougar Canyon). The issue of existing military overflights over these WSAs was evaluated for each area and the effects of the overflights were determined to be not sufficient to warrant a nonsuitable recommendation for the WSAs.

### **3.11.2 Management Practices**

Wilderness areas are managed to preserve and protect the area's resources and to prevent introduction of an activity that would degrade the quality of the environment or preclude Congress from designating the areas as wilderness. This management supports recreation and some rangeland uses, but precludes introduction of mechanized vehicles, except in emergencies. Nonimpairment criteria for WSAs require that motorized activities be temporary and reclaimable so as not to constrain Congress' decision on a wilderness designation. Overflights by general aviation and military aircraft fall within these nonimpairment criteria. The visual and audible intrusions of aircraft into the WSA or wilderness area are by nature temporary and reversible and leave no permanent evidence of human use.

This subsection identifies specific management practices for WSAs in the ROI.

#### **U.S. FISH AND WILDLIFE SERVICE**

Management of USFWS wilderness areas is implemented through two levels of planning including Refuge Management Plans and Individual Wilderness Management Plans. The lands located in DNWR are managed by the Refuge Management Plan as *de facto* wilderness by the USFWS. These lands are preserved through a "minimum tool" management approach which



requires refuge managers to use the least intrusive methods, equipment, and facilities necessary for administering the areas.

In the event of a disaster situation in DNWR, such as an aircraft crash, the wreckage removal and cleanup would involve the most non-intrusive methods possible and the DNWR's management objectives would be considered to the greatest extent practicable. Refer to section 3.3, Safety for a more detailed discussion of safety issues in and around NAFR.

#### **BUREAU OF LAND MANAGEMENT**

Between 1980 and 1991, the BLM conducted EISs on each WSA to assess the impacts of wilderness designation or allocation for other uses. The EISs evaluated wilderness values, recreation uses, mineral and energy resource potential, wildlife management, and other resources to determine the level of impact of designation as wilderness. During that time, USGS and the U.S. Bureau of Mines conducted a mineral study of each WSA. A Wilderness Study Report (1991) was completed and contained recommendations for wilderness and non-wilderness in each WSA (BLM 1991c).

BLM submitted recommendations for wilderness designation to the Secretary of the Interior for eventual congressional action. Until the Congressional review process is completed, WSAs are managed under BLM's Interim Management Policy (IMP) for lands under wilderness review (H-8550-1) so as to not impair their suitability for wilderness designation. A WSA possessing the greatest number of these attributes is more likely to be recommended suitable for wilderness designation.

The IMP outlines implementation procedures for the evaluation of proposed actions in a WSA. These procedures include:

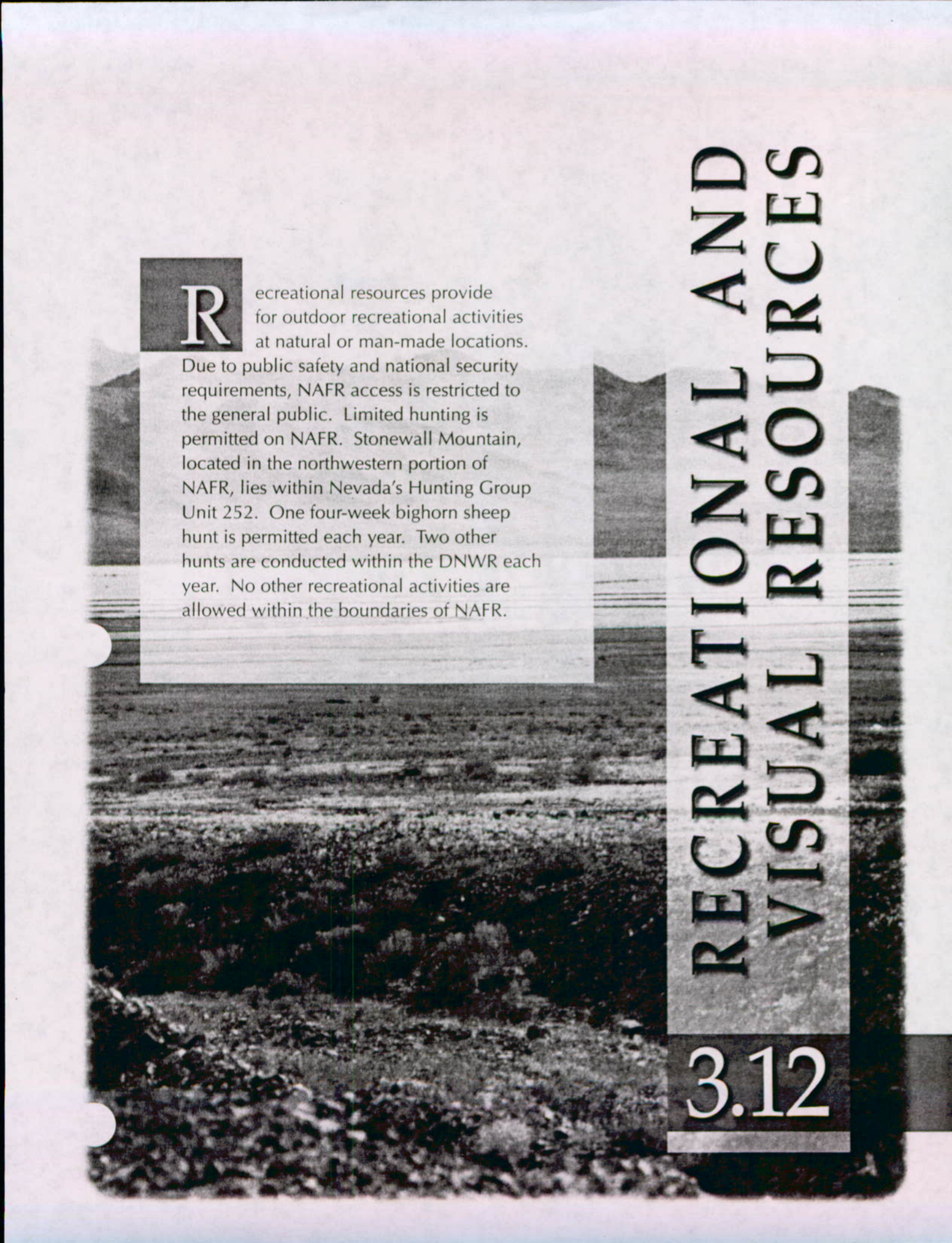
1. Review the definition of wilderness
2. Consider exceptions and limitations to the nonimpairment standard
3. Notify interested parties of proposed action
4. Conclude whether the use or facility will meet the nonimpairment standard
5. Consult the guidelines for specific activities
6. Prepare an EA or EIS
7. Determination made

All WSAs are managed under the IMP until Congress acts. If Congress determines a WSA will not be designated as wilderness, that land will be managed under general BLM management policies and applicable land use plans. Areas designated as wilderness are managed under

BLM Manual 8560 – Management of Designated Wilderness Areas and under the regulations at 43 CFR 8560.

The BLM's management policy outlined in the IMP is "to continue resources uses on lands under wilderness review in a manner that maintains the area's suitability for preservation as wilderness." The IMP contains guidelines for specific activities for interim management of lands under wilderness review. These include land actions (disposals, use authorizations, rights-of-way, access, and withdrawals), mineral uses, watershed rehabilitation and vegetation manipulation, rangeland management, wild horses and burro management, forestry, wildlife, recreation, cultural and paleontological resources, and fire management.

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**R**ecreational resources provide for outdoor recreational activities at natural or man-made locations.

Due to public safety and national security requirements, NAFR access is restricted to the general public. Limited hunting is permitted on NAFR. Stonewall Mountain, located in the northwestern portion of NAFR, lies within Nevada's Hunting Group Unit 252. One four-week bighorn sheep hunt is permitted each year. Two other hunts are conducted within the DNWR each year. No other recreational activities are allowed within the boundaries of NAFR.

# RECREATIONAL AND VISUAL RESOURCES

3.12

## RECREATIONAL AND VISUAL RESOURCES



*NAFR visual resources are dominated by arid playas and distant north-south trending mountain ridges.*

Visual resources are the landforms, water bodies, vegetation, buildings, fences, and other features that give a particular environment its aesthetic qualities. The visual impression of an area is derived from the type, arrangement, and contrast between these features.

BLM uses the resource management classification (VRM) system to identify the existing visual character of the landscape and define the allowable extent and type of modification to the landscape. The VRM classification system rates visual character from the most sensitive (VRM Class I) to the least sensitive (VRM Class IV). Since visual classes are defined solely by the quality of visual resources of an area and not influenced by classifications of neighboring areas, the most sensitive class can be adjacent to the least sensitive class.



*NAFR recreational resources include limited hunts for bighorn sheep, pictured here.*

## 3.12 RECREATION AND VISUAL RESOURCES

For the purpose of this analysis, recreation resources include primarily outdoor recreational activities that occur away from a participant's residence. This section addresses natural resources and man-made facilities that are designated or available for public recreational use in remote areas. The setting, activity, and other resources that influence affected recreation resources enable assessment of potential impacts to this resource. ROI Three is considered as it relates to recreation potential outside NAFR. ROI Two is discussed in the context of existing recreational opportunities on NAFR.

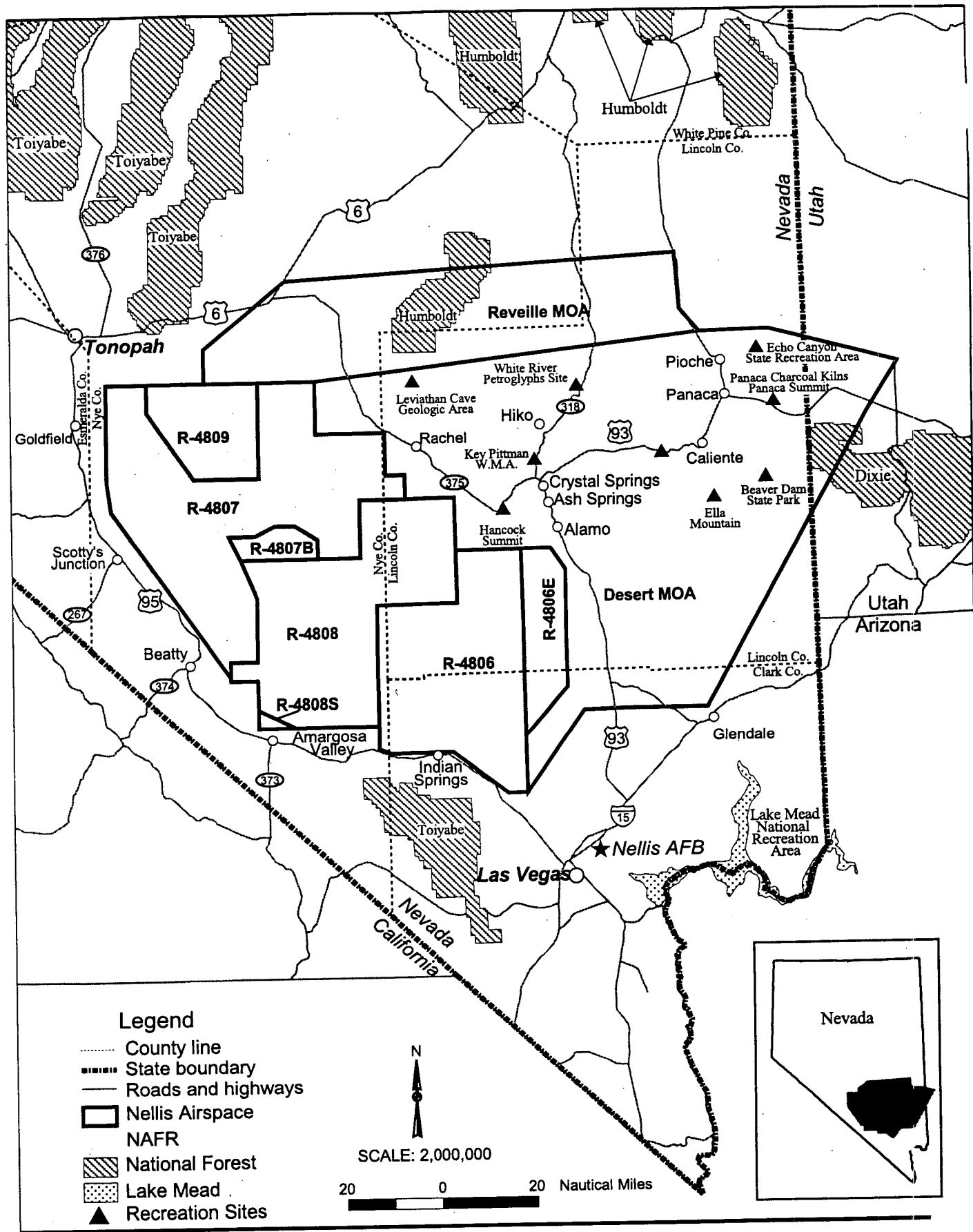
Visual resources are the natural (landforms, water bodies, vegetation), and man-made (buildings, fences, signs) features that give a particular environment its aesthetic characteristics. A visual impression of an area is derived from the type, physical arrangement, and contrast between these features. Although each viewer's perception may be slightly different, an overall landscape character can be assigned to an area and impacts to that character can be assessed.

### 3.12.1 Recreational Opportunities

The NRC airspace overlays approximately 7 million acres of land. Due to public safety and security reasons, approximately 3 million acres of this land is closed to public access. Most of the remaining land beneath the associated airspace (ROI Three) that is open to public recreation is managed by the BLM for multiple use, which includes recreation.

Numerous broad valleys separate the north-south trending mountain ranges within and surrounding NAFR. The diverse landscape provides a variety of outdoor recreation opportunities ranging from hiking, camping, horseback riding, land sailing, rockhounding, and nature viewing to off-highway vehicle use, recreational mining, and hunting. State parks, recreation areas, national forests, and wildlife refuges also provide these types of activities as well as specific destinations for visitors. Public lands and special use areas where recreation occurs are shown on Figure 3.12-1.

The BLM Caliente Field office manages the majority of land under the associated airspace. The *Caliente Management Framework Plan* (BLM 1980) identified areas where recreation use is a concern due to delicate ecosystems. The recreation portion of the plan provides a wide variety of recreational opportunities in response to increasing public demand, while at the same time providing protection for locations with important botanical, zoological, geological, and paleontological values. These areas are Ash Springs, Clover Creek, Gleason Canyon, Ella Mountain Summit, Panaca Charcoal Kilns-Panaca Summit, Oak Springs Summit, and Hancock Summit (BLM 1980). Due to the dispersed nature of outdoor recreation, use figures are difficult to estimate. Many of the activities occurring, such as camping, hiking, nature viewing, etc., do not require special permits. Therefore, these visitors often are not accounted for by informal surveys. The Caliente Resource Area, located in the eastern portion of the NRC airspace, has approximately 50,427 visits in 1996 (personal communication, M. Bunker 1997). The Tonopah Resource Area, located under the northwest portion of the associated airspace, had



**Figure 3.12-1. Recreation Sites and Areas under Nellis Military Airspace**

761,588 visits in 1996 (BLM 1997) (a visit is defined as a visit to BLM administered land and/or waters by a person for the purpose of engaging in any recreational activity, except those which are part of or incidental to the pursuit of a gainful occupation, whether for a few minutes, full day, or more).

To account for the variety of recreation experiences and opportunity, the BLM uses the Recreation Opportunity Spectrum (ROS) as a management tool. The ROS provides a framework by which outdoor recreation environments, activities, and experience opportunities can be organized and defined. Underlying the ROS is the basic assumption that quality outdoor recreation is best satisfied through a diverse set of opportunities. Although the notion of quality is subjective, the concept depends on basic factors such as what kind of experience an individual may expect, how much of this expectation is realized, and to what degree the visitor is satisfied by the experience.

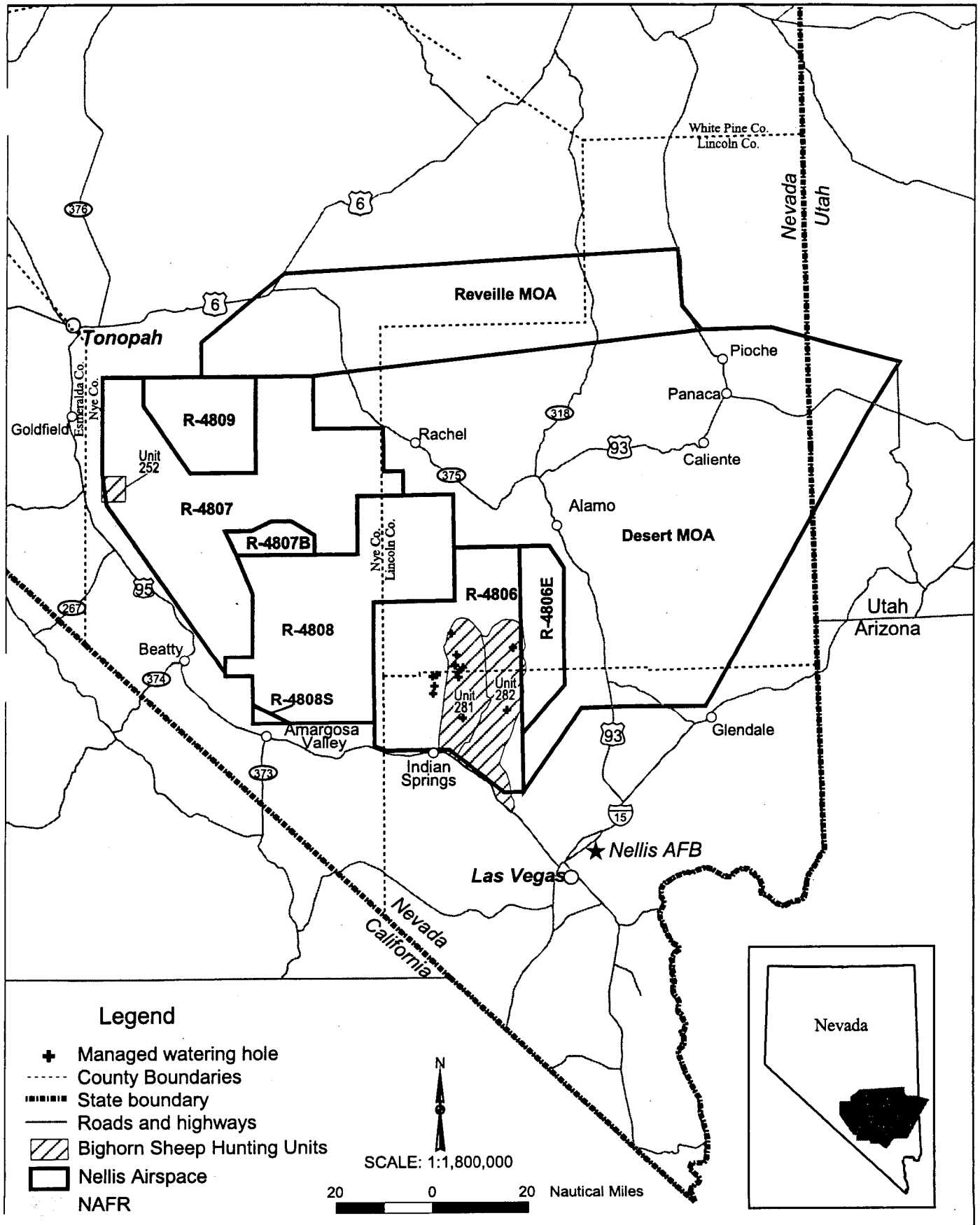
The ROS framework is arranged along a continuum and is divided into six general classes of recreational opportunities: Primitive, Semi-primitive Non-motorized, Semi-primitive motorized, Roaded Natural, Rural, and Urban. Opportunities for experiences along the continuum represent a range from a very high probability of solitude, self-reliance, and challenge to a very social experience with developed recreational amenities. The Caliente Resource area has no designated ROS. Both the Tonopah Resource area and Las Vegas Field office area are managed with ROS. In general, WSAs are managed as Primitive. Those land areas that are primitive in nature but are not in WSAs are managed as either Semi-Primitive Non-Motorized and Semi-Primitive Motorized depending on the amount of road access available. Roaded Natural areas, Rural, and Urban areas are all defined for the quality and amount of development occurring in the area with natural areas less developed than rural and urban areas.

The NDOW manages game units within the state. Big game management units in the ROI include 132, 133, 223, 231, 241, 242, 243, 244, 251, 252, 253, 271, 281, 282, 283, 284, 285, 286, and 287. Bighorn sheep, mule deer, antelope, and upland game (such as grouse, rabbit, and pheasants) are hunted throughout this region (Table 3.12-1). The hunting season varies by animal and equipment used. For general deer hunting, including archery and muzzleloaders, the season runs from August to December. For antelope, the season runs from August to September. The season for bighorn sheep, a premier trophy species, runs from about the first week in November to the first week in December (NDOW 1996).

Hunting also occurs in the southeastern corner of NAFR within portions of the DNWR (hunting units 281 and 282) (see Figure 3.12-2). An MOU between the Air Force and USFWS outlines the joint use and management of the portion of the NAFR that overlays DNWR. Hunting is permitted under this MOU for a period of not less than 14 consecutive days annually during the months of December and/or January to hunt bighorn sheep. Hunters must obtain a special range access permit prior to access to the area. The 1996 quota for bighorn sheep was five for hunting unit 281, which comprises the Pintwater Range, and two for unit 282, which comprises the area around Desert Range (see Table 3.12-1 for 1996 Nevada



Table 3.12-1. 1996 Nevada Hunting Statistics									
<b>Deer</b> (Hunt Numbers 1131, 1231, 1235, 1141, 1241, 1171, 1271)									
<i>Unit Group</i>	131-134	221-223	231	241-244	271, 272				
Deer kill	188	240	212	99	11				
Tag sales	448	563	357	155	46				
Total hunters	429	542	355	152	44				
Percent hunter success	44	44	60	65	25				
<b>Pronghorn</b> (Hunt Numbers 2151, 2161, 2251, 2261)									
<i>Unit Group</i>	115, 222, 231			132, 133, 134, 245 (excluding hunt number 2261)					
Pronghorn kill	21			18					
Tag sales	36			20					
Total hunters	36			20					
Percent hunter success	58			90					
<b>Bighorn Sheep</b> (Hunt Numbers 3000, 3151, 3251, and auction)									
<i>Unit Group</i>	132 <sup>a</sup>	223, 241 <sup>a</sup>	244 <sup>a,b</sup>	252 <sup>a,b</sup>	271 <sup>a,b</sup>	281 <sup>a</sup>	282 <sup>a</sup>	283-285, 287 <sup>a,b</sup>	286 <sup>a,b</sup>
Bighorn kills	0	1	3	4	6	3	1	1	1
Tag quotas	1	2	3	6	10	5	2	3	2
Total hunters	1	2	3	6	8	5	2	2	2
Percent hunter success	0	50	100	66	75	60	50	50	50
Notes: a. Resident b. Non-Resident									
<b>Elk</b> (Hunt Numbers 4161, 4151, 4181)									
<i>Unit Group</i>	231								
Elk kills	24								
Tag sales	37								
Total hunters	35								
Percent hunter success	69								
Source: NDOW 1997b.									



**Figure 3.12-2. Bighorn Sheep Hunting Districts and Managed Watering Holes under Nellis Military Airspace**

Hunting Statistics). Other recreational activities within the portions of DNWR outside of NAFR include hunting, hiking, and bird watching. Flight altitude restrictions over the DNWR are also described in this MOU.

Hunting on NAFR occurs on Stonewall Mountain, located on Nellis North Range (refer to Figure 3.12-2). An MOU also exists between Nellis AFB and the State of Nevada regarding Stonewall Mountain Bighorn Sheep management, including hunting activities. Hunting is permitted annually for a three-week period at the end of November/early December. Hunters must apply for the appropriate permits or tags through the NDOW prior to use of the area. Stonewall Mountain lies within hunting unit 252. The quota for bighorn sheep in 1996 for this unit was five. Small portions of two National Forests, Dixie and Humboldt, are located under the associated airspace ROI. Both of these National Forests offer picnicking, hunting, camping, and hiking in a rugged mountainous terrain. Special overflight restrictions have been placed on areas that include the Humboldt National Forest. These restrictions are over the Adven and Carter Ranches. Located under ROI Three are designated sites that can attract visitors. These include the DNWR, Humboldt National Forest, Cathedral Gorge State Park, Beaver Dam State Park, and Echo Canyon State Recreation Area. The location of these sites is depicted on Figure 3.12-1. These areas offer camping, picnicking, and hiking in a scenic location. Beaver Dam State Park and Echo Canyon State Recreation Area also offer fishing and water skiing. Table 3.12-2 provides visitor use information for these sites. The Timber Mountain Caldera Natural National Landmark is also located under ROI Three and attracts visitors interested in volcanic formations..

	<i>Cathedral Gorge</i>	<i>Echo Canyon</i>	<i>Beaver Dam</i>
Acreage	1,633	920	2,233
Peak Use Periods	April-Sept	April - Sept	May-Aug
Annual Visitors (1996)	42,617	53,447	6,926
Length of Stay	73% 1 day or less	75% 2 or more days	36% 1 day or less
Origin of visitors	46% in state	92% in state	95% in state
Most Popular Activities	<ol style="list-style-type: none"> <li>1. Hiking</li> <li>2. Relaxing</li> <li>3. Driving</li> <li>4. Photography</li> <li>5. Camping</li> </ol>	<ol style="list-style-type: none"> <li>1. Relaxing</li> <li>2. Lake Fishing</li> <li>3. Hiking</li> <li>4. Camping</li> <li>5. Driving</li> </ol>	<ol style="list-style-type: none"> <li>1. Relaxing</li> <li>2. Hiking</li> <li>3. Lake fishing</li> <li>4. Camping</li> <li>5. Photography</li> </ol>
<i>Source: Personal communications, Weaver 1997</i>			

Areas not specifically designated for recreation can also attract visitors. The Key Pittman Wildlife Management Area, Pahranaagat National Wildlife Refuge, White River Petroglyphs

Archaeological Site, and Leviathan Cave Geologic Area are designated areas that may draw visitors for their special or distinctive attributes.

Various ghost towns also attract visitors. The ghost towns located under ROI Three are in various states of disrepair. Usually these sites contain a few buildings or foundations of buildings. Some will also have cemeteries, mine tailings, and other evidence of historic mining. Historic ghost towns and mining camps are further discussed in section 3.9, Cultural Resources.

### **3.12.2 Visual Resources and Setting**

When rating the visual character of an area, the shape, form, line, and color of the landscape all play an important role. As the stewards of the land in the ROI, the BLM uses the Visual Resource Management Classification (VRM) system to identify the existing visual character of the landscape and define the allowable extent and type of modification to the landscape. The VRM Classification system rates visual character from the most sensitive (VRM Class I) to the least sensitive (VRM Class IV). Since visual classes are defined solely by the quality of visual resources of an area and not influenced by classifications of neighboring areas, the most sensitive class (VRM I) can be adjacent to the least sensitive class (VRM IV). Areas identified to receive Class II management include areas surrounding or adjacent to the Pahrnagat Valley Wildlife Refuge, Clover Creek, Beaver Dam State Park, the Big Hogback, Cathedral Gorge State Park, Highland Peak, Gleason Canyon, Echo Canyon State Park, Key Pittman Wildlife Management Area, and WSAs (BLM 1980).

As discussed previously in this document, ROI Three is located within the Basin and Range physiographic province characterized by flat valleys that provide broad views of distant mountain ranges. In the flat valley areas, local landforms consists of small hills, drainages, and volcanic rock formations. In the mountainous areas, land forms consist of large alluvial fans, barren rock, and vegetation covered mountainsides.

Within the broad valley areas, vegetation consists of a variety of communities: the southern portion of the ROI is dominated by communities typical of the eastern Mojave Desert (e.g., saltbrush, creosote bush scrub, and mixed Mojave communities); toward the northern portion of the ROI, transitioning to the Great Basin Desert, plant communities consist of saltbrush, pinyon juniper, and northern desert shrub. The mountain areas consist predominantly of coniferous forest. Plant associations vary geographically and with elevation (refer to section 3.8, Biological Resources, for a complete description of plant communities).

The Air Force has specific regulations that describe the requirements for cleanup of NAFR. In addition, the Air Force has an MOU with USFWS to clean up target debris, training ordnance, etc., from military training activities.

Very few urban areas exist within the ROI. These areas tend to be avoided by military aircraft for safety reasons. These towns and rural communities are typically associated with mining in the region.

U.S. Highway 93 has been designated a scenic byway by the NDOT. This highway offers views of desert wildlife, eroded mountainous terrain, and ghost towns.

### **3.12.3 American Indian Issues Concerning Recreation and Visual Resources**

The CGTO recognizes that, while the military land withdrawal limits their access to traditional resources, it also protects these resources from intrusions and disturbance by non-Indian recreationists.

Regarding visual resources, the NARD states:

All land forms within the NAFR have high sensitivity levels for American Indians. The ability to see the land without the distraction of buildings, towers, cables, roads, and other objects is essential for the spiritual interaction between Indian people and their traditional lands (AIWS 1997).

**T**he socioeconomic region of influence (ROI) is the geographical area within which the principal socioeconomic effects of continuation or termination of the NAFR land withdrawal will be experienced.

For NAFR socioeconomics, ROI Three is defined as Clark, Lincoln, and Nye counties, Nevada. Clark County's population is almost 98 percent urbanized. Nye County has a more rural (38 percent) population than Clark, but still has centers of population in Tonopah, Beatty, Amargosa Valley, and Pahrump. Lincoln County is 100 percent rural and has the smallest population of the three counties.

Socioeconomics includes the following:

- Employment
- Earnings
- Agriculture
- Mining
- Land ownership
- Population
- Housing
- Health care
- Public schools
- Law enforcement
- Fire protection
- Public finance

# SOCIOECONOMICS

3.13



*Socioeconomics addresses the social and economic effects of a federal action as it relates to environmental resources. Population growth increases pressure on other resources, including air quality, water availability, and biological species.*

The NRC is primarily located in rural sections of Nye, Lincoln, and Clark counties. The economics of both Nye County (full- and part-time employment of 10,825 in 1995) and Lincoln County (full- and part-time employment of 2,038 in 1995) are small by comparison to that of Clark County (full- and part-time employment of 609,684 in 1995). Personnel associated with both NAFR and Nellis AFB numbered almost 10,000 in 1995, of whom over 70 percent were active duty personnel.

The mining industry plays an important role in the economy of rural Nevada. As a gold producer, the State of Nevada ranks third in the world after Russia and South Africa. Of the three counties in the ROI, Nye County has historically been the most prominent mining county. The Nye County share of the assessed valuation of mining properties in the state has fallen from 20 percent in 1987 to less than 10 percent in 1995.

Population growth between 1990 and 1995 within the ROI has primarily taken

place within Clark County, which increased by 266,010 persons at an average annual rate of 6.1 percent. Nye County population increased by 4,860 persons over the same time period, at an average rate of 4.9 percent annually. Lincoln County's population has remained relatively stable and increased at an annual rate of 1.5 percent, from 3,810 persons to 4,110 persons.



*Changes in governmental expenditures can affect growth or contraction of military facilities. Through the life of NAFR, Indian Springs has gone through several economic cycles.*

## 3.13 SOCIOECONOMICS

### 3.13.1 Introduction

Socioeconomics addresses selected characteristics of the social and economic environment in the geographical area containing the NAFR. The socioeconomic environment in the Nellis AFB area is also presented due to the potential for environmental consequences associated with the No-Action Alternative. The characteristics addressed include the following: economic development (comprising employment and earning, with special attention to the agricultural and mining sectors of the economy), population, housing, public services and facilities (comprising health care, public schools, law enforcement, and fire protection), and public finance.

A substantial share of activity at Nellis AFB is directly and intimately tied to activities that take place at NAFR. Thus, background information is provided for both Nellis AFB and NAFR within their regional context.

### 3.13.2 Region of Influence

An analysis of the potential socioeconomic impacts of the renewal of withdrawal of NAFR requires establishment of an expanded ROI Three that encompasses three Nevada counties. This is the geographical area within which the potential direct and secondary socioeconomic effects of selection of an alternative would be experienced.

Clark, Lincoln, and Nye counties are the three southernmost counties of the State of Nevada. Clark County is the principal county of the Las Vegas Metropolitan Statistical Area (which also includes Nye County, Nevada and Mohave County, Arizona). Within Clark County are the incorporated communities of Las Vegas, Boulder City, Henderson, Mesquite, and North Las Vegas. The U.S. Bureau of the Census defines an urbanized place as one where there are 2,500 persons or more in an incorporated community or Census Designated Place (CDP). Thus defined, Clark County's population is almost 98 percent urbanized. Nye County has a more rural (38 percent) population than Clark, but still has centers of population in Tonopah, Beatty, Amargosa Valley, and Pahrump. Lincoln County is 100 percent rural and has the smallest population of the three counties.

Data used in this report comes from a wide variety of sources, including (but not limited to), the Nevada Statistical Abstract, the Regional Economic Information System (REIS) Database of the Bureau of Economic Analysis (BEA), the U.S. Department of Commerce, and U.S. Bureau of the Census.



### 3.13.3 Economics

#### 3.13.3.1 EMPLOYMENT

NRC is located in rural areas of Nye, Lincoln, and Clark counties. The economies of both Nye and Lincoln counties are small in comparison to that of Clark County. The number of jobs in Nye County increased from 7,884 in 1980 to 13,351 in 1990 at an average annual rate of 5.4 percent. However, between 1990 and 1995 the number of jobs in the county declined by 2,526 to 10,825 at an average annual rate of 4.1 percent (see Table 3.13-1). This decrease in employment is attributable mainly to the hiring moratorium imposed on the NTS, the major employer in the county. In 1995, the most important sectors in terms of employment were services (47.1 percent of total employment), mining (12.7 percent), state and local government (11.1 percent), and retail trade (10.0 percent) as shown in Table 3.13-1.

Of the three counties making up the ROI, Lincoln County has the lowest level of employment. Employment in the county increased from 1,810 in 1980 to 2,403 in 1990, at an average annual rate of 2.9 percent. Between 1990 and 1995, employment fell by 365 jobs to 2,038 (see Table 3.13-2). In 1995, the most important sector in terms of employment was state and local government with 27.3 percent of total county employment (see Table 3.13-2).

Over the period 1980 to 1990 employment in Clark County increased from 266,339 to 459,873 at an average annual rate of 5.6 percent. By 1995, the number of jobs had increased to 609,684 at 5.8 percent annually. All sectors (with the exception of farm and military employment) grew substantially over the period 1990 to 1995 with the most rapid increase in the following major sectors: manufacturing (8.9 percent annually, on average); state and local government (6.5 percent); and services (6.2 percent). Of total employment in 1995, the largest share was contributed by the services sector (46.4 percent), followed by retail trade with 15.8 percent, construction with 8.6 percent, state and local government with 7.4 percent, and finance, insurance, and real estate with 7.1 percent (see Table 3.13-3). Most of the growth in the services sector is attributable to growth in the hotel, gaming, and recreation sub-sectors.

Based on information collected and tabulated by the BEA, the estimated number of full- and part-time jobs in the State of Nevada in 1990 stood at 767,748, having increased at an average annual rate of 4.6 percent since 1980 when there were 490,673 jobs. Between 1990 and 1995, the number of jobs increased by 186,753 to 954,5012 at an average annual rate of 4.5 percent (see Table 3.13-4).

Total military and related personnel associated with Nellis AFB and NAFR numbered 10,110 in FY1994 and 9,996 in fiscal year (FY) 1995 (see Table 3.13-5). Of the FY1995 total, 7,205 were active duty military of whom approximately 170 (or 2.4 percent) worked on the NAFR. Between FY1994 and FY1995 there was a reduction of 2.8 percent (from 7,413 to 7,205) in active duty personnel assigned to Nellis AFB and NAFR. Civilian personnel at Nellis AFB totaled 1,890 in FY1994 and 1,852 in FY1995. Of these, the majority (55.6 percent in FY1994 and 53.8 percent in FY1995) were appropriated fund personnel. There were also contractor personnel

**Table 3.13-1. Employment Characteristics for Nye County, Nevada, 1980 and 1990-1995**

<i>Nye County Employment</i>	1980	1990	1991	1992	1993	1994	1995
Total Jobs	7,884	13,351	13,148	12,430	11,135	10,728	10,825
Farm	222	268	234	234	227	233	209
Nonfarm	7,662	13,083	12,914	12,196	10,908	10,495	10,616
Private	6,888	11,871	11,641	10,853	9,583	9,117	9,160
Ag. Services, Forestry, Fishing, Other	50	70	65	53	79	83	90
Mining	1,080	1,984	1,674	1,533	1,323	1,188	1,376
Construction	414	391	331	348	372	520	493
Manufacturing	88	162	162	166	180	172	218
Transportation & Public Utilities	(D)	(D)	(D)	(D)	234	243	269
Wholesale Trade	25	(D)	(D)	(D)	115	93	91
Retail Trade	525	964	933	965	1,031	1,040	1,086
Finance, Insurance, and Real Estate	(D)	(D)	(D)	406	408	417	435
Services	4,130	7,653	7,771	7,037	5,841	5,361	5,102
Govt. and Govt. Enterprises	774	1,212	1,273	1,343	1,325	1,378	1,456
Federal, Civilian	129	202	209	226	230	197	202
Military	101	77	72	78	69	62	52
State and Local	544	933	992	1,039	1,026	1,119	1,202
State	67	83	94	101	100	104	105
Local	477	850	898	938	926	1,015	1,097

Source: U.S. Department of Commerce 1997

<i>Nye County Employment</i>	Average Annual % Rate of Change		Absolute Change in Number of Jobs		Sector Employment as Percent of Total	
	1980- 1990	1990- 1995	1980- 1990	1990- 1995	1990	1995
Total Jobs	5.41%	-4.11%	5,467	-2,526	100.00%	100.00%
Farm	1.90%	-4.85%	46	-59	2.01%	1.93%
Nonfarm	5.50%	-4.09%	5,421	-2,467	97.99%	98.07%
Private	5.59%	-5.05%	4,983	-2,711	88.91%	84.62%
Ag. Services, Forestry, Fishing, Other	3.42%	5.15%	20	20	0.52%	0.83%
Mining	6.27%	-7.06%	904	-608	14.86%	12.71%
Construction	-0.57%	4.75%	-23	102	2.93%	4.55%
Manufacturing	6.29%	6.12%	74	56	1.21%	2.01%
Transportation & Public Utilities	NA	NA	NA	NA	NA	2.48%
Wholesale Trade	NA	NA	NA	NA	NA	0.84%
Retail Trade	6.27%	2.41%	439	122	7.22%	10.03%
Finance, Insurance, and Real Estate	NA	NA	NA	NA	NA	4.02%
Services	6.36%	-7.79%	3,523	-2,551	57.32%	47.13%
Govt. and Govt. Enterprises	4.59%	3.74%	438	244	9.08%	13.45%
Federal, Civilian	4.59%	0.00%	73	0	1.51%	1.87%
Military	-2.68%	-7.55%	-24	-25	0.58%	0.48%
State and Local	5.54%	5.20%	389	269	6.99%	11.10%
State	2.16%	4.81%	16	22	0.62%	0.97%
Local	5.95%	5.23%	373	247	6.37%	10.13%

(L) = Not shown to avoid disclosure of confidential information. Estimates are included in totals.

(D) = Less than 10 jobs. Estimates are included in totals.

Source: Bureau of Economic Analysis 1997

**Table 3.13-2. Employment Characteristics for Lincoln County, Nevada, 1980 and 1990-1995**

<i>Lincoln County Employment</i>	1980	1990	1991	1992	1993	1994	1995
Total Jobs	1,810	2,403	2,338	2,210	2,216	2,204	2,038
Farm	164	178	160	162	157	159	149
Nonfarm	1,646	2,225	2,178	2,048	2,059	2,045	1,889
Private	1,251	1,688	1,630	1,475	1,481	1,449	1,285
Ag. Services, Forestry, Fishing, Other	(L)	(D)	20	19	(L)	(L)	(L)
Mining	308	30	23	17	17	15	18
Construction	75	47	52	30	28	27	36
Manufacturing	12	10	(D)	(L)	(D)	(D)	(L)
Transportation & Public Utilities	96	88	88	69	62	70	59
Wholesale Trade	12	(L)	(D)	(D)	(D)	(D)	(D)
Retail Trade	310	250	228	248	247	253	(D)
Finance, Insurance, and Real Estate	52	50	60	61	50	53	59
Services	382	(D)	(D)	(D)	(D)	(D)	(D)
Govt. and Govt. Enterprises	395	537	548	573	578	596	604
Federal, Civilian	25	45	42	39	40	40	40
Military	12	12	11	11	10	(L)	(L)
State and Local	358	480	495	523	528	547	556
State	73	150	161	171	162	168	169
Local	285	330	334	352	360	379	387

Source: U.S. Department of Commerce 1997

<i>Lincoln County Employment</i>	Average Annual % Rate of Change		Absolute Change in Number of Jobs		Sector Employment as Percent of Total	
	1980- 1990	1990- 1995	1980- 1990	1990- 1995	1990	1995
Total Jobs	2.87%	-3.24%	593	-365	100.00%	100.00%
Farm	0.82%	-3.49%	14	-29	7.41%	7.31%
Nonfarm	3.06%	-3.22%	579	-336	92.59%	92.69%
Private	3.04%	-5.31%	437	-403	70.25%	63.05%
Ag. Services, Forestry, Fishing, Other	NA	NA	NA	NA	NA	NA
Mining	-20.78%	-9.71%	-278	-12	1.25%	0.88%
Construction	-4.57%	-5.19%	-28	-11	1.96%	1.77%
Manufacturing	-1.81%	NA	-2	NA	0.42%	NA
Transportation & Public Utilities	-0.87%	-7.68%	-8	-29	3.66%	2.89%
Wholesale Trade	NA	NA	NA	NA	NA	NA
Retail Trade	-2.13%	NA	-60	NA	10.40%	NA
Finance, Insurance, and Real Estate	-0.39%	3.37%	-2	9	2.08%	2.89%
Services	NA	NA	NA	NA	NA	NA
Govt. and Govt. Enterprises	3.12%	2.38%	142	67	22.35%	29.64%
Federal, Civilian	6.05%	-2.33%	20	-5	1.87%	1.96%
Military	0.00%	NA	0	NA	0.50%	NA
State and Local	2.98%	2.98%	122	76	19.98%	27.28%
State	7.47%	2.41%	77	19	6.24%	8.29%
Local	1.48%	3.24%	45	57	13.73%	18.99%

(L) = Not shown to avoid disclosure of confidential information. Estimates are included in totals.

(D) = Less than 10 jobs. Estimates are included in totals.

Source: U.S. Department of Commerce 1997

**Table 3.13-3. Employment Characteristics for Clark County, Nevada, 1980 and 1990-1995**

<i>Clark County Employment</i>	1980	1990	1991	1992	1993	1994	1995
Total Jobs	266,339	459,873	475,747	482,959	513,113	573,105	609,684
Farm	419	406	347	334	324	330	302
Nonfarm	265,920	459,467	475,400	482,625	512,789	572,775	609,382
Private	228,150	408,669	420,871	426,206	455,271	512,903	547,077
Ag. Services, Forestry, Fishing, Other	1,313	3,909	4,100	4,060	4,497	5,155	5,996
Mining	589	819	854	1,034	1,073	1,109	1,189
Construction	16,312	40,549	33,999	33,441	40,869	47,277	52,437
Manufacturing	7,271	11,671	11,483	11,976	13,915	15,947	17,832
Transportation & Public Utilities	13,758	21,081	22,119	22,026	23,614	26,417	28,614
Wholesale Trade	6,548	14,216	15,422	15,795	15,256	16,785	18,743
Retail Trade	44,266	72,356	75,786	77,952	80,309	88,927	96,320
Finance, Insurance, and Real Estate	20,410	35,154	35,729	35,010	38,270	42,098	43,200
Services	117,683	208,914	221,379	224,912	237,468	269,188	282,746
Govt. and Govt. Enterprises	37,770	50,798	54,529	56,419	57,518	59,872	62,305
Federal, Civilian	4,893	6,957	7,018	7,343	7,549	7,640	7,900
Military	10,515	10,913	11,108	10,097	9,292	9,902	9,300
State and Local	22,362	32,928	36,403	38,979	40,677	42,330	45,105
State	5,278	7,614	8,187	8,668	8,915	9,329	10,052
Local	17,084	25,314	28,216	30,311	31,762	33,001	35,053

Source: U.S. Department of Commerce 1997

<i>Clark County Employment</i>	Average Annual % Rate of Change		Absolute Change in Number of Jobs		Sector Employment as Percent of Total	
	1980- 1990	1990- 1995	1980- 1990	1990- 1995	1990	1995
Total Jobs	5.61%	5.80%	193,534	149,811	100.00%	100.00%
Farm	-0.31%	-5.75%	-13	-104	0.09%	0.05%
Nonfarm	5.62%	5.81%	193,547	149,915	99.91%	99.95%
Private	6.00%	6.01%	180,519	138,408	88.87%	89.73%
Ag. Services, Forestry, Fishing, Other	11.53%	8.93%	2,596	2,087	0.85%	0.98%
Mining	3.35%	7.74%	230	370	0.18%	0.20%
Construction	9.53%	5.28%	24,237	11,888	8.82%	8.60%
Manufacturing	4.85%	8.85%	4,400	6,161	2.54%	2.92%
Transportation & Public Utilities	4.36%	6.30%	7,323	7,533	4.58%	4.69%
Wholesale Trade	8.06%	5.68%	7,668	4,527	3.09%	3.07%
Retail Trade	5.04%	5.89%	28,090	23,964	15.73%	15.80%
Finance, Insurance, and Real Estate	5.59%	4.21%	14,744	8,046	7.64%	7.09%
Services	5.91%	6.24%	91,231	73,832	45.43%	46.38%
Govt. and Govt. Enterprises	3.01%	4.17%	13,028	11,507	11.05%	10.22%
Federal, Civilian	3.58%	2.57%	2,064	943	1.51%	1.30%
Military	0.37%	-3.15%	398	-1,613	2.37%	1.53%
State and Local	3.95%	6.50%	10,566	12,177	7.16%	7.40%
State	3.73%	5.71%	2,336	2,438	1.66%	1.65%
Local	4.01%	6.73%	8,230	9,739	5.50%	5.75%

Source: U.S. Department of Commerce 1997

**Table 3.13-4. Employment Characteristics for the State of Nevada, 1980 and 1990-1995**

<i>Nevada Employment</i>	1980	1990	1991	1992	1993	1994	1995
Total Jobs	490,673	767,748	784,481	792,119	830,951	904,855	954,501
Farm	5,448	5,260	4,494	4,409	4,285	4,367	3,962
Nonfarm	485,225	762,488	779,987	787,710	826,666	900,488	950,539
Private	413,849	672,192	684,460	688,726	725,894	795,706	842,270
Ag. Services, Forestry, Fishing, Other	2,625	6,227	6,651	6,409	7,164	8,061	9,180
Mining	6,627	15,588	14,730	14,670	14,085	13,923	14,971
Construction	30,857	57,997	50,517	49,981	58,196	67,919	74,657
Manufacturing	20,160	28,238	27,880	28,413	32,088	36,571	39,642
Transportation & Public Utilities	25,543	35,225	36,191	35,937	38,579	41,929	44,372
Wholesale Trade	13,973	25,746	27,071	27,932	27,836	30,086	32,957
Retail Trade	76,840	117,237	121,352	123,833	127,178	138,233	148,478
Finance, Insurance, and Real Estate	37,347	57,065	57,491	55,194	59,355	63,616	64,550
Services	199,877	328,869	342,577	346,357	361,413	395,368	413,463
Govt. and Govt. Enterprises	71,376	90,296	95,527	98,984	100,772	104,782	108,269
Federal, Civilian	10,476	12,356	12,404	13,003	13,219	13,369	13,618
Military	12,576	13,382	13,528	12,573	11,771	12,329	11,524
State and Local	48,324	64,558	69,595	73,408	75,782	79,084	83,127
State	14,918	19,706	21,048	21,873	22,360	23,062	24,041
Local	33,406	44,852	48,547	51,535	53,422	56,022	59,086

Source: U.S. Department of Commerce 1997

<i>Nevada Employment</i>	Average Annual % Rate of Change		Absolute Change in Number of Jobs		Sector Employment as Percent of Total	
	1980- 1990	1990- 1995	1980- 1990	1990- 1995	1990	1995
Total Jobs	4.58%	4.45%	277,075	186,753	100.00%	100.00%
Farm	-0.35%	-5.51%	-188	-1,298	0.69%	0.42%
Nonfarm	4.62%	4.51%	277,263	188,051	99.31%	99.58%
Private	4.97%	4.61%	258,343	170,078	87.55%	88.24%
Ag. Services, Forestry, Fishing, Other	9.02%	8.07%	3,602	2,953	0.81%	0.96%
Mining	8.93%	-0.80%	8,961	-617	2.03%	1.57%
Construction	6.51%	5.18%	27,140	16,660	7.55%	7.82%
Manufacturing	3.43%	7.02%	8,078	11,404	3.68%	4.15%
Transportation & Public Utilities	3.27%	4.73%	9,682	9,147	4.59%	4.65%
Wholesale Trade	6.30%	5.06%	11,773	7,211	3.35%	3.45%
Retail Trade	4.32%	4.84%	40,397	31,241	15.27%	15.56%
Finance, Insurance, and Real Estate	4.33%	2.50%	19,718	7,485	7.43%	6.76%
Services	5.11%	4.68%	128,992	84,594	42.84%	43.32%
Govt. and Govt. Enterprises	2.38%	3.70%	18,920	17,973	11.76%	11.34%
Federal, Civilian	1.66%	1.96%	1,880	1,262	1.61%	1.43%
Military	0.62%	-2.95%	806	-1,858	1.74%	1.21%
State and Local	2.94%	5.19%	16,234	18,569	8.41%	8.71%
State	2.82%	4.06%	4,788	4,335	2.57%	2.52%
Local	2.99%	5.67%	11,446	14,234	5.84%	6.19%

Source: U.S. Department of Commerce 1997

<i>Category</i>	<i>FY 1994</i>	<i>FY 1995</i>
Active Duty Military	7,413	7,205
Nellis AFB	8,238	7,035
NAFR	175	170
Civilian	1,890	1,852
Appropriated Fund	1,051	997
Non-Appropriated Fund	810	828
Other	29	27
Contractor	807	939
Nellis AFB	121	139
NAFR	686	800
<b>Total</b>	<b>10,110</b>	<b>9,996</b>
As of FY98, there were 21 government employees and 77 contractor personnel at TTR		

associated with activities at the base and on NAFR. In FY1994 there were 121 contractor personnel on the base and 686 on the NAFR and these numbers increased by FY1995 to 139 on the base and 800 on NAFR.

### **3.13.3.2 EARNINGS**

For Nye County, the greatest share of total earnings (which stood at \$363.9 million in 1995) was contributed by the services sector with 54.3 percent of the total followed by mining with a share of 17.6 percent (see Table 3.13-6). The average value of earnings per job in 1995 was \$33,619 with the highest represented by civilian employees of the federal government (\$46,649) followed closely by workers in the mining sector (\$46,538).

Earnings of workers in Lincoln County in 1995 totaled \$54.4 million, a fraction of the level in Nye County. Of this total, 29.0 percent (\$15.8 million) is contributed by the state and local government sector (see Table 3.13-7). Because of the small size of the county economy and relatively small number of enterprises, information is withheld from publication. Thus, it is difficult to identify the share that other sectors have of the total county earnings. However, 88.9 percent of the private, nonfarm earnings in the county is contributed by the following three sectors: wholesale trade, retail trade, and services. The average value of earnings per job at the county level was \$26,671 in 1995. The highest reported value was for the transportation and

**Table 3.13-6. Total Earnings and Average Earnings per job, Nye County, Nevada, 1980 and 1990-1995**

<i>Total Earnings (\$000) Nye County, Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Earnings by Place of Work	\$171,025	\$412,568	\$421,751	\$426,663	\$380,459	\$365,128	\$363,924
Farm	\$2,216	\$2,700	\$2,828	\$3,239	\$2,817	\$3,012	\$3,350
Nonfarm	\$168,809	\$409,868	\$418,923	\$423,424	\$377,642	\$362,116	\$360,574
Private	\$158,371	\$379,275	\$384,327	\$385,238	\$336,645	\$317,994	\$314,071
Ag. Services, Forestry, Fishing, Other	\$407	\$225	\$219	\$297	\$365	\$408	\$447
Mining	\$26,023	\$77,921	\$70,148	\$66,612	\$59,428	\$57,092	\$64,036
Construction	\$9,711	\$10,475	\$7,635	\$7,270	\$8,716	\$14,586	\$11,327
Manufacturing	\$1,907	\$2,103	\$2,420	\$2,392	\$2,379	\$2,522	\$3,128
Transportation & Public Utilities	(D)	(D)	(D)	(D)	\$8,469	\$9,421	\$10,463
Wholesale Trade	\$389	(D)	(D)	(D)	\$2,303	\$2,231	\$2,368
Retail Trade	\$5,499	\$10,761	\$11,956	\$12,794	\$14,267	\$15,779	\$18,539
Finance, Insurance, and Real Estate	(D)	(D)	(D)	\$5,529	\$5,423	\$5,416	\$6,271
Services	\$106,037	\$265,763	\$278,847	\$279,596	\$235,295	\$210,539	\$197,492
Govt. and Govt. Enterprises	\$10,438	\$30,593	\$34,596	\$38,186	\$40,997	\$44,122	\$46,503
Federal, Civilian	\$2,374	\$7,079	\$8,149	\$9,257	\$9,863	\$9,196	\$9,423
Military	\$985	\$909	\$854	\$1,053	\$888	\$695	\$442
State and Local	\$7,079	\$22,605	\$25,593	\$27,876	\$30,246	\$34,231	\$36,638
State	\$1,224	\$2,669	\$2,982	\$3,484	\$3,498	\$3,657	\$3,821
Local	\$5,855	\$19,936	\$22,611	\$24,392	\$26,748	\$30,574	\$32,817
<i>Source: U.S. Department of Commerce 1997</i>							
<i>Earnings per job, Nye County, Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Average Earnings per Job	\$21,693	\$30,902	\$32,077	\$34,325	\$34,168	\$34,035	\$33,619
Farm	\$9,982	\$10,075	\$12,085	\$13,842	\$12,410	\$12,927	\$16,029
Nonfarm	\$22,032	\$31,328	\$32,439	\$34,718	\$34,621	\$34,504	\$33,965
Private	\$22,992	\$31,950	\$33,015	\$35,496	\$35,129	\$34,879	\$34,287
Ag. Services, Forestry, Fishing, Other	\$8,140	\$3,214	\$3,369	\$5,604	\$4,620	\$4,916	\$4,967
Mining	\$24,095	\$39,275	\$41,904	\$43,452	\$44,919	\$48,057	\$46,538
Construction	\$23,457	\$26,790	\$23,066	\$20,891	\$23,430	\$28,050	\$22,976
Manufacturing	\$21,670	\$12,981	\$14,938	\$14,410	\$13,217	\$14,663	\$14,349
Transportation & Public Utilities	NA	NA	NA	NA	\$36,192	\$38,770	\$38,896
Wholesale Trade	\$15,560	NA	NA	NA	\$20,026	\$23,989	\$26,022
Retail Trade	\$10,474	\$11,163	\$12,815	\$13,258	\$13,838	\$15,172	\$17,071
Finance, Insurance, and Real Estate	NA	NA	NA	\$13,618	\$13,292	\$12,988	\$14,416
Services	\$25,675	\$34,727	\$35,883	\$39,732	\$40,283	\$39,272	\$38,709
Govt. and Govt. Enterprises	\$13,486	\$25,242	\$27,177	\$28,433	\$30,941	\$32,019	\$31,939
Federal, Civilian	\$18,403	\$35,045	\$38,990	\$40,960	\$42,883	\$46,680	\$46,649
Military	\$9,752	\$11,805	\$11,861	\$13,500	\$12,870	\$11,210	\$8,500
State and Local	\$13,013	\$24,228	\$25,799	\$26,830	\$29,480	\$30,591	\$30,481
State	\$18,269	\$32,157	\$31,723	\$34,495	\$34,980	\$35,163	\$36,390
Local	\$12,275	\$23,454	\$25,179	\$26,004	\$28,886	\$30,122	\$29,915
(L) = Not shown to avoid disclosure of confidential information. Estimates are included in totals.							
(D) = Less than 10 jobs. Estimates are included in totals.							
<i>Source: U.S. Department of Commerce 1997</i>							

**Nellis Air Force Range Renewal LEIS**

**Table 3.13-7. Total Earnings and Average Earnings per job, Lincoln County, Nevada, 1980 and 1990-1995**

<i>Total Earnings (\$000) Lincoln County, Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Earnings by Place of Work	\$27,221	\$65,704	\$64,808	\$55,219	\$56,508	\$57,776	\$54,356
Farm	\$1,450	\$1,916	\$1,055	\$424	\$2,140	\$1,849	\$1,866
Nonfarm	\$25,771	\$63,788	\$63,753	\$54,795	\$54,368	\$55,927	\$52,490
Private	\$21,133	\$50,656	\$49,672	\$39,338	\$38,337	\$39,213	\$35,225
Ag. Services, Forestry, Fishing, Other	(L)	(D)	\$116	\$103	\$68	\$74	\$78
Mining	\$7,669	\$519	\$403	\$304	\$252	\$257	\$248
Construction	\$2,194	\$1,061	\$703	\$305	\$329	\$382	\$556
Manufacturing	\$108	\$109	(D)	\$118	(D)	(D)	\$55
Transportation & Public Utilities	\$1,796	\$2,079	\$2,489	\$2,570	\$2,533	\$2,603	\$2,324
Wholesale Trade	\$101	(L)	(D)	(D)	(D)	(D)	(D)
Retail Trade	\$2,218	\$2,144	\$2,321	\$2,471	\$2,489	\$2,753	(D)
Finance, Insurance, and Real Estate	\$325	\$311	\$475	\$569	\$502	\$538	\$650
Services	\$6,685	(D)	(D)	(D)	(D)	(D)	(D)
Govt. and Govt. Enterprises	\$4,638	\$13,132	\$14,081	\$15,457	\$16,031	\$16,714	\$17,265
Federal, Civilian	\$390	\$1,211	\$1,184	\$1,215	\$1,374	\$1,427	\$1,429
Military	(L)	\$73	\$69	\$76	\$70	\$72	\$64
State and Local	\$4,216	\$11,848	\$12,828	\$14,166	\$14,587	\$15,215	\$15,772
State	\$1,204	\$4,478	\$4,980	\$5,705	\$5,523	\$5,763	\$6,003
Local	\$3,012	\$7,370	\$7,848	\$8,461	\$9,064	\$9,452	\$9,769

Source: U.S. Department of Commerce 1997

<i>Earnings per job, Lincoln County, Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Average Earnings per Job	\$15,039	\$27,342	\$27,719	\$24,986	\$25,500	\$26,214	\$26,671
Farm	\$8,841	\$10,764	\$6,594	\$2,617	\$13,631	\$11,629	\$12,523
Nonfarm	\$15,657	\$28,669	\$29,271	\$26,755	\$26,405	\$27,348	\$27,787
Private	\$16,893	\$30,009	\$30,474	\$26,670	\$25,886	\$27,062	\$27,412
Ag. Services, Forestry, Fishing, Other	NA	NA	\$5,800	\$5,421	NA	NA	NA
Mining	\$24,899	\$17,300	\$17,522	\$17,882	\$14,824	\$17,133	\$13,778
Construction	\$29,253	\$22,574	\$13,519	\$10,167	\$11,750	\$14,148	\$15,444
Manufacturing	\$9,000	\$10,900	NA	NA	NA	NA	NA
Transportation & Public Utilities	\$18,708	\$23,625	\$28,284	\$37,246	\$40,855	\$37,186	\$39,390
Wholesale Trade	\$8,417	NA	NA	NA	NA	NA	NA
Retail Trade	\$7,155	\$8,576	\$10,180	\$9,964	\$10,077	\$10,881	NA
Finance, Insurance, and Real Estate	\$6,250	\$6,220	\$7,917	\$9,328	\$10,040	\$10,151	\$11,017
Services	\$17,500	NA	NA	NA	NA	NA	NA
Govt. and Govt. Enterprises	\$11,742	\$24,454	\$25,695	\$26,976	\$27,735	\$28,044	\$28,584
Federal, Civilian	\$15,600	\$26,911	\$28,190	\$31,154	\$34,350	\$35,675	\$35,725
Military	NA	\$6,083	\$6,273	\$6,909	\$7,000	NA	NA
State and Local	\$11,777	\$24,683	\$25,915	\$27,086	\$27,627	\$27,815	\$28,367
State	\$16,493	\$29,853	\$30,932	\$33,363	\$34,093	\$34,304	\$35,521
Local	\$10,568	\$22,333	\$23,497	\$24,037	\$24,765	\$24,939	\$25,243

(L) = Not shown to avoid disclosure of confidential information. Estimates are included in totals.

(D) = Less than 10 jobs. Estimates are included in totals.

Source: U.S. Department of Commerce 1997



public utilities sector (\$39,390) followed by federal civilian employment (\$35,725) and state government employment (\$35,521).

Total earnings in Clark County totaled over \$18,093 million in 1995 as shown in Table 3.13-8. The greatest share of this total is contributed by the services sector (48.0 percent), followed by construction (10.4 percent), retail trade (9.7 percent), and state and local government (8.8 percent). On average, in 1995, the annual earnings per job was \$29,677, slightly above the state average. The average earnings per job varied from a high of \$46,045 in civilian employment for the federal government, \$36,683 for wholesale trade, \$36,621 for transportation and public utilities, and \$36,602 for local government to \$18,252 in retail trade, \$17,904 in agricultural services and forestry, and \$10,775 in farming as shown in Table 3.13-8.

Total earnings derived from employment in the State of Nevada totaled over \$27,971 million in 1995 as shown in Table 3.13-9. The greatest share of this total is contributed by the services sector (43.7 percent), followed by state and local government (10.1 percent), construction (9.7 percent), and retail trade (9.6 percent). On average, in 1995, the annual value of earnings per job was \$29,305 statewide. The average earnings per job varied from a high of \$49,031 in the mining sector and \$45,330 in civilian employment for the federal government to \$18,064 in retail trade, \$16,572 in agricultural services and forestry, and \$11,459 in farming as shown in Table 3.13-9.

### **3.13.3.3 AGRICULTURE**

As of 1992, there were 2,890 farms statewide in Nevada, encompassing approximately 9.2 million acres. Of these farms, 122 were in Lincoln County (48,968 acres), 155 were in Nye County (140,380 acres), and 223 were in Clark County (82,100 acres), (see Table 3.13-10).

Agriculture in Nevada primarily consists of two commodities: crops and livestock. In Nevada between 1990 and 1994, cash receipts from the marketing of crops and livestock (gross receipts from commercial market sales as well as loans [net of redemption] made or guaranteed by the Community Credit Corporation and other purchases under price support payments) have remained flat. Receipts in Clark and Lincoln counties have risen slightly, while receipts in Nye County have fallen dramatically. State cash receipts, not adjusted for inflation, fell from \$365,644,000 in 1990 to \$364,013,000 in 1994, a loss of over \$1.5 million in absolute terms. In dollar value adjusted for inflation, this represents nearly a 10 percent decline (see Table 3.13-11).

The declining performance of agriculture can be attributed to livestock commodities. Nevada supports cattle, sheep, and hogs. Cattle are the principal commodity in this group, comprising over 94 percent of the industry. While the production value of sheep and hogs has moved moderately between 1990 and 1995, the production value of cattle has dropped dramatically, from over \$135 million to under \$90 million (Nevada Statistical Abstract 1995). This has been reflected in the decline of cattle inventories statewide (see Table 3.13-12). By comparison, over the same period the production value of crops has risen from \$178 million to almost \$198 million, which is attributable to strong growth in the hay, potato, and onion markets (State of Nevada 1996).

**Table 3.13-8. Total Earnings and Average Earnings per job, Clark County, Nevada, 1980 and 1990-1995**

<i>Total Earnings (\$millions) Clark County, Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Earnings by Place of Work	\$4,053.5	\$10,948.4	\$11,637.6	\$12,907.0	\$14,333.6	\$16,168.7	\$18,093.3
Farm	\$3.2	\$2.6	\$2.7	\$2.6	\$3.6	\$2.9	\$3.3
Nonfarm	\$4,050.3	\$10,945.8	\$11,634.9	\$12,904.4	\$14,330.0	\$16,165.7	\$18,090.1
Private	\$3,474.1	\$9,506.4	\$10,008.2	\$11,139.4	\$12,451.1	\$14,170.2	\$15,913.6
Ag. Services, Forestry, Fishing, Other	\$12.3	\$57.7	\$62.3	\$66.7	\$74.3	\$87.5	\$107.4
Mining	\$20.2	\$9.4	\$10.3	\$14.7	\$20.6	\$22.7	\$25.2
Construction	\$406.3	\$1,271.0	\$1,093.1	\$1,141.4	\$1,473.5	\$1,682.4	\$1,885.5
Manufacturing	\$143.7	\$328.6	\$324.7	\$363.4	\$437.0	\$512.9	\$593.5
Transportation & Public Utilities	\$304.6	\$665.0	\$722.2	\$751.6	\$833.2	\$947.4	\$1,047.9
Wholesale Trade	\$127.6	\$433.8	\$495.4	\$546.7	\$538.2	\$603.5	\$687.5
Retail Trade	\$478.7	\$1,122.9	\$1,196.0	\$1,302.4	\$1,379.4	\$1,574.6	\$1,758.1
Finance, Insurance, and Real Estate	\$182.2	\$487.7	\$498.5	\$668.8	\$835.3	\$950.3	\$1,120.1
Services	\$1,798.3	\$5,130.1	\$5,605.6	\$6,283.7	\$6,859.5	\$7,788.8	\$8,688.5
Govt. and Govt. Enterprises	\$576.2	\$1,439.4	\$1,626.7	\$1,765.0	\$1,878.9	\$1,995.5	\$2,176.4
Federal, Civilian	\$98.6	\$239.0	\$261.9	\$298.7	\$309.3	\$334.4	\$363.8
Military	\$130.3	\$227.6	\$245.2	\$223.7	\$209.6	\$210.5	\$230.3
State and Local	\$347.3	\$972.9	\$1,119.6	\$1,242.6	\$1,360.0	\$1,450.6	\$1,582.4
State	\$73.5	\$198.8	\$226,255	\$253.6	\$263.3	\$278.6	\$299.4
Local	\$273.8	\$774.0	\$893,389	\$988.9	\$1,096.7	\$1,172.0	\$1,283.0

Source: U.S. Department of Commerce 1997

<i>Earnings per job, Clark County, Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Average Earnings per Job	\$15,219	\$23,807	\$24,462	\$26,725	\$27,935	\$28,212	\$29,677
Farm	\$7,535	\$6,443	\$7,706	\$7,871	\$11,194	\$8,948	\$10,775
Nonfarm	\$15,231	\$23,823	\$24,474	\$26,738	\$27,945	\$28,223	\$29,686
Private	\$15,227	\$23,262	\$23,780	\$26,136	\$27,349	\$27,627	\$29,088
Ag. Services, Forestry, Fishing, Other	\$9,394	\$14,755	\$15,202	\$16,439	\$16,531	\$16,981	\$17,904
Mining	\$34,338	\$11,518	\$12,039	\$14,244	\$19,188	\$20,509	\$21,206
Construction	\$24,911	\$31,345	\$32,152	\$34,131	\$36,055	\$35,586	\$35,958
Manufacturing	\$19,768	\$28,160	\$28,277	\$30,340	\$31,406	\$32,163	\$33,283
Transportation & Public Utilities	\$22,139	\$31,548	\$32,651	\$34,125	\$35,282	\$35,865	\$36,621
Wholesale Trade	\$19,493	\$30,513	\$32,122	\$34,610	\$35,280	\$35,956	\$36,683
Retail Trade	\$10,814	\$15,520	\$15,781	\$16,707	\$17,176	\$17,706	\$18,252
Finance, Insurance, and Real Estate	\$8,929	\$13,873	\$13,954	\$19,104	\$21,827	\$22,572	\$25,929
Services	\$15,281	\$24,556	\$25,321	\$27,939	\$28,886	\$28,935	\$30,729
Govt. and Govt. Enterprises	\$15,255	\$28,337	\$29,832	\$31,284	\$32,666	\$33,329	\$34,932
Federal, Civilian	\$20,155	\$34,352	\$37,320	\$40,679	\$40,979	\$43,768	\$46,045
Military	\$12,390	\$20,855	\$22,071	\$22,156	\$22,556	\$21,260	\$24,761
State and Local	\$15,530	\$29,545	\$30,757	\$31,878	\$33,433	\$34,268	\$35,083
State	\$13,920	\$26,112	\$27,636	\$29,262	\$29,533	\$29,865	\$29,785
Local	\$16,027	\$30,578	\$31,662	\$32,626	\$34,528	\$35,513	\$36,602

Source: U.S. Department of Commerce 1997

**Table 3.13-9. Total Earnings and Average Earnings per job, State of Nevada, 1980 and 1990-1995**

<i>Total Earnings (\$millions) State of Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Earnings by Place of Work	\$7,373.0	\$18,176.0	\$19,130.6	\$21,016.5	\$22,854.4	\$25,358.3	\$27,971.7
Farm	\$62.3	\$73.3	\$65.7	\$50.7	\$91.1	\$59.0	\$45.4
Nonfarm	\$7,310.7	\$18,102.7	\$19,064.9	\$20,965.7	\$22,763.2	\$25,299.3	\$27,926.3
Private	\$6,226.8	\$15,596.0	\$16,263.0	\$17,908.5	\$19,532.1	\$21,866.0	\$24,222.6
Ag. Services, Forestry, Fishing, Other	\$27.9	\$89.8	\$95.6	\$100.4	\$110.5	\$129.3	\$152.1
Mining	\$169.5	\$593.4	\$605.1	\$633.0	\$650.0	\$667.5	\$734.0
Construction	\$749.9	\$1,813.0	\$1,622.2	\$1,675.7	\$2,080.1	\$2,448.2	\$2,709.1
Manufacturing	\$371.7	\$789.8	\$816.2	\$956.4	\$1,020.1	\$1,188.4	\$1,326.0
Transportation & Public Utilities	\$559.3	\$1,115.4	\$1,195.9	\$1,257.8	\$1,386.1	\$1,529.1	\$1,664.5
Wholesale Trade	\$261.5	\$800.0	\$843.9	\$932.0	\$953.5	\$1,059.4	\$1,191.2
Retail Trade	\$829.1	\$1,800.1	\$1,908.1	\$2,056.5	\$2,177.9	\$2,430.3	\$2,682.1
Finance, Insurance, and Real Estate	\$323.0	\$740.6	\$766.0	\$994.1	\$1,213.1	\$1,350.5	\$1,551.5
Services	\$2,935.0	\$7,853.9	\$8,410.0	\$9,302.6	\$9,940.9	\$11,063.3	\$12,212.1
Govt. and Govt. Enterprises	\$1,083.9	\$2,506.6	\$2,801.9	\$3,057.2	\$3,231.2	\$3,433.3	\$3,703.7
Federal, Civilian	\$206.8	\$421.0	\$458.4	\$517.4	\$542.1	\$585.2	\$617.3
Military	\$146.0	\$260.6	\$279.9	\$261.8	\$250.8	\$253.4	\$272.6
State and Local	\$731.1	\$1,825.0	\$2,063.6	\$2,277.9	\$2,438.2	\$2,594.8	\$2,813.7
State	\$227.6	\$554.3	\$621.4	\$689.1	\$712.3	\$744.3	\$798.4
Local	\$503.5	\$1,270.7	\$1,442.3	\$1,588.9	\$1,726.0	\$1,850.5	\$2,015.3
<i>Source: U.S. Department of Commerce 1997</i>							
<i>Earnings per job, State of Nevada</i>	1980	1990	1991	1992	1993	1994	1995
Average Earnings per Job	\$15,026	\$23,674	\$24,386	\$26,532	\$27,504	\$28,025	\$29,305
Farm	\$11,438	\$13,928	\$14,623	\$11,504	\$21,269	\$13,501	\$11,459
Nonfarm	\$15,067	\$23,742	\$24,443	\$26,616	\$27,536	\$28,095	\$29,379
Private	\$15,046	\$23,202	\$23,760	\$26,002	\$26,908	\$27,480	\$28,759
Ag. Services, Forestry, Fishing, Other	\$10,634	\$14,426	\$14,375	\$15,668	\$15,420	\$16,039	\$16,572
Mining	\$25,583	\$38,066	\$41,079	\$43,150	\$46,145	\$47,942	\$49,031
Construction	\$24,301	\$31,260	\$32,112	\$33,527	\$35,743	\$36,046	\$36,287
Manufacturing	\$18,436	\$27,969	\$29,275	\$33,659	\$31,790	\$32,495	\$33,449
Transportation & Public Utilities	\$21,896	\$31,666	\$33,043	\$35,000	\$35,930	\$36,470	\$37,513
Wholesale Trade	\$18,717	\$31,075	\$31,173	\$33,368	\$34,255	\$35,212	\$36,143
Retail Trade	\$10,790	\$15,354	\$15,724	\$16,607	\$17,124	\$17,581	\$18,064
Finance, Insurance, and Real Estate	\$8,648	\$12,977	\$13,324	\$18,011	\$20,438	\$21,229	\$24,035
Services	\$14,684	\$23,882	\$24,549	\$26,858	\$27,506	\$27,982	\$29,536
Govt. and Govt. Enterprises	\$15,186	\$27,760	\$29,331	\$30,886	\$32,064	\$32,766	\$34,208
Federal, Civilian	\$19,741	\$34,076	\$36,958	\$39,795	\$41,010	\$43,769	\$45,330
Military	\$11,605	\$19,471	\$20,689	\$20,822	\$21,309	\$20,555	\$23,659
State and Local	\$15,130	\$28,270	\$29,652	\$31,031	\$32,174	\$32,810	\$33,848
State	\$15,259	\$28,131	\$29,521	\$31,504	\$31,856	\$32,273	\$33,209
Local	\$15,072	\$28,331	\$29,708	\$30,831	\$32,308	\$33,031	\$34,108
<i>Source: U.S. Department of Commerce 1997</i>							

**Table 3.13-10. Farm and Ranch Acreage in Nevada by County, 1992**

	Clark County	Lincoln County	Nye County	State of Nevada
Number of Farms	223	122	155	2,890
Land in Farms (acres)	82,100	48,968	140,380	9,263,684
Ave. Size of Farms (acres)	368	401	906	3,205
Total Cropland (acres)	9,198	26,087	— <sup>1</sup>	840,364
Harvested Cropland (acres)	5,470	14,170	11,076	408,568
Irrigated Land (acres)	7,643	17,622	18,068	556,172
Ave. Value per Farm	\$743,347	\$361,190	\$459,005	\$811,941
Ave. Value per Acre	\$2,196	\$870	\$496	\$252

Note: 1. Information withheld to avoid disclosure of data for individual farms.  
 Source: U.S. Department of Commerce 1992

**Table 3.13-11. Cash Receipts from Marketing of Crops and Livestock in Nevada by County (in thousands)**

County	1990	1991	1992	1993	1994
Clark	\$21,020	\$20,051	\$21,376	\$21,269	\$24,302
Lincoln	\$5,338	\$5,045	\$5,110	\$6,269	\$6,229
Nye	\$9,097	\$8,598	\$7,914	\$6,037	\$6,841
Statewide	\$365,644	\$335,749	\$330,456	\$360,094	\$364,013

Source: U.S. Department of Commerce 1997

**Table 3.13-12. Cattle Inventory in Nevada by County (as of January 1st)**

County	1990	1991	1992	1993	1994	1995
Clark	15,000	14,000	13,000	13,000	13,000	13,000
Lincoln	12,000	13,000	15,000	16,000	16,000	16,000
Nye	19,000	19,000	19,000	17,000	10,000	12,000
Statewide	530,000	520,000	520,000	500,000	490,000	500,000

Source: State of Nevada 1991

### 3.13.3.4 MINING

The mining industry plays a critical role in the economy of rural Nevada. As a gold producer, Nevada ranks third in the world behind Russia and South Africa (Dobra 1997). Within the

three-county Southern Nevada ROI, Nye has historically been the most prominent mining county. In 1987, Nye accounted for nearly \$55 million of the \$264 million of assessed valuation of Nevada mining properties (see Table 3.13-13). For 1994, Nye County properties were valued at \$97 million of the over \$1 billion of assessed valuation of Nevada mining properties (see Table 3.13-13).

	1987	1988	1989	1990	1991	1992	1993	1994
Eureka	\$42,185	\$56,574	\$106,899	\$184,335	\$248,771	\$271,433	\$345,148	\$422,880
Nye	\$54,727	\$56,160	\$55,941	\$108,827	\$122,357	\$115,165	\$115,668	\$97,430
Other Nevada Counties	\$167,173	\$211,471	\$300,724	\$427,208	\$681,289	\$516,214	\$540,943	\$532,107
Nevada	\$264,085	\$324,205	\$463,564	\$720,370	\$1,052,417	\$902,812	\$1,001,759	\$1,052,417
<b>Percent of Total</b>								
Eureka	15.97	17.45	23.06	25.59	23.64	30.07	34.45	40.18
Nye	20.72	17.32	12.07	15.11	11.63	12.76	11.55	9.26
Other Nevada Counties	63.30	65.23	64.87	59.30	64.74	57.18	54.00	50.56
Nevada	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<i>Source: State of Nevada 1996.</i>								

### 3.13.4 Land Use and Ownership

A vast majority of the three-county Southern Nevada ROI, as well as the state as a whole, is federally owned or held in trust (see Table 3.13-14). Nevada contains approximately 70,745,600 acres, with nearly 57 million acres, or 80.4 percent held by the federal government. This ownership is dominated by the BLM, which owns nearly 48 million acres statewide. This is followed by the USFS, with approximately 5.8 million acres, and the USFWS, with approximately 2.2 million acres.

Nye County is more than twice the size of Clark County, with approximately 11.5 million acres. Federal ownership in the county is approximately 8.5 million acres, or 73.8 percent. This is primarily divided between the BLM, with approximately 6.5 million acres, and the USFS with approximately 1.9 million acres.

The remaining approximately 3.1 million acres is split between the NTS (106,971 acres), farms and ranches (approximately 140,380 acres), and other privately held lands (see Table 3.13-14).

Lincoln County contains approximately 6.8 million acres, with the federal government owning approximately 6.4 million acres, or 94.3 percent. Of this 6.4 million acres, over approximately

5.6 million is owned by the BLM. The USFWS owns a substantial portion of the remainder, with approximately 761,490 acres (see Table 3.13-14).

<b>Table 3.13-14. Federally Owned Land in Nevada by Entitlement Acreage and County, FY1995 (in acres)</b>				
	<i>Clark</i>	<i>Lincoln</i>	<i>Nye</i>	<i>Statewide</i>
BLM	3,236,720	5,633,723	6,478,851	47,959,301
Forest Service	300,362	30,672	1,942,983	5,813,180
Bureau of Reclamation	0	0	0	88,075
National Park Service	587,321	0	106,971	774,669
Corps of Engineers	0	671	0	671
Fish & Wildlife	828,031	761,490	0	2,218,411
Total Federal Land	4,952,434	6,426,556	8,528,805	56,854,307
Total Land	5,173,760	6,816,000	11,560,960	66,905,600
% Federal Land/ County	95.70%	94.30%	73.80%	80.40%
<i>Note:</i>	This includes only land withdrawn pursuant to Public Law 94-565. It does not represent all federal lands. Acreage is used to compute tax payments.			
<i>Source:</i>	BLM 1991b, U.S. DOI, BLM; Department of Finance, Payments in Lieu of Taxes, FY1995.			

While Clark County is relatively small (as compared with other counties in Nevada), with approximately 5.1 million acres and over 98 percent of its population in urbanized areas, approximately 4.9 million acres, or 95.7 percent, belongs to the federal government. This federal ownership is dominated by the BLM, with approximately 3.2 million acres in Clark County. This is followed by the USFWS, with approximately 828,031 acres, and the National Park Service, with approximately 587,321 acres (see Table 3.13-14).

### **3.13.5 Population**

Between 1980 and 1990 Nevada was one of the fastest growing states in the nation, outpacing the national average of 0.97 percent growth per year with an annual growth rate of 5.0 percent (see Table 3.13-15). This growth has continued through 1995, as Nevada has grown from 1,236,130 persons in 1990 to 1,582,290 by 1995. This constitutes a net 5-year gain of 346,260 persons, or 30 percent (see Table 3.13-16).

**Table 3.13-15. Population for the United States, the State of Nevada, and Clark, Lincoln and Nye Counties for 1970, 1980, 1990, and 1995**

Area	1970	1980	1990	1995	AVERAGE ANNUAL RATE OF GROWTH		
					1970-1980	1980-1990	1990-1995
Unites States	205,052,000	227,726,000	249,913,000	263,034,000	1.05%	0.93%	1.03%
State of Nevada	488,738	800,493	1,236,130	1,582,390	5.06%	4.44%	5.06%
Clark County	273,288	463,087	770,280	1,036,290	5.42%	5.22%	6.11%
Lincoln County	2,557	3,732	3,775	4,110	3.85%	0.11%	1.71%
Nye County	5,599	9,048	17,781	23,050	4.92%	6.99%	5.33%

Source: U. S. Department of Commerce 1970,1980,1990a

**Table 3.13-16. Population Estimates for the State of Nevada and Clark, Lincoln, and Nye Counties, 1990 through 1995**

	1990	1991	1992	1993	1994	1995	Average Annual Percent Change (1990-1995)
State of Nevada	1,236,130	1,297,910	1,343,940	1,398,760	1,494,230	1,582,390	5.06
Clark County	770,280	820,840	856,350	898,020	971,680	1,036,290	6.11
Boulder City	12,760	12,960	13,000	13,350	13,640	14,090	2.00
Henderson	69,390	76,560	85,770	94,760	105,610	115,490	10.73
Las Vegas	268,330	289,690	303,140	323,300	346,350	368,360	6.54
Mesquite	1,960	2,070	2,370	3,270	3,850	5,120	21.17
North Las Vegas	50,030	51,060	55,400	60,880	69,700	77,820	9.24
Other Clark	402,470	432,340	459,680	495,560	539,150	580,880	7.61
Lincoln County	3,810	3,870	4,080	4,130	4,340	4,110	1.53
Caliente	1,120	1,140	1,140	1,160	1,160	1,160	0.70
Other Lincoln	2,690	2,730	2,940	2,970	3,180	2,950	1.86
Nye County	18,190	19,110	20,080	20,550	20,740	23,050	4.85
Gabbs	670	680	660	610	440	360	-11.68
Other Nye	17,520	18,430	19,420	19,940	20,300	22,690	5.31

This population growth has primarily taken place in Clark County, which increased by 266,010, from 770,280 persons in 1990 to 1,036,290 in 1995; a 6.1 average annual percent increase. Within Clark County, the City of Las Vegas had a total population of 268,330 in 1990, which increased at an annual rate of 6.54 percent to 368,360 by 1995 (see Table 3.13-16).

Henderson, which is the second largest incorporated city in Clark County, had a 1990 population of 69,390 and increased to 115,490 by 1995, at an annual average rate of 10.73 percent (see Table 3.13-16).

The population of Nye County grew from 18,190 persons in 1990 to 23,050 in 1995. This was a moderate gain of 4,860 persons, and rate of change (4.85 percent annually) below that of the state. Lincoln County's population has remained relatively stable, growing from 3,810 in 1990 to 4,110 in 1995, for an annual rate of growth of 1.53 percent (see Table 3.13-16).

The fact that the rates of growth correspond to the percent that the counties are urbanized is not surprising, because urbanized counties have substantially outpaced rural counties nationally in population growth since the 1980 Census. Between 1990 and 1995, there were 114,824 births in Nevada and 54,765 deaths, leaving net in-migration at 286,201 persons over this period. A large portion of these three components of population change were concentrated in Clark County, which had 76,166 births and 35,148 deaths, leaving net in-migration between 1990 and 1995 at 224,992 persons. This is substantial: a very large portion of the growth in Clark County is occurring because of in-migration, and not because of a natural growth rate (see Table 3.13-17).

The same can be said of Lincoln and Nye Counties, albeit on a smaller scale. Between 1990 and 1995, Nye County had 1,211 births, 949 deaths, and a net in-migration of 4,598 for a net gain of 4,860 persons by migration. Lincoln County's natural population change (births - deaths) actually declined by 29 persons between 1990 and 1995, with 194 births and 223 deaths. The population gain of 300 persons was attributable to 322 in-migrants (see Table 3.13-17).

The potentially affected population includes active duty military, Air Force civilian, and contractor personnel and each of their respective dependents. In FY1994 there were 7,413 active duty personnel assigned to Nellis AFB and the NAFR. Associated with these personnel were 17,612 dependents. There were an additional 2,697 civilian and contractor personnel. Assuming an average household size identical to that of Clark County (2.58 persons), these non-military personnel would be accompanied by 4,254 dependents giving a total population of 31,976 associated with activities at Nellis AFB and the NAFR. As of FY1995 this total population had declined to 29,292, attributable mostly to a reduction in the number of dependents of military personnel from 17,612 to 14,894.

The decline in military personnel and support personnel stands in contrast to the population trends of the State of Nevada.



	1990	1991	1992	1993	1994	1995
<b>State of Nevada Population</b>	<b>1,236,130</b>	<b>1,297,910</b>	<b>1,343,940</b>	<b>1,398,760</b>	<b>1,494,230</b>	<b>1,582,390</b>
Nevada Births	NA	21,764	22,058	22,293	23,853	24,856
Nevada Deaths	NA	9,687	10,140	10,918	11,680	12,340
Net Migration	NA	49,703	34,112	43,445	83,297	75,644
<b>Clark County Population</b>	<b>770,280</b>	<b>820,840</b>	<b>856,350</b>	<b>898,020</b>	<b>971,680</b>	<b>1,036,290</b>
Clark County Births	NA	14,207	14,422	14,767	16,015	16,755
Clark County Deaths	NA	6,047	6,450	6,983	7,560	8,108
Net Migration	NA	42,400	27,538	33,886	65,205	55,963
<b>Lincoln County Population</b>	<b>3,810</b>	<b>3,870</b>	<b>4,080</b>	<b>4,130</b>	<b>4,340</b>	<b>4,110</b>
Lincoln County Births	NA	34	25	38	50	47
Lincoln County Deaths	NA	41	50	41	44	47
Net Migration	NA	67	235	53	204	(230)
<b>Nye County Population</b>	<b>18,190</b>	<b>19,110</b>	<b>20,080</b>	<b>20,550</b>	<b>20,740</b>	<b>23,050</b>
Nye County Births	NA	252	256	216	236	251
Nye County Deaths	NA	127	171	188	215	248
Net Migration	NA	795	885	442	169	2,307

*Note:* NA = not applicable.

### 3.13.6 Housing

The housing stock of Nevada, particularly Nye and Clark counties, has expanded to meet the demands of the constantly growing population. Between 1970 and 1990 the number of housing units in the state has more than tripled, growing from 172,558 units to 518,858 units (see Table 3.13-18). Much of this growth occurred in Clark County, which grew by nearly 225,000 units (from 93,047 units in 1970 to 317,188 units in 1990). Nye County's housing stock more than tripled, growing from 2,098 units in 1970 to 8,073 units in 1990. While Lincoln County's housing stock grew, it did so more conservatively (a reflection of the slower population growth), growing from 1,043 units in 1970 to 1,800 units in 1990. The distribution of population and housing units within each county is presented in Table 3.13-19.

<b>Table 3.13-18. Household and Housing Unit Data</b>			
	1970	1980	1990
<b>Households</b>			
State of Nevada	160,052	304,327	466,297
Clark County	87,728	173,891	287,025
Lincoln County	792	1,270	1,325
Nye County	1,813	3,434	6,664
<b>Persons per Household</b>			
State of Nevada	3.05	2.63	2.53
Clark County	3.12	2.66	2.54
Lincoln County	3.23	2.94	2.63
Nye County	3.09	2.63	2.50
<b>Housing Units</b>			
State of Nevada	172,558	339,949	518,858
Clark County	93,047	190,607	317,188
Lincoln County	1,043	1,685	1,800
Nye County	2,098	4,292	8,073
<b>Persons per Housing Unit</b>			
State of Nevada	2.83	2.35	2.27
Clark County	2.94	2.43	2.30
Lincoln County	2.45	2.21	1.94
Nye County	2.67	2.11	2.06
<i>Source: U.S. Department of Commerce 1990a; 1980; 1970</i>			

**Table 3.13-19. Population and Housing Characteristics in the ROI, Counties, and State of Nevada, 1990**

	<i>Population</i>	<i>Housing Units</i>	<i>Households</i>
State of Nevada	1,177,633	518,858	466,297
Clark County	729,567	317,188	287,025
Clark Division	23,248	10,960	8,511
Enterprise CDP*	827	334	310
Indian Springs CDP	1,131	510	417
Laughlin CDP	4,649	2,637	1,925
Mesquite	1,848	684	596
Moapa Valley CDP	3,444	1,415	1,127
Sunrise Manor CDP	4,451	1,599	1,523
Las Vegas Division	706,319	306,228	278,514
Boulder City	12,260	5,390	4,998
East Las Vegas City	11,066	4,846	4,367
Enterprise CDP	5,580	2,172	2,024
Henderson City	64,315	25,400	23,237
Las Vegas City	254,193	109,670	99,735
Nellis AFB CDP	7,064	2,065	1,905
North Las Vegas City	47,075	15,837	14,525
Paradise CDP	123,516	63,924	56,731
Spring Valley CDP	51,689	22,236	20,282
Sunrise Manor CDP	90,340	35,665	33,343
Winchester CDP	22,920	12,485	11,343
Lincoln County	3,488	1,800	1,325
Alamo Division	1,023	440	343
Caliente Division	1,006	490	412
Caliente	969	449	393
Pioche Division	1,459	870	570
Nye County	16,641	8,073	6,664
Amargosa Valley Division	761	334	279
Beatty Division	1,645	902	745
Beatty CDP	1,616	869	729
Crystal Division	92	49	46
Pahrump CDP	15	8	6
Duckwater Division	298	215	121
Gabbs Division	812	359	287
Gabbs	667	290	240
Pahrump Division	7,344	3,508	3,024
Pahrump CDP	7,328	3,501	3,018
Ralston Division	122	62	46
Round Mountain Division	1,923	891	679
Tonopah Division	3,644	1,753	1,437
Tonopah	3,580	1,713	1,406
Yucca Flat Division	1,016	all in group quarters	

*Note:* \* CDP = Census Designated Place (i.e., non-incorporated community).  
*Source:* U.S. Department of Commerce 1990

It is difficult to estimate or project the number of housing units that exist in the state and the ROI. Since most of the counties of Nevada are rural, they have no requirement for a building permit for new residential development, hence there is no post-censal estimation method with which to assess new housing development in the state. In urbanized Clark County, there is building permit information, but this can provide an inaccurate indication of the current housing stock. A building permit only indicates an intent to build, not the completion of a unit. Table 3.13-20 provides an annual breakdown of the permits issued and valuations for the incorporated places in Clark County from 1990 to 1994.

Nellis AFB, in 1990, had two on-base housing complexes containing a total of 1,476 units that accommodate military families. The first is Nellis Terrace, which contains 790 single family Wherry housing units. The second complex is referred to as Manch Manor. Manch Manor contains 202 Capehart housing units, 478 appropriated housing units, and 6 additional single-family homes (GRW 1990).

### **3.13.7 Public Services and Facilities**

#### **3.13.7.1 HEALTH CARE**

As of 1995, the only comprehensive medical facility in Nye County was the Nye Regional Medical Center in Tonopah. In Lincoln County, the only comprehensive medical facility is the Grover C. Dils Medical Center, located in Caliente (see Table 3.13-21). These two facilities combined to provide Lincoln and Nye counties 25 licensed hospital beds. Combined, the counties of Nye and Lincoln contain 11 physicians, 56 registered nurses, and 30 LPNs (see Table 3.13-22).

Civilian hospital and medical facilities in the three-county Southern Nevada ROI are concentrated in Clark County. As of year end 1994, Boulder City, Desert Springs, Lake Mead, St. Rose Dominican, and Sunrise Hospitals, as well as the University Medical Center and Valley Hospital Medical Center, were located in Clark County. One other hospital, the Women's Hospital, had been in operation, but was closed at the end of 1994. The facilities afforded Clark County 2,092 licensed hospital beds (see Table 3.13-21). Clark County contains 1,418 physicians, 6,195 registered nurses, and 1,545 licensed practical nurses (LPNs) (see Table 3.13-22).

In addition to healthcare services that are available to the public at large, members of Indian tribes are afforded health care services through the Indian Health Service (IHS). The IHS is an agency of the U.S. Public Health Service within the Department of Health and Human Services. IHS provides health care services to American Indians who (a) are bona fide members of federally recognized tribes, bands, nations, villages, communities, and organized groups or (b) reside in a geographically designated Health Service Delivery Area.

Nellis AFB medical services are primarily supported by the Mike O'Callaghan Federal Hospital, which provides service to military veterans and military personnel and their

dependents. As of April 1, 1997, the hospital was authorized 78 medical staff with 70 personnel assigned. The facility currently has 114 beds and has approximately 17,813 outpatient visits per year.

<b>Table 3.13-20. Building Permit Data 1990 - 1994</b>					
	SINGLE FAMILY		MULTI-FAMILY		
	Permits	Valuation	Permits	Units	Valuation
<b>Unincorporated Clark County</b>					
1990	3,116	\$178,454,438	429	4,281	\$141,869,365
1991	2,794	168,362,336	251	3,219	108,369,343
1992	2,188	130,438,636	146	1,326	51,423,894
1993	4,139	234,304,386	604	1,914	77,656,164
1994	4,139	277,628,110	945	3,860	143,407,457
<b>Las Vegas</b>					
1990	4,998	\$274,034,657	493	4,451	\$121,070,786
1991	5,296	280,877,948	178	1,145	33,184,056
1992	4,475	249,230,208	291	1,397	53,767,076
1993	6,029	335,389,321	144	995	29,697,034
1994	6,822	483,810,505	457	3,396	155,685,992
<b>Henderson</b>					
1990	2,207	\$173,095,462	126	1,175	\$37,727,008
1991	2,488	194,453,950	792	1,701	60,084,216
1992	1,736	140,322,956	315	484	18,934,124
1993	2,679	203,687,074	521	865	32,504,480
1994	3,217	275,432,698	636	651	28,993,202
<b>Boulder City</b>					
1990	69	\$11,937,573	58	0	\$6,221,485
1991	43	6,874,004	2	0	493,031
1992	91	14,801,582	37	0	3,021,558
1993	46	997,204	42	0	5,787,173
1994	40	7,728,706	25	25	2,198,056
<b>North Las Vegas</b>					
1990	787	\$73,659,172	1	2	\$90,826
1991	1,499	243,620,148	6	24	1,122,532
1992	1,496	114,167,723	1	248	8,058,659
1993	2,122	173,509,653	0	0	—
1994	2,539	218,799,439	0	0	—
<b>Clark County Total</b>					
1990	11,177	\$711,181,302	1,108	9,909	\$296,979,470
1991	12,120	783,188,386	1,229	6,089	203,253,178
1992	9,986	648,961,105	790	3,455	135,205,311
1993	15,015	947,887,638	1,311	3,774	145,644,851
1994	16,757	1,263,399,458	2,063	7,932	330,284,707
Source: Las Vegas Perspective 1995. <i>Las Vegas Review-Journal</i> , Nevada Development Authority, First Interstate Bank of Nevada, in cooperation with the University of Nevada, Las Vegas.					

**Table 3.13-21. Community Hospital Utilization in Nevada by Facility, 1995**

Area/Hospital	Ownership	Average Number of Beds	Average Daily Census	Number of Admissions	Patient Days	Average Length of Stay (Days)	Average Bill per Admission	Average Bill per Day
<b>Clark County</b>								
Boulder City	Non-profit	23	10.6	995	3,887	3.9	\$8,836	\$2,262
Desert Springs	Profit	225	157.7	10,466	57,562	5.5	19,111	3,475
Lake Mead	Profit	170	103.4	7,632	37,752	4.9	13,967	2,864
St. Rose Dominican	Non-profit	136	62.6	5,623	22,857	4.1	14,131	3,476
Sunrise	Profit	681	491.7	33,806	179,474	5.3	19,086	3,595
University Medical	Public	519	351.0	19,822	128,106	6.5	18,066	2,795
Valley Hospital	Profit	338	273.0	19,141	99,637	5.2	18,055	3,469
<b>Lincoln County</b>								
Grover C. Dils	Public	4	1.0	93	356	3.8	5,198	1,358
<b>Nye County</b>								
Nye Regional	Public	21	5.2	544	1,901	3.5	7,573	2,164
Nevada		3,516	2,065.0	144,318	753,681	5.2	15,521	3,062

Source: State Department of Human Resources, Division of Health Resources and Cost Review 1995 Summary Financial Report.

**Table 3.13-22. Practicing Physicians, Dentists, and Nurses in Nevada by County**

County	Physicians <sup>1</sup>	Dentists	Registered Nurses	LPNs	Advanced Practice of Nursing
Clark	1,418	358	6,195	1,545	97
Lincoln	2	1	18	7	0
Nye	9	4	38	23	3
Nevada	2,322	618	9,851	2,297	185

Note: The information for Physicians and Dentists is for 1994, the information for Nurses is as of September 1995.

- The above table only shows the licensed practicing physicians. This table does not represent those physicians who hold active licenses but do not reside in Nevada; those who are inactive; or those who are retired.

Source: Personnel communication, State Board of Medical Examiners, State Board of Dental Examiners, and State Board of Nursing.

### 3.13.7.2 PUBLIC SCHOOLS

The public schools system of southern Nevada is organized into school districts that correspond to County boundaries. Students in the three-county ROI are distributed across all class levels, with the heaviest concentration of students being in the elementary grades (see Table 3.13-23).

**Table 3.13-23. Public School Enrollment in Nevada by Grade and School District  
End of First Month (School Year 1995-1996)**

School District	Pre-Kindergarten	Kindergarten	Elementary Grades 1-6	Secondary Grades 7-9	Secondary Grades 10-12	Ungraded	Total**	Annual % Change
Clark	1,011	14,236	82,937	37,310	30,305	489	166,788	6.7%
Lincoln	18	66	409	288	325	3	1,109	-1.7%
Nye	32	347	2,081	1,165	903	0	4,528	8.6%
Statewide	1,631	22,074	131,074	60,081	48,965	713	265,041	5.7%

*Note:* \* Ungraded refers to a student who is enrolled in a nongraded class in a school for special education or a student who cannot be assigned to a particular grade because of the nature of his/her condition NAC 387.111.  
 \*\* Totals include those students enrolled in special education programs per NRS 388.490.  
*Source:* Nevada Department of Education, Research Bulletin, Student Enrollment and Licensed Personnel Information, Volume 35, February 1, 1996. (Provided by the Nevada Department of Education-Planning, Research and Evaluation Branch).

Nye County has 14 elementary schools and six junior/senior high schools that accommodated 4,528 students in the fall of 1995 (see Table 3.13-24).

**Table 3.13-24. Public School Enrollment in Nevada by School District**

School District <sup>1</sup>	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96
Clark	121,984	129,233	136,188	145,327	156,348	166,788
Lincoln	1,055	1,090	1,097	1,091	1,128	1,109
Nye	3,441	3,519	3,663	3,918	4,170	4,528
Statewide	201,316	211,810	222,846	235,800	250,747	265,041

*Note:* 1. Totals include those students enrolled in special education programs per NRS 388.490.  
*Source:* Nevada Department of Education, Research Bulletin, Student Enrollment and Licensed Personnel Information, various issues (provided by the Nevada Department of Education-Planning Research and Evaluation Branch).

Lincoln County has five elementary schools and three junior/senior high schools that contained 1,109 students in the fall of 1995 (see Table 3.13-24).

The Clark County School district was founded in 1956 through the merger of 14 separate school districts within the county. The Clark County School District (CCSD) provides public education in pre-kindergarten through the 12th grade for all residents of Clark County. It also provides specialized education for all grade levels and alternative education for secondary school students.

Nellis AFB has one on-base elementary school that is part of the CCSD. The school is referred to as the Lomie G. Heard Elementary School, and has 42 teaching stations with the capacity to

handle 900 students (CCSD 1994). In addition to the elementary school there is a child development center (two phases) that accommodates approximately 550 children per day.

The size of the school district has grown substantially since its origination in 1956, when there were 27 schools serving the entire county, to a district that currently has 184 separate schools throughout the county. The CCSD enrollment for fall of 1995 was 166,788 students (see Table 3.13-24). The percent change in school enrollment approximates the change in the total population, (see Table 3.13-25).

Under federal and tribal law, American Indian children can be educated in tribally controlled and federally certified schools located on Indian reservations. There is one tribally controlled elementary school in Nye County operated by the Duckwater Shoshone Tribe. In 1995 the school had 32 students enrolled from pre-school to 8<sup>th</sup> grade with three full-time certified teachers.

<i>School District</i>	1991-92	1992-93	1993-94	1994-95	1995-96
Clark	5.94%	5.38%	6.71%	7.58%	6.36%
Lincoln	3.32%	0.64%	-0.55%	3.39%	-1.68%
Nye	2.27%	4.09%	6.96%	6.43%	8.59%
Statewide	5.21%	5.21%	5.81%	6.34%	5.70%
<i>Note:</i> Percentages are computed from the data in Table 3.13.7-4.					
<i>Source:</i> Nevada Department of Education, Research Bulletin, Student Enrollment and Licensed Personnel Information, various issues. (Provided by the Nevada Department of Education-Planning, Research and Evaluation Branch.)					

### **3.13.7.3 LAW ENFORCEMENT**

Law enforcement for the southern Nevada ROI is accomplished by a wide range of officials and authorities. Since Lincoln and Nye counties are rural and sparsely populated, they rely solely on a county sheriff for law enforcement. As Nye County population has grown since 1990, law enforcement personnel have risen from 81 officers in the FY1989-1990 to 110 in the FY1995-1996. By contrast, the Lincoln County force has shrunk from 16 officers in the FY1989-1990 to 14 officers in FY1995-1996.

In Clark County, law enforcement is the responsibility of the Las Vegas Metropolitan Police Department, which merged with the Clark County Sheriff's Office in 1973. The Metropolitan Police Department is by far the largest in Southern Nevada, employing 2,190 in 1994. Within the county, the cities of North Las Vegas, Henderson, and Boulder City also have their own police forces, as does Nellis AFB/NAFR. The Metropolitan Police department was followed in



size by the Henderson Police Department, with 199 (as of 1994), North Las Vegas Police Department, with 180 employees, and Boulder City, with 121 (see Table 3.13-26).

In addition to the law enforcement service providers addressed above, there are tribal police departments and Bureau of Indian Affairs police that provide services to tribal communities within Clark and Nye counties.

<b>Police Protection</b>						
<i>Department</i>	<i>Officers</i>		<i>Other Personnel</i>	<i>Stations</i>	<i>Vehicles</i>	
Boulder City	53		68	1	19	
Henderson	127		72	3	81	
Las Vegas	1,150		1,040	4	824	
Nev. Hwy Patrol	145		36	6	156	
North Las Vegas	129		51	1	38	
Lake Mead	NA		215	10	15	
Mt. Charleston	NA		5	1	4	
<b>Fire Protection</b>						
<i>Department</i>	<i>Personnel</i>	<i>Vehicles</i>	<i>Stations</i>	<i>1994 Responses</i>	<i>1994 Population</i>	<i>Responses per 1,000 Population</i>
Boulder City	34	9	1	1,407	13,640	103.15
Clark County	525	40	30	49,000	971,680	50.43
Henderson	127	30	3	7,376	105,610	69.84
Las Vegas	392	89	10	43,121	346,350	124.5
North Las Vegas	83	6	4	8,338	69,700	119.63
<i>Note: NA = not available</i>						

Law enforcement on Nellis AFB is provided by the military and by civilian security. As of November 1, 1995, there were three civilian security personnel assigned. In 1995, there were 22 civilian security personnel assigned to NAFR at ISAF AF.

### 3.13.7.4 FIRE PROTECTION

The largest fire department in Southern Nevada is the Clark County Fire Department, with 525 firefighters in 1994. Contained within Clark County is the Las Vegas Fire District, with 392 firefighters in 1994. The combined total of paid, volunteer, Americans with Disabilities Act-appointed, seasonal, and inmate firefighters for the fire districts in 1992 numbered 1,982 firefighters (see Table 3.13-26). BLM also has wildland firefighting capability in the region.

The ISAFAF and Nellis AFB in Clark County, and Mercury Test Site in Nye County, have the next largest organized fire-fighting unit, with a combined 1992 staff of 160. Nellis AFB has 78 paid firefighters and ISAFAF has 33 paid firefighters.

### **3.13.8 Public Finance**

Although the general fund may be categorized slightly differently in each county, it is still the most uniform administrative budgetary concept available to describe fiscal conditions and, hence, will be used as the basis for comparison between county budgets. In addition to the county general budgets, the impact of state and federal budget decisions on the counties will be considered.

The county budgets are balanced each year by taking the balance of the budget from the prior year, adding new revenues, and subtracting all expenditures. In reporting the budgetary information, any differences between ending balances and beginning balances between years are due to Audit Prior Period Adjustments and residual equity transfers between fund types. Definitions of government revenue and expenditure categories can be found in Table 3.13-27 and 3.13-28, respectively.

Allocational government policies in Nevada counties are funded through a variety of sources, primarily *ad valorem* revenue (property taxes) and Supplemental City-County Relief Taxes, or sales tax (SCCRT). There are no state or local income taxes. Other locally generated sources of revenue include fines, permits and fees, local gaming revenues, charges for county services, dedicated, and other revenues. These revenues are complemented by a number of state and federal redistributive policies.

The total impact of redistributed income to the counties is difficult to measure, because some parts are incorporated in places of the budget, which are primarily allocational, such as the SCCRT. Likewise, determining the amount of revenue generated wholly within a county is challenging as well. Therefore, the budgetary categories that are clearly defined as being "outside sources" (intergovernmental revenue, transfers in, grants, and federal payments in lieu of taxes [PILT]) may be compared with the county budgets as a whole to provide an imperfect, but relative measure of each county's reliance on outside revenues.

The budgets of the Clark, Lincoln, and Nye counties vary dramatically. Clark County, being the most populous, has the largest budget. Including an opening fund balance of \$64 million in 1997, the total budget for the county is over \$550 million. Outside sources of revenue form a substantial portion of Clark County's budget, constituting \$139 million, or 25 percent of revenues. The largest expenditure is transfers out of the county at \$167 million, followed by public safety at \$85 million, and general government obligations at \$72 million (see Table 3.13-29).

The annual ending fund balance has remained relatively stable over the period FY1990-FY1997 between approximately \$56.8 million and \$89.6 million. *Ad valorem* tax revenues increased at

**Table 3.13-27 Governmental Revenue Categories**

<i>Ad Valorem</i> includes property taxes
<i>Supplemental City-County Relief Taxes:</i> includes sales taxes
<i>Fines Permits and Fees</i> include library fines, court fines, environmental fines, bail forfeits, business, liquor, county gaming, city gaming, marriage, animal, and bicycle licenses; building, sign, and mobile home permits; gas, electric, water, phone, and sanitation franchise fees; impact fees; and others. Most entities incorporate these into the general fund, unless they establish a specific special revenue fund.
<i>Intergovernmental Revenue</i> includes revenue sharing, grants, and payments-in-lieu-of-taxes (PILT) from the federal government; grants, fuel taxes, cigarette taxes, liquor taxes, basic and supplemental city/county relief (sales and use) taxes, motor vehicle privilege tax, state gaming licenses, court administrative assessments, and PILT from the state; and revenue shared with local governments from county gaming licenses, county road fund distributions, and real property transfer taxes.
<i>Charges for Services</i> are categorized according to the individual government function. Service charges primarily consist of fees and charges performed for a service rendered to the public. While the smaller entities maintain charges for service in the general fund, the larger entities create special revenue and/or proprietary funds.
<i>Payment in Lieu of Taxes (PILT)</i> involve annual payments distributed to eligible units of general local government by the BLM. The payments are intended to offset the loss of tax revenue to States and localities caused by the presence of tax-exempt federal land. Payments are made for tax-exempt federal lands administered by the BLM, USFS, National Park Service, USFWS and for federal water projects and some military installations. The payments are in addition to revenues from oil and gas leases, along with sales of minerals, timber and other materials and products derived from public lands.
<i>Other Taxes</i> may include park construction, room, county optional motor vehicle fuel, or the county optional 0.25 percent sales and use taxes. An entity may incorporate these into the general fund or a special revenue fund.
<i>Miscellaneous</i> receipts include interest earnings, rents, royalties, and contributions or donations from private sources. Interest earnings are usually included in the general and debt service funds. The others are commonly found in the general fund, but larger entities may include them in a special revenue or proprietary fund.

**Table 3.13-28. Governmental Expenditure Categories**

Counties, cities, and towns summarize their expenditures using the following functions and activities. An entity may supplement the following activities suggested by the Department of Taxation (State of Nevada 1995).

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| <ul style="list-style-type: none"> <li>• General Government                             <ul style="list-style-type: none"> <li>- Legislative</li> <li>- Executive</li> <li>- Elections</li> <li>- Finance and Other</li> </ul> </li> <li>• Judicial</li> <li>• Public Safety                             <ul style="list-style-type: none"> <li>- Police</li> <li>- Support Services</li> <li>- Corrections</li> <li>- Protective Services</li> </ul> </li> <li>• Public Works                             <ul style="list-style-type: none"> <li>- Highway and Streets</li> <li>- Snow and Ice Removal</li> <li>- Street Lighting</li> <li>- Engineering</li> </ul> </li> <li>• Sanitation                             <ul style="list-style-type: none"> <li>- Street Cleaning</li> <li>- Waste Cleaning &amp; Disposal</li> <li>- Weed Control</li> </ul> </li> <li>• Debt Service                             <ul style="list-style-type: none"> <li>- Principal</li> <li>- Interest</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Health                             <ul style="list-style-type: none"> <li>- Vital Statistics</li> <li>- Public Health Administration</li> <li>- Communicable Disease Control</li> <li>- Maternal and Child Service</li> <li>- Cemetery</li> <li>- Animal Control</li> </ul> </li> <li>• Welfare                             <ul style="list-style-type: none"> <li>- Institutional Care</li> <li>- Old Age Assistance</li> <li>- Direct Assistance</li> </ul> </li> <li>• Culture and Recreation                             <ul style="list-style-type: none"> <li>- Participant Recreation</li> <li>- Spectator Recreation</li> <li>- Parks</li> <li>- Libraries</li> </ul> </li> <li>• Community Support                             <ul style="list-style-type: none"> <li>- Housing Redevelopment</li> <li>- Economic Development</li> <li>- Economic Opportunity and Other</li> </ul> </li> </ul> |
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*Intergovernmental Expenditures* includes expenditures made by one level or unit of government to another government in support of governmental activities administered by the recipient unit. Excluded from this classification are matching employer contributions by a government to a pension or retirement system administered by another government.

*Other Financial Sources and Uses* are accounted for separately and are a major heading by themselves. They include proceeds of long- and short-term debt, operating transfers in and out, sale of fixed assets, and other miscellaneous items. Operating transfers represent transfers between funds. The in transfers are positive and the out are negative. Other miscellaneous items may be negative when they represent a fund reclassification.

*Prior Period Adjustments* are a method of accounting for changes in budget balances from the end of one year to the beginning of the next, and usually occur after the fact. These adjustments are commonly found when funds are created, discontinued, or reclassified in terms of type.

*Residual Equity Transfers* are non-routine transfers of equity between funds that occur during the course of a year. Examples include a contribution of enterprise fund capital by the general fund, then subsequent return of all or part of the contribution to the general fund; or the transfer of the residual balance from a discontinued fund to the general or debt service fund (State of Nevada 1995).

*Fund Balance* is "the excess of assets over liabilities and reserves in a governmental fund (NRS 354.533)." Beginning and ending balances now contain reserved and unreserved moneys. The reserve is "a portion of the fund balance which is not appropriable for expenditures or is segregated by law or contract for a specific future use (NRS 354.562)." Therefore, the reserved portions of a fund balance may only be available under certain previously defined circumstances (i.e., the outcome of litigation).

**Table 3.13-29. Clark County Summary of Government Type Funds (in thousands)**

<i>Revenues/Expenditures</i>	<i>Actual FY90</i>	<i>Actual FY91</i>	<i>Actual FY92</i>	<i>Actual FY93</i>	<i>Actual FY94</i>	<i>Actual FY95</i>	<i>Estimated FY96</i>	<i>Budgeted FY97</i>
<b>Summary of All Revenues</b>								
Opening Fund Balance	\$44,585	\$59,716	\$64,486	\$56,771	\$68,743	\$86,366	\$89,633	\$64,199
Ad Valorem	42,815	50,276	56,391	64,742	71,885	77,625	84,720	94,012
S.C.C.R.T.	69,375	66,652	69,188	79,024	92,290	104,034	113,298	120,653
<b>Other</b>								
Fines, Permits, and Fees	45,974	53,507	53,472	56,172	37,820	42,886	45,007	47,276
Local Gaming	0	0	0	0	25,966	27,966	29,464	31,420
Intergovernmental	16,314	15,717	17,025	20,942	14,646	16,457	18,321	19,784
Charges for Services	17,769	26,926	27,879	29,861	37,094	37,911	38,899	41,582
Interest charges	0	0	0	0	10,990	12,861	13,504	10,150
Transfer In	0	0	0	0	84,224	99,363	103,236	115,187
Grants	0	0	0	0	1,459	4,787	2,370	3,749
Federal In - Lieu	0	0	0	0	1,082	986	949	900
Dedicated	0	0	0	0	0	0	0	0
Other	82,332	95,551	94,497	108,100	2,451	4,804	2,134	1,431
Bond Proceeds/stf	0	0	0	0	0	0	0	0
Total Other Resources	162,389	191,701	192,873	215,075	215,732	248,021	253,884	271,479
<b>Total All Resources</b>	<b>319,164</b>	<b>368,345</b>	<b>382,938</b>	<b>415,612</b>	<b>448,649</b>	<b>516,045</b>	<b>541,535</b>	<b>550,343</b>
<b>Summary of All Expenditures</b>								
General Government	33,588	44,661	49,021	56,367	54,314	62,777	64,461	72,704
Judicial	45,808	52,981	60,512	69,436	65,551	72,888	49,930	54,284
Public Safety	28,847	32,843	38,602	40,436	42,408	44,032	79,259	85,364
Public Works	9,816	11,047	12,979	14,434	13,980	14,848	16,021	16,910
Culture & Recreation	6,692	7,784	8,948	10,653	10,897	11,712	12,791	14,123
Welfare	14,307	16,301	18,749	20,509	22,077	24,282	25,408	28,339
Health	8,830	8,990	4,234	4,381	4,516	4,554	12,259	12,393
Other	16,741	22,364	23,708	31,777	27,679	26,574	41,526	32,964
Transfers Out	94,820	106,886	109,414	98,877	129,400	164,947	175,681	167,428
<b>Grand Total Expenditures</b>	<b>259,449</b>	<b>303,857</b>	<b>326,167</b>	<b>346,870</b>	<b>370,822</b>	<b>426,614</b>	<b>477,336</b>	<b>484,510</b>
Ending Balance	59,716	64,486	56,771	68,743	77,827	89,633	64,199	65,833

an average annual rate of 11.9 percent over this period while SCCRT revenues increased by 8.2 percent annually. Expenditures grew most rapidly for public safety at 16.8 percent annually on average between FY1990 and FY1997. Growth in other areas included general government (11.7 percent annually), culture and recreation (11.3 percent annually), and welfare (10.3 percent annually).

The opening fund balance of Nye County is noticeable in that it has fallen from a high of \$2.4 million in FY1993 to a forecast low of \$0 in 1998. For FY1997, the opening balance of the budget was \$441,000 and totaled \$16 million.

Again, outside sources provided a substantial amount of this revenue, contributing \$3.8 million, or 23 percent of the budget. In contrast with Clark County, the largest expenditure for Nye County in 1997 is public safety, with \$6.6 million, followed by general government with \$5.7 million and the judicial system with \$2.3 million (see Table 3.13-30).

While *ad valorem* tax revenues have increased substantially (at an average annual rate of 27.2 percent between FY1990 and FY1997), SCCRT revenues have only increased by 1.2 percent. Major increases in expenditures have occurred for general government (10.8 percent annually), the judicial system (10.5 percent annually), and public safety (10.4 percent annually).

The budget of Lincoln County is comparatively small. The opening fund balance of Lincoln County is also noticeable, in that it has fallen from a high of \$632,000 in FY1994 to a forecast low of \$102,000 in 1998. With an opening fund balance of \$213,000 in 1997, the total budget was \$2.6 million. While outside sources contributed a relatively small amount of \$563,000 to the budget, this still constituted 22 percent of the total revenues. Expenditures were concentrated on public safety, with \$1.1 million, followed by general government with \$856,000 and the judicial system with \$473,000 (see Table 3.13-31).

*Ad valorem* tax revenues have increased at an average annual rate of 13.7 percent between FY1990 and FY1997 while SCCRT revenues have increased by only 1.0 percent annually. Increases in major expenditure categories have been as follows: 6.9 percent annually for general government; 8.0 percent annually for the judicial system; and 7.5 percent annually for public safety.

### **3.13.9 American Indian Issues Concerning Socioeconomics**

American Indians living in the NAFR region of influence are tied to NAFR both spiritually and economically. Many work at jobs directly related to the Air Force or in support and service jobs. Because the Indian world view interrelates all aspects of the social, spiritual and economic spheres, the Indian people are concerned about all aspects of the Proposed Action and alternatives.

<b>Table 3.13-30. Nye County Summary of Governmental Type Funds (in thousands)</b>								
<i>Revenues/Expenditures</i>	<i>Actual FY90</i>	<i>Actual FY91</i>	<i>Actual FY92</i>	<i>Actual FY93</i>	<i>Actual FY94</i>	<i>Actual FY95</i>	<i>Actual FY96</i>	<i>Actual FY97</i>
<b>Summary of All Revenues</b>								
Opening Fund Balance	\$1,815	\$2,675	\$1,385	\$2,402	\$803	\$1,374	\$1,106	\$441
Ad Valorem	1,037	728	2,724	3,799	4,463	4,723	4,925	5,595
S.C.C.R.T.	3,162	2,794	2,859	2,852	2,899	3,291	3,065	3,441
Other								
Fines, Permits, and Fees	264	222	225	236	237	232	331	379
Local Gaming	0	0	0	0	58	52	60	70
Intergovernmental	2,369	2,358	2,875	2,575	2,190	2,174	2,395	2,436
Charges for Services	1,021	1,153	1,217	1,002	907	885	1,117	1,171
Interest charges	0	0	0	0	0	0	0	0
Transfer In	0	0	0	0	868	105	608	838
Grants	0	0	0	0	0	0	0	0
Federal In - Lieu	0	0	0	0	513	550	527	550
Dedicated	0	0	0	0	0	0	0	0
Other	878	285	1,802	666	1,081	1,737	1,945	1,543
Bond Proceeds/stf	0	0	0	0	0	0	0	0
Total Other Resources	4,532	4,018	6,119	4,479	5,855	5,734	6,982	6,987
<b>Total All Resources</b>	<b>10,546</b>	<b>10,215</b>	<b>13,087</b>	<b>13,532</b>	<b>14,020</b>	<b>15,123</b>	<b>16,079</b>	<b>16,465</b>
<b>Summary of All Expenditures</b>								
General Government	2,793	3,392	4,425	4,455	4,579	4,951	5,427	5,723
Judicial	1,166	1,175	1,392	1,636	1,764	1,884	2,107	2,352
Public Safety	3,304	3,856	4,430	4,973	5,443	6,008	6,711	6,582
Public Works	0	0	27	154	109	166	192	218
Culture & Recreation	0	0	148	0	0	0	0	0
Welfare	0	0	0	0	0	0	0	0
Health	104	109	190	226	406	582	709	789
Other	160	299	72	220	265	371	395	558
Transfers Out	344	0	0	1,065	78	54	98	243
<b>Grand Total Expenditures</b>	<b>7,871</b>	<b>8,831</b>	<b>10,684</b>	<b>12,729</b>	<b>12,645</b>	<b>14,016</b>	<b>15,638</b>	<b>16,465</b>
Ending Balance	2,675	1,385	2,402	803	1,374	1,106	441	0
<i>Source: Nevada Legislative Counsel Bureau 1996</i>								

*Nellis Air Force Range Renewal LEIS*

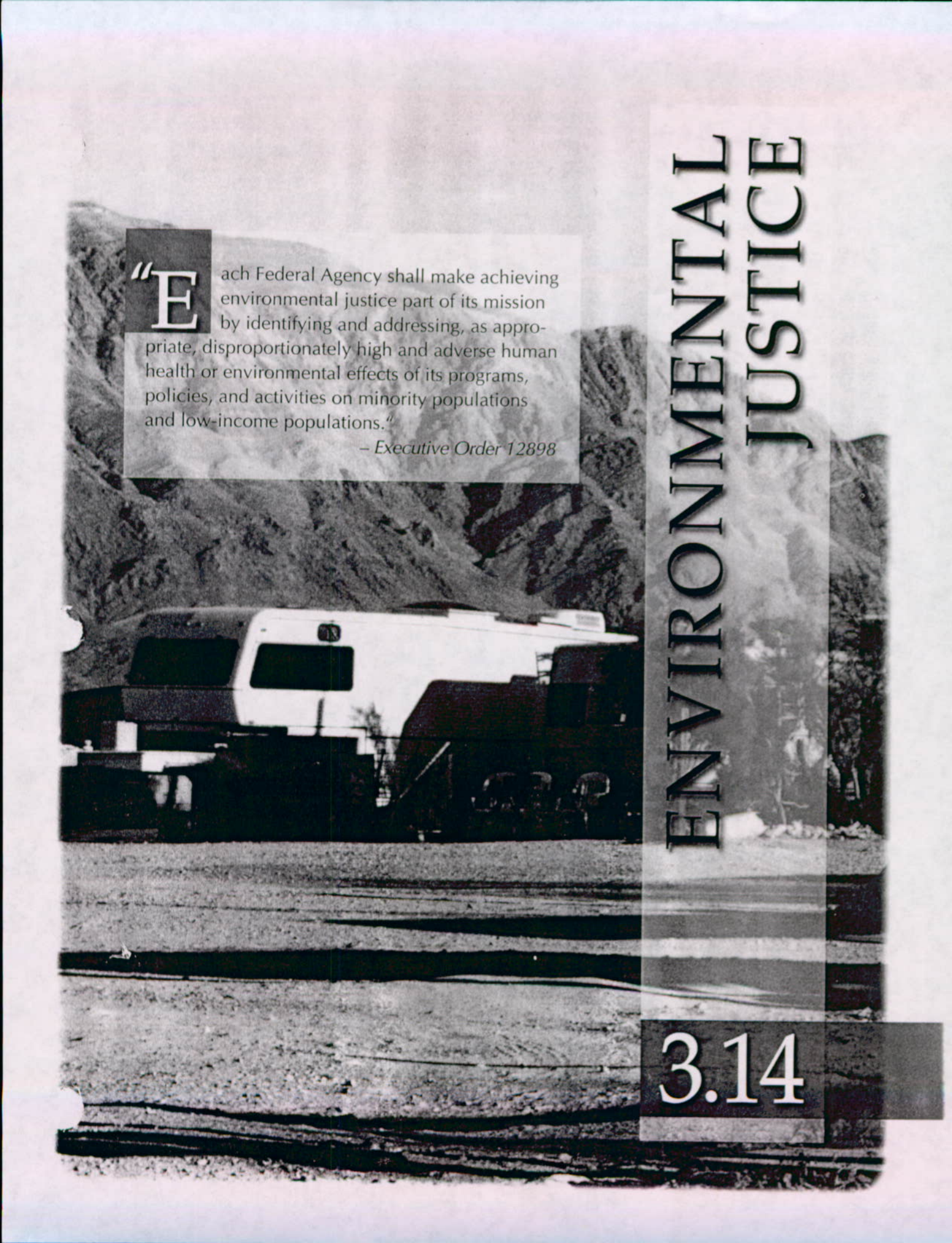
**Table 3.13-31. Lincoln County Summary of Governmental Type Funds (in thousands)**

<i>Revenues/Expenditures</i>	<i>Actual FY 90</i>	<i>Actual FY 91</i>	<i>Actual FY 92</i>	<i>Actual FY 93</i>	<i>Actual FY 94</i>	<i>Actual FY 95</i>	<i>Estimated FY 96</i>	<i>Budgeted FY 97</i>
<b>Summary of All Revenues</b>								
Opening Fund Balance	\$326	\$536	\$522	\$527	\$632	\$476	\$519	\$213
Ad Valorem Revenue	308	434	481	526	607	594	663	756
S.C.C.R.T.	679	623	640	640	665	727	714	711
Other								
Fines, Permits, and Fees	129	141	145	160	193	225	187	207
Local Gaming Revenues	0	0	0	0	5	3	6	6
Intergovernmental Revenue	428	441	409	549	528	575	550	378
Charges for Services	96	76	46	73	65	75	65	67
Interest charges	0	0	0	0	61	90	50	60
Transfer In	0	0	0	0	29	7	1	100
Grants	0	0	0	0	79	76	100	85
Federal In - Lieu	0	0	0	0	0	0	0	0
Dedicated Revenue	0	0	0	0	0	0	0	0
Other Revenues	118	120	168	157	49	47	51	33
Bond Proceeds/stf	0	0	0	0	0	0	0	0
Total Other Resources	771	778	768	939	1,008	1,098	1,009	935
<b>Total All Resources</b>	<b>2,084</b>	<b>2,371</b>	<b>2,411</b>	<b>2,632</b>	<b>2,912</b>	<b>2,895</b>	<b>2,906</b>	<b>2,615</b>
<b>Summary of All Expenditures</b>								
General Government	537	576	624	550	632	721	860	856
Judicial	276	288	330	420	434	470	513	473
Public Safety	698	837	899	1,025	975	1,107	1,252	1,154
Public Works	3	2	4	5	11	23	18	5
Culture & Recreation	0	0	0	0	0	0	0	0
Welfare	0	0	0	0	0	0	0	0
Health	17	16	17	0	21	55	50	25
Other	0	10	0	0	0	0	0	0
Transfers Out	18	119	10	0	363	0	0	0
<b>Grand Total Expenditures</b>	<b>1,549</b>	<b>1,848</b>	<b>1,884</b>	<b>2,000</b>	<b>2,436</b>	<b>2,375</b>	<b>2,693</b>	<b>2,514</b>
Ending Balance	536	522	527	632	476	519	213	102
<i>Source: Nevada Legislative Counsel Bureau 1996</i>								



The NARD (AIWS 1997) identified the following socioeconomic issues relevant to the NAFR:

- **American Indian region of influence:** The following reservations are within the area the CGTO considers the Nellis AFB LEIS region of influence: Duckwater Shoshone Tribe, Las Vegas Paiute Tribe, Moapa Paiute Tribe, Yomba Shoshone Tribe. Other tribes that are outside the NAFR LEIS region of influence but that the CGTO consider as potentially impacted by the proposed action or alternatives are: Timbisha Shoshone Tribe, Death Valley, California; and the Pahrump Paiute Tribe.
- **American Indian education:** Tribally operated schools in Nye County and Headstart programs on the Moapa Paiute Indian reservation.
- **Farming and ranching:** Prior to the military land withdrawal of NAFR, and in the NAFR region, Indian families owned or had access to springs and agricultural lands. Following the withdrawal, often there was no longer access to these resources.
- **Mining:** American Indians mined the NAFR region on their own behalf, with their own established mining claims. Some claims established by Euroamericans were first identified by Indian people who guided the Euroamerican prospectors to the ore deposits, but were usually excluded from partnerships and establishing their own mining claims.
- **Political integration and community cohesion:** Euroamerican settlement and the military land withdrawal fragmented the Indian cultures of the region, lowering the tribes' ability to negotiate, resolve conflicts, keep peace and share resources (AIWS 1997). Lack of access to traditional meeting places by the three ethnic groups represented in the CGTO, eroded their interethnic interaction skills and resulted in a loss of political power.
- **Transportation and tribal enterprises:** The CGTO is concerned about the issue of explosive materials being transported across reservations. AIWS has researched the effect of continued or increased transportation, and suggests that it is "detrimental to the economic success of tribal-owned business and may increase the cost of insurance policies" (AIWS 1997).



**"E**ach Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

– Executive Order 12898

# ENVIRONMENTAL JUSTICE

3.14

*The NAFR/LEIS Outreach Program included scoping meetings in several locations throughout Clark, Lincoln, and Nye Counties that provided for public participation.*



**E**nvironmental justice considers the potential for disproportionate environmental impacts incurred by minority or low-income populations as a result of a federal action subject to environmental review. Environmental justice applies to all environmental resources.

Environmental justice information about the region of influence focuses on the distribution of minority populations or low-income populations. For purposes of this analysis, minority populations and low-income populations are defined as follows:

- **Minority populations:** Persons of Hispanic heritage of any race; Blacks; American Indians, Eskimos and Aleuts; and Asian or Pacific Islanders. The census does not report the minority population of an area, but it does report population by race, and separately, by ethnic origin. These data were used to estimate the minority populations for this LEIS.
- **Low-income population:** Persons living below the poverty level, based on \$12,674 for a family of four in 1989 as reported in the 1990 census. Estimates of these two population categories were developed using data from the 1990 Census of Population and Housing.



*Low-income and minority populations within Nye, Lincoln, and Clark Counties were evaluated to define any environmental consequences associated with NAFR land withdrawal renewal.*

### 3.14 ENVIRONMENTAL JUSTICE

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* provides that each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations. Air Force instructions and policy guidelines directed the methodology by which this environmental justice analysis was performed. To promote participation in the environmental impact analysis process by potentially affected populations, especially low-income and minority populations, the Air Force conducted scoping meetings in several locations throughout Clark, Lincoln and Nye counties, published a newsletter for the public about range operations and the LEIS process, operates a web site, and is conducting an extensive Native American interaction program.

The discussion that follows describes the number of persons in minority populations and low-income populations living in the project area.

#### 3.14.1 Region of Comparison

The region of comparison (ROC) for environmental justice includes Clark, Lincoln, and Nye counties in Nevada. The portion of the Desert MOA that is located in Iron and Washington counties in western Utah is not expected to receive disproportionately higher effects than the general population affected by the project. The ROC comprises the smallest political jurisdictions (i.e., the counties) that encompass the land within NAFR and the lands underlying the related airspace.

#### 3.14.2 Minority Populations and Low-Income Populations

For purposes of this analysis, minority populations and low-income populations are defined as follows:

- *Minority populations* – Persons of Hispanic origin of any race; Blacks; American Indians, Eskimos and Aleuts; and Asian or Pacific Islanders (without double-counting persons of Hispanic origin who are also contained in the latter groups)
- *Low-income populations* – Persons living below the poverty level, based on \$12,674 for a family of four in 1989 as reported in the 1990 census

Estimates of these two population categories were developed using data from the 1990 Census of Population and Housing. The census does not report the minority population of an area, but it does report population by race, and separately, by ethnic origin, which were used to estimate the minority populations for this analysis.

In 1990, the three-county ROC contained 763,015 persons, of which 184,202 persons (24.1 percent) were minorities and 79,072 persons (10.4 percent) were living below the poverty level. Populations of the individual counties in the ROC are discussed below.

Lincoln County contained a population of 3,775 persons in 1990, of which 309 (8.2 percent) were minorities and 495 (13.1 percent) were living below the poverty level. A total of 156 persons (4.1 percent) were persons of Hispanic origin. In addition, 81 persons (2.1 percent) were Black; 58 persons (1.5 percent) of the population were American Indian, Eskimo, or Aleut, and 16 persons (0.4 percent) were Asian or Pacific Islander.

Nye County contained 17,781 persons in 1990, of which 2,134 persons (12.0 percent) were minorities and 1,840 persons (10.3 percent) were living below the poverty level. Persons of Hispanic origin comprised 1,237 persons (7.0 percent). In addition, American Indians, Eskimos, or Aleuts comprised 499 persons (2.8 percent) of the population. Blacks comprised 1.6 percent of the population or 291 persons, and Asians or Pacific Islanders comprised 155 persons (0.9 percent).

Clark County contained 741,459 persons in 1990, of which 181,759 persons (24.5 percent) were minorities and 76,737 (10.3 percent) were living below the poverty level. Persons of Hispanic origin comprised 82,904 persons (11.2 percent) of the total population. A total of 70,738 persons (9.5 percent) of the population were Black, 26,043 persons (3.5 percent) Asian or Pacific Islander, and 6,416 persons (0.9 percent) American Indian, Eskimo, or Aleut. Some persons in the latter categories are also included in the subtotal for persons of Hispanic origin. To avoid double-counting these persons, they are only counted once when calculating the minority population.

The Air Force is conducting an extensive Native American Interaction Program (NAIP) for NAFR and is working with 18 American Indian tribes and official American Indian organizations. Members of these tribes live within the local area either on reservation lands or off the reservation. Others live outside the local area while maintaining local ties as a result of ancestral and traditional connections to the area.

Indian reservations in the ROI include the Duckwater Reservation in northeastern Nye County, the Yomba Reservation in northwestern Nye County, the Moapa Reservation in northeastern Clark County, the Fort Mojave Reservation and Trust Lands in southern Clark County, and the Las Vegas Paiute Tribe in Clark County. The populations associated with these reservations are included in the county populations provided previously, and are reported separately below.

The Duckwater Reservation, which is approximately 50 miles north of the Desert MOA boundary, is approximately 6.2 square miles in size. In 1990, the population living on the reservation was 135 persons and there were 65 housing units; 24.5 percent of persons were living below the poverty level. The Yomba Reservation located approximately 60 miles north of Tonopah, is approximately 7.3 square miles in size and contained 95 persons and 36 housing units in 1990; 39.4 percent of persons were living below the poverty level. The Moapa Reservation located under the Sally Corridor subdivision of the Desert MOA at the NRC is

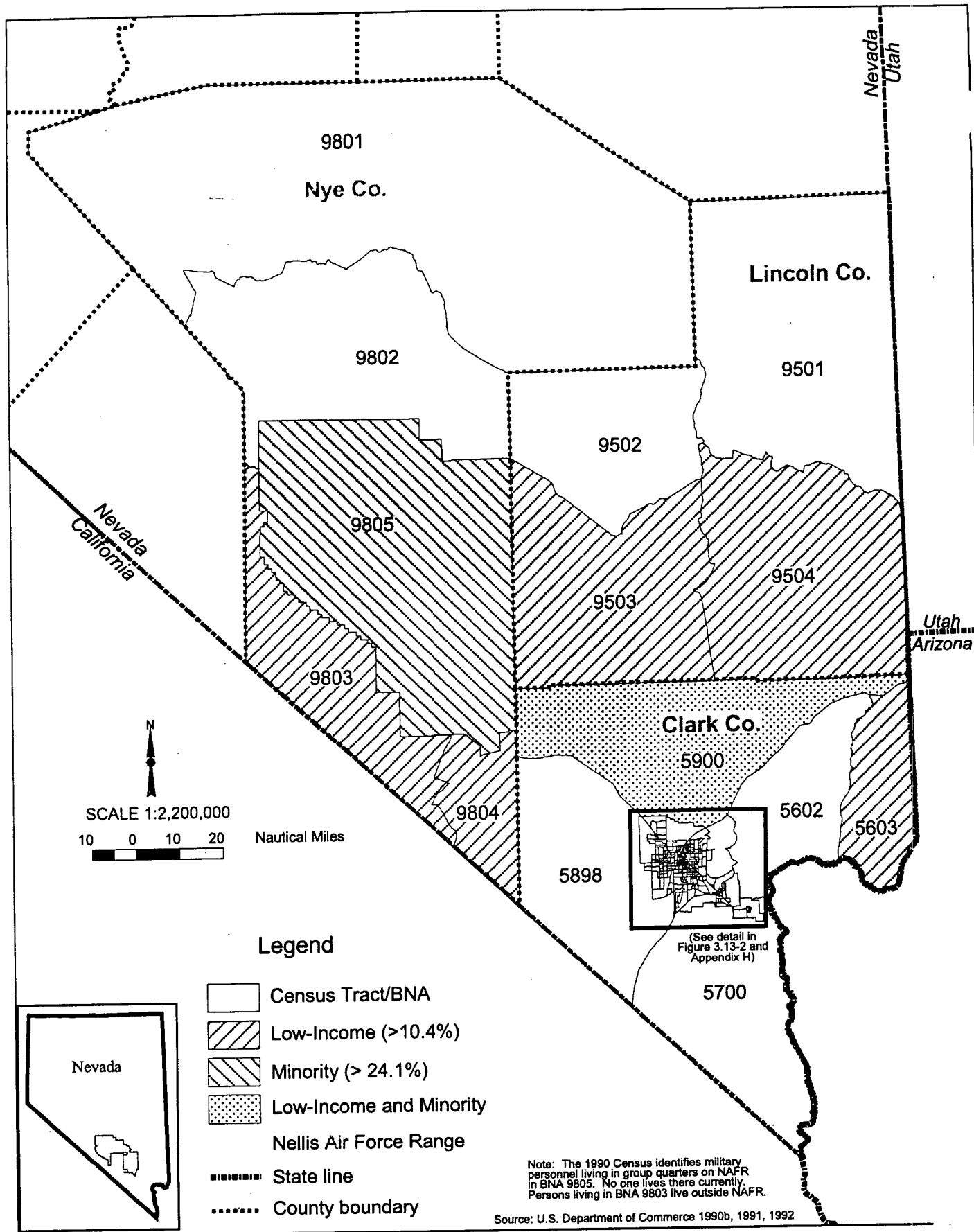
approximately 112 square miles in size. The population in 1990 was 375 persons and there were 112 housing units; 50.7 percent of persons were living below the poverty level. Portions of the Fort Mojave Reservation and Trust Lands are located on the southern tip of Clark County, approximately 80 miles from the NRC, and extend into Arizona and California. The Nevada portion of these lands is approximately 6.2 square miles in size, but it contains no population. The Las Vegas Colony contains approximately 6.2 square miles of land and in 1990 had a population of 80 persons and 26 housing units; 37.2 percent of persons were living below the poverty level.

For enumeration purposes, the Bureau of Census has defined small geographic units, for which data are aggregated, below the county level. Within metropolitan counties and urbanized areas, these units are called census tracts. In non-metropolitan counties such as Nye and Lincoln counties, where census tracts have not been established, block numbering areas (BNAs) are established. There are 129 census tracts/BNAs in the three-county ROI, including 120 in Clark County, four in Lincoln County, and five in Nye County. Figure 3.14-1 shows the counties and the census tracts/BNAs.

For the analysis of baseline conditions, individual census tracts/BNAs have been identified that contain higher percentages of minority populations and low-income populations, relative to the general population in the ROC. Three criteria were used to establish disproportion. For minority status, either the percentage of persons in minority populations in the census tract must exceed the average for the general population in the ROI (which is 24.1 percent) or the minority population must exceed 50.0 percent, indicating that in that census tract, minorities constitute a majority of the persons who could potentially be affected by the project. For low-income status, the percentage of persons living below the poverty level in the census tract must exceed the ROC average, which is 10.4 percent for the three counties.

Appendix H presents data on minority populations and low-income populations in the ROC for each of the 129 census tracts/BNAs. Census tracts/BNAs are marked "yes" in the center column if they have a higher percentage of minority persons than the ROC and "yes" in the final column if they have a higher percentage of minority persons than the ROC. The maps in Figures 3.14-1, 3.14-2, and Appendix H present the information in the table in a graphic form. Minorities comprise more than 50.0 percent of the total population in 14 census tracts in the ROC or 10.8 percent of all census tracts, all of which are in Clark County. The minority population percentage exceeds the ROC average of 24.1 percent in 43 of the 129 census tracts/BNAs or in 33.3 percent of the census tracts/BNAs. The percentage of the population living below the poverty level exceeds the ROC percentage of 10.4 percent in 52 of the census tracts or 40.3 percent of the total geographical units.

The Air Force conducted scoping meetings in several locations throughout Clark, Lincoln, and Nye counties. A newsletter was also published for the public about range operations and the LEIS process. An internet site (<http://www.nellis.af.mil/range/renewal>) is available for public use and an extensive NAIP is being conducted.



**Figure 3.14-1. Census Tract/BNAs in Clark, Lincoln, and Nye Counties**

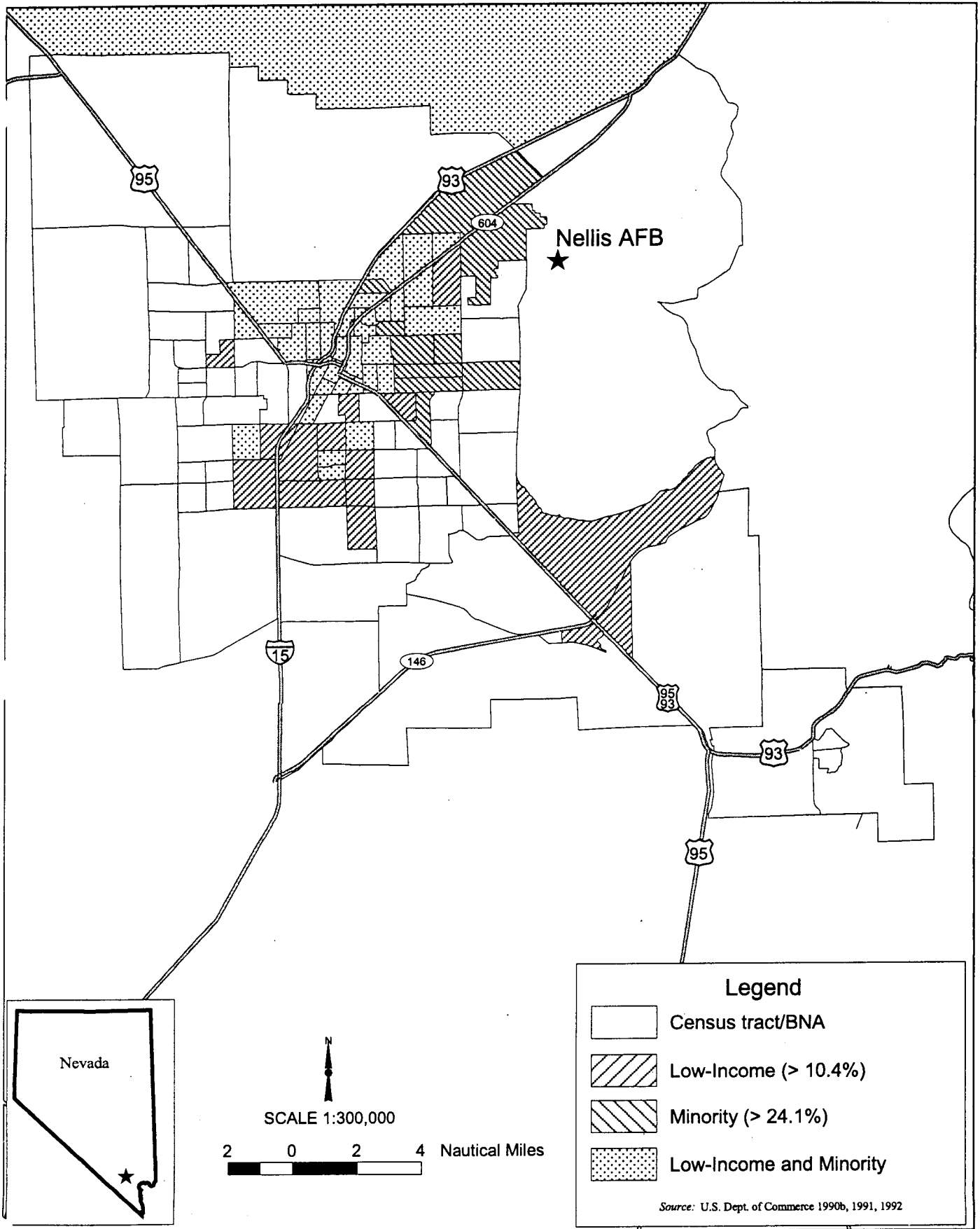


Figure 3.14-2. Census Tract/BNAs with High Percentage of Low-Income and Minority Populations



These efforts have provided for public participation by minority and low-income populations.

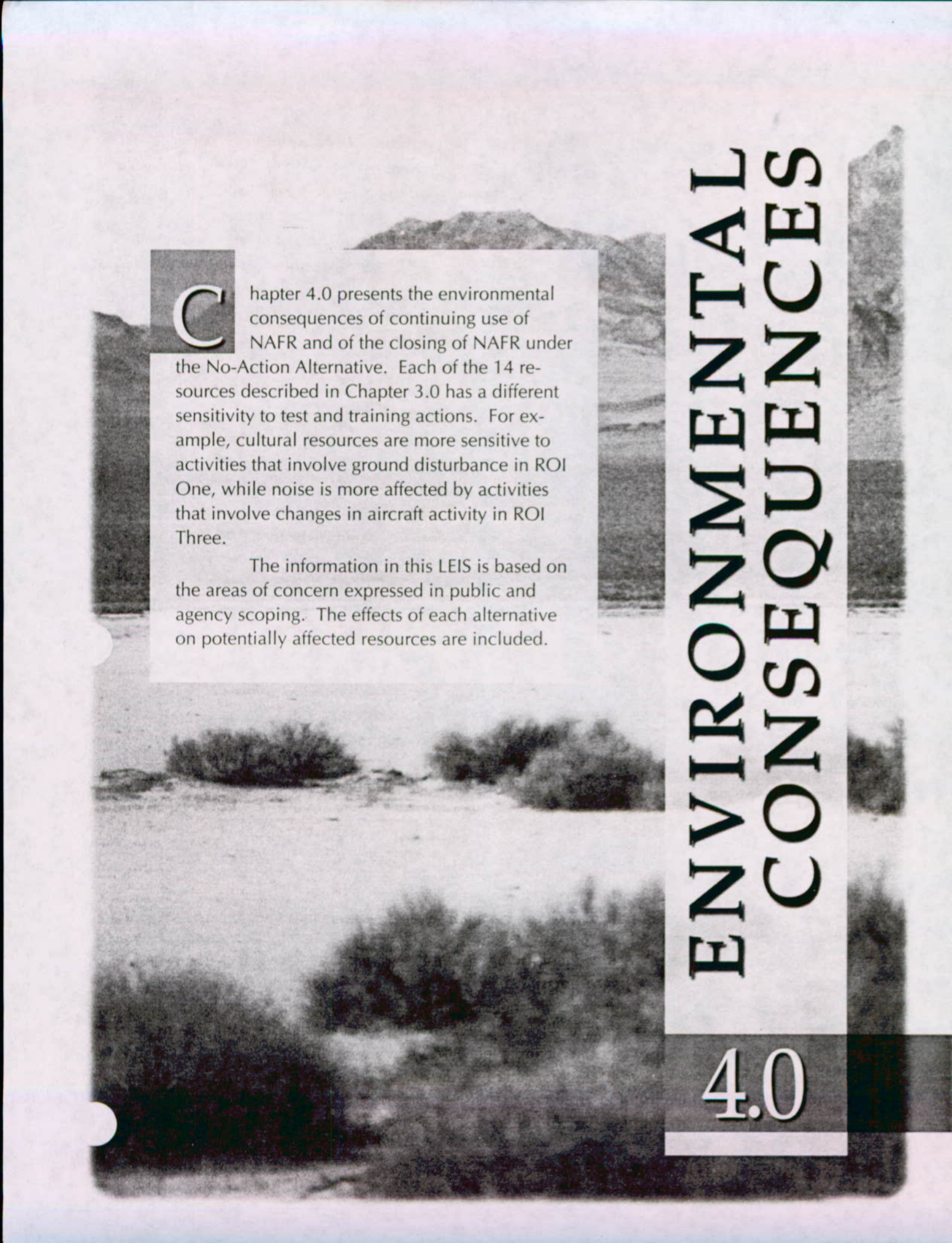
A list of environmental justice concerns identified through the scoping, public participation, and American Indian consultation process for this LEIS appears below:

- Nye County and Lincoln County indicated that they are rural, relatively lower per-capita income counties that may qualify for extra considerations, opportunities for participation, and mitigation measures, under EO 12898.
- American Indian tribes asked the Air Force to continue government-to-government negotiations.
- American Indians have expressed concerns that past programs, policies, and activities on NAFR have resulted in disproportionate effects on Indian tribes resulting from sacred land violations, cultural resource protection, and access violations.
- American Indians believe that operation of the TTR has disproportionately impacted American Indians as a result of sacred land violations, perceived risks from radiation, failure to protect American Indian cultural resources, and restricted access.

#### **3.14.2.1 AMERICAN INDIAN ISSUES CONCERNING ENVIRONMENTAL JUSTICE**

The CGTO considers NAFR to be all American Indian traditional land. They consider existing Air Force activities to constitute violations of access to holy land and cultural survival. They believe that no group other than American Indians has been so specifically affected by the creation and operation of NAFR. For this reason, these points fall under the category of environmental justice. The Owens Valley Paiute, Western Shoshone and Southern Paiute peoples require access to the lands to conduct religious ceremonies and also to practice essential elements of their culture, including educating the younger generation.

The CGTO also feels that studies of cultural resources should not be initiated without their participation.



**C**hapter 4.0 presents the environmental consequences of continuing use of NAFR and of the closing of NAFR under the No-Action Alternative. Each of the 14 resources described in Chapter 3.0 has a different sensitivity to test and training actions. For example, cultural resources are more sensitive to activities that involve ground disturbance in ROI One, while noise is more affected by activities that involve changes in aircraft activity in ROI Three.

The information in this LEIS is based on the areas of concern expressed in public and agency scoping. The effects of each alternative on potentially affected resources are included.

# ENVIRONMENTAL CONSEQUENCES

## 4.0

## ENVIRONMENTAL CONSEQUENCES

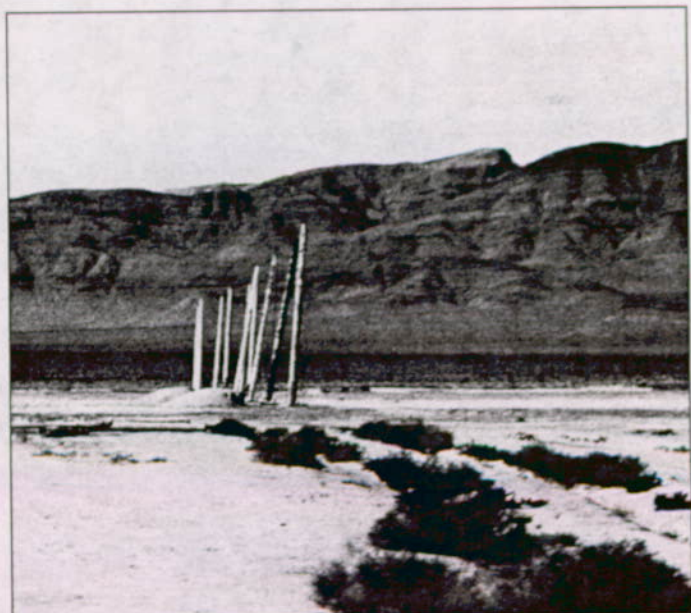


The consequences of continued Air Force exclusive use of NAFR will be continued air-to-ground and monitored air-to-air training, continued use of the range targets, and continued secure testing of complex weapons systems critical to U.S. interests into the 21st century.

The environmental consequences to renewal of NAFR and exclusive military use include the following:

- continued impacts to resources within the disturbed areas of ROI One.
- continued access exclusion and associated protection of resources within ROI Two. The extent of ROI Two and the area's exclusion would depend upon decisions made regarding land renewed and jurisdiction over that land.
- continued noise impacts and socioeconomic benefits associated with military training in ROI Three.

The No-Action Alternative has the potential for reduction of impacts to resources in ROI One, increased impacts to resources in ROI Two, and a combination of reduced impacts in some areas and increased impacts in other areas of ROI Three.



## 4.0 ENVIRONMENTAL CONSEQUENCES

This chapter overlays the project elements described in Chapter 2.0 onto the baseline or existing conditions of Chapter 3.0 to produce projected environmental consequences of the alternatives. For each resource area, Table 4.0-1 summarizes public or agency issues raised during scoping. Each of the 14 resource areas noted in the table is addressed in sections 4.1 through 4.14.

<i>Resource Area</i>	<i>Public or Agency Issue</i>
1. <i>Airspace</i>	<ul style="list-style-type: none"> <li>• Does the Air Force intend to take any more airspace? If so, how much?</li> <li>• Discuss the operations and effects of Nellis Air Force Base (AFB) on all special use airspace (Military Operations Areas [MOAs] and Restricted Areas).</li> </ul>
2. <i>Noise</i>	<ul style="list-style-type: none"> <li>• Sonic booms near rural communities (Caliente, Rachel, Alamo, Pioche). Identify locations of supersonic operations.</li> <li>• New aircraft noise emissions.</li> <li>• Identify changes in use of the range (e.g., increase in night operations).</li> <li>• How will these and Navy-proposed operations affect Nevada?</li> <li>• Assess impact of existing and potential MOA overflights.</li> </ul>
3. <i>Safety</i>	<ul style="list-style-type: none"> <li>• Reasons for and consequences of access restrictions to Nellis AFB.</li> <li>• Reasons for and consequences of access restrictions, specifically in regard to restriction of federal agencies charged with resource management activities (Bureau of Land Management [BLM], U.S. Fish and Wildlife Service [USFWS]).</li> <li>• Discuss opportunities and consequences of increased public access to the Nevada Wild Horse Range (NWHR), Timber Mountain National Monument, and the Desert National Wildlife Range (DNWR).</li> <li>• Analyze impacts of Nellis operations on off-site safety and identify safeguards/mitigation for public safety.</li> <li>• Discuss local responsibility for emergency response and management, mutual aid, and cleanup.</li> <li>• Provide a record of aircraft mishaps and crashes and their effects on the human and natural environment.</li> <li>• Analysis of objects and armaments released from aircraft.</li> </ul>
4. <i>Hazardous Materials and Solid Waste</i>	<ul style="list-style-type: none"> <li>• Toxic spills on Nellis Air Force Range (NAFR).</li> <li>• Describe surface disturbance and contaminant cleanup activities.</li> <li>• Describe pollution prevention and waste control activities, particularly from ordnance burial.</li> <li>• Describe soil surveys for environmental restoration.</li> <li>• Status of agreements for managing hazmat/waste and remediation activities (including plutonium contamination) on NAFR.</li> </ul>
5. <i>Earth Resources</i>	<ul style="list-style-type: none"> <li>• Return portions of the Clarkdale and Wagner Mining Districts to public domain status per Nevada Senate Joint Resolution (SJR) 25.</li> <li>• Provide a comprehensive mineral resources (rock and oil) inventory.</li> <li>• Identify potential mineral resources including precious metals, strategic and critical minerals and industrial minerals.</li> <li>• Identify definitive soil surveys conducted since the last LEIS.</li> </ul>
6. <i>Water Resources</i>	<ul style="list-style-type: none"> <li>• Provide a comprehensive water resources inventory.</li> <li>• Identify extent of contaminated groundwater.</li> </ul>

<b>Table 4.0-1. Public or Agency Issues Raised during Scoping</b>	
<i>Resource Area</i>	<i>Public or Agency Issue</i>
7. <i>Air Quality</i>	<ul style="list-style-type: none"> <li>• Studies should be conducted for potential impacts on air quality.</li> <li>• Evaluate the effects of gaseous emissions from aircraft operations.</li> </ul>
8. <i>Biological Resources</i>	<ul style="list-style-type: none"> <li>• Provide a comprehensive natural resources inventory.</li> <li>• Identify policies and activities supportive of ecosystem management.</li> <li>• Provide protection of riparian habitats.</li> <li>• Achieve and maintain a "thriving ecological balance" for the NWHR.</li> <li>• Extent of and management of wild horse, endangered species, and other game and non-game animals.</li> </ul>
9. <i>Cultural Resources</i>	<ul style="list-style-type: none"> <li>• Tribal Member involvement in data recovery. Loss of cultural heritage values. Warehouses of unanalyzed artifacts in storage.</li> <li>• Provide a comprehensive cultural resources inventory.</li> <li>• Open historic places for public access where it is permissible.</li> </ul>
10. <i>Land Use and Transportation</i>	<ul style="list-style-type: none"> <li>• Will the Air Force acquire any more land as it did with the White Sides withdrawal?</li> <li>• Identify all land areas not critical to the mission that could be returned to multiple use, to include mining, trapping, hunting, recreation, etc.</li> <li>• Extent of grazing on NAFR (Bald Mountain allotment and trespass grazing).</li> <li>• Extent of interaction with other land and resource management agencies with regard to the NWHR, Timber Mountain National Monument and DNWR.</li> <li>• Identify military impacts on the DNWR, how they are being handled, and what is proposed to avoid, reduce, or mitigate inherent conflicts and incompatibilities with refuge wildlife preservation.</li> <li>• Policies regarding environmental rehabilitation of surface-disturbed sites no longer in use.</li> <li>• LEIS should address why Air Force activities cannot be combined with Naval Air Station Fallon or other nearby bases to reduce amount of withdrawn lands in the western states.</li> <li>• Identify extent of roads constructed and abandoned since the last LEIS.</li> </ul>
11. <i>Wilderness and Wilderness Study Areas</i>	<ul style="list-style-type: none"> <li>• Define Wilderness Areas and Wilderness Study Areas (WSAs) under Nellis Range Complex (NRC).</li> <li>• Identify impacts to wilderness resources.</li> </ul>
12. <i>Recreation and Visual Resources</i>	<ul style="list-style-type: none"> <li>• Open access to portions of the range for recreation activities.</li> <li>• Allow access to Stonewall Mountain and other areas.</li> </ul>
13. <i>Socioeconomics</i>	<ul style="list-style-type: none"> <li>• Identify the negative economic impacts on airlines and civil aviation resulting from military restricted areas and other military operations.</li> <li>• Lincoln and Nye Counties are bearing risks of range activities but are not reaping economic benefits of withdrawals. Implement employment and procurement opportunities for rural area/communities surrounding the range.</li> <li>• Economic analysis in Special Nevada Report should be updated through the LEIS to show economic impacts.</li> <li>• Purchase electrical power from Lincoln County Power District to mitigate other economic losses.</li> <li>• Socioeconomic effects (both + and -) of Nellis AFB on southern Nevada.</li> </ul>
14. <i>Environmental Justice</i>	<ul style="list-style-type: none"> <li>• Environmental impacts of NAFR operations are disproportionately impacting low-income populations in Nye and Lincoln Counties.</li> <li>• Exclusive use disproportionately affects minority (American Indian populations who have historically used NAFR lands and resources.</li> </ul>

**T**

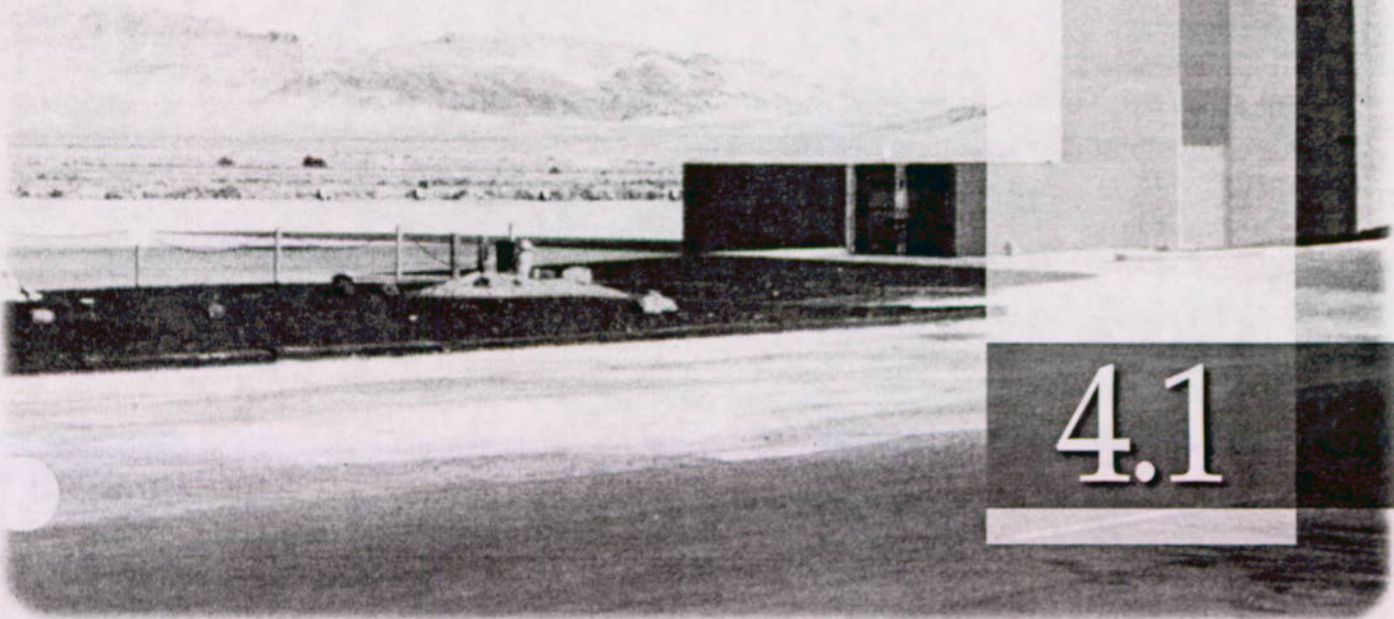
he FAA manages airspace so that both military and civil aviation requirements can be accommodated. The airspace is currently designated and managed in the present training areas to satisfy both Nellis AFB flight training needs and general aviation activities throughout this area.

Under all action alternatives assessed in this LEIS, the restricted areas, military operation areas (MOAs), and other airspace currently used by NAFR would remain essentially unchanged. Under the No-Action Alternative, NAFR special use airspace would no longer reach the surface.

Special Use Airspace has remained relatively unchanged through the years with a few modifications to exterior airspace boundaries that enhanced both FAA and Nellis AFB compatible use of adjacent airspace areas. The internal MOA and restricted area subsections supporting the various air-to-air and air-to-ground training scenarios have been adjusted to improve management, and such adjustments are anticipated to continue under any alternative.

# AIRSPACE

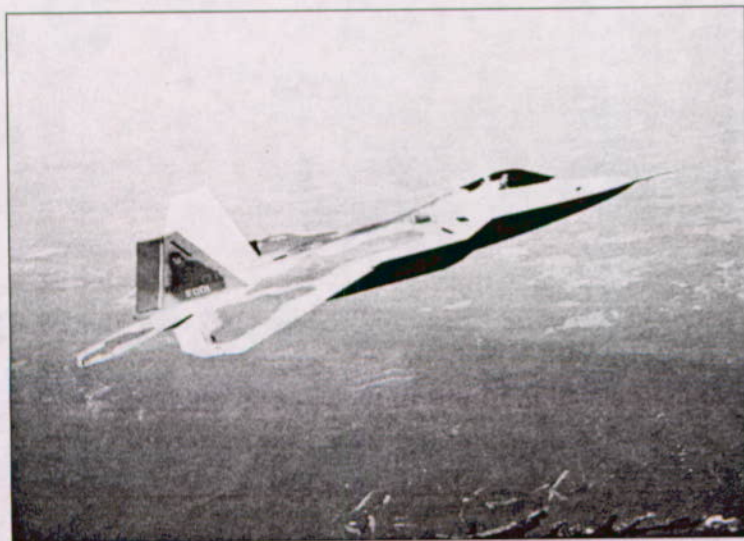
4.1





*The No-Action Alternative would either affect or terminate all air-to-ground and security missions operating from Nellis AFB. The Thunderbirds Aerial Demonstration Team, shown here practicing over Indian Springs, would be one of the few operational squadrons that would still be able to train as it has in the past.*

**U**nder the No-Action Alternative, all ground activities associated with NAFR would terminate. Without Department of Defense (DOD) control over any land areas, the Air Force would work with the FAA to change restricted airspace to a minimum of 100 feet above ground level (AGL) or to convert to MOAs for remaining air-to-air training activities.



*Under the No-Action Alternative, air-to-air training missions that do not require ground-based monitors, threats, or scoring could be conducted. There would be no large-scale Red Flag or similar training and no testing of new weapons systems requiring ground equipment.*

## 4.1 AIRSPACE

The assessment of airspace use and management discusses how the action alternatives and No-Action Alternative would affect the current NRC airspace structure, its operational use, and its compatibility with civil aviation in the region. Renewal alternatives do not include any actions that would increase or expand the NRC airspace. Discussion of these alternatives focuses on anticipated future use of this airspace. Analysis of the No-Action Alternative considers potential effects on airspace use that could occur if the NAFR land withdrawal were not renewed.

### 4.1.1 Alternatives 1A and 1B – Indefinite Withdrawal and Withdrawal/Modification of Lands and/or Administration

#### 4.1.1.1 NELLIS RANGE COMPLEX AIRSPACE USE AND MANAGEMENT

Under these alternatives, the restricted areas and military operations areas (MOAs) shown in Figure 3.1-1 would remain unchanged. As discussed in section 3.1, the NRC restricted airspace has remained relatively unchanged through the years with a few modifications made to the exterior airspace boundaries to enhance the compatible use of adjacent airspace areas by the Federal Aviation Administration (FAA) and Air Force. Any future need for additional modifications would continue to be a cooperative planning effort between the Air Force and FAA airspace managers and would be assessed, if necessary, through the National Environmental Policy Act (NEPA) process. The internal MOA and restricted area subsections would also be expected to remain unchanged although any boundary changes would not affect other adjacent airspace uses. In addition, no changes are anticipated for the northern and western ingress/egress transit routes currently used for the whole NRC.

Mission and operational changes have occurred from 1986 to the present and are expected to continue to occur. These changes are included in the historic level of between 200,000 and 300,000 annual sortie-operations used in this analysis. Although mission or operational changes, such as the introduction of the F-22, are expected in the foreseeable future, these changes are accounted for by the range of sortie-operations. The specific environmental consequences associated with such mission or operational changes would be assessed by specific NEPA documentation.

The five military training routes (MTRs) identified in Table 3.1-1 would continue to be used at current operational levels, whether they are flown in conjunction with or independent of NRC training missions. Department of Defense (DOD) periodically reviews MTR use and determines whether routes/route segments should be modified, combined, or eliminated, as necessary, to maximize overall MTR use by the different DOD service components or to respond to potential concerns with underlying land use conflicts. No significant changes are currently anticipated in the use or design of these five MTRs.



The Low Altitude Tactical Navigation (LATN) areas bordering the east and southwest boundaries of the NRC would continue to support low-speed, low-altitude training at their current use. There are no changes anticipated for the different refueling routes supporting Red/Green Flag exercises and other mission activities in the NRC.

Airspace that is designated around Nellis AFB (Las Vegas Class B) and Indian Springs Air Force Auxiliary Field (ISAF AF) (Class E) for air traffic control (ATC) purposes would change as operational requirements dictate. If any changes were necessary, they would be accomplished through FAA coordination and would not normally require NEPA assessment.

#### **4.1.1.2 CIVIL AVIATION AIRSPACE USE**

As discussed in section 3.1, the NRC is situated within an area that has had relatively little impact on either commercial or general aviation. This is due primarily to the near direct routing provided by Federal Airways and Jet Routes to accommodate instrument flight rules (IFR) traffic and the commonly flown routes for visual flight rules (VFR) traffic between most airports through this region. No changes are currently planned for the Airway/Jet Route structure surrounding NRC. Although commercial and general aviation is expected to increase 54 and 17 percent, respectively, by 2015 (Nevada Department of Transportation [NDOT]1995), such increases would not be affected by the continued existence and use of the NRC. Nellis AFB airspace and operations management would continue to interact with state and federal agencies at periodic forums, and with the FAA and other DOD agencies in the Western Regional Airspace Council to discuss any future airspace issues or modifications affecting the NRC.

Survey flights conducted by the Nevada Division of Wildlife (NDOW), BLM, and USFWS within portions of the NRC would be unaffected by continued use of this airspace. Nellis AFB range scheduling would continue cooperative efforts in coordinating and scheduling these flights when requested by the three agencies.

#### **4.1.2 Alternatives 2A and 2B – 25-Year Withdrawal and 25-Year Withdrawal/Modification of Lands and/or Administration**

The effects of these alternatives would be identical to those discussed for Alternatives 1A or 1B.

#### **4.1.3 No-Action Alternative**

##### **4.1.3.1 NRC AIRSPACE USE AND MANAGEMENT**

The discontinued withdrawal of NAFR lands and the associated termination of air-to-ground activities would require FAA reevaluation of the restricted airspace to determine whether remaining DOD mission requirements warranted the continued need for this restricted airspace. Without DOD control of the land, the Air Force would likely make application to FAA to redesignate the Restricted Airspace. Initially, air-to-air training would continue to

occur at current levels. Training would likely decrease at least 50 percent because training needing ground support would no longer be possible at NAFR.

Use of the five MTRs over the current withdrawn lands could be expected to decline since some low-level missions would no longer be able to be flown in conjunction with any weapons range use. Some training requirements could still be met on these routes, but such use may not warrant continued retention of all five MTRs. A determination would have to be made by the individual scheduling agencies on the further need for each route.

With elimination of the air-to-ground mission, the LATN areas could be eliminated because the low-speed, low-altitude aircraft would most likely be able to fulfill low-level navigation requirements within the NRC. There may be a continuing need to retain LATN southwest for Air Warrior A-10 training while these aircraft are in transit to the Fort Irwin range area.

Retention of the existing air refueling routes would need to be reevaluated, based not only on NRC operational requirements, but also other DOD refueling mission needs in either the Edwards Range or Utah Test and Training Range (UTTR). The Las Vegas Class B airspace and Indian Springs Class E airspace would remain unchanged because this airspace is established for ATC purposes, regardless of how the NRC is used.

#### **4.1.3.2 CIVIL AVIATION AIRSPACE USE**

The No-Action Alternative would have little effect on transit IFR air traffic through this region. While this traffic would continue to operate principally on existing Federal Airways and Jet Routes already providing near direct routing between all key airports, the FAA would have more flexibility in routing these aircraft through portions of the NRC if hazardous air-to-ground operations did not exist. If any portions of the restricted airspace were to be redesignated as MOA airspace, VFR aircraft would no longer be restricted from using this airspace and could operate under see and avoid flight clearances within this airspace. Considering the current location and near direct alignment of general aviation airports outside of the existing restricted airspace, it is not likely that VFR aircraft would operate that extensively within this airspace if it were unrestricted.

Overall, airspace actions that could occur as a result of the No-Action Alternative would not be expected to have a significant effect on how airspace adjacent to the NRC has been used by the FAA and the DOD.

#### **4.1.4 American Indian Issues Concerning Airspace**

The Consolidated Group of Tribes and Organizations (CGTO) perceives any action associated with military training to have an adverse impact, but the CGTO has not specifically identified concerns regarding this resource. At a general level, they have stated that traditional cultural resources can potentially be affected by the actions around them, including actions that occur within military airspace. For example, Indian people feel that training exercises on NAFR, including the electronic combat (EC) program, have caused, "cultural resources, rock shelters,

and petroglyph panels . . . on the edge of rock outcrops to be destroyed and break off . . . ”  
(AIWS 1997).

# NOISE

**A** summary of the noise analysis indicates that, under any action alternative, the ranges and MOA noise levels remain essentially the same as the baseline. Test and training activity and associated noise would continue to be dispersed throughout the airspace.

The No-Action Alternative would produce a reduction in noise throughout the NRC. No ground delivery of ordnance, weapons system testing, tactical testing, or training that includes ground-based support facilities would continue.



## NOISE



*During public scoping, some commentors expressed concern with existing overflight noise. Nellis AFB has an established procedure for dealing with noise complaints. However, under any alternative, overflights would likely continue to be a local issue.*

**N**oise includes supersonic noise caused by military aircraft performing maneuvers over NAFR and in surrounding airspace. Noise levels were calculated using actual measurements of supersonic events in Nellis airspace. A computer model based on this extensive noise monitoring was used to predict noise events at NAFR and in MOAs where supersonic maneuvers take place. Each individual airspace was evaluated separately. Noise levels and the number of supersonic events for the baseline condition are the same as those for all action alternatives.

The No-Action Alternative would reduce supersonic noise because many missions for training and testing would not achieve performance goals without ground facilities.



*The use of targets and threat emitters includes a limited number of military vehicles on the range roads. There is minimal noise from vehicles and sporadic noise from aircraft and ordnance delivery.*

## 4.2 NOISE

### 4.2.1 Overview

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with aircraft operations. Although aircraft are not the only sources of noise, they are readily identifiable to those affected by their noise emissions and are typically singled out for special attention and criticism. Consequently, aircraft noise is often noted as an environmental impact associated with military aircraft training flights in populated or recreation areas. Restricted access on NAFR precludes civilian and unauthorized military personnel on NAFR lands. The restrictions on land access reduce the potential for human exposure to noise from military activities. However, the NRC airspace overlies areas with civilian population and lands allowing public access.

The LEIS alternatives all involve aircraft operations of the types which currently occur over the NAFR, but with different levels of activity. Noise from these alternatives has therefore been analyzed by the methods described in section 3.2. The following subsections describe the noise consequences of each alternative.

### 4.2.2 Interpreting the Consequences of Noise

A general discussion of noise, the metrics for measuring noise, and noise effects is presented in Appendix E.

#### NOISE REGULATIONS AND POLICIES

Interpretation of Day-Night Average Sound Level ( $L_{dn}$ ) or Onset Rate Adjusted Monthly Day-Night Average Sound Level ( $L_{dnmr}$ ) can be based on an updated and validated "Schultz curve," (see Figure E-2 in Appendix E). This curve predicts the average response of individuals to various  $L_{dn}$  levels. The now-classical analysis of noise exposure-response relationships was first published in 1978 (Schultz 1978) and was based on data from 12 major social surveys addressing community annoyance due to transportation noise. Since then, it has been updated, refined, and validated several times (e.g., Fidell et al. 1991) and the described exposure-response relationships were adopted by the Federal Interagency Committee on Noise (FICON) (1992) for use by federal agencies in assessing aircraft noise-related impacts.

More recently, researchers began reevaluating the original Schultz curve data, and added a significant number of data points from new, technically improved community annoyance studies (Finegold et al. 1994). The current version of the curve used to predict community exposure-response relationships is shown in Figure E-3 of Appendix E, which compares the original Schultz curve with the most recently developed curve fit studies (Finegold et al. 1994). As shown, variances between results are slight. The equation fit by Finegold et al. represents a good fit to the data, and is also consistent with current theory of human annoyance reaction (Fidell et al. 1988). Features represented by this model include a single inflection point —

annoyance never going to zero as noise level decreases (some people are always annoyed), and annoyance never going to 100 percent as noise level increases (some people are never annoyed, or never complain). Response to  $L_{dnmr}$  is obtained by applying  $L_{dnmr}$  to the  $L_{dn}$  axis of the Schultz curve. Since  $L_{dnmr}$  is always equal to or greater than  $L_{dn}$ , this automatically yields the increased annoyance associated with the added penalties used with  $L_{dnmr}$ .

The most common point referred to on the Schultz curve is 65 decibels (dB). This is a benchmark often applied to determine residential land use compatibility around airports or highways. By extension, it is often used as a criterion in planning of airspace. For this LEIS, it is recognized that affected areas are diverse and it is not appropriate to use a single criterion.

The 65 dB  $L_{dn}$  value is useful to recognize as a level which, when exceeded, is normally not compatible with residential land use. The significance of other levels are as follows:

- An  $L_{dn}$  of 55 dB was identified by the U.S. Environmental Protection Agency (USEPA) as a level "... requisite to protect the public health and welfare with an adequate margin of safety" (USEPA 1972). Noise may be heard, but there is no risk to the public or its welfare.
- At  $L_{dn}$  values below 55 dB, the percentage of annoyance is correspondingly lower. Annoyance is never zero, but at an  $L_{dn}$  of 45 dB or less it is low enough to be negligible.

#### **OTHER EFFECTS FROM NOISE**

In addition to annoyance, other concerns about exposure to noise include the potential for hearing loss, other nonauditory health effects, the potential for speech and sleep interference, and possible effects on domestic animals and wildlife. These issues are addressed below and additional details are provided in Appendix E.

#### **HEARING LOSS**

Noise-induced hearing loss is probably the best defined of the potential effects of human exposure to excessive noise. Federal workplace standards for protection from hearing loss allow a time-average level of 90 dB over an 8-hour work period, or 85 dB averaged over a 16-hour period. Even the most protective criterion (no measurable hearing loss for the most sensitive portion of the population at the ear's most sensitive frequency, 4,000 hertz (Hz), after a 40-year exposure) suggests a time-average sound level of 70 dB over a 24-hour period (USEPA 1972). Since it is unlikely that persons will be exposed to elevated noise levels 24 hours per day for extended periods of time, there is little possibility of hearing loss below a  $L_{dn}$  of 75 dB, and this level is extremely conservative.

#### **NONAUDITORY HEALTH EFFECTS**

Nonauditory health effects of long-term noise exposure, where noise may act as a risk factor, have never been found to occur at levels below those protective against noise-induced hearing

loss, described above. Most studies attempting to clarify such health effects have found that noise exposure levels established for hearing protection will also protect against any potential nonauditory health effects, at least in workplace conditions. The best scientific summary of these findings is contained in the lead paper at the National Institutes of Health Conference on Noise and Hearing Loss, held on 22-24 January 1990 in Washington, D.C., which states the following:

The nonauditory effects of chronic noise exposure, when noise is suspected to act as one of the risk factors in the development of hypertension, cardiovascular disease, and other nervous disorders, have never been proven to occur as chronic manifestations at levels below these criteria (an average of 75 dBA for complete protection against hearing loss for an eight-hour day). At the International Congress on Noise as a Public Health Problem (1988), most studies attempting to clarify such health effects did not find them at levels below the criteria protective of noise-induced hearing loss, and even above these criteria, results regarding such health effects were ambiguous. Consequently, one comes to the conclusion that establishing and enforcing exposure levels protecting against noise-induced hearing loss would not only solve the noise-induced hearing loss problem but also any potential nonauditory health effects in the work place. [von Gierke 1990; parenthetical wording added for clarification.]

#### ***SPEECH INTERFERENCE***

Speech interference associated with noise is a primary cause of annoyance to individuals on the ground. The disruption of routine activities such as radio or television listening, telephone use, or family conversation gives rise to frustration and irritation. The quality of speech communication is also important in classrooms, offices, and industrial settings, and can cause fatigue and vocal strain in those who attempt to communicate over the noise. Research has shown that the use of the Sound Exposure Level (SEL) metric will measure speech interference successfully, and that an SEL exceeding 65 dB will begin to interfere with speech communication.

#### ***SLEEP INTERFERENCE***

Sleep interference may be measured in either of two ways. "Arousal" represents actual awakening from sleep, while a change in "sleep stage" represents a shift from one of four sleep stages to another stage of lighter sleep without actual awakening. In general, arousal requires a somewhat higher noise level than does a change in sleep stage.

Some guidance is available in judging sleep interference. The USEPA identified an indoor  $L_{dn}$  of 45 dB as necessary to protect against sleep interference (USEPA 1972). Assuming a very conservative structural noise insulation of 20 dB for typical dwelling units, this corresponds to an outdoor  $L_{dn}$  of 65 dB as minimizing sleep interference.



### ***NOISE EFFECTS ON DOMESTIC ANIMALS AND WILDLIFE***

Animal species differ greatly in their responses to noise. Each species has adapted, physically and behaviorally, to fill its ecological role in nature, and its hearing ability usually reflects that role. Animals rely on their hearing to avoid predators, obtain food, and communicate with and attract other members of their species. Noise may mask or interfere with these functions. Secondary effects may include nonauditory effects similar to those exhibited by humans—stress, hypertension, and other nervous disorders. Tertiary effects may include interference with mating and resultant population declines.

There are available many scientific studies regarding the effects of noise on wildlife and some anecdotal reports of wildlife “flight” due to noise. Few of these studies or reports include any reliable measures of the actual noise levels involved. However, in the absence of definitive data on the effect of noise on animals, the Committee on Hearing, Bioacoustics, and Biomechanics of the National Research Council has proposed that protective noise criteria for animals be taken to be the same as for humans (National Research Council 1977).

### **QUANTIFYING NOISE FROM OUTDOOR RECREATIONISTS’ PERSPECTIVE**

Using  $L_{dnmr}$  does not necessarily help outdoor recreationists anticipate what sort of aircraft noise they may encounter on visits to overflowed lands available for public access within ROI Three. When aircraft fly over outdoor public lands sporadically within the NRC airspace (hundreds of square miles), the experience of aircraft noise during a typical visit often takes the following form:

1. For much of any given visit, outdoor recreationists will unlikely notice any aircraft noise, because aircraft operations will be far enough away from them that the noise will be inaudible or only slightly audible, even in areas with low natural noise levels.
2. For a small part of a typical visit, noise from distant aircraft operations may intermittently come to the notice of outdoor recreationists when they are not hiking, talking, or making any other noises themselves.
3. For an even smaller part of a typical visit, noise from aircraft operating within a few miles of an outdoor recreationist, although not particularly loud, may intrude to some degree on enjoyment of natural quiet.
4. On rare occasions (once in many visits) and in certain locations, an aircraft may directly overfly a visitor at low altitude. On such occasions, a visitor will hear a very loud noise for a short period of time. This noise will probably be annoying and may be startling as well.

While these four conditions approximately describe expected aircraft noise exposure under most large areas of military training airspace, one or more condition may be influenced by the

specific use of the airspace. For example, if a person is situated in close proximity to an area where aircraft concentrate to enter the NAFR, conditions three and four (listed above) would be expected to occur with greater frequency. Such activity would likely occur in the Desert and Reveille MOA airspace (e.g., near "Student Gap," near Rachel, Nevada). Conversely, a person located under airspace where aircraft do not regularly concentrate would probably experience only conditions one and two.

There can be a wide range of experiences and perceptions of experiences. Reactions vary greatly from person to person, depending upon the individual's expectations and the context in which the event occurs.

### **4.2.3 Methodology for Noise Analysis**

The NRC consists of 21 separate airspace units. Each unit was modeled to provide a basis for defining local noise consequences of aircraft overflights. The historic level and distribution of NAFR day/night operations is projected to continue into the foreseeable future.

#### **4.2.3.1 DESCRIPTION OF THE NOISE MODEL**

##### ***MOA RANGE NOISEMAP (MR\_NMAP)***

Noise levels for the alternatives addressed in this LEIS were computed using the Air Force's MR\_NMAP computer program (Lucas and Calamia 1996). Within the Restricted Areas and MOAs with no preferred tracks, as is the case with the use of the NRC, it computes noise based on a uniform distribution of sortie-operations weighted by the percent of time the sortie-operations are within the airspace, and the range of varying altitudes flown by the aircraft.

##### ***ENTERING OPERATION DATA INTO MR\_NMAP***

MR\_NMAP calculates the noise levels based on the operations data provided by the NRC airspace manager and the aircrews that currently use NRC airspace and train in ROI Three. The NRC airspace manager maintains records on the number of monthly operations flown, the airspace units used, and the amount of time each aircraft is scheduled to spend in a given airspace unit. This information is used to determine the amount of use each airspace unit experienced during a given year. While the amount of time each aircraft spends in one specific airspace unit is variable, because the purpose is to maximize training, the maximum time scheduled is an excellent average for the time used for modeling purposes.

Operational personnel provided input on the average time an aircraft spends at different altitudes, average airspeeds, and average power settings required for that airspeed. The altitude profile is an average of above-ground level readings experienced from the time the aircraft enters the airspace unit until the time it departs that unit and is dependent on the type of aircraft and its mission. Thousands of hours of radar data have also been collected and analyzed from the NRC to study the amount of time an aircraft spends at different altitudes. This information, combined with pilot interviews, was used in estimating the average altitude

profile. The average airspeeds and power settings to obtain that airspeed were based on what airspeeds were used during mission planning, which are also based on both fuel and time availability.

Averages are also used to determine the spatial distribution of aircraft within an airspace unit by separating the total number of operations flown into missions that can be individually modeled. All of the operations within the NRC assume the aircraft can literally fly anywhere in the airspace unit assigned for that particular mission.

### ***RELIABILITY OF THE NOISE CALCULATIONS***

The reliability of the noise modeling results is dependent on (1) the operations data entered into the model, (2) the measured aircraft noise data used in the calculations, and (3) the propagation algorithms contained in MR\_NMAP. The operations data entered into the model are carefully reviewed by airspace personnel that are expert at the training conducted in the NAFR complex. These data represent the operations during the busiest time periods (month) of the year so that the noise predictions are not diluted by periods of low activity and if anything, they slightly overpredict the noise level. The power and speed settings, the altitude profile, and the spatial distribution are dependent on the training syllabus.

The measured aircraft noise data used in the calculations come from the Air Force Noise Effect Branch of Armstrong Laboratories, which collects and maintains aircraft noise data for the purpose of noise modeling. The acoustical data set used by the noise model is regularly updated with the latest noise measurements. Updated acoustic measurements were developed using actual dedicated overflights of F-15, F-16, and B-1 aircraft. Acoustical measurements were made using dedicated aircraft that flew under controlled conditions over a microphone array. The recordings were incorporated into a noise file data set (Omega 10) that is used by MR\_NMAP.

The propagation algorithms used in the noise model account for spherical divergence (spherical spreading of noise energy), atmospheric absorption (reduction of noise as it interacts with air), and lateral attenuation (added reduction of noise as it interacts with the ground). Not included in the noise model are the effects due to wind, ground topography, and day-to-day variations in the meteorological conditions. For locations far from the aircraft, where propagation distance are greater than several thousand feet, atmospheric absorption and lateral attenuation can result in significant uncertainties in the noise levels calculated by MR\_NMAP.

Because of the problems associated with the calculations of noise in mountainous areas (ROIs Two and Three include mountainous terrain) studies are being conducted on the effect of terrain (Plotkin et al. 1993; NATO 1994). These studies tentatively show that topographic features can sometimes cause momentary increases in noise levels ("reflections," potentially up to 3 dB for brief periods) and can sometimes decrease noise substantially ("shielding," often in excess of 20 dB). Low-altitude flight altitudes are expressed as feet above ground level (AGL). As such, in mountainous terrain, AGL is relative to the highest local ground elevation; altitudes above low areas are correspondingly higher. By using the specified altitude AGL in the

analysis, the calculations assume aircraft are at lower altitudes than they would actually fly. The net result is a conservative calculation, which tends to overpredict the cumulative noise levels.

#### **ACCURACY OF THE NOISE CALCULATIONS**

The limitation of all noise models is that the accuracy of the results varies depending on the noise levels calculated. The lower the noise level (below 55 dB), the greater the uncertainties. There are two reasons for these uncertainties. First, when there is a large number of aircraft operations, time-average sound levels below 55 dB will occur at relatively long distances from aircraft, thus giving atmospheric propagation effects greater opportunity to cause significant variability; all of which increase the uncertainty in the sound level of individual flights. Second, when there are a few number of operations, the time-average sound levels are generated by only a few individual aircraft noise events that may not be statistically representative of the given aircraft modeled. When the sound levels are greater than 55 dB, the noise predictions are accurate to within a few decibels.

#### **4.2.3.2 NOISE MODELING APPROACH**

For noise modeling purposes, the operation data of existing and potential restricted area and MOA overflights were entered into the model. These data consisted of two parts: (1) an air-to-air component, and (2) an air-to-ground component. Each of these parts were modeled separately using MR\_NMAP and the results from the model predictions were summed using NMPLLOT, a computer program that plots cumulative noise exposure. Aircraft noise is localized in each airspace. Activities in other airspace subdivisions or elsewhere in Nevada do not change the localized noise levels.

The air-to-air component assumed that the operations were uniformly distributed in each assigned airspace. A range of representative flight and altitude profiles, engine thrust settings, airspeeds, and the flight time in minutes in the airspace subdivision for each of the participating aircraft were entered into the model. Chapter 5.0 addresses cumulative effects of new aircraft, specifically the F-22, operating in the NRC.

The air-to-ground component of the noise model was used to represent the aircraft that perform air-to-ground training. The operations were modeled using a uniform horizontal distribution that is time-weighted according to the amount of time the aircraft spend in different regions of the airspace. Additional factors entered into the model included representative flight and altitude profiles, engine thrust settings, and airspeeds.

#### **4.2.4 Noise Level Consequences Associated with Alternative 1A — Indefinite Withdrawal**

This section assesses the environmental consequences of continuing land withdrawal and test and training activity at NAFR. Based on information from 1986 to the present, the number of sortie-operations is projected to be between 200,000 and 300,000 per year. A sortie-operation is

the use of one airspace subdivision by one aircraft. This annual level of sortie-operations is projected to continue. This range of sortie-operations incorporates current and projected day and night operations associated with NAFR.

#### **4.2.4.1 SUBSONIC NOISE**

Table 4.2-1 shows the projected  $L_{dnmr}$  for the 21 airspace subdivisions described in Chapter 1.0. Projected future levels are the same as the current condition. (For comparison to the baseline condition please see Table 3.2-1.) Projected future noise levels are within normally acceptable criteria. There is little, if any, change in noise consequences.

All noise levels associated with NAFR operations are well below those that would create any health or safety concerns. The highest  $L_{dnmr}$  calculated in this LEIS was 63 dB under one of the airspace subunits supporting NAFR targets.

#### **4.2.4.2 SONIC BOOMS**

Sonic booms, created by supersonic flights, were noted as a public concern in rural communities. Table 4.2-2 shows Day-Night Average C-weighted Sound Level ( $L_{Cdn}$ ) and boom frequency for Alternative 1A. Airspaces not shown are subject to  $L_{Cdn}$  of less than 45 dB. Sonic boom levels and frequency of occurrence are projected to be the same as baseline. Alternative 1A is expected to result in no changes in impacts from supersonic noise.

#### **4.2.4.3 NOISE FROM HIGH EXPLOSIVES AND GROUND ACTIVITY**

Noise levels from the detonation of high explosives or other ground activity on NAFR are not expected to change from baseline conditions.

#### **4.2.5 Noise Level Consequences Associated with Alternative 1B – Withdrawal/Modification of Lands and/or Administration**

Noise from operations associated with this alternative would be expected to be the same as described under Alternative 1A.

Table 4.2-1. Noise Levels – Alternative 1A				
Airspace	200,000 SORTIE-OPERATIONS		300,000 SORTIE-OPERATIONS	
	Ldnmr		Ldnmr	
Caliente	54		56	
Coyote	57		59	
Elgin	46		47	
Reveille	54		56	
R-61	53		55	
R-62	53		55	
R-63	53		55	
R-64	53		55	
R-65	53		55	
Alamo	53		55	
EC South	52		54	
Pahute Mesa	53		54	
R-71	53		55	
R-74	60		62	
R-75	61		63	
R-76	58		60	
R-4808W <sup>1</sup>	46		47	
R-4808E <sup>1</sup>	<45		<45	
R-4809A	49		51	
EC East	55		57	
EC West	56		57	

1. DOE airspace over NRC.

Table 4.2-2. Baseline Sonic Boom Levels and Numbers per Day				
Airspace	200,000 SORTIE OPERATIONS		300,000 SORTIE-OPERATIONS	
	LCdn	Number/day	LCdn	Number/day
Elgin	54	1.0	56	1.5
Coyote	48	0.2	50	0.3
All Others	<45	0.1	<45	<0.1

#### **4.2.6 Noise Level Consequences Associated with Alternative 2A – 25-Year Withdrawal**

Noise from operations associated with this alternative would be expected to be the same as described under Alternative 1A.

#### **4.2.7 Noise Level Consequences Associated with Alternative 2B – 25-Year Withdrawal/Modification of Lands and/or Administration**

Noise from operations associated with this alternative would be expected to be the same as described under Alternative 1A.

#### **4.2.8 Noise Level Consequences Associated with the No-Action Alternative**

Aircraft overflight and sonic boom noise would continue. However, under this alternative, no land withdrawal renewal would occur. The NRC airspace horizontal boundaries will remain as currently defined by the FAA. The Air Force would likely make application to FAA to redesignate the Restricted Airspace. Aircraft operations that require ground facilities (targets, tracking sites, threat simulators or other test and training equipment) would no longer take place. The activities that would no longer occur include air-to-ground, weapons system testing, Red Flag/Green Flag large force exercises and all air-to-air activities that require ground-based tracking or related activities. Air Force operations would decrease by approximately 50 percent from the current use projections.

Noise associated with the no-action alternative has been computed for the 50 percent reduction case. Low (100,000 sortie-operations per year) and high (150,000 sortie-operations per year) ranges have been analyzed. Currently, 39 percent of sorties are associated with Red Flag/Green Flag. These have been eliminated from the sortie-operation distributions presented earlier. The remaining 11 percent reduction has been taken to be uniform across all other operations.

Table 4.2-3 shows  $L_{dnmr}$  for the 21 airspace units analyzed. Table 4.2-4 shows  $LC_{dn}$  and sonic booms heard per day for those airspaces that would be exposed to sonic booms. For analysis purposes, a 10 percent reduction in sorties would correspond to a 1 dB per year reduction in  $L_{dnmr}$  and  $LC_{dn}$  and a 10 percent per year reduction in frequency of noise and sonic boom events.

Noise levels in Tables 4.2-3 and 4.2-4 are from 1 to 5 dB lower than for baseline. There would be no adverse noise consequences from the No-Action Alternative.

#### **4.2.9 American Indian Issues Concerning Noise**

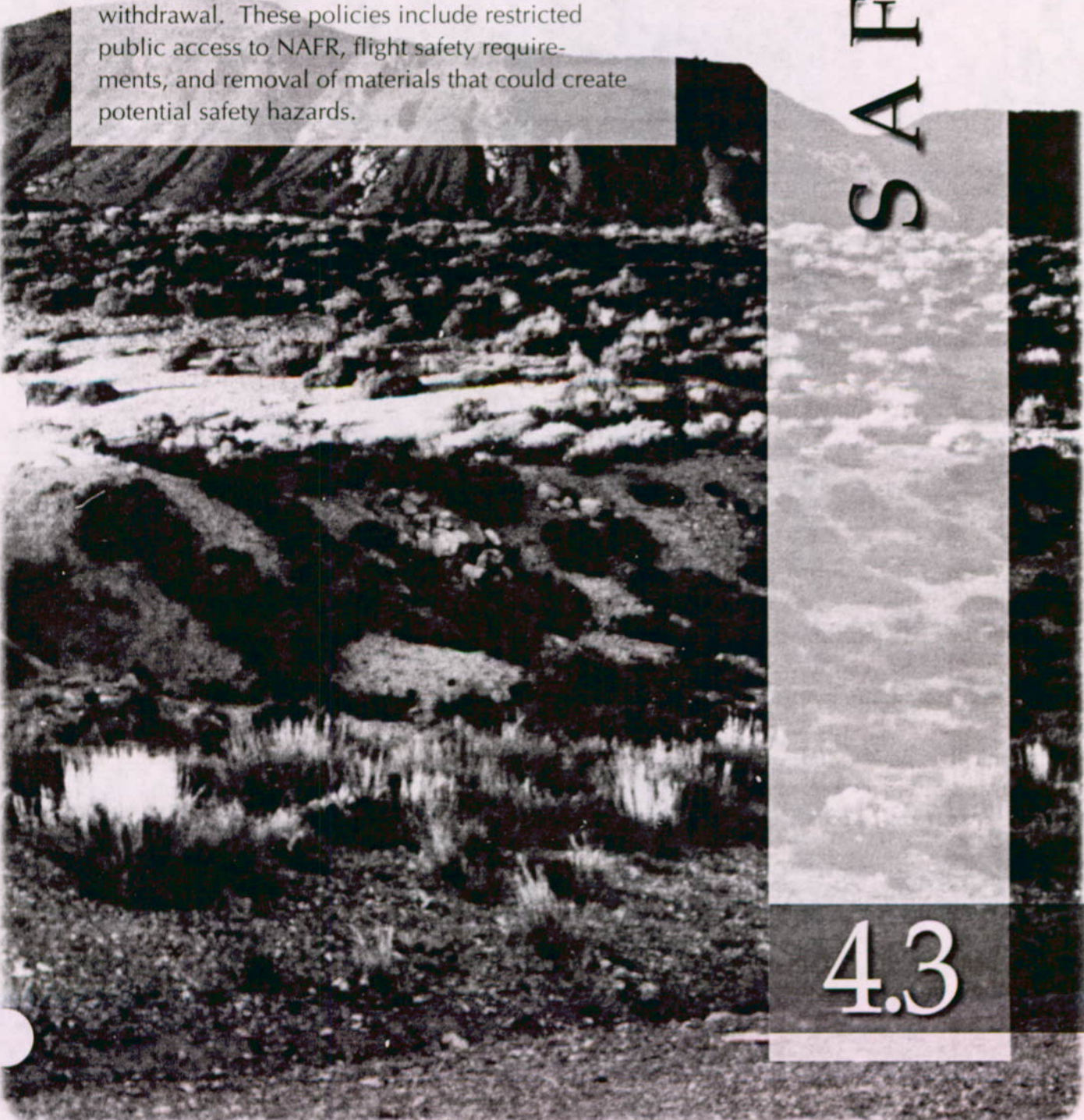
The CGTO perceives any action associated with military training to have an adverse impact, but the CGTO has not specifically expressed concerns about this resource. Noise can have a disruptive effect on traditional cultural activities, such as ceremonies, regardless of its external source. In other words, noise from military overflights, mining activities, or recreational vehicles can all potentially disturb traditional activities.

Table 4.2-3. Noise Levels for No-Action Alternative		
Airspace	100,000 SORTIE-OPERATIONS	150,000 SORTIE-OPERATIONS
	<i>L<sub>dnmr</sub></i>	<i>L<sub>dnmr</sub></i>
Caliente	50	51
Coyote	52	54
Elgin	<45	<45
Reveille	49	51
R-61	52	54
R-62	52	54
R-63	52	54
R-64	52	54
R-65	52	54
Alamo	52	54
EC South	51	53
Pahute Mesa	51	53
R-71	50	52
R-74	55	57
R-75	57	59
R-76	54	56
R-4808W	<45	<45
R-4808E	<45	<45
R-4809A	48	50
EC East	53	55
EC West	53	55

Table 4.2-4. No-Action Sonic Boom Levels and Numbers per Day				
Airspace	100,000 SORTIE-OPERATIONS		150,000 SORTIE-OPERATIONS	
	<i>LC<sub>dn</sub></i>	<i>Number/day</i>	<i>LC<sub>dn</sub></i>	<i>Number/day</i>
Elgin	53	0.6	54	1.0
Coyote	<45	<0.1	46	0.2
All Others	<45	<0.1	<45	<0.1



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**S**afety policies and procedures currently in effect for NAFR will be continued under any decision to renew the land withdrawal. These policies include restricted public access to NAFR, flight safety requirements, and removal of materials that could create potential safety hazards.

# SAFETY

4.3

## SAFETY



*Range safety protects persons and equipment from delivery of ordnance.*

If the No-Action Alternative were selected, corporate mining and public access would depend upon DOI's determination. The No-Action Alternative could expose the public to safety risks in many areas of NAFR. Although target areas are regularly cleared of ordnance debris, over 50 years of NAFR use has resulted in dispersed shell casings, possible unexploded old ordnance, and metal fragments. These materials could be hazardous to the public if the No-Action Alternative were selected and public access were unrestricted.



*Explosive safety zones are required to protect range personnel and the public. The missile fragment on the hillside was approximately 1.5 miles from the nearest target.*

*Restricted access reduces public exposure to unsafe conditions. Access to range target sections for even military personnel is closely monitored to ensure that no accidents occur.*



## 4.3 SAFETY

Elements of the action alternatives or the No-Action Alternative that have the potential to affect safety are evaluated relative to the degree to which the alternative increases or decreases safety risks to military personnel, the public, and property. The need for a safe and secure test and training range is addressed in Chapter 1.0. Exclusive use of NAFR has protected public safety both on the range and in the NRC.

Safety includes fire and ground safety, including the potential for risk, as well as the Air Force's capability to manage that risk by limiting exposure, responding to emergencies, and suppressing fires. Aircraft flight risks both on NAFR and within the NRC address projected Class A mishaps and bird-aircraft strike hazards (BASH). Explosive safety addresses any changes in uses or handling from current uses and practices. If a unique situation is anticipated to develop as a result of continued withdrawal, the capability to manage that situation is assessed. Changes in risk arising from the alternatives are considered individually and collectively. Assessment is made about the adequacy of disaster response planning.

### 4.3.1 Alternative 1A — Indefinite Withdrawal

#### 4.3.1.1 FIRE RISK AND MANAGEMENT/GROUND SAFETY

Operations and maintenance activities on NAFR would continue at the same level and continue to be conducted using the same processes and procedures as under current operations. All actions would be accomplished by technically qualified personnel, and would be conducted in accordance with applicable Air Force safety requirements, approved technical data, and Air Force Occupational Safety and Health (AFOSH) standards.

Since the type and level of use of NAFR is not expected to substantially change, there is no anticipated increase in fire risk. Planned disaster response actions and range fire suppression capabilities have proven adequate in the past; they would be expected to continue to be adequate in the future. Currently, approximately four to five fires a year occur on the range. There would be no change in applicable mutual aid agreements for fire risks.

The land areas surrounding training assets ensure public protection by restricting presence in the safety areas associated with laser use, emitters, and targets supporting air-to-ground ordnance delivery. Safety requirements associated with these activities were discussed in section 3.3.

#### *LASERS*

Laser targeting-equipped aircraft would continue to operate and train on NAFR. Laser use would be limited to those targets that have been surveyed and have been specifically approved for such use. If new or additional targets were recommended for laser use, the target and target area would be surveyed and assessed before approval to ensure that no potential hazards exist

that could create safety risks. If required, some operational constraints may be placed on the use of the target to mitigate any potentially hazardous condition.

### ***ELECTRONIC EMITTERS***

Use of electronic emitters to provide training in electronic warfare and add realism to other types of training activity would continue on NAFR. As previously discussed in section 3.3.1, safe separation distances from the specific emitter have been established. Operation of this equipment would continue with required safety zones established and maintained.

### ***SUPERSONIC FLIGHT***

Levels of supersonic flight activity would continue as described in section 3.3.1. Altitudes, speeds, and aircraft conducting supersonic activities would remain unchanged. Overpressures created by sonic booms would remain below levels that would create health risks to people, or any other safety risks to structures on the ground under the sonic boom footprint.

### ***DROPPED OBJECTS***

The exclusive use of NAFR protects the public from armament releases. Due to safeguards built into weapon systems guarding against the inadvertent arming, launching, or releasing of ordnance, the probabilities of such a release outside of designated target areas remains minuscule. While the possibilities of other objects separating from an aircraft in flight cannot be totally discounted, that risk, too, is extremely low. This analysis of existing and continuing potential safety risks within the NRC uses the representative scenario described in Appendix J. Under the conditions specified in this scenario, calculations indicate that the potential of such an event occurring and then injuring a person on the ground is approximately one chance in 370 million, and the potential of structure damage is about one chance in 465,000.

As further highlighted in Appendix J, these calculations do not even consider the probability of a person being present in the area. The NRC land areas are sparsely populated, further reducing public injury potential. For example, the population density of Lincoln County, Nevada, is 0.4 persons per square mile, and the population density of Nye County, Nevada, is 1.0 persons per square mile (U.S. Department of Commerce 1991). Based on the areas of these counties, this means that the probability of a person being present in any specified 1.5 square-foot area in Lincoln County is one chance in 52,600,000, and in Nye County it is one chance in 19 million. Overall, the risks associated with the potential for dropped objects on the NRC are so small that they can essentially be discounted.

#### **4.3.1.2 FLIGHT RISKS**

##### ***AIRCRAFT MISHAPS***

Aircraft mishaps under current operations were assessed considering a range of maximum and minimum sortie-operations. It is expected that sortie-operations would continue within this

range. As previously shown in Table 3.3-2, the greatest indicated risk is associated with use of MOA airspace (Desert MOA). Throughout the MOA airspace, statistical projections indicate the probability of a Class A mishap once every 2.0 years. When the level of use is considered, this equates to a probability of a mishap of 0.00003 or one chance in more than 33,000. Risks associated with aircraft mishaps are anticipated to remain relatively unchanged. Should new aircraft enter the military's inventory, they would be assessed at that time.

Nearly 1.3 million acres of the refuge have been proposed for wilderness designation and must be managed as wilderness. Vast areas are roadless and almost inaccessible. If there is a mishap on or over refuge lands, the Air Force closely coordinates cleanup efforts with refuge personnel. This could require use of vehicles in remote areas, thus leaving tracks or other scars on the landscape.

#### ***BIRD-AIRCRAFT STRIKES***

As previously indicated, there have been 10 documented bird strikes in the NRC since 1985. Of these, one was a Class B mishap and three were Class C mishaps. The other six strikes caused little or no damage. Risk associated with bird-aircraft strikes is expected to remain low.

Overall, flight risks do not indicate a significant safety issue.

#### **4.3.1.3 MUNITIONS USE AND HANDLING**

Use of live and training ordnance would continue on NAFR. Training on NAFR and over the NRC would continue to employ chaff and flares. All ordnance would be handled by trained and qualified personnel in accordance with all explosive safety standards and detailed published technical data. It is expected that the type and amount of ordnance expended would continue at current levels. If new targets were developed, or the use of existing ones changed, or if different ordnance were planned for use, prior to approval for use, a comprehensive safety footprint analysis would be accomplished around the target to ensure no safety risks arise. If necessary, operational constraints pertaining to use of specific delivery tactics, ordnance type, or aircraft headings would be developed to mitigate any potentially unsafe condition.

#### ***WEAPONS SAFETY FOOTPRINTS***

Weapons safety footprints define land areas exposed to potential risk from ordnance delivery. When live ordnance detonates, risk is isolated to the immediate area exposed to explosive effects. However, in the case of training and inert ordnance, there is no detonation. The ordnance remains relatively intact, and can bounce, tumble, and skid along the ground, often for great distances. It is this phenomenon that creates the need for large land areas to accommodate some ordnance deliveries. The land area described by the safety footprint is that area wherein, at a 95 percent confidence level, it is calculated that 99.99 percent of the delivered ordnance would come to rest. These footprints are unique to the type of ordnance used, the aircraft delivering the ordnance, and the type of delivery accomplished. Some representative

safety footprints for varied ordnance are described in Table 4.3-1.

<b>Table 4.3-1. Representative Weapon Safety Footprints</b>		
<i>Ordnance Delivery</i>	<i>Acres of Land Required</i>	<i>Square Miles of Land Required</i>
GBU 10/12 Medium Altitude	2,209	3.45
GBU 10/12 High Altitude	2,943	4.60
BDU-33 Low Angle	153	0.24
BDU-33 Dive Bomb	157	0.24
AGM 65 Low Altitude	28,850	45.08
AGM 65 High Altitude	38,691	60.45
<i>Source: Air Force Instruction (AFI) 13-212.</i>		

#### **CHAFF AND FLARE SAFETY**

As previously discussed, the materials in chaff are generally nontoxic (except in quantities significantly larger than those any human or animal could reasonably be exposed to). Air quality concerns regarding chaff use addresses the potential for chaff to break down into respirable particles, and the possibility that hazardous air pollutants may be generated from the pyrotechnic impulse cartridges used with some chaff types. Chaff particulate tests and a screening health risk assessment concluded that these are not significant concerns.

The potential for chaff to affect soil and water is remote. Laboratory tests of chaff using a modified toxic characteristics leaching procedure, indicated little or no potential for adverse effects on soil. No adverse impacts from chaff on biological resources have been identified. Based on their digestive processes, few animals are expected to suffer physical effects from chaff ingestion. Effects from inhalation are not considered a significant issue, since chaff particles would represent a small percentage of the particulates regularly inhaled by animals.

Impacts on land use and visual resources are directly related to the visibility and accumulation of chaff debris. Field studies (one of which was conducted on NAFR) of the visibility of chaff and incidental debris in different environmental contexts concluded that significant aesthetic effects are unlikely (Air Force 1997d).

The primary potential impact associated with flare use is the possibility of burning material reaching the ground and igniting a fire, which could create significant secondary environmental impacts. Minimum release altitudes established for flare release, and the complete cessation of flare use during periods of extreme fire risk, minimize this risk (AFI 13-212, Volume 2, Nellis AFB Supplement 1).

Toxicity is not a concern since magnesium, the primary material found in flares, is not highly toxic, and it is extremely unlikely that humans or animals would ingest flare material. Impulse cartridges and initiators used with some flares contain chromium and, in some cases, lead, which are hazardous air pollutants under the Clean Air Act (CAA). A screening health risk assessment (Air Force 1997d) concluded that they do not present a significant health risk in the quantities involved. Laboratory analyses of flare pellets and flare ash indicate that these materials have little potential for affecting soil or water resources.

Field studies similar to those conducted for chaff indicate that flare debris does not accumulate in noticeable quantities; therefore, there is little potential for impact to aesthetic resources (Air Force 1997d).

Silver Flag Alpha training would continue under this alternative as under existing conditions.

In summary, all ordnance use is governed by detailed safety processes and procedures. These have proven effective in the past and are expected to continue to be effective in the future. Explosive safety does not involve any major safety issues.

#### **4.3.2 Alternative 1B – Indefinite Withdrawal/Modification of Lands and/or Administration**

Increased access associated with this alternative responds to public or agency access requests without increasing public risk. In general, no change in public access is anticipated for the NWHR, the Timber Mountain National Monument, or the DNWR.

##### **4.3.2.1 FIRE RISK AND MANAGEMENT/GROUND SAFETY**

In general, fire risk and ground safety issues associated with this alternative remain as discussed above. Although some nonconsumptive co-use could occur in the areas of Mud Lake, the Kawich Range, and in the southern portion of the EC South Range, it would be on a non-interference basis with NAFR operations. Therefore, there should be no added safety concerns associated with the use of lasers and electronic emitters. Potential risks associated with dropped objects would also remain low. Procedures would be developed that would continue to ensure that national security and military operations would not be compromised, and that the public would continue to be protected with an adequate margin of safety to minimize risk.

Since the three areas considered for co-use are in areas of NAFR where no ordnance use is authorized, no unexploded ordnance (UXO) should be present. Flares are authorized for use in the airspace overlying these areas. Studies have shown that flare reliability is approximately 99 percent; although it is possible that a dud flare may come to rest on the ground, the probability of this occurring is very low (Air Force 1997d). Overall, planning and management actions should ensure that co-use creates no major safety issues. Nevertheless, this increased access resulting in increased human presence may have the potential to somewhat heighten fire risks.



#### **4.3.2.2 FLIGHT RISKS**

Aircraft operations would continue as under current use. Flight risks are unaffected by this alternative. Risks associated with aircraft mishaps and bird-aircraft strikes would remain low.

#### **4.3.2.3 MUNITIONS USE AND HANDLING**

Ordnance, chaff, and flare use would continue at current levels under this alternative. Since none of the lands considered for co-use currently have bombable targets, co-use would have no effect on ordnance use. Although the lands designated for co-use may be overflown, safeguards incorporated into weapon systems designed to prevent inadvertent arming, launching, or releasing ordnance would continue to be effective, reducing the risk to minimal levels. Also, as indicated above, no UXO would be present on the lands proposed for co-use. Explosive safety risks would remain as assessed for Alternative 1A.

Future unknown or undefined changes to Air Force mission, security, and/or safety requirements could negatively or positively affect the amount of land available for co-use. Should future Air Force requirements change, co-use of some or all of the three potential co-use areas may become inconsistent with Air Force mission, security, and/or safety requirements. Should that occur, co-use of that particular area could be further restricted or terminated. Changes to future Air Force requirements could also increase the size of the three potential co-use areas and/or make other locations of the range available for possible co-use.

#### **4.3.3 Alternative 2A — 25-Year Withdrawal**

This alternative is the same as Alternative 1A with the exception that lands would only be approved for continuation in withdrawn status for 25 years. Since the length of time associated with the withdrawal would have no interaction with safety concerns, Alternative 1A and Alternative 2A are assessed the same.

##### **4.3.3.1 FIRE RISK AND MANAGEMENT/GROUND SAFETY**

There is no significant fire risk and there are no significant ground safety concerns associated with this alternative action. Refer to section 4.3.1.1 for additional details.

##### **4.3.3.2 FLIGHT RISKS**

The risks associated with an aircraft mishap or bird-aircraft strike would remain low. Specific safety data are contained in section 4.3.1.2

##### **4.3.3.3 MUNITIONS USE AND HANDLING**

As previously discussed in section 4.3.1.3, risks associated with munitions use and handling are low.

#### **4.3.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

With the exception of the time span associated with the withdrawal action, the actions that would occur under this alternative are the same as those under Alternative 1B. Since safety concerns are not affected by the length of time of the withdrawal, this alternative is assessed the same as Alternative 1B.

##### **4.3.4.1 FIRE RISK AND MANAGEMENT/GROUND SAFETY**

Although there are no major fire or ground safety concerns associated with this alternative, refer to section 4.3.2.1 for a discussion of the specific issues arising from co-use of some lands.

##### **4.3.4.2 FLIGHT RISKS**

Flight activity would remain unchanged from current operations. As previously discussed, risk from an aircraft mishap or bird-aircraft strike is low.

##### **4.3.4.3 MUNITIONS USE AND HANDLING**

As previously discussed in section 4.3.2.3, explosive safety risks are low.

#### **4.3.5 No-Action Alternative**

##### **4.3.5.1 FIRE RISK AND MANAGEMENT/GROUND SAFETY**

Before the lands currently comprising NAFR can be returned to DOI jurisdiction, the Air Force and (in some locations) the Department of Energy (DOE) are responsible for environmental cleanup of the non-renewed lands. Human presence and activity during collection, remediation, handling, storing, processing, transportation, and disposal of hazardous and solid waste in accordance with applicable federal and state laws and regulations could increase fire risk.

Since all military-related air-to-ground and ground-based activity would cease, the actions currently creating the greatest source of fire risk would no longer occur. Furthermore, since the Air Force would no longer operate or maintain anything on the lands currently comprising NAFR after the transfer, there would be no military-related ground safety concerns. After land transfer, BLM would have responsibility for fire response. Increased human presence may, in itself, be a source of increased fire risk.

Since the lands currently comprising NAFR would be administered and managed by the BLM, that agency would ultimately determine land uses. Environmental cleanup of some non-renewed lands may not be able to ensure ground safety. DOE, Air Force, and BLM review would be required to determine what areas would need to be fenced to ensure public safety. These areas are currently unknown and cannot be assessed for fire or ground safety risk.

#### 4.3.5.2 FLIGHT RISKS

Military training in the airspace would continue. Although all air-to-ground training activity would cease, air-to-air training would still be possible. Flight activity in the regional military training airspace is projected to be reduced by 50 percent. Based on this assumption, it may be extrapolated that the minimum time between statistically predicted Class A mishaps would double (to an estimated 4.8 years), and the risk of bird-aircraft strikes would be halved. Overall, risks associated with aircraft flight training operations would be reduced.

#### 4.3.5.3 MUNITIONS USE AND HANDLING

If the lands were no longer withdrawn, the use of ordnance for any air-to-ground training would cease. Routine cleaning of ordnance from ranges would no longer be required. While chaff and flares could still be used in the special-use airspace, the level of use would be reduced.

Before the non-renewed lands can revert to BLM control, the Air Force, DOE, and BLM would be required to assess the level of cleanup required. Target areas would be groomed of unexploded or malfunctioned ordnance by explosive ordnance disposal (EOD) personnel. Although some hazards are associated with these activities, the level of risk is normally considered manageable.

#### 4.3.6 American Indian Issues Concerning Safety

The CGTO perceive any action associated with military training to have an adverse impact, but American Indians in the GGTO have not identified specific concerns about safety for either the Proposed Action or the No Action Alternative. Regarding occupational and public health and safety, the *Native American Resource Document* (NARD) states:

The NAFR's programs and activities are performed in accordance with the regulations of the Occupational Safety and Health Administration. Tribes that live near the NAFR would like to be included in systematic research aimed at ensuring that public health and safety measures devised by Nellis AFB extend into tribal lands and communities [AIWS 1997].



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or any action alternative that continues the NAFR land withdrawal, hazardous materials would continue to be used in the disturbed areas of NAFR, including the six major operations areas and portions of the North and South ranges. Equipment maintenance and other installation maintenance such as vehicle maintenance, target refurbishment, and electronic countermeasures emitter maintenance would continue.

The types and amounts of waste generated would continue without significant change under any action alternative. The hazardous waste disposal procedures would be adequate for the amount of waste generated and would be retained and used. The clean-up and maintenance of target areas would continue using Coronet Clean procedures. The NAFR Spill Prevention and Response Plan would continue to be used and updated, as required.

## HAZARDOUS MATERIALS AND SOLID WASTE

4.4

## HAZARDOUS MATERIALS AND SOLID WASTE



*All targets, such as these obsolete military vehicles, would continue to have hazardous materials removed prior to placement. Materials from used targets are recycled.*

**I**nstallation Restoration Program (IRP) Decision Documents that have been accepted by the Nevada Division of Environmental Protection (NDEP) for hazardous waste sites would be implemented under the action alternatives. Long-term monitoring at two landfills on Indian Springs Air Force Auxiliary Field will be accomplished by sampling three monitoring wells at each site annually. The program of long-term investigation and remediation by the DOE under its Environmental Restoration Program would continue. Clean-up on TTR and Pahute Mesa would proceed and final closure of plutonium-contaminated sites would be done based on the results of negotiations between the DOE, DOD, and the NDEP. Proceedings for the management of the depleted uranium (DU) target area would be implemented as detailed in the DU Management Plan.

Existing nonhazardous solid waste collection and disposal procedures for the ranges would be adequate for the amount of wastes that is expected to be generated in the foreseeable future. Disposal of asbestos-containing materials would continue to be done by a licensed contractor at an off-range permitted disposal facility. PCB-contaminated equipment and wastes would be disposed of through the Defense Reutilization and Marketing Office (DRMO) at an off-base permitted disposal facility.



*The cleanup and maintenance of target areas would continue using the Coronet Clean Procedures.*

## **4.4 HAZARDOUS MATERIALS AND SOLID WASTE**

### **4.4.1 Alternative 1A — Indefinite Withdrawal**

#### **4.4.1.1 HAZARDOUS AND TOXIC MATERIALS**

Under this alternative, NAFR personnel would continue to use hazardous and toxic materials. Materials used include paints, solvents, thinners, adhesives, aircraft fuel, diesel, gasoline, lubrication oils, brake and hydraulic fluids, cleaners, batteries, acids, chlorofluorocarbon refrigerants, herbicides, insecticides, rodenticides, and compressed gases in compliance with applicable regulations and Air Force instructions.

The Air Force maintains data within the supply system that are used to generate listings of the hazardous materials that are used for various purposes/processes at the ranges and operations areas. Aircraft maintenance and other installation maintenance processes such as vehicle maintenance, target refurbishment, and electronic countermeasures emitter maintenance would continue. Existing Air Force pollution prevention processes, known as HAZMART for the management of procurement, handling, storage, and issuing of hazardous materials used on NAFR would be adequate for the foreseeable future and would be retained and used. Ordnance would continue to be expended on range targets. The Range Emergency Response/Contingency Plans and associated Spill Prevention, Control, and Countermeasures (SPCC) Plans would be updated as required to respond to new procedures, regulations, or any new waste systems. Transportation of hazardous material would continue to be done in accordance with the Department of Transportation requirements and regulations.

#### **4.4.1.2 HAZARDOUS WASTE MANAGEMENT**

The types and amounts of waste generated would continue under this alternative. The hazardous waste disposal procedures are adequate for the amount of waste generated and would be retained and used. If any new waste streams were identified as part of new weapons systems, the appropriate transportation and storage procedures would be developed and the Resource Conservation Recovery Act (RCRA) Part B permit would be modified to reflect the new waste streams. The Air Force would continue to manage the 90-Day Accumulation Sites for some hazardous waste generators on the ranges. Waste generation tracking procedures would remain in place. The Defense Reutilization and Marketing Office (DRMO) on Nellis AFB would continue to be responsible for the disposal of excess property and hazardous waste generated on NAFR. The cleanup and maintenance of target areas would continue using Coronet Clean procedures.

#### **4.4.1.3 ENVIRONMENTAL RESTORATION AND MONITORING PROGRAMS**

The Installation Restoration Program (IRP) Decision Documents, including soil surveys, that have been accepted by the Nevada Division of Environmental Protection (NDEP) would

continue. Long-term monitoring at two landfills on ISAFAF will be accomplished by sampling three monitoring wells at each site annually.

Several agreements exist for managing materials for which DOE is responsible. The program of long-term investigation and remediation by the Environmental Restoration Program (ERP) under DOE would continue in accordance with the Federal Facility Agreement and Consent Order (FFACO). Final closure of plutonium-contaminated sites would be accomplished based on agreements among the DOD, the DOE, and the NDEP. Procedures for the management of the depleted uranium (DU) target area, which will be detailed in the Final DU Management Plan, would be implemented. As noted above, the cleanup and maintenance of NAFR target areas would continue using the Coronet Clean Procedures.

#### **4.4.1.4 SOLID WASTE**

Existing nonhazardous solid waste collection and disposal procedures for the ranges would be adequate for the solid wastes expected to be generated in the foreseeable future.

### **4.4.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

#### **4.4.2.1 HAZARDOUS AND TOXIC MATERIALS**

The environmental impacts from the use of hazardous and toxic materials by the DOD under this alternative would be the same as the impacts from the use of hazardous and toxic materials under Alternative 1A. Co-use of NAFR lands or use of non-renewed lands, in concurrence with the BLM, could result in some use of hazardous and toxic materials by the public.

#### **4.4.2.2 HAZARDOUS WASTE MANAGEMENT**

The environmental impacts from the management of hazardous waste generated by DOD activities under this alternative would be the same as the impacts from the management of hazardous wastes under Alternative 1A. There could be some hazardous waste generated by the public in co-use or non-renewal locations. BLM would manage these wastes in non-renewed lands. Permitted recreation in co-use areas would be scheduled in concurrence with Air Force missions. Those activities that conflict with Air Force mission, security, and/or safety requirements would not be approved. This scheduling would need to include a notice prohibiting transportation of materials or production of hazardous waste.

#### **4.4.2.3 ENVIRONMENTAL RESTORATION AND MONITORING PROGRAM**

Those parts of the Clarkdale and Wagner Mining Districts and neighboring areas that are proposed for non-renewal would be the subject of surveys to identify any potential areas of contamination. The results of these surveys would be used to prepare the written determination. The extent of decontamination, if required, would be determined after consultation between the BLM and the Air Force in accordance with applicable legislation

(Public Law [PL] 99-606, as amended, Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), etc.).

The IRP program on the rest of NAFR under this alternative would be the same as under Alternative 1A.

#### **4.4.2.4 SOLID WASTE**

The environmental impacts from the generation, collection, and disposal of solid waste under this alternative would be the same as the impacts from solid waste under Alternative 1A. There could be an increase in solid waste generated during co-use under BLM permits. Management of these wastes would be in concurrence with the BLM and the Air Force.

Management of solid waste on any non-renewal areas would be performed by BLM in accordance with BLM procedures.

#### **4.4.3 Alternative 2A— 25-Year Withdrawal**

##### **4.4.3.1 HAZARDOUS AND TOXIC MATERIALS**

The environmental impacts from the use of hazardous and toxic materials under this alternative would be the same as the impacts from the use of hazardous and toxic materials under Alternative 1A.

##### **4.4.3.2 HAZARDOUS WASTE MANAGEMENT**

The environmental impacts from the management of hazardous waste under this alternative would be the same as the impacts from the management of hazardous wastes under Alternative 1A.

##### **4.4.3.3 ENVIRONMENTAL RESTORATION AND MONITORING PROGRAMS**

The environmental impacts from the hazardous waste sites under this alternative would be the same as the impacts from the hazardous waste sites under Alternative 1A.

##### **4.4.3.4 SOLID WASTE**

The environmental impacts from the generation, collection, and disposal of solid waste under this alternative would be the same as the impacts from solid waste under Alternative 1A.



#### **4.4.4 Alternative 2B— 25-Year Withdrawal/Modification of Lands and/or Administration**

##### **4.4.4.1 HAZARDOUS AND TOXIC MATERIALS**

The environmental impacts from the use of hazardous and toxic materials under this alternative would be the same as the impacts from the use of hazardous and toxic materials under Alternative 1B.

##### **4.4.4.2 HAZARDOUS WASTE MANAGEMENT**

The environmental impacts from the management of hazardous wastes under this alternative would be the same as the impacts from the management of hazardous wastes under Alternative 1B.

##### **4.4.4.3 ENVIRONMENTAL RESTORATION AND MONITORING PROGRAMS**

The environmental impacts from the management of hazardous waste sites under this alternative would be the same as the impacts from the hazardous waste sites under Alternative 1B.

##### **4.4.4.4 SOLID WASTE**

The environmental impacts from the generation, collection, and disposal of solid waste under this alternative would be the same as the impacts from solid waste under Alternative 1B.

#### **4.4.5 No-Action Alternative**

##### **4.4.5.1 HAZARDOUS AND TOXIC MATERIALS**

Under this alternative, hazardous and toxic materials would not be used by Air Force personnel, contractors, temporary duty military units, or tenant organizations on NAFR. Range maintenance processes such as vehicle maintenance, target refurbishment, and electronic countermeasures emitter maintenance would cease. Ordnance would not be expended on range targets. Hazardous materials would be removed from the range and taken to the HAZMART for reissue. Range Emergency Response/Contingency Plans and associated SPCC plans would remain in effect until range closure activities are completed.

Potential hazardous materials use in future public or commercial operations or any other land uses on what had been NAFR would receive separate environmental review and would be administered by Department of the Interior (DOI) and BLM.

#### **4.4.5.2 HAZARDOUS WASTE MANAGEMENT**

Under this alternative, hazardous waste would not be generated by routine NAFR maintenance activities because these activities would cease. Some hazardous waste could be expected from the decommissioning and shut-down of facilities in the major work areas on the range. Examples could include waste petroleum products from fuel storage tanks, building materials contaminated with lead-based paint and lead solder, and small quantities of various chemicals. During demolition activities associated with this alternative, the use of petroleum, oil, and lubricants for equipment would create the potential for minor spills and releases. Compliance with best construction practices would reduce this potential to insignificant levels. Existing hazardous waste disposal procedures would continue to be used until all facilities have been closed following applicable regulations. If large-scale demolition projects were initiated, the disposal of hazardous waste could be included in the demolition contract. Hazardous waste generated by future uses on NAFR would be administered in accordance with DOI agreements and permits, and applicable federal and state regulations.

#### **4.4.5.3 ENVIRONMENTAL RESTORATION AND MONITORING PROGRAMS**

No new DOD hazardous waste sites would be created under this alternative. The long-term monitoring at the two IRP landfill sites at ISAFAF would continue. Surveys of the RCRA Facility Assessment SWMUs and Areas of Concern that were recommended for further evaluation would be accomplished to determine whether and to what extent the lands that are proposed for recession are contaminated. Decisions regarding cleanup of contaminated solid waste management units (SWMUs), hazardous waste sites, and bombing targets would be made in consultations between the Air Force and the BLM in accordance with PL 99-606, as amended. Disposal of waste munitions would be done in accordance with the finalized DOD Range Rule. Interim institutional controls and physical barriers would be required to protect public health and safety until final closure is achieved at the sites. Lands that would not pose a risk to humans would be managed under the DOI multiple use of lands and resource policies.

Under this alternative, the DOE would accomplish their environmental restoration activities at the sites they are responsible for on NAFR in accordance with the FFACO.

#### **4.4.5.4 SOLID WASTE**

Solid waste from Air Force operations at the major work areas would not be generated, collected, or disposed of under this alternative. Small quantities of nonhazardous solid waste would be expected to be generated during range closure activities. The amount of waste would not be significant and would not present a potential health or environmental risk. The decision on disposal of these wastes would be made during development of closure plans.

Nonhazardous solid waste generated by future multiple use of NAFR land would be administered in accordance with DOI agreements and permits.

#### **4.4.6 American Indian Issues Concerning Hazardous Materials and Solid Waste**

The CGTO has stated that hazardous waste on Air Force withdrawn lands may have adversely affected traditional food and medicine sources on NAFR. Indian people would like to become involved in the siting of all new waste facilities, and the analysis of past contamination at existing facilities.

An accident with hazardous materials on roads crossing reservation lands could cause hardship for Indians for whom the road is their only connection to other highway systems. Regarding the transport of explosive and hazardous materials, the NARD states:

Tribal governments would like to cooperate with Nellis AFB in the development and implementation of safe transportation policies. However, no systematic consultation with tribal governments has been conducted to date. Indian communities located along transportation routes are continuously exposed to risks of accidents, spills, and adverse impacts of transportation on tribal economies. The cumulative effects of long-term explosive and hazardous materials transportation through tribal lands would be traumatic and potentially life-threatening to the well-being of the Indian people. Many Indian people have expressed fear of such transportation practices through and near tribal lands in addition to potentially causing impacts to places of spiritual power.

Tribal governments believe Nellis AFB has the responsibility to assist neighboring tribes in developing an emergency response management program in regard to transportation of explosive and hazardous materials as it passes through tribal lands.



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arth resource specialists look at the following areas to determine if any impacts would occur as a result of continuation of NAFR as a test and training range:

- Physiography and Topography
- Stratigraphy
- Tectonic History
- Seismicity and Faulting
- Volcanism
- Paleontology
- Soils
- Mineral Resources
- Energy Resources

# EARTH RESOURCES

4.5

## EARTH RESOURCES



*Continuation of the NAFR land withdrawal and use of the area as a test and training range is not projected to have any additional impacts upon earth resources. Non-renewal of specific land areas under Alternatives 1B or 2B or the No-Action Alternative has the potential to permit mineral exploitation and off-road recreational vehicle use that would impact the geology and soils.*

Alternatives 1A and 2A would not increase use or cause any further modifications to withdrawn land. No direct additional impacts are anticipated to earth resources with these alternatives.

Under Alternatives 1B and 2B, potential mining in the non-renewed portion of the Clarkdale mining district could result in removal or significant alteration of geologic features. In addition, mining operations could strip existing topsoil, potentially resulting in increased soil erosion. Soil erosion could also occur as a result of off-road recreational vehicle use in the proposed 30,000 - 35,000 acres of land along the western border of the current NAFR.

Access to mineral resources under the No-Action Alternative could result in more adverse impacts to earth resources of the types described for Alternatives 1B or 2B, but could benefit local mining interests.

Mining access and mining decisions would be outside of Air Force control. Such decisions would be made by BLM with State of Nevada involvement. Appropriate environmental documentation and safeguards would be the responsibility of the permitting federal agency.

## **4.5 EARTH RESOURCES**

### **4.5.1 Alternative 1A — Indefinite Withdrawal**

#### **4.5.1.1 UNIQUE GEOLOGIC/GEOMORPHIC FEATURES**

This alternative would not increase the use of NAFR or cause any further modification to earth resources. No increase in impacts in mountainous areas would occur. Target areas are generally located on or near playas. No change in use or increase in impacts is projected to these geologic/ geomorphic features.

#### **4.5.1.2 GEOLOGIC HAZARDS**

Because this alternative would not increase the use of NAFR or cause any further modifications, no impacts are anticipated with respect to geologic hazards (e.g., fault rupture, earthquake shaking, liquefaction, soil settlement, volcanic eruptions) at NAFR.

#### **4.5.1.3 SOIL EROSION AND SOIL EXPANSION HAZARDS**

Use of ordnance and vehicles on NAFR results in continuing ground disturbance and some soils are exposed to wind erosion. Because this alternative would not increase the use of NAFR or cause any further modifications, no change in impacts are anticipated with respect to soil erosion hazards or soil expansion hazards (i.e., damage to structure foundations due to expansion and shrinkage of clay-rich soils) at NAFR. Additional details of the effects of chaff on soils is presented in section 4.8.1.1.

#### **4.5.1.4 MINERAL RESOURCES**

Continued withdrawal of NAFR lands would delay economic opportunity associated with extraction of some mineral resources. Potentially valuable deposits of metallic and nonmetallic minerals are present throughout NAFR.

The success of mineral exploration often depends on the evaluation of large amounts of geologic data from a broad region. Synthesis of these data define smaller and smaller areas eventually leading to exploratory drilling. If economics permits, the end product of this process could be a mine, or several mines, contained within an original area that may have been 1,000 square miles or more. If geologic data are not available because exploratory access to the land is restricted, regional patterns, structures, and trends that could be critical to mineral discoveries may remain hidden. Restricted access means that, from a mineral-resource perspective, the geology is not accessible and therefore is not understood. From a mineral exploration or exploitation perspective, continued withdrawal of NAFR lands delays the acquisition of information. This is considered a potentially significant impact to mineral exploration or future mining developments.

Since most economically viable mineral deposits occur in mountainous areas of exposed bedrock and because target areas are located on bajada and playa sediments, potential mineral resources should be unaffected by current ordnance. However, the historic use of NAFR over the past 50 years may require site-specific economic analyses to determine whether costs of ordnance cleanup for safety are greater than the benefit of the mineral resources to be extracted.

#### **4.5.1.5 PALEONTOLOGICAL RESOURCES**

Because this alternative would not increase the use of NAFR or cause any further modification to paleontological resources, no impacts would occur.

### **4.5.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

#### **4.5.2.1 UNIQUE GEOLOGIC/GEOMORPHIC FEATURES**

This alternative would not increase the use of or cause any further modifications to NAFR. Unique geologic/geomorphic features could potentially be impacted by mining within the Clarkdale and Wagner Mining Districts, if permitted by BLM. Surface mining can significantly alter geologic/geomorphic features. Similarly, but to a lesser degree, subsurface mining can result in alteration of geologic/geomorphic features.

#### **4.5.2.2 GEOLOGIC HAZARDS**

This alternative would not increase the use of or cause any further modifications to NAFR. Geologic hazards could potentially impact mining operations within the Clarkdale and Wagner Mining Districts. No landslides or active faults have been mapped in this area, but this area is located within Seismic Zone 3, defined as an area of major damage potential.

#### **4.5.2.3 SOIL EROSION/EXPANSION HAZARDS**

This alternative would result in a small increase in use of NAFR lands. However, the proposed co-use of small areas would not cause any further modifications to NAFR. Therefore, minimal impacts are anticipated with respect to soil erosion hazards (e.g., creation of fugitive dust due to disturbance of fine-grained soils) or soil expansion hazards (i.e., damage to structure foundations due to expansion and shrinkage of clay-rich soils) within most of NAFR.

#### **4.5.2.4 MINERAL RESOURCES**

Potential activity at the Clarkdale and Wagner Mining Districts could increase local extraction of mineral resources. Such mining activity, were it to be proposed, would be subject to the DOI and the BLM NEPA review. Continued withdrawal of the remaining lands could result in the delay in obtaining geologic information and in economic opportunity associated with extraction of potentially viable mineral resources as described in Alternative 1A.

As with Alternative 1A, delivery of live ordnance could increase the cost of future minerals exploration and resource development, in select areas, due to the high cost of clearing ordnance to an acceptable level of safety. Areas that may pose significant safety hazards include the vicinity of long-term (20+ years) targets. Most of these sites are located in playas and other areas with a limited mineral potential.

#### **4.5.2.5 PALEONTOLOGICAL RESOURCES**

With the exception of the lands not included in the renewal application that are part of the Clarkdale and Wagner Mining Districts, this alternative would not increase the use of or cause any further modifications to NAFR. If this alternative were selected, potential impacts could occur to paleontological resources in the non-renewed area.

### **4.5.3 Alternative 2A — 25-Year Withdrawal**

#### **4.5.3.1 UNIQUE GEOLOGIC/GEOMORPHIC FEATURES**

This alternative would not increase the use of NAFR or cause any further modification to earth resources. No increase in impacts in mountainous areas would occur. Target areas are generally located on or near playas. No change in use or increase in impacts is projected to these geologic/geomorphic features.

#### **4.5.3.2 GEOLOGIC HAZARDS**

Because this alternative would not increase the use of NAFR or cause any further modifications, no impacts are anticipated with respect to geologic hazards (e.g., fault rupture, earthquake shaking, liquefaction, soil settlement, volcanic eruptions) at NAFR.

#### **4.5.3.3 SOIL EROSION AND SOIL EXPANSION HAZARDS**

Use of ordnance and vehicles on NAFR results in continuing ground disturbance and some soils are exposed to wind erosion. Because this alternative would not increase the use of NAFR or cause any further modifications, no change in impacts are anticipated with respect to soil erosion hazards or soil expansion hazards (i.e., damage to structure foundations due to expansion and shrinkage of clay-rich soils) within most of NAFR.

#### **4.5.3.4 MINERAL RESOURCES**

Continued withdrawal of NAFR lands could delay economic opportunity associated with extraction of some mineral resources. Potentially valuable deposits of metallic and nonmetallic minerals are present within NAFR. Impacts would be as described in section 4.5.1.4.

#### **4.5.3.5 PALEONTOLOGICAL RESOURCES**

This alternative would not change the use of NAFR; therefore, no impacts would occur.



#### **4.5.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

##### **4.5.4.1 UNIQUE GEOLOGIC/GEOMORPHIC FEATURES**

This alternative would not increase the use of or cause any further modifications to NAFR. Unique geologic/geomorphic features could potentially be impacted if BLM permitted mining within the non-renewal area. Surface mining can significantly alter geologic/geomorphic features. Similarly, but to a lesser degree, subsurface mining can result in alteration of geologic/geomorphic features. Potential adverse impacts of possible mining in this area would be subject to DOI and BLM permits and NEPA review.

##### **4.5.4.2 GEOLOGIC HAZARDS**

With the exception of the lands not included in the renewal application that are part of the Clarkdale and Wagner Mining Districts, this alternative would not increase the use of or cause any further modifications to NAFR. Geologic hazards could potentially impact mining operations within the Clarkdale and Wagner Mining Districts. No landslides or active faults have been mapped in this area, but this area is located within Seismic Zone 3, defined as an area of major damage potential. Seismic impacts to potential mining in this area would be subject to additional NEPA review by BLM if this alternative were selected and mining became commercially feasible.

##### **4.5.4.3 SOIL EROSION/EXPANSION HAZARDS**

With the exception of the lands not included in the renewal application that are part of the Clarkdale and Wagner Mining Districts, this alternative would not increase the use of or cause any further modifications to NAFR. Therefore, no impacts are anticipated with respect to soil erosion/expansion hazards within most of the NAFR.

Soil erosion could occur in the non-renewal lands that are part of Clarkdale and Wagner Mining Districts. BLM permitted activity would be subject to separate NEPA review. Soil erosion such as creation of fugitive dust due to disturbance of fine-grained soils could potentially occur as a result of recreational use in the potential co-use lands, specifically in Mud Lake where co-use could include vehicle activity on the playa.

##### **4.5.4.4 MINERAL RESOURCES**

Access to part of the Clarkdale and Wagner Mining Districts by the mining industry could increase mineral exploration and knowledge of the area. If commercially viable deposits were located and DOI and BLM permits were acquired, including associated NEPA review, sand and gravel or other mineral resources within this area could be extracted. Mining operations in the non-renewed Clarkdale and Wagner Mining Districts could result in potential benefits to the mining industry associated with extraction of mineral resources.

Continued withdrawal of other NAFR lands could result in the delay of economic opportunity associated with extraction of some mineral resources. Continued restricted access to NAFR would preclude the exploration of NAFR lands for mineral deposits.

Delivery of live ordnance on NAFR targets could preclude future minerals exploration and resource development due to the high cost of clearing ordnance to an acceptable level of safety. Most of the target sites are located in areas of limited mineral potential.

#### **4.5.4.5 PALEONTOLOGICAL RESOURCES**

With the exception of the non-renewed part of the Clarkdale and Wagner Mining Districts, this alternative would not increase the use of or cause any further modifications to NAFR. Potential mining in the receded portion of the Clarkdale and Wagner Mining Districts or recreational use in the non-renewal lands or co-use lands could result in disruption of paleontological resources. A detailed paleontological survey has not been completed on NAFR. Potential impacts would be greater than under Alternative 1A or 2A.

#### **4.5.5 No-Action Alternative**

In the event that the land withdrawal for NAFR is not renewed, much of the approximately 3 million acres currently closed to the public would eventually be open to multiple use under BLM administration. The extent of the area opened would depend on an acceptable level of safety being achieved with respect to ordnance removal and soil remediation.

##### **4.5.5.1 UNIQUE GEOLOGIC/GEOMORPHIC FEATURES**

Depending on the location, type, and intensity of future BLM-permitted developments and uses, unique geologic/geomorphic features could be adversely impacted.

##### **4.5.5.2 GEOLOGIC HAZARDS**

Depending on the location, type, and intensity of future BLM-permitted development and uses, geologic hazards could adversely impact these public uses. Active faults have been mapped in the south-central portion of NAFR. Landslides have not been mapped but are most likely present throughout the mountainous regions of NAFR. In addition, this area is located within Seismic Zones 2B and 3, defined as areas of moderate damage potential and major damage potential, respectively.

##### **4.5.5.3 SOIL EROSION AND SOIL EXPANSION HAZARDS**

Depending on the location, type, and intensity of commercial and public uses permitted by BLM, soil erosion could increase. For example, mining operations and recreational use could strip existing topsoil, potentially resulting in increased soil erosion, surface water particulate loading, and exacerbated fugitive dust conditions due to wind erosion. Because detailed soil mapping has not been completed, the soil erosion and expansion potential in this area is not

fully defined. Soil erosion and expansion potential would be comparable to disturbed areas in other parts of the Great Basin.

#### **4.5.5.4 MINERAL RESOURCES**

The No-Action Alternative may result in extraction of mineral resources. Any new mining activities on what was NAFR would depend on the commercial viability of the mineral deposit. Potentially valuable deposits of metallic and nonmetallic minerals are present on NAFR.

#### **4.5.5.5 PALEONTOLOGICAL RESOURCES**

Depending on the location, type, and intensity of private uses, such as mining, or public uses, such as recreation, paleontological resources could be impacted. The degree of impact would be determined by access to any resource and the extent of protection provided to the resource by BLM. In all cases, the removal of Air Force restrictions to access would increase the potential for significant impacts to any previously undisturbed paleontological resources.

#### **4.5.6 American Indian Issues Concerning Earth Resources**

The CGTO has argued that certain activities on Air Force withdrawn lands may have adversely affected the rocks and soil. The NARD also states that because of past military activity, certain areas are unfit for human use and have become inaccessible to American Indians for religious purposes (AIWS 1997).

The CGTO wants to ensure access to quarry sites and other mineral resources important for making tools and other cultural activities. In addition, some locations on NAFR are considered by the CGTO to be power places, and are associated with traditional healing ceremonies. CGTO would like to see the Air Force consider the cultural importance of specific geological features when military actions are planned.

Under the No-Action Alternative, the CGTO feels that the BLM and USFWS will not be able to provide a level of protection to traditional cultural resources (which can include geological features and quarry sites) similar to that provided by restricted access on NAFR.



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ater resources on NAFR would not change if Alternatives 1A or 2A were implemented. Range activities and the potential effect they would have on surface water occurrence, quality, and flow would be the same as currently exists for both ROI One and ROI Two.

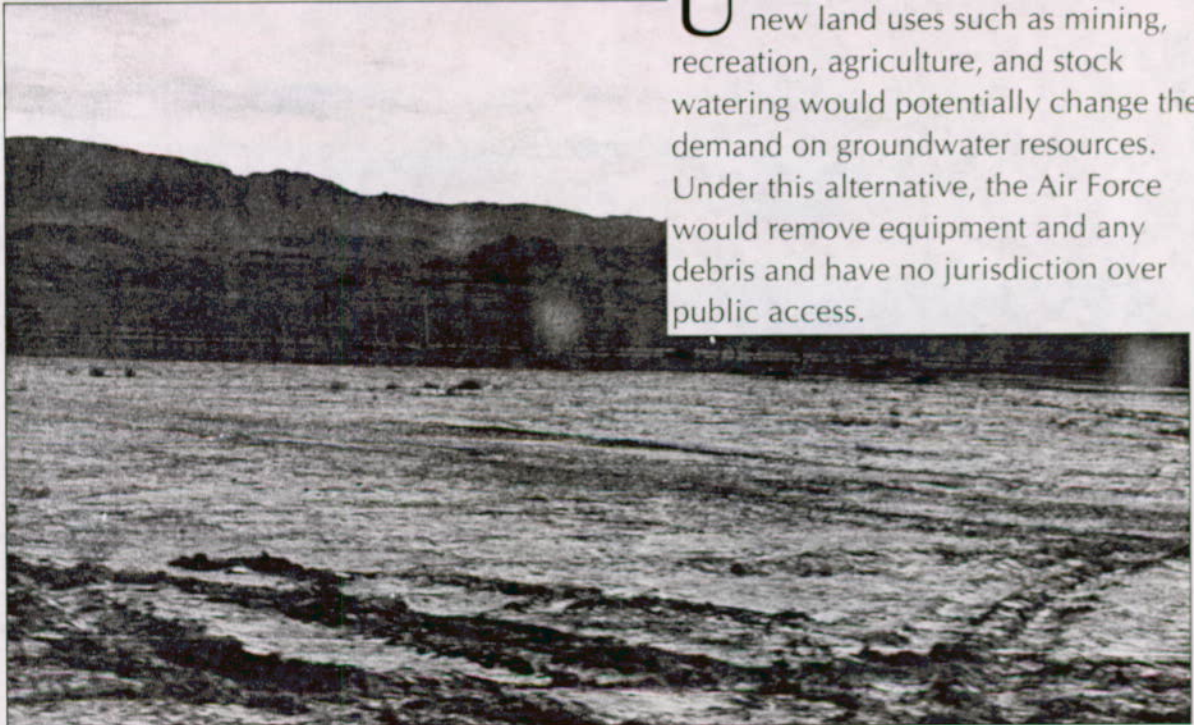
Any change in water resources on NAFR would be limited to areas of non-renewed land or areas where co-use of the land would occur under Alternatives 1B or 2B. Changes in water use or water quality would be where land uses change from that which currently exists. Co-use activities would have limited potential to adversely affect surface water resources. Revitalizing or initiating new mining activities on non-renewed lands would have the potential to affect water quality due to runoff from mine tailings, process wastes, increased erosion, or other direct and indirect mining effects. The Air Force would have no decisionmaking authority on lands released to BLM under Alternatives 1B or 2B.

# WATER RESOURCES

4.6

## WATER RESOURCES

Under the No-Action Alternative, new land uses such as mining, recreation, agriculture, and stock watering would potentially change the demand on groundwater resources. Under this alternative, the Air Force would remove equipment and any debris and have no jurisdiction over public access.



*Playa drainage areas are susceptible to damage and erosion if used by off-road vehicles. Restricted access minimizes this impact. The No-Action Alternative would increase the potential for off-road vehicle use.*



*Groundwater usage in developed areas of NAFR such as that pictured here at Indian Springs, and at TTR, includes domestic, landscaping, and industrial. These uses are not projected to change except under the No-Action Alternative.*

## 4.6 WATER RESOURCES

The Air Force is committed under PL 99-606 to adhere to state water law. The Nevada State Engineer, therefore, permits water use on the NAFR.

This section addresses water resources within ROI One (range facilities) and ROI Two (NAFR land withdrawal area). Operation of the NAFR would not be expected to impact water resources in ROI Three.

### 4.6.1 Alternative 1A — Indefinite Withdrawal

#### 4.6.1.1 SURFACE WATER

Surface water conditions on NAFR would be unchanged if this alternative were implemented. Range activities and the potential effect they would have on surface water occurrence, quality, and flow would be the same as currently exists for both ROI One and ROI Two.

#### 4.6.1.2 FLOODPLAINS

The existing flooding conditions on the range would remain unchanged for both ROI One and ROI Two if this alternative were implemented. Many existing facilities (e.g., target areas, roads, etc.) are located on or near playas. These areas would be subject to the same hazards that currently exist on the range.

#### 4.6.1.3 GROUNDWATER

Much of the groundwater available for use by the Air Force on the range is currently unused. The water demand on the range (ROI One and ROI Two) would be similar to that which currently exists if this alternative were implemented. Since this alternative does not include any significant increases in personnel, water demands of adjacent communities would not increase if this alternative were implemented. In addition, water quality impacts would be similar to those that currently exist. Current Air Force activities do not affect groundwater quality on NAFR. Underground storage of petroleum oil liquids (POL) would not be expected to change groundwater quality. Significant impacts to groundwater quality are limited to underground testing areas on the Nevada Test Site (NTS) and Pahute Mesa portion of NAFR. Risks associated with radioactive groundwater contamination are being evaluated on an ongoing basis by the DOE, including assessment of potential off-site migration of contaminant plumes to the south-southwest by deep, regional aquifers.

#### 4.6.1.4 WATER RIGHTS

Water rights on the range (ROI One and ROI Two) would remain unchanged if this alternative were implemented. Current water use is below appropriated amounts. However, as described

above, the water demand on the range would be similar to the existing demand and, therefore, would not create a need for additional appropriations of surface or groundwater.

#### **4.6.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

##### **4.6.2.1 SURFACE WATER**

Surface water on NAFR is very limited due to the low precipitation, high evaporation, low humidity, and wide extremes in daily temperature. Any change in these limited surface water conditions on NAFR (ROI Two) would be limited to areas not included in the renewal application or areas where co-use of the land would occur. In both cases, changes in surface water use or water quality would be where land uses change from that which currently exists. Co-use activities would have limited potential to adversely impact surface water resources. Future multiple use of lands not renewed would have the potential to change water quality due to the change in land uses. For example, should a full-scale mining operation be permitted by BLM, potential adverse impacts to water quality could occur due to runoff from mine tailings, process wastes, increased erosion, or other mining effects.

##### **4.6.2.2 FLOODPLAINS**

The existing flooding conditions on the range would remain unchanged for both ROI One and ROI Two if this alternative were implemented. Existing facilities (e.g., target areas, roads, etc.) would be subjected to the same hazards that currently exist on the range. Potential future development of lands not included in the renewal application would need to undergo further NEPA evaluation on a site-by-site basis to determine if new land uses would impact floodplains. Potential recreation, particularly vehicle use at Mud Lake, would have the potential to have short-term impacts to the playa.

##### **4.6.2.3 GROUNDWATER**

This alternative would not increase use or cause any further modifications to the majority of the range (ROI Two). Therefore, no impacts are anticipated for the majority of the range with respect to groundwater withdrawal or water quality. Similarly, no impacts are anticipated for the adjacent communities if this alternative were implemented since no significant increases in personnel is anticipated. Lands not included in the renewal application could allow BLM to evaluate for the revitalization of historic mining activities (or initiating new mining activities) such as those that have occurred at the Clarkdale Mining District. Surface and subsurface mining has the potential to require significant quantities of water that would likely be provided by groundwater extraction. Additionally, certain areas of the range would be available at times for co-use activities (i.e., recreation) that may involve minimal water use. However, the anticipated water demand of recreational activities (e.g., hiking, land sailing) would be negligible.

Adverse impacts to groundwater quality would be similar to those that currently exist on a portion of the range. Current Air Force activities do not change groundwater quality on NAFR. Significant impacts to NAFR groundwater quality is limited to underground testing areas Pahute Mesa. Risks associated with radioactive groundwater contamination are being evaluated on an ongoing basis by the DOE, including assessment of potential off-site migration of contaminant plumes to the south-southwest by deep, regional aquifers.

#### **4.6.2.4 WATER RIGHTS**

Water rights on NAFR would remain unchanged if this alternative were implemented. The portions of NAFR that would be non-renewed or designated co-use areas would have the potential to be utilized for public or private activities. Future development on lands not included in the renewal application could likely increase the water demand. BLM would provide environmental review of future land use requests. Current water use is below appropriated amounts. In the event that additional water is needed, acquisition of existing appropriative water rights or the transfer of rights would be required.

### **4.6.3 Alternative 2A — 25-Year Withdrawal**

#### **4.6.3.1 SURFACE WATER**

Similar to Alternative 1A, surface water conditions on NAFR would be unchanged if this alternative were implemented. Range activities and the potential effect they would have on surface water occurrence, quality, and flow would be the same as that which currently exists.

#### **4.6.3.2 FLOODPLAINS**

As with Alternative 1A, the existing flooding conditions on the range would remain unchanged if this alternative were implemented. Existing facilities (e.g., target areas, roads, etc.) would be subject to the same flooding hazards that currently exist on the range.

#### **4.6.3.3 GROUNDWATER**

Much of the groundwater appropriations on the range are currently unused. The water demand on the range would be similar to that which currently exists if this alternative were implemented. Similarly, if this alternative were implemented, the water demand on adjacent communities would be similar to that which currently exists since no significant increases in personnel is anticipated. Adverse water quality impacts would also be similar to those that currently exist on a portion of the range. Current Air Force activities do not change groundwater quality on NAFR. Significant impacts to groundwater quality are limited to underground testing areas on the Pahute Mesa portion of NAFR. Risks associated with radioactive groundwater contamination are being evaluated on an on-going basis by the DOE, including assessment of potential off-site migration of contaminant plumes to the south-southwest by deep, regional aquifers.



#### 4.6.3.4 WATER RIGHTS

Water rights on the range would remain unchanged if this alternative were implemented. Current water use is below appropriated amounts. The water demand on the range would be similar to the current demand and, therefore, would not create a need for additional appropriations of surface or groundwater.

#### 4.6.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration

##### 4.6.4.1 SURFACE WATER

Any change in surface water conditions on NAFR would be limited to those areas not included in the renewal application. Future multiple use of the lands not renewed would have the potential to affect water quality due to changes in runoff, increased erosion, etc.

##### 4.6.4.2 FLOODPLAINS

The existing flooding conditions on the range would remain unchanged for both ROI One and ROI Two if this alternative were implemented. Existing facilities (e.g., target areas, roads, etc.) would be subjected to the same hazards that currently exist on the range. Potential future development of lands not renewed would need to undergo further BLM NEPA evaluation on a site-by-site basis to assure that new land uses would not increase the flooding hazard. Potential co-use areas would be the same as discussed in Alternative 1A.

##### 4.6.4.3 GROUNDWATER

No increase in water extraction, use, or water quality impacts would occur for the majority of the range if this alternative were implemented. Similarly, no increase in water extraction or use would occur on adjacent communities since no significant increases in personnel is anticipated. Lands not renewed on NAFR would likely be subject to multiple uses. If permitted by BLM, this could include the revitalization of historic mining activities such as those that have occurred at Clarkdale Mining District. Surface and subsurface mining has the potential to require significant quantities of water that would likely be provided by groundwater extraction. Potential future development of lands not renewed would need to undergo BLM NEPA evaluation on a site-by-site basis to identify impacts from any new land uses. Additionally, certain areas of the range would be available at times for co-use of recreational activities such as hiking and land sailing with negligible water demand.

Adverse groundwater quality impacts would also be similar to those that currently exist. Current Air Force activities do not change groundwater quality on the NAFR. Significant impacts to groundwater quality is limited to underground testing areas on the Pahute Mesa portion of the NAFR. Risks associated with radioactive groundwater contamination are being evaluated on an on-going basis by the DOE, including assessment of potential off-site migration of contaminant plumes to the south-southwest by deep, regional aquifers.

#### **4.6.4.4 WATER RIGHTS**

Water rights on the range would remain unchanged if this alternative were implemented. The portions of NAFR that would be non-renewed or designated co-use areas would have the potential to be utilized for public or private activities. Future development on lands not included in the renewal application if permitted by BLM could likely increase the water demand. Current water use is below appropriated amounts.

#### **4.6.5 No-Action Alternative**

##### **4.6.5.1 SURFACE WATER**

If this alternative were implemented, there would be potential for BLM to permit multiple uses that could utilize or affect surface water resources such as mining or other public or private activities, livestock watering, and recreational activities. These land uses would be subject to separate BLM NEPA evaluation.

##### **4.6.5.2 FLOODPLAINS**

The existing flooding conditions on the range would remain unchanged if this alternative were implemented. BLM-permitted potential future land use would need to consider the areas of flood inundation and avoid potential hazards associated with development within flood prone areas.

##### **4.6.5.3 GROUNDWATER**

Under this alternative, new land uses permitted by BLM could change the demand on groundwater resources. Feasible land uses may require additional supply and therefore, additional groundwater withdrawal. Water uses would be subject to regulations of the Nevada Division of Water Resources and administered by the State Water Engineer.

The groundwater quality impacts that have occurred at the NTS and NAFR (associated with the underground testing of nuclear devices) would have a greater impact potential if the No-Action Alternative were implemented. This would be particularly true in those portions of the Pahute Mesa and west of the Pahute Mesa where underground testing has affected groundwater. The ongoing studies by the DOE will provide further insight as to the potential hazards that these contaminants currently pose to the public. These studies will also provide the baseline for evaluation of potential risks associated with future proposed activities in this area by BLM and the State of Nevada.

##### **4.6.5.4 WATER RIGHTS**

If this alternative were implemented, there would no longer be an Air Force need for existing surface water or groundwater appropriations on the range. These appropriations would be available for use by other public or private entities for uses permitted on the DOI or the BLM

lands. Groundwater appropriations would be transferred from the Air Force and reassigned as appropriate by the State Water Engineers Office.

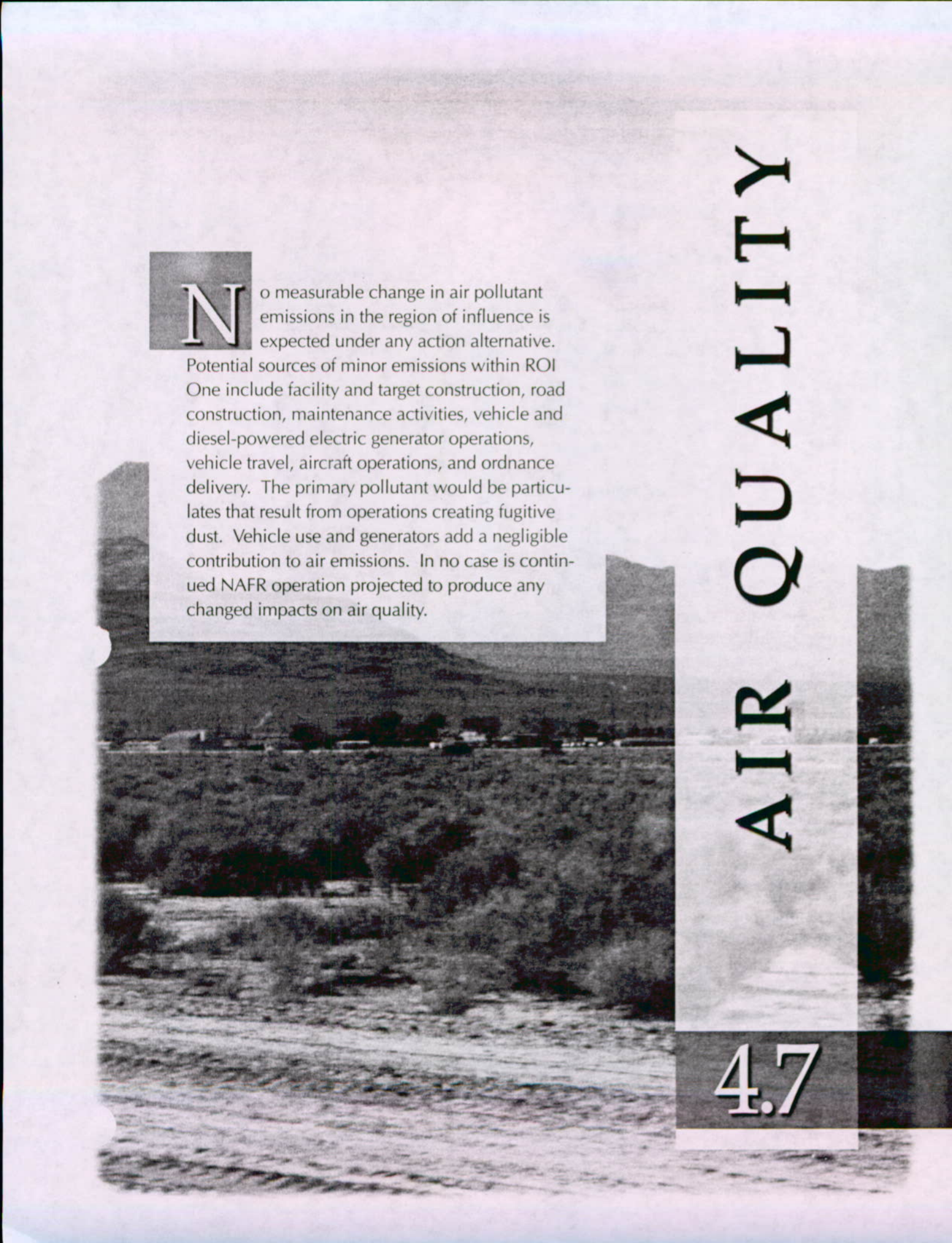
#### **4.6.6 American Indian Issues Concerning Water Resources**

The CGTO perceives any action associated with military training to have an adverse impact. With respect to surface hydrology and groundwater, the NARD states:

Animals in these regions must drink this water; they do not have a choice. Water pollution also puts plant communities in jeopardy.

Tribal governments are concerned that the migration of polluted water from contaminated areas into land outside the NAFR will have long-term adverse effects [AIWS 1997].

Access restrictions have protected some of these water sources from modern disturbance, but these same restrictions have excluded Indian people from using these sources. Under the No-Action Alternative, the CGTO feels that the BLM and USFWS will not be able to provide a level of protection to traditional cultural resources (which can include springs and other water sources) similar to that provided by restricted access on NAFR.



**N**o measurable change in air pollutant emissions in the region of influence is expected under any action alternative.

Potential sources of minor emissions within ROI One include facility and target construction, road construction, maintenance activities, vehicle and diesel-powered electric generator operations, vehicle travel, aircraft operations, and ordnance delivery. The primary pollutant would be particulates that result from operations creating fugitive dust. Vehicle use and generators add a negligible contribution to air emissions. In no case is continued NAFR operation projected to produce any changed impacts on air quality.

# AIR QUALITY

4.7

## AIR QUALITY



*Impacts due to combustive emissions from vehicles would be insignificant because most emission sources would be mobile and intermittent and pollutant impacts would not be large enough in a localized area to cause any exceedance of ambient air quality standards. Fugitive dust emissions from construction, maintenance, and operation activities on exposed soil would occur.*

The level of activities proposed under Alternatives 1A or 2A would not differ substantially from activities that presently occur in this area.

The level of activities proposed under Alternatives 1B or 2B could differ from activities that presently occur. Increased recreation, particularly off-road vehicle use, could increase disturbed areas and generate additional fugitive dust. Construction and operation of any mining activity could result in a substantial new pollutant source. Any such development would be evaluated in separate environmental documentation.

Air quality impacts associated with Air Force activities under the No-Action Alternative would be associated only with surface and/or subsurface environmental cleanup.



*Increased recreation and/or subsequent construction and maintenance activities by non-Air Force entities under the No-Action Alternative would be administered by the appropriate DOI agency. Any new projects would be regulated under the applicable local, state, or federal air pollution rules.*

## 4.7 AIR QUALITY

Air quality in the project area and immediately surrounding region would be affected by emissions from sources associated with construction, maintenance, and operation of NAFR. The following sections provide a description of air quality impacts that would occur from each alternative. Emissions from any alternative that cause an exceedance of any state or national ambient air quality standard would result in environmental impacts.

### 4.7.1 Alternative 1A – Indefinite Withdrawal

#### 4.7.1.1 CONSTRUCTION AND MAINTENANCE

Construction and maintenance activities are expected to occur under this alternative only at current levels. Air quality impacts associated with activities within ROI Two could occur from combustive emissions due to equipment and vehicle usage and fugitive dust emissions in the form of particulate matter less than 10 microns in diameter (PM<sub>10</sub>) as a result of ground-disturbing activities and equipment/vehicle operations on dirt roads. Impacts due to combustive emissions from these sources would be insignificant, since most emission sources would be mobile and intermittent, and pollutant impacts would not be large enough in a localized area to cause any exceedance of an ambient air quality standard.

Air quality impacts during general maintenance activities would be short term and would cease at the end of the required maintenance. Additionally, the level of maintenance activity proposed under Alternative 1A would not differ substantially from activities that presently occur in this area. Therefore, air quality impacts from maintenance activities under this alternative would be insignificant.

#### 4.7.1.2 OPERATIONS

Air quality impacts from the operation of Alternative 1A within NAFR would primarily be caused by generator emissions associated with operation of the numerous radar and communication sites in the NRC. Large amounts of particulate matter emissions could also occur from fugitive dust emitted during the delivery of ordnance from aircraft. Fugitive dust emissions associated with this activity would generally be small when non-explosive ordnance were used. However, use of live ordnance would have the potential to produce a substantial amount of fugitive dust, depending on the explosive potential of the ordnance and softness of the impacted soil. Fugitive dust emissions from ordnance deliveries would also be exacerbated during periods of high winds.

Some operational air quality impact would also occur from aircraft emissions. However, impacts due to aircraft emissions would be insignificant, since these emission sources would be mobile and intermittent and pollutant emissions would not be large enough in a localized area to cause any exceedance of an ambient air quality standard. Also, the ground-level impact of aircraft emissions released above the atmospheric mixing layer (which could range from a few

hundred feet to over 10,000 feet AGL, depending on the time of day and year) would be minimal due to the inability of the released pollutants to penetrate the mixing layer and mix downward to ground level.

Operational activities proposed under Alternative 1A would not quantitatively differ from activities that presently occur in this area. Therefore, operational air quality impacts associated with the alternative in this area would be insignificant.

The potential exists for project aircraft to impair visibility within a federal Class I area, defined as (1) a reduction in regional visual range and (2) temporary atmospheric discoloration or plume blight. Criteria to determine significant impacts on visibility within Class I areas usually pertain to stationary emission sources, because mobile sources are generally exempt from permit review by regulatory agencies. Since there are no readily available quantitative techniques to estimate visibility impacts from in-flight aircraft, the assessment is made in a qualitative manner. The nearest Class I area to NAFR is Death Valley National Park, approximately 10 miles from the western edge of NAFR. Emissions from aircraft would quickly disperse and would not be expected to affect visual range from a reference point 10 miles away. Additionally, plume blight would occur within an aircraft flight path, but only for a short duration immediately after passage of the aircraft. Therefore, impacts on visibility from the alternative within Class I areas in proximity to NAFR would be insignificant.

#### **4.7.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

##### **4.7.2.1 CONSTRUCTION AND MAINTENANCE**

No different new construction is expected to occur under this alternative other than continuation of site-specific construction dictated by future mission changes. Air quality impacts associated with maintenance activities within ROI Three would be identical to those identified for Alternative 1A. Additionally, the overall level of activity proposed under Alternative 1B would not quantitatively differ from activities that presently occur. Therefore, air quality impacts from maintenance activities under the alternative would be insignificant.

Any construction on the non-renewed lands would be subject to BLM environmental review and permitting processes.

##### **4.7.2.2 OPERATIONS**

Air quality impacts from Air Force operations under Alternative 1B would be identical to those identified for Alternative 1A. The level of activities proposed under Alternative 1B would not differ substantially from activities that presently occur in this area. Therefore, air quality impacts from operational activities under the alternative in this area would be insignificant.

Operational activities that would occur on land not included in the renewal application by the Air Force would be administered by the DOI. Emissions from these activities would be regulated under the applicable local, state, or federal air pollution rules and regulations.

Potential PM<sub>10</sub> emissions from recreation or co-use lands, particularly Mud Lake, would not be expected to contribute to non-attainment in the Las Vegas Valley due to the distances involved.

#### **4.7.3 Alternative 2A – 25-Year Withdrawal**

Air quality impacts associated with construction, maintenance, and operation of Alternative 2A would be identical to those identified for Alternative 1A. Proposed activities under this alternative would not differ substantially from activities that presently occur in this area. Therefore, air quality impacts would be insignificant.

#### **4.7.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

Air quality impacts associated with construction, maintenance, and operation of Alternative 2B would be identical to those identified for Alternative 1B. Therefore, air quality impacts associated with this alternative would be insignificant.

#### **4.7.5 No-Action Alternative**

##### **4.7.5.1 CONSTRUCTION AND MAINTENANCE**

Air quality emissions associated with Air Force activities under the No-Action Alternative would be limited to clean up. Insignificant amounts of new combustion emissions due to equipment and vehicle usage and fugitive dust emissions in the form of PM<sub>10</sub> may occur as a result of decommissioning activities.

##### **4.7.5.2 OPERATIONS**

Air quality emissions associated with the operation of the No-Action Alternative would decrease to 50 percent or less of present aircraft emissions due to decreased aircraft activities. Since the level of operations would decrease from the existing level of operations, and existing levels do not have significant impacts, impacts due to aircraft emissions under the alternative would remain insignificant.

#### **4.7.6 American Indian Issues Concerning Air Quality**

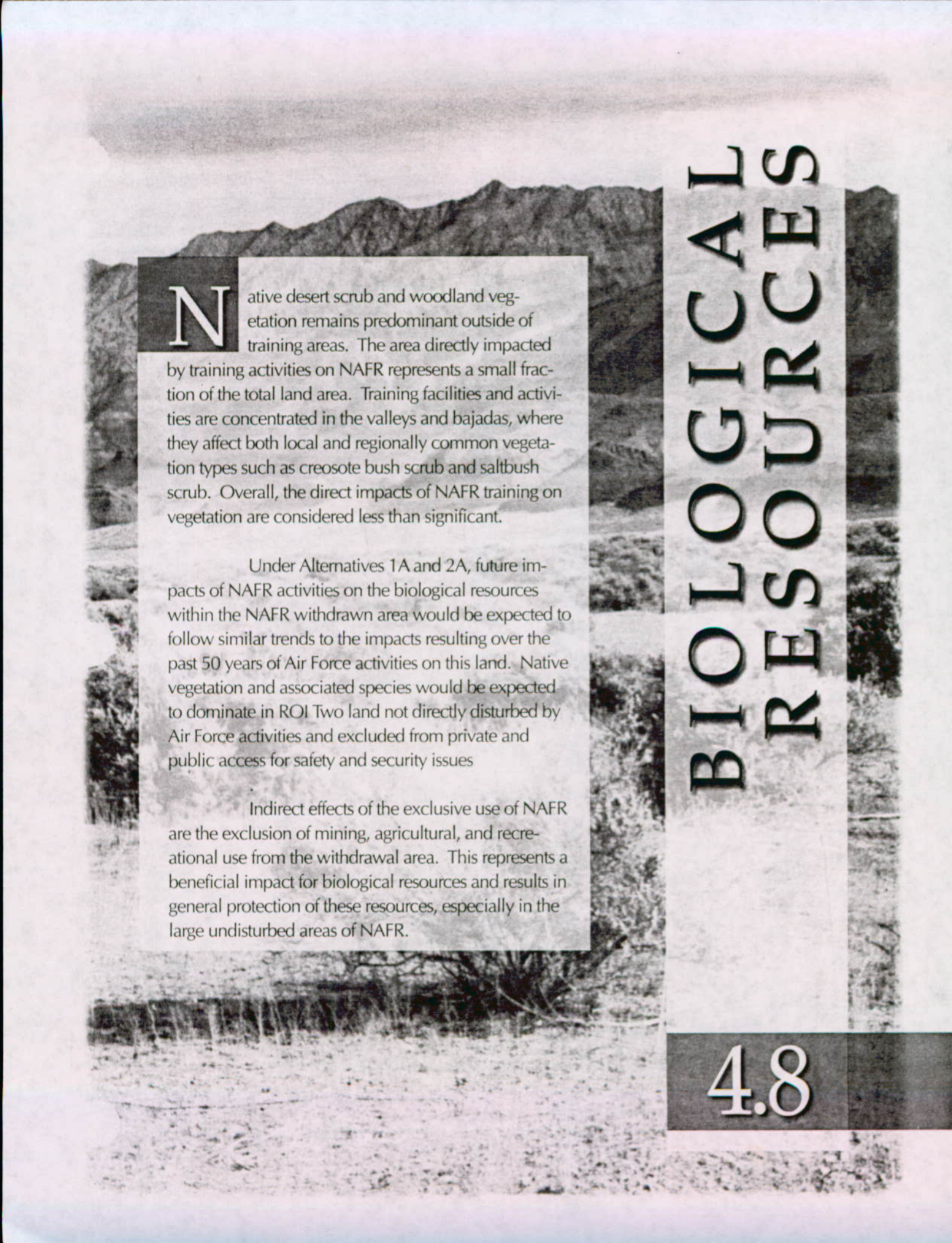
The CGTO perceives any action associated with military training on the part of the Air Force to have an adverse impact. In particular, the CGTO has argued that certain activities on Air Force withdrawn lands may have adversely affected the air, making food or other resources gathered from some parts of NAFR unusable.



The NARD states:

Nellis AFB should make an effort to record systematically the adverse effects of military activities on the air quality of American Indian communities located near the NAFR.  
[AIWS 1997]

The CGTO wants to be included in future studies of air resources.



**N**ative desert scrub and woodland vegetation remains predominant outside of training areas. The area directly impacted by training activities on NAFR represents a small fraction of the total land area. Training facilities and activities are concentrated in the valleys and bajadas, where they affect both local and regionally common vegetation types such as creosote bush scrub and saltbush scrub. Overall, the direct impacts of NAFR training on vegetation are considered less than significant.

Under Alternatives 1A and 2A, future impacts of NAFR activities on the biological resources within the NAFR withdrawn area would be expected to follow similar trends to the impacts resulting over the past 50 years of Air Force activities on this land. Native vegetation and associated species would be expected to dominate in ROI Two land not directly disturbed by Air Force activities and excluded from private and public access for safety and security issues

Indirect effects of the exclusive use of NAFR are the exclusion of mining, agricultural, and recreational use from the withdrawal area. This represents a beneficial impact for biological resources and results in general protection of these resources, especially in the large undisturbed areas of NAFR.

# BIOLOGICAL RESOURCES

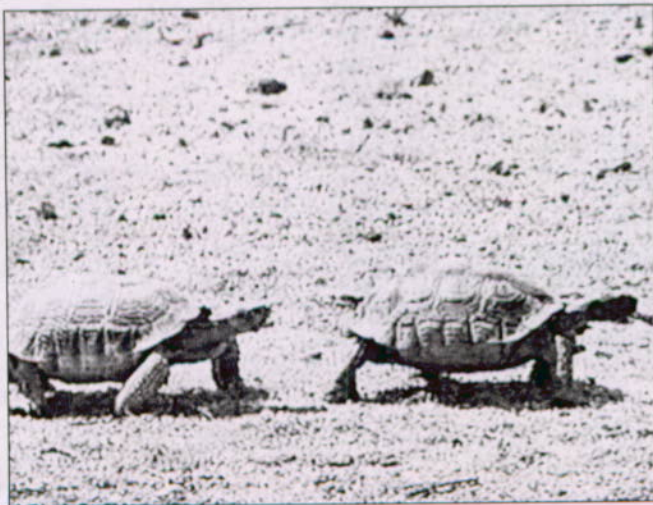
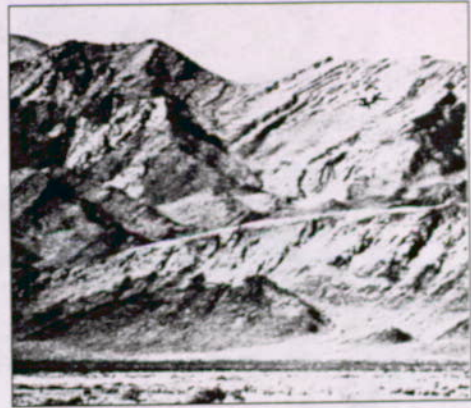
4.8

## BIOLOGICAL RESOURCES

Under Alternatives 1B and 2B, local areas of soil and vegetation would likely be removed or otherwise disturbed in lands that become available for mining or public access. The resulting biological impacts would be localized, but collectively affect a sufficiently large area that the impacts could be significant if native desert scrub or woodland vegetation were eliminated or cover by native species substantially reduced due to disturbance.

The No-Action Alternative would have both positive and negative impacts on biological resources. The relinquishment of land to BLM would result in the cessation or reduction of military training activities that currently disturb vegetation and wildlife primarily in ROI One. These include disturbances caused by maintenance and use of test and training ranges, and the potential for wildfires, water and soil contamination, and erosion from Air Force activities. Aircraft overflights would continue at a reduced level.

Administration of the land under a multiple-use doctrine would allow public access and other uses such as mining, livestock grazing, or irrigated agriculture in ROI Two. Previously withdrawn lands would also become available for certain public uses, such as utility corridors needed to support expanding local populations. These land use changes are likely to have widespread negative impacts that would offset the short-term benefits of reduced military activity. Allowing private and public access into previously inaccessible areas would result in mortality of individual animals (including sensitive or special interest species) and the disturbance to wildlife habitat. Impacts resulting from public access and new land uses may have more of a detrimental effect on individual animals and populations of species than current activities on NAFR.



*NAFR exclusive use areas remove two of the primary threats to desert tortoises, off-road vehicles and illegal collecting.*



*The exclusion of all human activities except those associated with DOD missions has effectively served to protect sensitive vegetation and species within NAFR.*

## 4.8 BIOLOGICAL RESOURCES

### 4.8.1 Alternative 1A — Indefinite Withdrawal

Environmental impacts associated with this alternative are described below. The administrative change proposed under this alternative would not be expected to affect biological resources. Impacts associated with the re-allocation of funding would depend on which activities were eliminated, and which new activities could be funded as a result. For each sub-resource area, the discussion evaluates impacts at the three ROI levels.

The Integrated Natural Resource Management Plan (INRMP) for NAFR (Air Force 1997g) is a planning document that identifies the current and future management actions necessary to meet resource management goals. It is the document that guides the implementation of management resource actions. The INRMP for NAFR is a work-in-progress, which is evolving as inventory studies progress and input is generated through the Nellis Range Stewardship Dialogue. This process is part of the NAFR response to DOD Instruction 4715.3, which mandates a policy of ecosystem management on DOD installations (for background see Leslie et al. [1996]). These principles emphasize the management of installations such as NAFR to maintain biodiversity while ensuring the sustainability of military training activities. "Adaptive management," which allows the refinement of management strategies based on experimentation and monitoring results, is critical to successful ecosystem management. Any measures recommended in this LEIS for implementation through the INRMP must also be consistent with the principles of ecosystem management outlined in the DOD Instruction.

#### 4.8.1.1 VEGETATION

Sources of potential impacts on vegetation on NAFR include air-to-ground gunnery and bombing practice at targets; maintenance and placement of targets and threat simulators; ground training, activities primarily in the vicinity of ISAFAF; and the use and maintenance of roads and utility lines.

These activities occur primarily in areas that have already been disturbed, with additional ground disturbance likely around the edges. The affected areas are concentrated on valley floors and adjacent bajadas. Much of the disturbance is concentrated on playas whose biological resource value is low because of the limited extent and duration of flooding and the general lack of wetland vegetation as compared, for example, with the extensive wetlands of Ash Meadows and the Pahranaagat Valley. Localized erosion and soil contamination may occur, but is generally confined to the immediate areas of disturbance owing to the lack of flowing streams throughout the region and the concentration of ground-disturbing activities on level terrain.

Disturbances associated with roads that generally receive little use and are unfenced and with a variety of widely dispersed training facilities (see Chapter 1.0 for description), are not likely to hinder wildlife migration or influence the vegetation.

The direct impacts of continuing use are not significant, because of the disturbed nature of the affected areas, their wide dispersion, and the small fraction (approximately 3 percent) of the land area of NAFR that is affected. New land disturbing activities are subject to review and mitigation when warranted under NEPA.

Ground disturbance, including fires started by live ordnance or flares, may indirectly contribute to the spread of weeds, among which are foxtail or red brome (*Bromus madritensis* ssp. *rubens*) in the Mojave Desert and cheatgrass (*Bromus tectorum*) in the Great Basin Desert. The increase of these grasses and other weeds in desert scrub and woodland habitats can lead to increased fire frequency, causing "type conversion" from scrub and woodland to grassland vegetation. Such conversions, if they occurred over large areas, would be significant, threatening native plant and wildlife populations and degrading the ecological functions and human values associated with native desert habitats.

The use of chaff and flares on the NRC airspace is described in sections 1.5.4 and 3.3.3. The primary constituents of chaff fibers are silicon dioxide and alumina (aluminum oxide), with lesser amounts of oxides of calcium, magnesium, boron, sodium, potassium, and iron. The fibers have an aluminum alloy coating (99.45 percent aluminum) which includes trace amounts of copper, manganese, magnesium, zinc, vanadium, and titanium (Air Force 1997d). Chaff fibers are also coated with stearic or palmitic acid to aid their dispersion in the air. Chaff is deployed by aircraft using the NRC at a variety of altitudes and becomes widely dispersed by the wind, eventually settling to the ground. Soil sampling on the NAFR indicates that chaff fragments are frequently present in areas where training occurs (Air Force 1997d). Owing to the aridity of the NRC, decomposition of the chaff fragments occurs slowly through weathering (Air Force 1997d).

Increasing accumulations of metals deposited from chaff use can have adverse effects on plant growth (Bohn et al. 1979). However, the toxicity of aluminum and other metals to plants is normally associated with acidified soils from which cations, especially calcium, have been leached by rainfall. The likelihood of aluminum toxicity to plants on NAFR is minimal because the soils are neutral to basic, with soil pH averaging 8.2-8.9 on the South Range and 8.0-9.6 on the North Range (Air Force 1996d). The soils are buffered with calcium and other cations in salts retained near the surface because of evaporation. Other constituents of chaff--stearic and palmitic acid--are non-toxic vegetable oils that are degraded by weathering and microbial action, with no effect on soils or vegetation.

Given the nature of the soils and the wide dispersion of chaff over a land area of several million acres, it is not expected that chaff constituents, at the quantities deployed on the NRC, could accumulate in soil to the point of significantly affecting soil properties or plant growth (Air Force 1997d). During times when the range is heavily used, the total amount of chaff that is deployed amounts to about 400,000 bundles, each weighing about 0.1 kilograms, per year. Although this represents a large total mass, the quantities of aluminum and other metals being deposited on the land are probably several orders of magnitude less than the expected background concentrations in soils on the range. Aluminum deposition from ongoing chaff

use, assuming dispersion over roughly 1 million hectares (1 hectare = 2.47 acres), averages about 4 milligrams per square meter per year. In contrast, background amounts of aluminum in the upper 30 centimeters of the soil would be expected to be on the order of 5 to 10 kilograms per square meter, assuming that the soil consists of 5 to 10 percent aluminum as is typically the case (Bohn et al. 1979). As a result, annual deposition rates are probably less than one millionth of the existing background amounts, and average concentrations would not increase appreciably even after many decades of training, although there would be considerable variability depending on where chaff is most heavily deployed and how it is dispersed by wind. The potential impact on soils and vegetation is considered less than significant.

Flares are manufactured and used so as to minimize the possibility that burning material reaches the ground. Occasionally flares can continue burning and cause range fires (Air Force, Navy, and DOI 1991). This represents another type of disturbance that, in combination with the localized ground disturbances, could increase the abundance of undesirable weedy grasses in native scrub and woodland communities (Minnich 1995; Young 1995).

Future impacts of NAFR activities on the vegetation within the NAFR withdrawn area would be expected to follow similar trends to the impacts resulting over the past 50 years of Air Force activities on this land. Native vegetation would be expected to dominate in areas not directly disturbed by Air Force activities.

The available site descriptions (e.g., Air Force 1981, 1997g; The Nature Conservancy [TNC] 1995; Dames & Moore 1996) suggest that native desert scrub and woodland vegetation remains predominant outside of training areas, at least in non-wetland habitats. Accordingly, there is minimal risk of large-scale changes in desert vegetation beyond areas of immediate, ongoing impact.

The BLM requires the salvage of all valuable cacti and yuccas (e.g., Joshua trees) prior to land disturbing activities. The disposal of salvaged plants is coordinated by BLM and may include site restoration, landscaping public purpose facilities, or relocating material off-site for other projects. Efforts will be coordinated with the Forestry Program Lead for the Las Vegas Field Office.

Another indirect environmental consequence of the use of NAFR is the exclusion of mining, agricultural, and recreational use from the withdrawal area. Mining, agricultural, and recreational uses occur in the areas surrounding NAFR and DNWR. These uses are cited as threats to rare and endangered plants in Nevada. The continued withdrawal will exclude these activities and serve to protect the NAFR and DNWR from the adverse impacts of these activities. As noted in section 3.10, considerable areas of NAFR were subject to mining and agriculture (primarily livestock grazing) prior to the land withdrawal. These uses, along with increasing on- and off-highway traffic and recreational activity would have continued to result in the removal of native vegetation and the spread of weeds, if the withdrawal had not occurred. This exclusion represents a beneficial impact which cannot be quantified but which

may offset to a considerable degree the localized adverse effects that occur as a result of military training. This comparison is discussed in more detail under the No-Action Alternative.

Potential impacts on vegetation under the MOA airspace are negligible since Air Force activities in this region are confined to altitudes and locations where they are unlikely to cause disturbance of the vegetation.

#### **4.8.1.2 WILDLIFE**

Impacts to wildlife on NAFR result from on-the-ground activities including continuing use of range targets, ground facilities, training areas, and roads. The impacted areas tend to be in valleys and on bajadas and amount to only about 3 percent of the land area of NAFR. Disturbed sites generally provide only marginal habitat for most wildlife species found in the area. In these areas, wildlife populations are affected by the direct mortality of individual animals, habitat alteration, and the alteration of species' normal behavior. No data are available on wildlife use of range targets, but such use is expected to be minimal given the removal of vegetation, lack of water, and recurrent noise and hazards associated with live ordnance use.

A number of range targets are in the vicinity of playas that are temporarily flooded by heavy rainfall and/or runoff in some years. The extent of ponded habitat that may be available coincident with periods of bird migration is unpredictable, and these habitats are, therefore, considered to be of low value to birds and other wildlife, although during wettest years they may be visited by migratory shorebirds (Air Force 1997b). Springs and other surface water resources that are critical to desert wildlife are not directly impacted by training on NAFR. Because of the relatively small areas that are affected, and the lack of critical resources within these areas, the impacts on wildlife associated with local disturbance are considered less than significant.

Localized increases in contaminant concentrations in the soil, attributable to the use of explosive ordnance, have been detected at NAFR bombing targets (Air Force 1996b). This phenomenon is highly localized in the degraded areas where ordnance delivery occurs. These areas do not provide food or habitat resources likely to attract wildlife, nor are there obvious mechanisms that would transport contaminants into other areas where food chain effects might be more likely. Hence, potential toxicity to wildlife due to contamination is not considered a significant risk on NAFR at present.

The use of NAFR results in increased noise levels, episodic noise and visual disturbances, and chaff and flare releases on ranges in accordance with their approved uses. Although individual animals may be adversely affected in the immediate vicinity of these activities, there is no evidence to suggest that wildlife populations are reduced on the range relative to adjacent similar habitats (Air Force, Navy, DOI 1991). Much of the concern over noise impacts on wildlife comes from studies and anecdotal reports of the reactions of nesting raptors, colonial shore- and waterbirds, and migratory waterfowl (e.g., Gladwin et al. 1987; Lamp 1989), none of which occur in the areas most likely to be affected by overflight activity on NAFR.

Given that these activities occur in previously impacted areas constituting a small fraction of the land area of NAFR, and do not affect critical habitat resources, impacts on wildlife are generally not significant. Conversely, the exclusion of mining, agricultural, and recreational uses results in reduced habitat impacts and levels of disturbance to desert wildlife on NAFR. The withdrawal of NAFR results in the exclusion of mining, agriculture, and recreational use. These activities have been cited as threats to rare and endangered plants in Nevada.

Under Alternative 1A, special use airspace associated with NAFR would continue to be used in accordance with FAA/Air Force designations. It is assumed that current Memoranda of Understanding (MOUs) and standard operating procedures (SOPs) that lessen potential noise impacts on sensitive receptors, including the DNWR, Pahrangat National Wildlife Refuge (NWR), state wildlife management areas, and National Forest lands (Air Force, Navy, DOI 1991; Air Force 1994b), would remain in effect. These restrictions include the following:

- Avoidance of Pahrangat NWR by 1 nautical mile (NM) horizontally and 2,000 feet AGL, with supersonic overflight restricted to 5,000 feet AGL.
- With respect to the DNWR, avoidance by 2,000 feet AGL when using the Desert MOA, and restriction of supersonic flight to above 5,000 feet AGL within R-4806.
- Avoidance of Key-Pittman Wildlife Management Area by 2,000 feet AGL, with supersonic overflight restricted to 5,000 feet AGL.

Although the reactions of individual wildlife to aircraft noise are widely documented, the population and ecosystem effects of military flight training activities are uncertain. The most rigorous studies of wildlife responses to jet aircraft or simulated jet aircraft noise have shown little or no effect beyond temporary startle responses by individuals of most species (Ellis 1981; Black et al. 1984; Lamp 1989; Ellis et al. 1991), without the suggestion of effects at the population level (Air Force 1994a). Most importantly, there is no evidence that wildlife populations are diminished in areas subject to overflight by military aircraft. At NAFR, this may be partly due to the SOPs mentioned above as well as the exclusion of mining, agriculture, and recreation uses.

As described above in section 4.8.1.1, the continuing use of chaff on the NRC is not expected to affect soil and vegetation. A laboratory test indicated that chaff as normally deployed does not fragment into particles small enough (i.e. PM10) to present a respiratory hazard, although the fibers may be partially inhaled and cause irritation to mucous membranes (Air Force 1997d). Local accumulations of windblown chaff may occur under rocks or plants, or along the margins of water bodies. In such cases, chaff could be ingested by wildlife, although there is no reason to expect deliberate consumption by animals. Investigators on the NRC found no evidence that chaff was being picked up and carried to nests or burrows by wildlife (Air Force 1997d). There is no evidence that chaff use has any long-term effects on wildlife populations on the NRC or other locations (Air Force 1997d). The continuing use of chaff is considered an insignificant impact on wildlife.



Range fires may occur as a result of Air Force activities as well as natural causes (lightning strikes) on NAFR. Fires can increase the spread of weeds, especially non-native grasses, which in turn contribute to increased fire susceptibility (Minnich 1995; Young 1995). The replacement of large areas of desert scrub and woodland habitats by non-native grassland could reduce the local diversity and abundance of native wildlife. This impact, if it occurred, would be significant.

Future impacts of NAFR activities on wildlife species inhabiting the NAFR would be similar to those impacts that have already occurred as a result of past Air Force activities. Future impacts could be assessed in a similar fashion to those discussed under the vegetation section (i.e., random sampling and periodic reassessments to detect large scale changes).

In conclusion, this alternative is not expected to significantly affect wildlife subject to overflight, given the continuation of existing MOUs and SOPs governing special use airspace associated with NAFR.

#### **4.8.1.3 AQUATIC AND WETLAND HABITATS**

Significant aquatic and wetland habitats on NAFR are limited to well-known springs, creeks, and impoundments and are not directly or indirectly affected by ongoing training activities (Figure 3.8-1; Appendix G). As discussed in section 3.8, surface water resources on the North Range have been severely impacted by wild horses due to trampling where the animals congregate. A joint Air Force-BLM program to construct horse exclosures at these sites is expected to have long-term beneficial impacts on the many types of native wildlife that depend on these resources.

Seasonally flooded playas have not been systematically studied, and the extent to which they are affected by current training activities is largely unknown. Localized disturbance has certainly occurred in many of the valleys on NAFR, where numerous targets are located. Being largely unvegetated, these areas would not qualify as wetlands, but they could be Waters of the United States under the CWA (33 CFR 328.3). As far as is known, these habitats do not provide significant resources for migratory birds or other biota (Air Force 1997b), suggesting that impacts on them are insignificant. It is possible, however, that for brief periods and/or in the wettest years, flooded playas are used by migratory birds, most likely during spring, and that training activities at those times and locations could cause birds to leave and/or avoid target areas in favor of less disturbed sites.

There are several important aquatic and wetland habitats overflowed by aircraft training associated with NAFR. Effects on potentially sensitive wildlife were considered previously under section 4.8.12, Wildlife. No impacts on aquatic species are anticipated.

#### 4.8.1.4 SPECIAL STATUS SPECIES

##### *PLANTS*

Most sensitive plant species known on NAFR (Table 3.8-2) occur in habitats that are not compatible with the siting of Air Force infrastructure that requires large, level areas. For this reason, there is very low potential for adverse effects on listed, proposed, or candidate threatened or endangered species. In general, land withdrawn for NAFR has long-term beneficial impacts on sensitive plants, by restricting livestock grazing, land development, and limiting ground-disturbance. It should be noted that these factors, which are frequently cited as threats to rare and endangered plants in Nevada (Mozingo and Williams 1980). The withdrawal of NAFR results in the exclusion of mining, agriculture, and recreational use. These activities have been cited as threats to rare and endangered plants in Nevada. None of the sensitive plant taxa identified as occurring on NAFR are threatened by training. Most do not occur in areas of potential direct impact (Table 3.8-2).

The only sensitive plants known to occur in the vicinity of targets or range-training activities are (1) Merriam's bearpaw poppy, which, because of its widespread occurrence (Figure 3.8-2), including many areas not impacted by training on NAFR, is not threatened by any localized impacts of training activities (TNC 1997); and (2) Parish's phacelia, which occurs in playas that are subject to training activities on South Range, but which has a population size of many millions of plants, spanning large areas in Indian Springs Valley and Three Lakes Valley during years of favorable rainfall (TNC 1997). Based on the abundance of Parish's phacelia in areas subject to ongoing military use, this species is not threatened by continuing activities associated with the land withdrawal. Not all of NAFR has been systematically searched. It is likely that sensitive plant taxa exist outside disturbed areas within NAFR. It is also possible that sensitive plant taxa exist in some areas not yet inventoried where training and ground disturbance occur. The continuation of existing land uses and Air Force activities within sites that are already established and recently used is not expected to significantly affect any special status plant populations because of the disturbed nature of these sites.

At least two sensitive plant taxa, Clokey eggvetch and Pahute Mesa beardtongue (Table 3.8-2), may be adversely impacted by wild horse grazing in drainages fed by springs on the North Range (TNC 1997). These plants may ultimately benefit from Air Force-BLM efforts to exclude wild horses from surface water sources.

At present, there is minimal overlap between training activities and the habitats known or likely to support special status plants. However, ground-disturbing activities in previously unused areas could impact special status plants. Existing distributional information on special status plants on NAFR is generally incomplete. Existing information would not rule out the occurrence of special status plants in most areas where future activities could be proposed unless recent botanical surveys at the appropriate time(s) of year had been done on the site (Table 3.8-2). The extirpation of a local population, if it occurred, could be a significant impact, depending on the rarity and endangerment of the affected species. In the past, TNC has

worked with Nellis to inventory and evaluate vegetation resources. Depending on funding, this work is expected to continue in the future. Such inventories reduce the likelihood that local populations of rare plants would be inadvertently threatened by military training activities.

### ***WILDLIFE***

Alternative 1A would not adversely affect any federally listed, proposed, or candidate threatened or endangered species, with the exception of the desert tortoise. Supporting information and analysis is provided below.

The only listed species that is known to occur in areas of direct impact is the desert tortoise (threatened). Protective measures (which include a training program, desert tortoise relocations, the restriction of off-highway use, and the presence of a qualified biologist) and compensatory measures (the transferal of \$50,000 to the Desert Tortoise Habitat Conservation Fund, which will benefit tortoise populations in the entire northeastern Mojave Desert region) have been adopted by the Air Force and have resulted in the USFWS' issuance of a Biological Opinion stating that "current training ... is not likely to jeopardize the continued existence of the desert tortoise and is not likely to destroy or adversely modify designated critical habitat" (USFWS 1997). Adverse impacts to the tortoise and its habitat would occur on a limited portion of the South Range that is used for air-to-ground weapons training. The impact amounts to the degradation of about 971 acres of habitat, and an annual take of up to 12 tortoises. When considered on a rangewide basis, impacts to desert tortoise would be an insignificant impact because the South Range is low to very low density habitat, and represents a very small percentage of the desert tortoise habitat available in the Northeastern Mojave Recovery Unit.

Other listed species that may occur on NAFR include the bald eagle and peregrine falcon, both of which may occur as occasional transients, but do not nest or overwinter anywhere on the range owing to the lack of appropriate habitat. Either species may occur frequently in winter or as a transient forager at other times in airspace associated with NAFR. Both are associated with wetlands and are most likely to occur in the Pahranaagat Valley area of the Desert MOA. The SOPs explained in section 4.8.1.2 have horizontal and vertical "setbacks" from aerial combat training, and provide a reasonable assurance of insignificant impacts on these species and other birds occurring in these wetland habitats.

The impacts resulting from wild horses, especially to water resources on NAFR, are documented in the INRMP (Air Force 1997g). The BLM is responsible for managing the wild horse herd size. Management is ongoing, with round-ups occurring every 3 to 4 years. Other proposed control measures include maintaining free-roaming horses only on the NWHR, installing fences around important water resources, monitoring of the horse population and creating additional man-made water sources so horses will avoid natural springs.

Several listed fishes occur in waters under the MOA airspace (Table 3.8-2). Fishes and other aquatic organisms are unlikely to be affected by jet aircraft overflight and no impacts are anticipated. As explained in section 4.8.1.2, the continuing use of chaff is considered an insignificant impact to wildlife, including special status species.

Other special status species (federal species of concern, Table 3.8-2) and large mammals that are of special interest such as the desert bighorn, mule deer, and pronghorn antelope are unlikely to be significantly affected by ongoing use of the range and associated airspace, because (1) the affected areas have already been exposed to repeated activities of the type that would continue; (2) the affected areas represent a small fraction of the ranges inhabited by each species; and (3) despite observations of temporary disturbance to wildlife, there is no evidence that military aircraft training is adversely affecting wildlife populations.

Finally, there is a potential beneficial impact on special status and special interest wildlife associated with the exclusion from NAFR of non-military human uses including recreational, agricultural, and mining activities. This extent of restricted access and associated management is not possible on BLM lands. The withdrawal of NAFR results in the exclusion of mining, agriculture, and recreational use. These activities have been cited as threats to rare and endangered plants in Nevada. Public land uses would adversely affect wildlife habitat on the range, although effective management to balance the demand for public land uses with wildlife habitat protection would lessen the impact.

#### **4.8.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

With respect to continuing operations in areas where land and airspace use would not change, this alternative has the same impacts as Alternative 1A. The land not included in the renewal application along the west boundary of NAFR and in a portion of the Clarkdale and Wagner Mining Districts would allow public access, mineral exploration, or agricultural uses in a number of areas that have been designated as exclusive military use. Public access for recreation and other activities would be available for co-use within Mud Lake, the Kawich Range, and EC South. Impacts foreseeable as a result of these land use changes are described below.

##### **4.8.2.1 VEGETATION**

If permitted by BLM, mining exploration, agriculture, or public access could disturb local areas of soil and vegetation. The resulting impacts would most likely occur in areas not previously affected by military use, and so would be new impacts, adding to the extent of disturbance on NAFR. The acreage that would be affected is uncertain. Impacts would be localized, but could collectively affect a sufficiently large area such that impacts could be significant if native desert scrub or woodland vegetation, or other native species were eliminated or substantially reduced due to disturbance.

Prior to opening non-renewed areas, BLM may need to systematically map and evaluate vegetation in terms of vulnerability to long-term elimination or replacement by undesirable weeds such as cheatgrass. Agricultural and mining leases, public access corridors, and other facilities or infrastructure should be sited on vegetation types that recover more quickly from disturbance and are more widely distributed, such as, for example, shadscale scrub as opposed

to Joshua tree woodland. Previously disturbed land should be utilized preferentially. Plans to control noxious weeds that have the potential to spread beyond the immediate area of disturbance would be needed in conjunction with public or commercial access.

#### **4.8.2.2 WILDLIFE**

Under this alternative, wildlife could be impacted by the loss or alteration of vegetation discussed above, and species that are more sensitive to human activity (e.g., pronghorn antelope, bobcat) would tend to be locally replaced by those that are more tolerant (e.g., jackrabbit, coyote). These impacts could be significant, analogous to those on vegetation, to the extent that impacts occur over a large area.

Steps to avoid impacts to wildlife are similar to, and typically done in conjunction with steps to reduce vegetation impacts. BLM areas subject to changing land uses would need to be evaluated in terms of wildlife habitat values, and former NAFR areas with the lowest values could be utilized for new activities such as grazing and mining leases or public access corridors.

#### **4.8.2.3 AQUATIC AND WETLAND HABITATS**

Under this alternative, several aquatic and wetland habitats may be affected by land use changes. Surface waters are not known to be present in the vicinity of the Clarkdale Mining District (Air Force 1997g; compare Figures 3.5-7 and 3.8-1). Because of the importance of springs or other surface water sources to desert wildlife, the absence of these resources should be confirmed in any areas subject to non-renewal to mitigate potential impacts. Other areas where co-use could occur should also be evaluated for potential surface waters, aquatic and wetland habitats that may be important to wildlife on a seasonal or permanent basis. These habitats need to be avoided spatially or temporally during seasons of use by wildlife. Water resources can be protected from wild horses by continued culling of herd size, maintaining free-roaming horses only in the NWHR, and if needed, fencing around springs and the installation of man-made water sources for horses to use.

#### **4.8.2.4 SPECIAL STATUS SPECIES**

No federally listed, proposed, or candidate threatened or endangered species are likely to be present or affected in the areas where land use changes could occur under this alternative. Other special status plants or animals could, however, be present. Losses of a small fraction of the individuals or habitat present in any particular location would not be significant, but the extirpation of a local population would have the potential to be a significant impact. If local populations of special status species had the potential to be adversely affected by changes in land use or administrative management, the agency responsible for the new land use would be expected to coordinate with the agencies responsible for the management of the particular species and to develop appropriate strategies to reduce the potential impacts to insignificance.

#### **4.8.3 Alternative 2A — 25-Year Withdrawal**

From the standpoint of biological resources, Alternative 2A is identical to Alternative 1A.

#### **4.8.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

From the standpoint of biological resources, Alternative 2B is identical to Alternative 1B, except for the unknown, potentially beneficial inventory or management consequences associated with administrative or funding changes.

#### **4.8.5 No-Action Alternative**

The No-Action Alternative would have both positive and negative impacts on biological resources. The non-renewal of land would result in the cessation of military training activities that currently disturb vegetation and wildlife on the range. These include disturbances caused by maintenance and use of test and training ranges, impacts from noise due to aircraft overflights, and the increased potential for wildfires, water and soil contamination, and erosion. The cessation of practice bombing and strafing, with the cleanup of exploded and unexploded ordnance, would result in reduced hazards to wildlife.

There would be additional short-term disturbances associated with abandonment and cleanup activities, followed by a period of little or no disturbance by federal agencies during which vegetation and wildlife habitats may recover, depending on the extent of modification that has taken place.

Subsequently, however, DOI administration of the land under a multiple-use doctrine would be expected to allow public access and uses such as mining, livestock grazing, or dispersed recreation. Previously withdrawn lands would also become available for certain public uses, such as utility corridors needed to support expanding local populations. It is unlikely that lands would be needed for community expansion.

Although large areas of the Range, including areas that are part of the DNWR, would probably remain undisturbed, increased mining, agriculture, and recreational land use, along with increased vehicular traffic (on- and off-highway), are likely to have widespread negative impacts that would offset the short-term benefits of reduced military activity. Sections 3.10 and 4.10 identify areas where mining would be most likely to occur. Agricultural land uses such as grazing and alfalfa growing would likely expand near existing operations where water is accessible.

The factors whose influence would likely increase are among those most frequently cited as threats to rare and endangered plants in Nevada (Mozingo and Williams 1980). Allowing public access into previously inaccessible areas would result in mortality of individual animals (including sensitive or special interest species) and the disturbance to wildlife habitat, including NAFR protected habitat for many special interest plant and animal species. For

example, the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994) includes urbanization, agricultural development, and mining operations as important causes of widespread desert tortoise habitat destruction. Impacts resulting from public access and new land uses may have more of a detrimental effect on individual animals and populations of species than current activities on NAFR.

Under new federal management, the impacts of new land uses would need to be assessed under NEPA. Effective management would be needed to balance public demands for access with habitat protection. This management could not approach the exclusive limited use NAFR now has. Casual dispersed recreation and increased access to previously closed areas would be difficult to regulate. Public access would probably be accompanied by an increase in wildlife and habitat management activity on NAFR lands, which could lessen impacts or provide benefits for some species.

Beneficial impacts would occur in areas of local disturbance and lands under MOA airspace, whereas NAFR could experience mostly adverse impacts. Resource management planning activities within the BLM would be expected to develop a plan that would balance the desires of the public for multiple use of the previously withdrawn lands while protecting its biological resources.

Due to the large area potentially affected by impacts under this alternative, wildlife species (including special status and special interest species) inhabiting areas affected by increased human presence and land use changes would need to be inventoried by BLM. Data gathered on wildlife species should include specific information including population size, breeding habitat, migration patterns, and seasonal use of different habitats to better understand and quantify level of disturbances to wildlife species on what was NAFR.

#### **4.8.6 American Indian Issues Concerning Biological Resources**

The CGTO perceive any action associated with military training on the part of the Air Force to have an adverse impact. Also, local Indian people believe that actions taken as part of an environmental restoration and management program will directly impact biological resources.

The NARD states:

The NAFR's projects and activities have impacted the region's plant and animal species. A number of them are currently candidates for listing as either threatened or endangered. Indian people have deep knowledge of the biological resources of the area and should participate directly with scientists responsible for the protection of its biological resources. Although systematic traditional-use plant studies have not been conducted on the NAFR, American Indians would like to see Nellis AFB take a step further and invite them to assist the agency in the planning and implementing of ecosystem management programs at the NAFR. [AIWS 1997]

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The CGTO also recognizes the protection offered to resources by the restricted status of lands on NAFR. The CGTO considers environmental restoration a worthy goal, but feels Indian people should be involved in designing such programs. They should also be allowed to assist in other ways on revegetation and reclamation projects. These recommendations would apply if an action alternative or the No-Action Alternative were implemented.



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# CULTURAL RESOURCES

**T**his impact assessment for cultural resources centers on the concept of cultural resource significance. Federal law can protect significant cultural resources. Impacts to cultural resources were assessed by:

- identifying the differences among NAFR alternatives and scenarios relevant to cultural resources;
- identifying existing impacts to NAFR cultural resources;
- understanding potential changes in NAFR associated with alternatives;
- understanding the potential for significant cultural resources to be affected; and
- determining the extent, intensity, and context of the effects of alternatives.



## CULTURAL RESOURCES

The Air Force has initiated consultation with the Nevada State Historic Preservation Officer (SHPO) and with 18 American Indian groups cooperating under the aegis of the Consolidated Groups of Tribes and Organizations (CGTO). These groups are from the Western Shoshone, Owens Valley Paiute and Shoshone, Mojave, and Southern Paiute people. This consultation regarding the potential effects on cultural resources within ROIs One, Two, and Three included identification of known traditional cultural resources potentially affected by continuation of the range withdrawal or termination of land withdrawal. The importance of traditional cultural resources is discussed in the "Native American Resource Document" prepared by the CGTO.

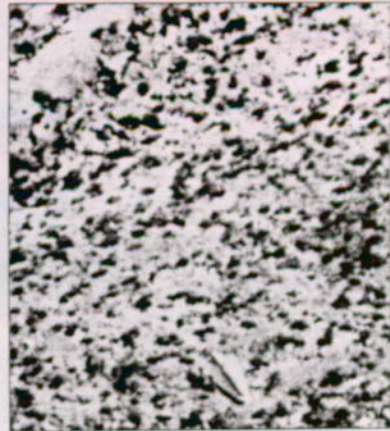
Under alternatives 1A and 2A, potential sources of impacts to archaeological and architectural resources would be a continuation of NAFR actions that potentially affect cultural resources, as follows:

- Access restrictions that both protect resources and make authorized access difficult.
- Ground disturbance in ROI One resulting from construction, operations, or maintenance of existing roads, utilities, facilities, and targets.
- Disturbance in ROI Two and ROI Three associated with noise, vibrations, and visual intrusions from overflights.

Under alternatives 1B and 2B, potential sources of impacts would include potential disturbance to archaeological, architectural, and traditional cultural resources from co-use or increased public access to selected areas.

No-Action Alternative potential sources of impacts include the following:

- Access-related impacts resulting from increased vandalism.
- Alterations in land status that result in changes in legal protection or enforcement of protection.
- Any modifications in land management policy that expose cultural resources to potential impacts from consumptive or non-consumptive uses.



*To avoid potential vehicle impacts to environmental resources (such as cultural resources), many target darts and attached cables that have drifted down on hillsides are left in place on NAFR.*



*The arid climate combined with exclusive use and restricted access has preserved significant historic and early American Indian resources within NAFR.*

## 4.9 CULTURAL RESOURCES

This section begins with the general nature of potential impacts to cultural resources and a description of how to assess them. First, there is a description of the impact assessment process in relation to archaeological, architectural, and traditional cultural resources. Because the five alternatives proposing treatment of the military withdrawal process (Alternatives 1A, 1B 2A, 2B, and No Action) have common elements, potential impacts to cultural resources are addressed in general in section 4.9.1. Section 4.9.2 discusses compliance with Section 106 of the National Historic Preservation Act (NHPA). Sections 4.9.3 through 4.9.7 examine specific impacts under each alternative. Section 4.9.8 details American Indian concerns about cultural resources as they are summarized in *American Indian Perspectives to the Legislative Environmental Impact Statement for the Nellis Air Force Range Renewal, Nevada, Native American Resource Document* (AIWS 1997). Section 4.14.1 discusses environmental justice as it relates to American Indians.

### 4.9.1 Impact Assessment Process

Impacts to cultural resources were assessed by (1) identifying the differences among alternatives as they relate to cultural resources; (2) identifying the range of existing impacts to cultural resources on NAFR; (3) understanding the areas of NAFR and those under affected airspace that would be affected by the alternatives; (4) understanding the potential for significant cultural resources that could be affected; and (5) determining the extent, intensity, and context of the effects. The impact assessment process for cultural resources, as outlined in federal historic preservation laws and regulations, centers on the concept of cultural resource significance. Federal law requires consideration of cultural resources, including traditional cultural resources, under Archaeological Resource and Protection Act (ARPA), American Indian Religious Freedom Act (AIRFA), Native American Graves Protection and Repatriation Act (NAGPRA), Federal Land Policy and Management Act (FLPMA), and Executive Order (EO) 13007. However, the NHPA provides the greatest protection to significant cultural resources, that is, those that are eligible for nomination to the National Register of Historic Places (NRHP). (See discussion of NHPA in section 3.9.1.)

As part of the NRHP eligibility assessment process, the Air Force initiated consultation with the Nevada State Historic Preservation Officer (SHPO) and with 18 American Indian groups cooperating under the aegis of the CGTO (refer to section 3.9.5). The consultation regarding potential effects on cultural resources within ROIs One, Two, and Three included identification of known cultural resources potentially affected by the proposed action (AIWS 1997, Air Force 1997c). This analysis is based in part on the information provided in *Nellis Air Force Base Cultural Resource Management Plan* (CRMP) (Air Force 1997c). The importance of traditional cultural resources is discussed in the NARD prepared by the CGTO (AIWS 1997).

Impact analysis for archaeological and architectural resources employed guidelines and standards set forth in the Section 106 process defined under the NHPA (see section 4.9.2). This process requires identifying significant cultural resources potentially affected by an action,

determining the effect of that action, and implementing measures to avoid, reduce, or otherwise mitigate those effects.

An action results in adverse effects to a cultural resource eligible for nomination to the NRHP when it alters the resource's characteristics, including relevant features of its environment or use, that qualify it for inclusion in the NRHP (36 CFR 800.9[b]). Potential impacts could include the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property from, or alteration of the character of, the property's setting, when that character contributes to the property's qualification for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of the property.

#### **4.9.1.1 GENERAL SOURCES OF IMPACTS TO ARCHAEOLOGICAL AND ARCHITECTURAL RESOURCES**

Impacts can be categorized according to their source. In this section, the sources of potential impacts to archaeological and architectural resources are summarized for each alternative, followed by a more detailed discussion of impact sources. Potential sources of impacts to NRHP-eligible archaeological and architectural resources considered for this LEIS include the following:

- Change in access rules;
- Alterations in land status;
- Transfer to a different governing land management policy;
- Ground disturbance from construction, air and ground operations, or maintenance (no specific undertakings are planned for any of the alternatives, but changes in land use could result in these activities); and
- Noise, vibrations, and visual impacts from construction, air and ground operations, or maintenance (no specific undertakings are planned for any of the alternatives, but changes in land use or airspace utilization could result in these activities).

***ALTERNATIVES 1A AND 2A — INDEFINITE WITHDRAWAL AND 25-YEAR WITHDRAWAL***

Under alternatives 1A and 2A, potential sources of impacts to archaeological and architectural resources within all ROIs would be the continuation of those actions that affect existing cultural resources at the time of the NAFR LEIS, including the following:

- Ground disturbance resulting from construction, air and ground operations or maintenance of existing roads, utilities, facilities, and targets;
- Noise, vibrations, and visual intrusions from construction, air and ground operations, or maintenance; and
- Access restrictions consistent with Air Force mission requirements.

Existing military targets, facilities, roads and utility lines would continue to be used. There would be no changes in military air traffic. Changes in the use of, or additions to, any of these range features would still require separate environmental analyses with associated impact assessments. Responsibility for such environmental analyses would remain with the overseeing agency (refer to Chapter 2.0).

***ALTERNATIVES 1B AND 2B — INDEFINITE AND 25-YEAR WITHDRAWAL/MODIFICATION OF LANDS AND/OR ADMINISTRATION***

For Alternatives 1B and 2B, potential sources of impacts to archaeological and architectural resources within all ROIs would be the continuation of those actions that have affected existing cultural resources since 1986. In addition, a portion of NAFR lands would be returned to BLM jurisdiction. Other portions of the withdrawn lands could be made available for recreation co-use. Potential sources of impacts include the following:

- Change in access rules;
- Alterations in land status;
- Transfer to a different governing land management policy;
- Ground disturbance resulting from military air and ground operations, military or civilian construction or maintenance activities, general civilian use (e.g., off-highway vehicles, grazing, mining), or maintenance of existing roads, utilities, facilities, and targets;
- Noise, vibrations, and visual intrusions from construction, air and ground operations, or maintenance.

### ***NO-ACTION ALTERNATIVE***

Under the No-Action Alternative, in ROI One and ROI Two all existing withdrawn lands would come under the jurisdiction of the BLM or DNWR (USFWS) and would be subject to those agencies' land use decisions. Potential sources of impacts to archaeological and architectural resources could include the following:

- Change in access rules, such as
  - possible increased access to some locations of sensitive cultural resources within ROI One and ROI Two; or a
  - change in traffic patterns.
- Alterations in land status as the result of a change in jurisdiction from Air Force to BLM and DNWR (USFWS).
- Transfer to a different land management policy that could allow
  - consumptive use (e.g., mining or grazing); or
  - non-consumptive use (e.g., hiking or off-highway vehicle use).
- Ground disturbance resulting from construction, air and ground operations, or maintenance.
- Noise, vibrations, and visual impacts resulting from construction, air and ground operations, or maintenance. These could include the following:
  - changes in the source of noise, vibration and visual intrusion;
  - continuation of military overflights; or
  - addition of effects from multiple use, such as mining machinery, recreational vehicles, or other civilian traffic.

Within ROI Three, potential sources of impacts for the No-Action Alternative could include reduction in noise, vibrations, and visual intrusions from overflights. Under No-Action military overflights would continue in the ROI Three airspace at a reduced level.

#### **4.9.1.2 GENERAL EFFECTS OF IMPACTS**

##### ***IMPACTS RELATED TO ACCESS***

Access to most of the existing military land withdrawal at NAFR is presently restricted. Anyone desiring entry to NAFR must coordinate access with range personnel. As a consequence of these restrictions, the general public does not have access to cultural resources on the range. However, under EO 13007 and agreements between the Air Force and local

tribes, American Indians are currently able to gain access to certain cultural resources on NAFR provided access corresponds to Air Force mission safety and security requirements.

Access to cultural resources on NAFR could potentially change from existing conditions in two ways: it could be made easier or more difficult. Either of these changes could lead to adverse effects, depending on the specific resource. For example, under a multiple-use management plan such as that governing BLM lands, access to cultural resources would be easier than under Air Force public access restrictions. Road construction on public lands associated with future permitted activities could also lead to improved access, although gates and fences might inhibit access in some locations.

Improved access for American Indians to traditional cultural resources might simultaneously lead to improved access for other people wishing to vandalize cultural resources. Also, increased recreational use of some areas might interfere with American Indian ceremonies or other traditional uses of sacred sites or other cultural resources.

Improved access, through opening an area to multiple use, construction of new roads, or improvement of existing roads, has the potential to increase vandalism. In a study of vandalism on archaeological sites in Colorado (Nickens et al. 1981), proximity to unpaved access roads proved to be a predictor for rates of vandalism (the closer to the road, the more likely the site would suffer vandalism). Purposefully destructive actions, such as unauthorized excavation and artifact theft, defacement, and illegal off-highway vehicle use, are prime sources of adverse effects to cultural resources (cf. U.S. Army Corps of Engineers 1992). Cultural resources could also be disturbed through inadvertent actions, such as people driving over a site. Increased vandalism could affect the types of cultural resources most likely to be determined eligible for nomination to the NRHP (e.g., historic buildings, large sites, rock shelters, or rock art). These resources are typically more visible than small lithic scatters or isolated artifacts.

Professional archaeologists and avocational archaeologists in the southern Nevada region have noted that outside the Nellis withdrawal lands, archaeological sites are likely to experience impacts from uses such as recreation and casual mining. For example, many rock art panels outside NAFR in southern Nevada have suffered impacts from graffiti, spray paint, removal or other intentional defacement. In contrast, the rock art sites on NAFR show relatively little defacement and may remain in a condition similar to what those outside NAFR might have been 100 years ago (personal communication, Myhrer 1998).

#### ***IMPACTS RELATED TO ALTERATIONS IN LAND STATUS***

According to the NHPA, changes in land status sometimes can adversely affect a significant cultural resource if, under the new owner or manager, the resource is protected by less stringent historic preservation laws or is not protected at all. Cultural resources protected under the NHPA and other federal laws and regulations (including AIRFA, NAGPRA, and EO 13007) would continue to have the same legal protection under any of the land withdrawal alternatives as well as the No-Action Alternative, despite any changes in jurisdiction. This is



because a federal agency would still manage the land and be obligated to comply with federal laws and regulations.

However, under the No-Action Alternative, the Las Vegas District BLM would receive an additional 2.2 million acres to manage, including protecting cultural resources. At the current funding level, the BLM would feel the impact on its budget. The majority of BLM funds targeted for cultural resources are used for compliance with Section 106 of NHPA (see section 4.9.2), with little or no funding available for Section 110 compliance. Although avocational archaeologists provide invaluable help to agency archaeologists monitoring the condition of cultural resources, they are too few to protect known cultural resources from deterioration and vandalism (personal communication, Myhrer 1997). The DNWR, managed by the USFWS, already is responsible for Section 110 compliance, so their acquisition of jurisdiction over approximately 846,000 acres would probably have little effect.

#### ***IMPACTS RELATED TO MODIFICATIONS IN LAND MANAGEMENT POLICY***

Under the No-Action Alternative, the military land withdrawal would end, although some restrictions to public entry could remain in hazardous areas or until hazardous waste and materials could be removed or otherwise rendered safe for human contact. Jurisdiction over much of the land within what was NAFR would be the responsibility of the BLM and USFWS. The BLM is committed to a multiple-use philosophy and could allow consumptive (e.g., mining, grazing) or non-consumptive (e.g., hiking, off-highway vehicle) uses of an area. Lands that would come under the jurisdiction of DNWR would probably be managed the same way non-overlapping lands are managed under the land withdrawal, i.e., as a *de facto* wilderness (see Wilderness and Wilderness Study Areas, section 3.11). This management policy restricts motorized vehicle use and construction of structures, while allowing people to have recreational access. The loss of NAFR sensitivity restrictions would be expected to result in a greater number of recreationalists on the DNWR.

#### ***IMPACTS RELATED TO GROUND DISTURBANCE***

Under the existing land status, ground disturbance could result from delivering explosive and non-explosive training ordnance, or dropping aircraft or missile parts from aircraft; transit of ground vehicles; use by military personnel of facilities for temporary or extended periods of time; target and earthworks use and maintenance; access road and utility line use and maintenance; or structure use and maintenance. These types of actions now occur on approximately 3 percent of the military land withdrawal. No actions not previously approved are included in the proposed action and alternatives. Any facilities not included in Air Force planning documents at the time of the NAFR LEIS would be subject to all applicable environmental regulations.

If the land is no longer part of the military land withdrawal, the land under BLM jurisdiction could be subject to ground disturbance from mining, grazing, off-highway vehicle use; construction; use and maintenance of new roads or trails; use and maintenance of other

facilities; and other consumptive or non-consumptive uses the BLM could permit under its multiple-use land management mandate. Ground disturbance could also result from cleanup activities associated with the removal of military facilities. This could include the removal of targets and other facilities, the cleanup of any hazardous waste sites dating to before modern disposal regulations, and removing unexploded ordnance from the live ranges. Any actions proposed by the BLM would be subject to all applicable environmental regulations. Because the DNWR is managed as a *de facto* wilderness area (refer to sections 3.11 and 4.11), ground disturbance on lands that would come under its jurisdiction would probably come from human foot traffic and camping.

#### ***IMPACTS RELATED TO NOISE, VIBRATION, AND VISUAL IMPACTS***

Studies have established that subsonic noise-related vibration damage to structures, even historic buildings, requires high decibel levels generated at close proximity to the structure and in a low frequency range (USFS 1992; cf. Battis 1983, 1988). Aircraft must generate at least 120 dB at a distance of no more than 150 feet to potentially result in structural damage (Battis 1988). For this analysis, the assessment of the potential for adverse effects to structures employs these decibel and proximity criteria.

A large, high-speed aircraft flying directly over a building had less than a 0.3 percent chance of damaging fragile structures such as wooden buildings (Sutherland 1990). In other words, the probability of an aircraft, such as a B-1B bomber, operating at 200 feet AGL at 540 knots true airspeed directly over such a structure, is extremely unlikely to cause damage. Operations at higher elevations would have a lower potential for causing damage as on-the-ground noise levels decrease as the aircraft's elevation rises. Structures offset from the flight track have an even lower probability of being affected by low-flying aircraft.

In a report to Congress entitled *Potential Impacts of Aircraft Overflights of National Forest System Wildernesses*, the USFS (1992) examined the issue of noise effects on historic resources. The study observes that "concerns that aircraft noise causes damage are based on speculation" and that the "evidence of potential damage risk is more theoretical than empirical" (USFS 1992). It goes on to indicate that most damage could be expected in already fragile and susceptible structures, such as adobe buildings. In this type of building, cosmetic cracks that could be caused by a number of factors such as weathering, natural settling, or noise vibrations, could be worsened through repeated exposure to noise. However, to cause immediate damage, the noise would have to have extremely high pressure levels (such as a sonic boom) and to have originated close to the structure, or to have a frequency that coincides with one or more of the structure's natural frequencies (USFS 1992).

Noise effects on buildings have been difficult to test and document in the field. However, thresholds for noise effects to architectural resources are generally agreed to "be specifically oriented to the frequency range below 30 Hz" (USFS 1992). A vibration study on a historic building at White Sands National Monument, New Mexico, determined that "medium level vibrations (1-20 mm/sec at 1-30 Hz) were the most dangerous" (King et al. 1988).

It is possible for sonic booms to adversely affect some cultural resources. Individual sonic booms vary considerably. The average boom pressure on the ground is normally about 1 pound per square foot (psf). Window breakage for overpressures on the order of 2 psf would be approximately 75 broken panes per million. Maximum overpressures of even 6 psf have an extremely low potential to damage structures or displace rocks (Battis 1983). Therefore, while there is some potential for sonic booms to cause window breakage in historic buildings, there is very low potential for structural damage to architectural resources or for displacement and breakage of the components of most archaeological resources.

The effects of noise on cultural resources may also be related to setting. Noise that affects setting may be caused by construction and maintenance of facilities and by machinery or vehicles. Aircraft noise and overflights can also potentially affect setting. To be adversely affected, the setting of a resource must be an integral part of the characteristics that qualify the resource for listing on, or eligibility for, the NRHP. Because of modern development, this is often not the case for significant cultural resources, especially in urban or semi-urban environments. Even in rural areas, noise intrusions from vehicles, farm machinery, and off-highway machines may create a noise environment that is unlikely to be consistent with the original setting of the property.

If the audible and visible aspects of the setting are fundamental to the resource's significance, then the nature and magnitude of potential impact from audible or visual intrusions on that setting can be evaluated. Intrusions sufficient to alter the setting can adversely affect the resource. The nature and magnitude of the impacts depend upon the characteristics of the affected cultural resource, the amount by which the sound level exceeds baseline noise levels, the other types of noise sources in the vicinity of the cultural resource, and the frequency with which people visit the resource.

With the military land withdrawal, cultural resources in ROIs One, Two and Three are subject to effects from noise, vibration and visual impacts. These conditions would not change with Alternatives 1A, 1B, 2A, or 2B. Under the No-Action Alternative, there could be as much as a 50 percent reduction in military aerial activity, and all effects related to military ground activity would cease. There could also be noise, vibration, and visual impacts stemming from some activities allowed on land that would come under BLM jurisdiction, such as mining or off-highway vehicle use. Land that would be the sole responsibility of DNWR (USFWS) would probably experience approximately one-half the current noise, vibration, or visual impacts.

#### **4.9.1.3 GENERAL SOURCES OF IMPACTS AND THEIR EFFECTS ON TRADITIONAL CULTURAL RESOURCES**

Most potential sources of impacts to traditional cultural resources, including those that are not NRHP-eligible, are essentially the same as those associated with archaeological and architectural resources: access-related impacts; changes in land status; change in land management policy; ground disturbance; and noise, vibrations, and visual intrusions. However, the significance or severity of the impact must be assessed in part through

consultation with representatives of the concerned American Indian groups. Certain areas could be frequently used for traditional purposes, while others could be used on a less frequent basis and may be of less immediate concern to American Indians.

As with archaeological and architectural resources, impact analysis for traditional cultural resources requires identifying significant traditional resources potentially affected by an action, determining the effects of that action, and implementing, if possible, measures to avoid or mitigate adverse effects. For this reason, the Air Force has implemented a Native American Interaction Program (NAIP). Under this program, the Air Force is conducting on-going discussions with members of the CGTO addressing the potential effects of the alternatives.

#### ***ACCESS***

Two aspects of access are of concern to the CGTO (AIWS 1997). First, many American Indians do not want restrictions placed on their access to traditional cultural resources. Although the Air Force is committed to working with the CGTO, it must find a balance between the needs of the Air Force mission, safety, and the traditional concerns of the CGTO. Visiting traditional cultural resources is an important part of some American Indian religious activities. Second, the CGTO is concerned that improved roads or loss of restricted access in some locations could increase visitation to sensitive locations by non-Indians. This could lead to vandalism and to interference with American Indian ceremonies.

#### ***ALTERATIONS IN LAND STATUS AND MODIFICATIONS IN LAND MANAGEMENT POLICY***

The CGTO recognizes the protection offered by the restricted status of lands on NAFR (AIWS 1997). Transference of jurisdiction to another federal agency, while offering the same protection under the law, could result in different effects on traditional cultural resources. The BLM's multiple-use mandate from the FLPMA could result in adverse effects to traditional cultural resources from intrusive activities such as mining, grazing, off-highway driving, hiking, and camping. The DNWR, while imposing few access restrictions on its lands, generally prohibits motorized vehicle traffic and development so that adverse effects would be limited to those that might stem from hiking and camping.

#### ***GROUND DISTURBANCE***

Aspects of all five range development alternatives that could disturb the ground have the potential to disturb traditional cultural resources in the area. American Indian archaeological sites are often traditional cultural resources, but non-archaeological traditional cultural resources (e.g., natural features, native animal or plant species) may also be disturbed.

#### ***NOISE, VIBRATION, AND VISUAL IMPACTS***

Noise could potentially affect traditional cultural resources in a variety of ways (AIWS 1997). For example, traditional ceremonies and rituals by members of tribes included in the CGTO often depend on isolation, solitude, and silence. An aircraft flying overhead, even at very high

altitudes, may be deemed an intrusion by members of the CGTO. Overflights and vehicle traffic can be very disruptive for American Indians engaged in ceremonial activities, sometimes preventing these activities from being conducted at certain locations.

#### **4.9.2 Compliance with NHPA, Section 106**

In preparing this LEIS, the Air Force is complying with NEPA, NHPA and associated regulations (36 Code of Federal Regulations [CFR] 60.4, 36 CFR 800) that require that effects to cultural resources from federal actions be taken into consideration as part of the decision-making process. NHPA requires that federal agencies considering undertakings go through consultations with the SHPO and the Advisory Council on Historic Preservation (ACHP). This process also requires that concerns of interested parties, such as the CGTO, be considered. The Air Force is conducting government-to-government consultation with each of the American Indian groups who comprise the CGTO.

During initial NEPA consultations with the Nevada SHPO regarding renewal of the military land withdrawal, the Air Force indicated they would prepare a comprehensive CRMP in compliance with AFI 32-7065 and NEPA (refer to section 3.9) (Air Force 1997c).

The NHPA's Section 106 review process consists of consultation with the SHPO, cultural resources inventory (site identification), evaluation of each cultural resource's eligibility for listing in the NRHP, determination of effect, and avoidance or mitigation of impacts. The Nellis AFB CRMP (Air Force 1997c) outlines procedures for complying with Section 106 in the context of the management of all cultural resources on Nellis AFB and NAFR. The CRMP presents these procedures under the following general categories:

- Determine eligibility and nominate appropriate cultural resources for NRHP listing.
  - identify cultural resources and determine whether they meet any NRHP criteria. The Nellis five-year plan addresses the identification process.
- Determine steps to reduce or mitigate adverse effects. Implementation of a mitigation plan might not prevent all cultural resources from being disturbed, but would recover scientific and historical data from affected sites, which would mitigate their loss. Data recovery might not mitigate the loss of a traditional cultural resource.
  - forward determination and mitigation proposals to the SHPO for review, and
  - in some instances, nominate resources for listing on the NRHP.
- Develop monitoring and mitigation objectives.
  - a mitigation plan would also address long-term management of cultural resources, ensure that cultural resources are not inadvertently damaged by other activities, and provide measures to prevent or reduce vandalism.
- Program survey efforts, including identifying areas with the potential for significant resources.

- Develop a five-year plan that prioritizes Section 106 and Section 110 compliance.
- Develop a Memorandum of Agreement or programmatic agreement with the SHPO for addressing cultural resource issues and areas of concern such as the following:
  - American Indian concerns;
  - ARPA compliance;
  - preservation and mitigation strategies;
  - identification of traditional cultural properties and resources;
  - survey of historic buildings and Cold War facilities;
  - potential cultural resource management impacts to the Air Force mission or Nellis programs;
  - unexpected discoveries of archaeological materials;
  - hazardous spill impacting cultural resources; and
  - consultation procedures.
- Continue coordinating efforts with the CGTO as part of the Nellis AFB NAIP.

### **4.9.3 Alternative 1A — Indefinite Withdrawal**

Under this alternative, the Air Force would continue to operate the NAFR as it has since 1986. Existing MOUs between the Air Force and other agencies with whom the Air Force shares jurisdiction would remain in force. The Air Force would continue to fulfill its Section 110 obligation for existing lands, and would conduct Section 106 inventory as part of environmental documentation as the need arises. Compliance procedures would be guided by the Nellis AFB CRMP (Air Force 1997c). This configuration would continue indefinitely, although it would be subject to periodic review.

#### **4.9.3.1 ARCHAEOLOGICAL RESOURCES**

Prior to the military land withdrawal, the lack of roads, sparse regional population, and absence of vehicles capable of traveling the rough terrain contributed to the preservation of cultural resources through isolation.

Following the 1940 military land withdrawal, and for the ensuing years, archaeological resources were either directly affected by ground-disturbing military operations or were left in their undisturbed condition. Disturbances from military operations generally occurred within approximately 3 percent of the land withdrawal (section 4.9.1). Some of the archaeological resources within these limited areas may have been damaged to such an extent that, regardless of their condition prior to the military land withdrawal in 1940, they no longer have any potential to be eligible for nomination to the NRHP. However, other archaeological resources located within ROI Two outside of the areas of ground disturbance, have been subject to noise

vibration, visual intrusion, and dropping ordinance. Within ROI Three outside of NAFR boundaries, the effects to archaeological resources from military activities are limited to noise, vibration, and visual intrusion.

Under Alternative 1A, those archaeological resources in ROI One that have been previously affected by ground-disturbing actions on NAFR would continue to experience the same effects. Because no additional actions that would affect archaeological resources are included in Alternative 1A, cultural resources outside the areas of ground disturbance but within the withdrawal (ROI Two), would experience the same effects as today. Archaeological resources in ROI Two include one NRHP-listed site, one NRHP-eligible site, and up to 15 historic mining districts that may include archaeological remains and may also be NRHP-eligible. Their NRHP eligibility would remain unchanged. Cultural resources under the airspace outside of NAFR boundaries (ROI Three) would also experience no change in impacts or NRHP eligibility from NAFR activities. Archaeological resources listed on the NRHP include two archaeological districts and 106 historic ghost towns that could include archaeological deposits.

#### **4.9.3.2 ARCHITECTURAL RESOURCES**

There may be as many as 15 historic mining sites and complexes within ROI Two on NAFR that retain excellent integrity and meet eligibility requirements for the NRHP. A portion of the NRHP-eligible Las Vegas and Tonopah Railroad (LV&T) railbed also passes through ROI Two. Under Alternative 1A, potential effects to architectural resources would remain the same as today. Under the airspace beyond the NAFR boundaries, there are four buildings and one historical district listed on the NRHP, as well as three eligible historic architectural resources and 106 historic ghost towns that may be architectural resources. Because no changes are proposed for the use of airspace, there would be no change in impacts on historic architectural resources within ROI Three from NAFR activities.

#### **4.9.3.3 TRADITIONAL CULTURAL RESOURCES**

As part of the Native American Interaction Program the Air Force is working with members of the CGTO to collect information on traditional cultural resources throughout NAFR. This information is confidential and still being compiled. The results of studies so far are that there are numerous traditional cultural resources throughout the military land withdrawal that is NAFR. These include a wide variety of resources and site types, as described in section 3.9.5. Known traditional cultural resources include all aspects of the natural environment, such as naturally occurring rocks, plants, animals, water, and air. Properties also may be archaeological locations such as rock shelters, rock art, quarry locations, or campsites.

As with other cultural resources, the effects of this alternative would be mixed. Members of the CGTO (AIWS 1997) feel that present Air Force military actions adversely affect traditional cultural resources, that Alternative 1A would continue to adversely impact traditional cultural resources, and that damage would increase and spread through continued ground disturbance, noise, vibrations, and visual intrusions. Also, because access would continue to be restricted,

American Indians would still need to schedule planned or desired use of specific areas within the military withdrawal. This limitation on access is considered an adverse effect by the CGTO, because the lands are traditional territory. However, through the NAIP, the Air Force is committed to finding equitable solutions to the Indians' need to have access to NAFR. Members of the CGTO also recognize that a benefit of this access restriction is that traditional cultural resources are protected from vandalism and casual destruction.

Beneath the airspace beyond the NAFR boundaries, impacts to traditional cultural resources could continue to be caused by noise and visual intrusions from military overflights, but the impacts would be no greater than baseline conditions.

#### **4.9.4 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

This alternative resembles Alternative 1A in that it proposes a land withdrawal for an indefinite period, and the Air Force would continue to operate the NAFR as it has since 1986. However, under this alternative there would be changes in the withdrawal. A portion of land, including part of the Clarkdale and Wagner Mining Districts, would return to BLM administration. MOUs between the Air Force and other agencies with whom the Air Force shares jurisdiction (i.e., DOE, USFWS) could be revised, and jurisdiction and land management issues would be resolved with those agencies that now share responsibility for environmental compliance within the range. The Air Force would continue to fulfill its Section 110 obligation for existing lands for which it is responsible, and would conduct Section 106 inventory as part of environmental documentation as the need arises (cf. Air Force 1997c). This configuration would continue indefinitely, although it would be subject to periodic review.

##### **4.9.4.1 ARCHAEOLOGICAL RESOURCES**

As was the case for Alternative 1A, archaeological resources that were undisturbed prior to the military land withdrawal in 1940 either continued in their undisturbed state or were directly affected by ground-disturbing military operations. These disturbances occurred in circumscribed areas (ROI One) constituting little of NAFR, and may have resulted from construction, use and maintenance of targets, associated facilities (e.g., emitters, scoring locations), access roads and utility lines, and personnel facilities.

Outside of ROI One but still within the military land withdrawal (ROI Two), archaeological resources have not experienced major ground disturbing effects but could have been affected by military activities. Within ROI Three, not including ROI One, effects on archaeological resources resulting from military activities are limited to noise, vibration, and visual intrusion.

Under Alternative 1B, as for Alternative 1A, those archaeological resources that have been previously adversely affected by ground disturbance on NAFR would continue to experience the same effects. One NRHP archaeological site and 16 that are NRHP-eligible are within ROI Two.



Under Alternative 1B, anticipated effects could occur from increased co-use recreation access and from non-renewal. One important feature would be a change in jurisdictional obligations, particularly with regard to which agency would have responsibility for NHPA compliance. All federal agencies have similar legal responsibility toward cultural resources under the NHPA and other laws and regulations, but land use policies and law enforcement funding availability varies from agency to agency. A change in jurisdiction could also lead to changes in public access to the land. The majority of NAFR would remain under Air Force jurisdiction, and thus would not be affected under Alternative 1B. In cases where access rules would change, such as the Clarkdale and Wagner Mining Districts or co-use recreational areas, archaeological resources could potentially be subject to adverse effects such as vandalism and erosion from increased access.

Cultural resources under the airspace outside of NAFR boundaries would not experience any change in impacts or NRHP eligibility under Alternative 1B. Two NRHP districts and 106 NRHP-eligible sites are within ROI Three.

#### **4.9.4.2 ARCHITECTURAL RESOURCES**

There may be as many as 15 historic mining sites and complexes, and a historic railbed within ROI Two that retain excellent integrity and meet eligibility requirements for the NRHP. Under Alternative 1B, any cultural resources in nonrenewal land or subject to co-use access have a greater potential for impact. Under the airspace outside the NAFR boundaries, there is one NRHP architectural district, four NRHP properties, and 109 NRHP-eligible architectural sites within ROI Three. Because no changes are proposed for the use of airspace, there would be no effect on historic architectural resources under Alternative 1B.

#### **4.9.4.3 TRADITIONAL CULTURAL RESOURCES**

As part of the NAIP, the Air Force is working with members of the CGTO to collect information on traditional cultural resources throughout NAFR. This information is confidential and still being compiled. The results of studies so far indicate that there are numerous traditional cultural resources throughout the military land withdrawal that is NAFR. These include a wide variety of resources and site types, as described in sections 4.9.1.3 and 3.9.5.

For traditional cultural resources on most of NAFR that remain under the jurisdiction of the Air Force under Alternative 1B, potential impacts would be the same as described for Alternative 1A.

Changes in land status through non-renewal of a portion of land or co-use could also affect traditional cultural resources. If any specific land is not renewed, such as the Clarkdale Mining District, traditional cultural resources that might be in this area would no longer be protected by restricted access, and would be exposed to a greater potential for vandalism or other forms of disturbance. BLM is committed by philosophy, as well as obligated by law, to the preservation of traditional cultural resources. However, BLM is generally responsible for multiple uses on lands under its jurisdiction. Cultural resources in other areas that might be

opened to recreation could be subject to vandalism or unintentional disturbance by recreational users of the area. Finally, for lands that would continue to have restricted access, changing jurisdiction from the Air Force to another federal agency (e.g., DOE) might require that the CGTO establish a relationship with the new agency to gain access to traditional cultural resources.

Members of the CGTO feel that Air Force military actions adversely affect traditional cultural resources, that Alternative 1B would continue to adversely impact traditional cultural resources, and that damage would increase and spread through continued ground disturbance, noise, vibrations, and visual intrusions (AIWS 1997).

Beneath the airspace beyond the NAFR boundaries, impacts to traditional cultural resources under Alternative 1B would continue to be caused by noise and visual intrusions, but the impacts from Air Force activities would be no greater than baseline conditions.

#### **4.9.5 Alternative 2A — 25-Year Withdrawal**

Under this alternative, the Air Force would continue to operate the NAFR as it has since 1986. Existing MOUs between the Air Force and other agencies with whom the Air Force shares jurisdiction would remain in force. The Air Force would continue to fulfill its Section 110 obligation for existing lands, and would complete the Section 106 process as part of environmental documentation as the need arises. This configuration would continue for 25 years, at which time the range renewal process would be repeated.

With the exception of the military land withdrawal expiring in 25 years instead of extending for an indefinite period, Alternative 2A is the same as Alternative 1A. Archaeological, architectural, and traditional cultural resources within the military withdrawal that have been undisturbed for the past 50 years would probably continue to be undisturbed. Some of the resources in areas intensively used by the military prior to the institution of environmental laws may no longer have the potential to be eligible for nomination to the NRHP. The NRHP eligibility of any archaeological resources under the airspace outside the NAFR boundaries would not change because of Air Force activities under this alternative.

#### **4.9.6 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

This alternative is the same as 1B except that it proposes a 25-year withdrawal. The Air Force would continue to operate the NAFR as it has since 1986. However, as under Alternative 1B, there could be some nonrenewal of land in portions of the Clarkdale and Wagner Mining Districts to the BLM. Existing MOUs between the Air Force and other agencies with whom the Air Force shares jurisdiction (i.e., DOE, USFWS) could be revised, and jurisdiction and land management issues would be resolved with agencies that now share responsibility for environmental compliance within the range. The Air Force would continue to fulfill its Section 110 obligation for existing lands for which it is responsible, and would complete the Section 106

process as part of environmental documentation as the need arises (cf. Air Force 1997c). This configuration would continue for 25 years, at which time the range renewal process would be repeated.

#### **ARCHAEOLOGICAL RESOURCES**

Environmental consequences to archaeological, architectural, and traditional cultural resources would essentially be the same as those described for Alternative 1B.

#### **4.9.7 No-Action Alternative**

Under this alternative, NAFR would close and all military ground activity would cease. In some cases, effects on cultural resources directly related to the cessation of activity could be considered either non-adverse or positive, although some effects could be considered ambiguous. In particular, ground-disturbing activities stemming from military activities, such as use and maintenance of facilities, including targets, roads, and utility lines, would no longer occur, and access to most cultural resources would no longer be restricted.

Balancing these beneficial or ambiguous effects are the potential adverse effects from losing exclusion and transferring jurisdictional responsibilities to other agencies. These agencies, including BLM, USFWS and DOE, operate under the same federal laws and regulations protecting cultural resources as other federal agencies and are equally committed to complying with Sections 106 and 110 of the NHPA.

Under the No-Action Alternative the following effects could occur:

- Access to cultural resources might be improved, possibly allowing American Indians unrestricted use of some traditional cultural resources and providing educational opportunities to the public.
- Opening access to areas throughout the existing military land withdrawal would increase the potential for cultural resources to be looted, vandalized, or affected by erosion from roads and trails.
- Mining exploration or exploitation, if allowed on BLM-managed land could potentially impact cultural resources, including historic mining sites and complexes.
- Grazing livestock, where permitted by the managing agency, can trample artifacts and cause increased erosion, both of which may damage cultural resources.
- Plowing or other mechanical activities associated with agriculture can disturb the surface and subsurface deposits of a cultural resource.
- Recreation, including rockhounding, hunting, and hiking, could expose cultural resources to damage from inadvertent trampling, erosion from roads and trails, and vandalism.

- Traffic, including recreational vehicles and vehicles used in mining or ranching, could cause visual and noise intrusions.
- Cultural resources would still be subject to noise, vibration and visual intrusion from aircraft overflights, although overflights under the No-Action Alternative are expected to be approximately 50 percent of the typical annual 1986 to 1995 levels (see Appendix A).
- Military resources less than 50 years old and of special significance (e.g., Cold War-related) might require documentation and monitoring in compliance with the NHPA.
- Cleanup of explosive and other possible hazardous materials required in some locations could potentially damage cultural resources.

#### **4.9.7.1 ARCHAEOLOGICAL RESOURCES**

The No-Action Alternative has the potential to affect all significant archaeological resources present in the NRC. Some effects might be considered neutral, while others may be adverse, beneficial, or a combination of both. Under ROIs One and Two, there are an estimated 1,800 known cultural resources on the 3 percent of NAFR that has been surveyed for cultural resources. This includes one that is listed on the National Register and 16 that are eligible. The majority of the remainder have not been evaluated for NRHP eligibility. Under the airspace of ROI Three, there are two NRHP districts, and an unknown number of archaeological resources that may be eligible for nomination to the NRHP.

*Access.* Removing restricted access to as much as 3 million acres within ROI Two could have an adverse effect on archaeological resources. Sites that have been undisturbed for more than 50 years could be exposed to a variety of impacts. Because of improved public access, deliberate vandalism at some sites could potentially be the most significant adverse effect that might result. Looters can destroy any archaeological site in a few hours. People ignorant of the law, who collect surface artifacts, also damage sites. Other adverse effects could arise from less intentional damage, including driving or walking across a site or erosion of a site caused indirectly by roads or trails nearby.

A potential benefit to lifting access restrictions on this large area would be possible opportunities to add to the public's knowledge of the history of southern Nevada. These opportunities could arise from research done as part of agency compliance with environmental laws invoked by a proposed undertaking.

*Alterations in Land Status.* Many archaeological resources within ROIs One and Two would be affected by the alteration in land status under the No-Action Alternative. However, if the responsibility for compliance with Sections 106 and 110 reverts to the BLM or to another federal agency, the resources would still be protected by federal laws (in the case of DNWR, the USFWS already has Section 110 responsibilities). Transfer of jurisdiction would not be an

adverse effect. However, as discussed in section 4.9.1, protection by policy and law does not afford the same protection from vandalism as restricted access.

*Modifications in Land Management Policy.* Although archaeological resources would retain protection under federal laws regardless of the federal agency controlling them, the resources could be exposed to adverse effects resulting from the multiple uses allowed on the land. Recreation, mining exploration, agriculture, and grazing could all expose archaeological cultural resources to adverse effects.

*Ground Disturbance.* Various future activities could cause ground disturbance on archaeological sites. However, any future undertakings requiring federal permits would also require compliance with the appropriate environmental laws and regulations, including the NHPA and the ARPA, probably with the BLM or USFWS as the lead agencies. Compliance would probably include mitigation of impacts to significant cultural resources. These undertakings could include grazing, mining, cleanup and removal of Air Force facilities, construction of transmission corridors, or construction of agency facilities (e.g., BLM or USFWS). Activities that do not generally require specific permits, such as off-highway vehicle use, and other recreational activities, could potentially disturb archaeological sites without requiring the mitigation of adverse effects.

*Noise, Vibrations, and Visual Impacts.* The No-Action Alternative would not affect the existence of special use airspace in southern Nevada. Archaeological resources could still be subject to noise, vibrations, and visual impacts from military aircraft overflights. The Air Force would no longer use roads or facilities within what was NAFR and any noise or vibrations from this use would cease. However, depending on the specific land-use policies and recreation plans of the BLM and USFWS, the archaeological resources could still be subject to noise from commercial or public use of the existing road network and nearby land. Off-road vehicles, mining activities, construction, and use of BLM facilities could also all contribute noise and visual impacts. As was discussed in section 4.9.1, how these impacts would affect the NRHP eligibility of archaeological sites would depend on the individual resource's characteristics. In general, noise, visual and vibration effects do not adversely impact the NRHP status of archeological resources.

#### **4.9.7.2 ARCHITECTURAL RESOURCES**

The No-Action Alternative would affect architectural resources within the NRC. On ROI One and ROI Two, as many as 15 historic mining sites and complexes and the LV&T railbed could be subject to effects related to access and changes in land status as well as land management policy. Historic mining structures in areas that may be reopened for further exploration and mining could be damaged by modern mining practices, although some of those adverse effects could be mitigated when the agency complies with Section 106 of NHPA. Access by recreational users, including rockhounds and recreational miners, could also damage historic architectural resources through vandalism, erosion, or inadvertent disturbance.

Architectural resources within ROI Three could experience a decrease in noise, vibration and visual intrusion from military overflights. This would be a neutral or beneficial effect from the No-Action Alternative.

#### **4.9.7.3 TRADITIONAL CULTURAL RESOURCES**

There are numerous traditional cultural resource areas throughout NAFR (section 3.9.5). As part of the NAIP, the Air Force is working with members of the CGTO to collect information on traditional cultural resources throughout NAFR. This information is confidential, and still being compiled.

The No-Action Alternative has the potential to adversely affect traditional cultural resources. As with other cultural resources, the effects could be mixed. American Indians and others would probably have free access to most of the former military land withdrawal. American Indians could use traditional areas at their own discretion. However, increased access by non-Indian people could lead to intentional or unintentional physical damage to traditional cultural resources. In addition, public or commercial access could result in loss of privacy during American Indian religious ceremonies or other special occasions .

Traditional cultural resources would remain under federal laws and regulations, but non-exclusive use could mean these resources might not receive the same level of protection. BLM and USFWS are obligated by law to the preservation of traditional cultural resources, but neither agency has the exclusive use requirement of the Air Force.

While the Air Force would no longer be the source of ground disturbance, disturbance could still result from multiple uses. The lands that would become the sole responsibility of DNWR (USFWS) would probably still have access restrictions in line with the purpose of the wildlife refuge, but these would be less restrictive than under the Air Force/DNWR joint management. In addition, the Air Force could still use the existing MOA and redesignated airspace, contributing to noise, vibrations and visual impacts. Because the Air Force would still be at Nellis AFB, the NAIP would continue and the Air Force would continue to consider the needs of American Indians while carrying out its mission.

#### **4.9.8 American Indian Concerns**

##### **4.9.8.1 OUTREACH PROCESS**

The Nellis Environmental Management Directorate has initiated a NAIP that solicits information from Indian people who have concerns about the NAFR and Nellis AFB lands. Since 1996, American Indians from the CGTO have been closely involved in inventory, documentation and discussions of traditional cultural resources. The primary goal of the alliance is the preservation of traditional cultural resources.

#### 4.9.8.2 ISSUES

In the NARD (AIWS 1997), produced as part of the EIAP for the NAFR land withdrawal renewal LEIS, the CGTO outlined a series of issues and concerns. These are briefly listed below.

- *Centrality and Continuity.* The NAFR comprises a portion of lands seen by the CGTO as traditionally central to the functioning of American Indians from as far away as southern California.
- *Usurpation of All Resources.* The CGTO sees the military land withdrawal as a continuation of the process that began with moving American Indians onto reservations and off the land, thereby causing a complete disruption of their way of life.
- *Air Pollution and Radiation.* The CGTO has argued that certain activities on Air Force withdrawn lands may have adversely affected air, the land, and rocks, making food or other resources gathered from those areas unusable.
- *Environmental Justice.* According to the CGTO, Air Force activities on Nellis constitute sacred land violations and cultural survival violations (see section 4.14).
- *Socioeconomic Issues.* The NARD (AIWS 1997) identified socioeconomic issues as being relevant to the NAFR. The following list is discussed in more detail in the NARD (AIWS 1997):
  - American Indian region of influence;
  - American Indian education;
  - farming and ranching;
  - mining;
  - political integration and community cohesion; and
  - transportation and tribal enterprises.
- *Programs.* Certain Air Force programs are of special concern to American Indians, specifically:
  - EC programs;
  - hazardous materials and waste; and
  - environmental restoration programs (ERPs).

#### **4.9.8.3 TRADITIONAL CULTURAL RESOURCES**

The NARD (AIWS 1997) suggests an approach to continued Air Force jurisdiction under Alternatives 1A, 1B, 2A, or 2B. The document does not provide an alternative approach if the No-Action Alternative were to be selected.

The essence of the suggested approach is an MOU between CGTO and the Air Force that reflects the mission of the Air Force at Nellis while incorporating culturally sensitive approaches used to further expand the focus and long-term functioning of the NAIP. As presented by the CGTO (AIWS 1997), the program would include systematic studies of American Indians; inclusion of American Indian monitors; and the identification, evaluation and monitoring of cultural resources, sacred sites, and traditional cultural resources located on NAFR.

Roles and responsibilities for stewardship of cultural resources would be spelled out in the MOU. In some cases, important cultural or ceremonial areas could be set aside and protected, to be used exclusively by Indian people from the CGTO to conduct ceremonies, collect foods and medicines, and to serve as an educational vehicle necessary for perpetuating American Indian culture. No military training exercises or ground disturbing activities would be permitted within the protected area, and the Air Force would initiate protective measures to avoid further disturbance to these and other culturally sensitive areas. American Indians would also be included in environmental restoration programs, including revegetation and reclamation programs.

#### **4.9.8.4 ACCESS**

Two aspects of access are of concern to the CGTO (AIWS 1997). First, many American Indians do not want restrictions placed on their access to traditional cultural resources. Visiting traditional cultural resources is an important part of some American Indian religious activities. Although the Air Force is committed to working with the CGTO, it must find a balance between the requirements of its mission and the traditional concerns of the CGTO. Second, members of the CGTO are concerned that improved roads and the lifting of access restrictions in some locations may cause increased visitation to sensitive locations by non-Indians. This could lead to vandalism and to interference with ceremonies. The CGTO recognizes the conflicting aspects of this issue: their desire for unlimited access and the protection provided by restricted access.



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and use is interrelated with other environmental resources including biological, cultural, recreation and visual, and socioeconomic resources.

Any modification to land status has the potential for impacting land use or transportation. Assessment of the continued use of NAFR on individual land uses requires identification of the other uses and determination of the degree to which they would be affected.



# LAND USE AND TRANSPORTATION

4.10

## LAND USE AND TRANSPORTATION

Under Alternatives 1A and 2A, land use and land status would remain unchanged. Land status and military activities would continue on the withdrawn lands. Land management plans would remain unchanged. Overlapping withdrawals of NAFR and DNWR lands would remain, and special use areas would continue to be managed under the appropriate land management plan. Access to NAFR would continue at the same level and general transportation activity in the region as well as jurisdiction of roads would remain unchanged.



*Under No-Action, selected areas, including live target areas on the South Range, would have limitations to access until all safety issues were resolved.*

Under Alternatives 1B and 2B, land status and land use would potentially be selectively altered. The Air Force would not withdraw up to 50 percent of the Nevada Senate Joint Resolution 25 mining district or approximately 30,000 to 35,000 acres of land along the western border of NAFR. These changes would permit BLM multiple use management to open areas for mining, recreation, or other land uses. Alternatives 1B or 2B could also adjust DOD and DOE jurisdiction in specific areas. Such adjustments could have a minimal impact on existing land use patterns.

Alternatives 1B or 2B could also execute an administrative realignment of specific areas between the Air Force and DOE. Under these alternatives, those Air Force lands described as Pahute Mesa would transfer to DOE; the land withdrawn by PLO 1662 would transfer from DOE to the Air Force and be included in NAFR.

Under the No-Action Alternative, up to 3 million acres would be returned to DOI administration and management. The Air Force would cease all military-related land use, including enforcement of access restriction in most areas. Access to some areas may continue to be restricted for health and safety reasons until such areas are cleared of health risks. Uses consistent with BLM management policies would likely predominate, including grazing, mining, and recreation. These changes to land status and land use would be expected to impact nearly all other environmental resources that have been essentially isolated from access for 50 years.



*Access to NAFR is limited for safety and security reasons to escorted specific-objective travel. This would continue under any action alternative.*

## 4.10 LAND USE AND TRANSPORTATION

This section focuses on the consequences of the proposed action and alternatives on land ownership or land status, general land use patterns, land management plans, and special use areas, including roads. The land withdrawal renewal action alternatives do not have any increase of land withdrawn for military purposes. As described in section 2.2, land areas have been identified that could be returned to BLM for multiple use and that could be used for recreational co-use with certain Air Force mission constraints.

Any modification to land ownership or status is considered for possible impact. Assessment of the withdrawal impacts on individual land uses requires identification of the other uses and determination of the degree to which they would be affected. Similarly, modification of use or management of these lands is analyzed for impact.

Within BLM resource areas lie special use areas with unique management objectives including Areas of Critical Environmental Concern (ACECs), Special Recreation Management Areas (SRMAs), and others, as discussed in section 3.10.3. Impacts on management and status of these areas are considered. Impacts to Wilderness Study Area (WSAs) are discussed in section 4.11. Effects on users of recreation areas are discussed in section 4.12. Overflight impacts on wildlife are discussed in section 4.8, Biological Resources.

The Air Force has a series of MOUs with the USFWS to address management concerns regarding overlapping withdrawal of portions of the DNWR. These MOUs include Air Force operational actions to support DNWR responsibilities (see section 2.4).

### 4.10.1 Alternative 1A — Indefinite Withdrawal

Under Alternative 1A, land use and land status would remain unchanged and would be as described for baseline conditions in section 3.10.

Military activities would continue on the withdrawn lands. Land management plans would remain unchanged. Overlapping withdrawals of NAFR and DNWR lands would remain, and special use areas would continue to be managed under the appropriate land management plan as described in section 3.10. Access to NAFR would continue at the same level and general transportation activity in the region as well as jurisdiction of roads would remain unchanged.

Aircraft test and training activity over lands under the NRC, including WSAs and other special use areas, would continue at historic levels. No change in overflights or change in land use is anticipated. No change in vehicular or general aviation transportation is proposed.

## **4.10.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

### **4.10.2.1 LAND STATUS AND LAND USE PATTERNS**

Under Alternative 1B, land status would be altered in specific locations. The Air Force would withdraw approximately 3 million acres, resulting in the non-renewal of a portion of the Clarkdale and Wagner Mining Districts and approximately 30,000 to 35,000 acres of land along the western border of the current NAFR.

Establishment of this alternative would have a localized impact on existing land use patterns. Although some lands would no longer be used for military purposes, they would most likely assume the land uses of the surrounding area. These uses include livestock grazing, mining, and recreation.

This alternative also provides for short-term co-use for mission-compatible, environmental resource management, American Indian religious or cultural activities, recreation, and other uses in certain areas. Each of these activities would be planned on an annual basis and would be subject to change based on safety and security requirements. Mud Lake, Kawich Range or EC South have been identified as co-use locations. The activities associated with these areas would be recreational in nature.

The lands described as Pahute Mesa, and other lands subject to the MOU between the Air Force and DOE (PLO 1662), could be realigned or withdrawn as part of this Congressional action.

### **4.10.2.2 LAND MANAGEMENT PLANS**

Land management plans of the BLM would be reviewed for co-use management under this alternative. Appropriate amendments to the land management plans and agreements between the Air Force and BLM would be prepared to accommodate the potential co-use of portions of NAFR. Additional MOUs and associated planning documents would likely be entered into between the Air Force and the USFWS for coordination near DNWR.

A series of administrative changes would be required to implement co-use of certain areas. The Air Force and other key agencies would function as part of the Five-Party Cooperative Agreement for information exchange and advice on environmental management issues on NAFR and adjacent areas.

### **4.10.2.3 SPECIAL USE AREAS**

Special use areas within associated airspace would be largely unaffected by this alternative. General transportation activity in the region, as well as the jurisdiction of roads, would remain unchanged. Co-use areas that would be accessible to the public as discussed above, would be accessible on existing roads. Anticipated vehicular use levels would remain near their current levels.

### **4.10.3 Alternative 2A — 25-Year Withdrawal**

Under Alternative 2A, the effects on land use and status, land management plans, and special use areas would be as described in section 4.10.1. This alternative differs from Alternative 1A only in the duration of the withdrawal.

### **4.10.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

Under Alternative 2B, the effects on land use and status, land management plans, and special use areas would be as described in section 4.10.2. This alternative differs from Alternative 1B only in the duration of the withdrawal.

### **4.10.5 No-Action Alternative**

Under the No-Action Alternative, Congressional action would close NAFR and result in no land withdrawal for military purposes. The Air Force would anticipate continuing the use of the special use airspace for air-to-air operations. This would result in no air-to-ground activities on what was NAFR.

#### **4.10.5.1 LAND STATUS AND LAND USE PATTERNS**

Under this alternative, land status would be altered substantially. Approximately 3 million acres would be returned to DOI administration and management. BLM would have jurisdiction over land use on the North Range and USFWS would have sole jurisdiction over most of the South Range. DOE and Air Force activities for decontamination are expected to continue on some lands. On most of the former NAFR, other uses consistent with BLM or USFWS management policies would predominate. On BLM lands, these uses may include grazing, mining, and recreation.

#### **4.10.5.2 LAND MANAGEMENT PLANS**

Impacts to land management plans would include an extensive amendment to the Caliente Management Framework Plan to recognize the additional land area within the BLM's jurisdiction. Uses, policies, and programs would need to be developed and a plan amendment would be processed in accordance with federal regulations (43 CFR Part 1600). These regulations establish a process for the development, approval, maintenance, amendment and revision of BLM plans, consistent with FLPMA.

Some adjustment to DNWR plans would likely be required to allow for the change from restricted access and to address the valley areas on the South Range currently managed by the Air Force.

#### **4.10.5.3 SPECIAL USE AREAS**

Special use areas would remain unchanged by this alternative. The majority of the DNWR would continue to be managed as a de facto wilderness.

#### **4.10.5.4 TRANSPORTATION**

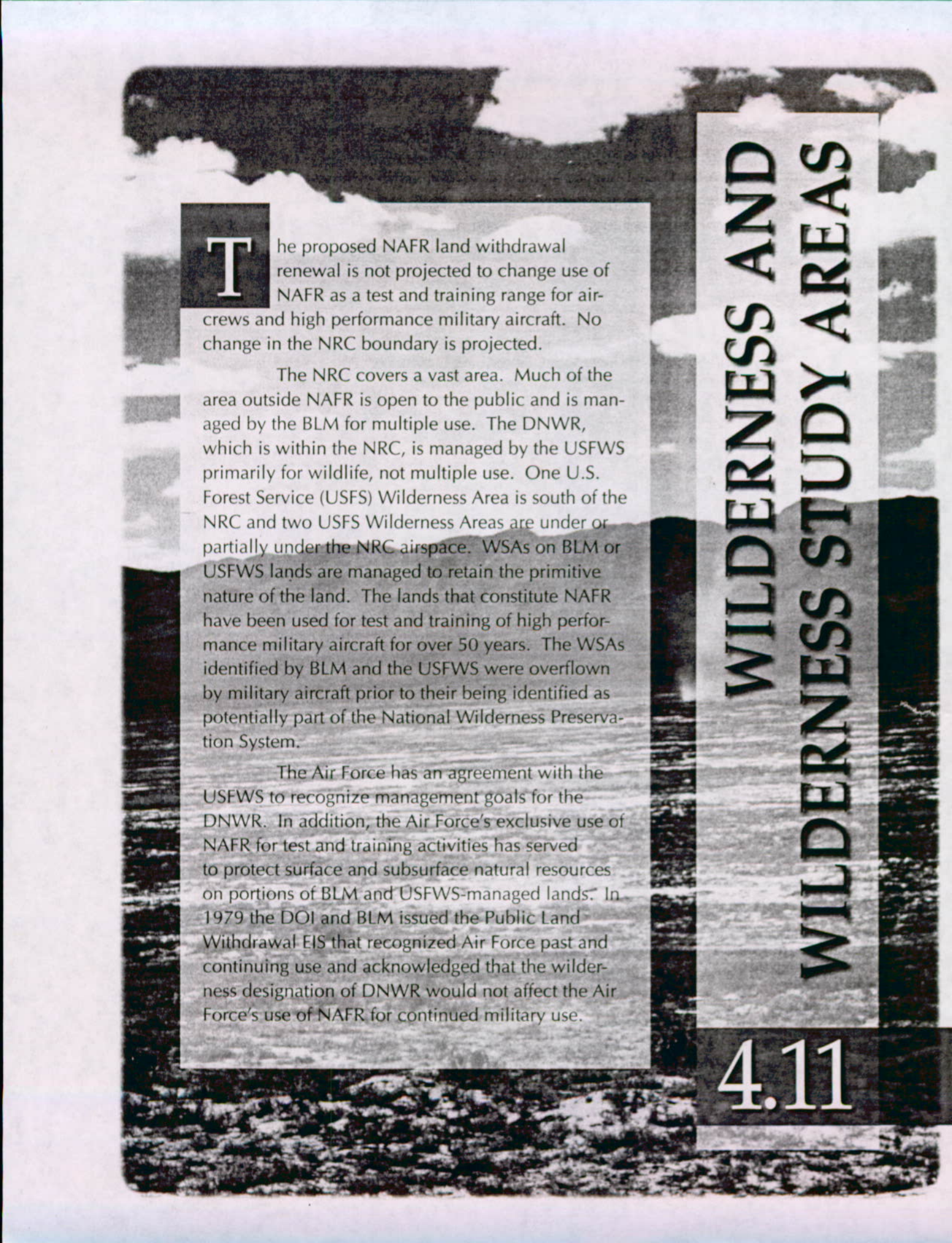
Under this alternative, changes to vehicular use levels within the region are anticipated. Currently access within the withdrawn area is restricted. The total number of vehicles should not change, but the purpose of vehicles will change from military employment to other uses such as industrial and recreational. Construction of new roads is not anticipated although the BLM may determine that modifications to access are required.

#### **4.10.6 American Indian Issues Concerning Land Use and Transportation**

The CGTO considers the issue of access to have two aspects in the context of the proposed action and alternatives:

- Increased access to cultural resource locations by non-Indian people under the No Action Alternative;
- Limited access by Indian people to resource locations under any action alternative.

The CGTO recognizes the conflicting aspects of this issue: their desire for unlimited access and the protection provided by restricted access.



**T**he proposed NAFR land withdrawal renewal is not projected to change use of NAFR as a test and training range for aircrews and high performance military aircraft. No change in the NRC boundary is projected.

The NRC covers a vast area. Much of the area outside NAFR is open to the public and is managed by the BLM for multiple use. The DNWR, which is within the NRC, is managed by the USFWS primarily for wildlife, not multiple use. One U.S. Forest Service (USFS) Wilderness Area is south of the NRC and two USFS Wilderness Areas are under or partially under the NRC airspace. WSAs on BLM or USFWS lands are managed to retain the primitive nature of the land. The lands that constitute NAFR have been used for test and training of high performance military aircraft for over 50 years. The WSAs identified by BLM and the USFWS were overflowed by military aircraft prior to their being identified as potentially part of the National Wilderness Preservation System.

The Air Force has an agreement with the USFWS to recognize management goals for the DNWR. In addition, the Air Force's exclusive use of NAFR for test and training activities has served to protect surface and subsurface natural resources on portions of BLM and USFWS-managed lands. In 1979 the DOI and BLM issued the Public Land Withdrawal EIS that recognized Air Force past and continuing use and acknowledged that the wilderness designation of DNWR would not affect the Air Force's use of NAFR for continued military use.

## WILDERNESS AND WILDERNESS STUDY AREAS

# 4.11



## WILDERNESS AND WILDERNESS STUDY AREAS

*Roads, targets, and other structures on NAFR within the DNWR are not compatible with a wilderness designation. Such areas with targets and access roads have been excluded from the DNWR Wilderness Recommendation.*



**T**he continuing use of NAFR for military test and training operations under the action alternatives will be consistent with the past 50 years. No change in environmental consequences is anticipated that could affect wilderness designations of land within the NAFR or under the NRC. Under the No-Action Alternative, military ground operations would be terminated. Overflights would continue, although at a reduced level.

Since no NAFR military ground activities exist in designated Wilderness Areas or WSAs, no change in impacts to those areas is expected under either an action or a no-action alternative.



*Continuing use of NAFR is not projected to affect wilderness quality in areas that meet national wilderness criteria.*

## 4.11 WILDERNESS AND WILDERNESS STUDY AREAS

This section considers the consequences of the proposed renewal of NAFR and alternatives on wilderness and WSAs. These special use areas have unique management objectives. The potential for environmental consequences that could affect management and status of these areas are considered.

Effects on users of recreation areas are discussed in section 4.12, Recreation and Visual Resources. Overflight impacts on wildlife are discussed in section 4.8, Biological Resources. Additional details on Air Force MOUs and SOPs designed to reduce environmental consequences in specific sensitive habitats are provided in section 4.8.1.2.

### 4.11.1 Alternative 1A — Indefinite Withdrawal

Under Alternative 1A, NAFR land use and land status would remain unchanged and would be as described for baseline conditions in section 3.11. Military activities would continue on the withdrawn lands. Overlapping withdrawals of NAFR and DNWR lands would remain, and WSAs and wilderness areas under the NRC would continue to be managed under the appropriate land management plan as described in section 3.11.

Military test and training activity over lands under the NRC, including WSAs and wilderness areas, would continue at historic levels. No change in annual overflights or in land use is anticipated. Activities that may cause ground disturbance (i.e., road use, munitions use) would continue at existing levels. As stated in section 4.3, if there is an aircraft mishap, the Air Force closely coordinates cleanup efforts with the agency responsible for that land.

Two factors were considered to evaluate potential indirect environmental consequences from aircraft overflights and training over WSAs in the region: 1) the extent to which these activities may affect the attributes that render an area suitable for preservation as Wilderness; and 2) whether the activities would conflict with management policies designated to ensure that the suitability of WSAs not be impaired until Congress has acted on them.

The attributes evaluated to determine wilderness qualities of these WSAs include naturalness, special features, and opportunities for solitude or primitive and unconfined recreation. The types of activities generally considered to affect naturalness are physical intrusions within the WSA, including transmission lines, fences, wells, and mine scars. Similarly, special features such as geologic and cultural resources are affected when activities disturb or alter the features or physical resources of the area.

Although aircraft activity and noise may be perceived by recreationalists as conflicting with opportunities for solitude and primitive recreation in a natural environment, Congress has determined that military overflight is not incompatible with wilderness areas (California Desert Protection Act 1992). The environmental documentation prepared by the BLM supporting WSA recommendations indicates that military overflights are not a reason to consider the areas

inappropriate for future Wilderness Area designation. The *Nevada BLM Statewide Wilderness Report* noted that military overflights over three WSAs formed part of the existing conditions in these areas. The effects of these overflights were not considered sufficient to preclude recommending the areas for wilderness status.

With respect to management policies for WSAs, overflights fall within the nonimpairment criteria of the Integrated Management Plan (IMP), which require that impacts be temporary, reclaimable, and not constrain Congress's decision on wilderness designation.

Congress will decide the ultimate disposition of WSAs. Factors likely to influence Congress's decisions include the report and suitability recommendations by the BLM provided in the *Nevada BLM Statewide Wilderness Report*, as well as current and projected military activities. In the past, Congress has concluded that, due to their transitory nature, aircraft overflights do not impair the natural and solitude qualities associated with wilderness designation. The noise levels and associated aircraft overflight effects are by nature temporary and reversible, leaving no permanent evidence of human use.

#### **4.11.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

Under Alternative 1B, the effects on wilderness and WSAs would be as described in section 4.11.1. Neither the non-renewal area nor the co-use areas have been designated as WSAs by the BLM. These lands may be inventoried by the BLM in order to evaluate their wilderness suitability.

#### **4.11.3 Alternative 2A — 25-Year Withdrawal**

Under Alternative 2A, the effects on wilderness and WSAs would be as described in section 4.11.1. This alternative differs from Alternative 1A only in the duration of the withdrawal.

#### **4.11.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

Under Alternative 2B, the effects on wilderness and WSAs would be as described in section 4.11.1. This alternative differs from Alternative 1B only in the duration of the withdrawal.

#### **4.11.5 No-Action Alternative**

The No-Action Alternative would result in no land withdrawal for military purposes and close NAFR. This would result in no military ground activities on what was NAFR. The Air Force would be expected to continue the use of the special use airspace for air-to-air operations.

Under the No-Action Alternative, land status would be altered substantially. Up to 3 million acres would be returned to DOI administration and management. Although some activities for decontamination and national security could continue on some lands, other uses consistent

with BLM management policies (such as grazing, mining, and recreation) would likely predominate on lands not within the DNWR. Lands within DNWR would continue to be managed under the appropriate land management plan as described in section 3.11.

It is anticipated that an extensive amendment to the Caliente Management Framework Plan would be required to recognize the additional land area within the BLM's jurisdiction. Uses, policies, and programs would need to be developed and a plan amendment would be processed in accordance with federal regulations (43 CFR Part 1600).

It is possible that the plan amendment process would yield recommendations regarding potential WSAs. The longstanding military withdrawal status has resulted in the generally undisturbed nature of the NAFR resources. Under the No-Action Alternative the BLM would inventory NAFR Lands for suitability as wilderness.

Multiple use of what was NAFR for mineral exploration, off-highway vehicle (OHV) recreation, potential transmission or transportation corridors, or other uses could affect the potential wilderness value of what was the NAFR North Range and any accessible parts of the South Range outside of the DNWR. Unrestricted OHV and related recreational uses has the potential for greater environmental consequences to potential wilderness resources on what was NAFR than 50 years of use as a military test and training range.

The loss of Air Force security on NAFR under a No-Action Alternative would likely necessitate rapid review of the North Range, especially to determine the wilderness environmental qualities and to protect those qualities from recreation that may have the potential to impact cultural or traditional American Indian areas or natural areas.

#### **4.11.6 American Indian Issues Concerning Wilderness**

The CGTO has concerns regarding access under No-Action wilderness areas on NAFR. Non-Indian recreationalists could disturb traditional resources or intrude on American Indian resources or intrude on American Indian ceremonies in sacred areas. The CGTO also has stated that visual intrusion of aircraft, as well as noise, could impact wilderness resources important to Indian people. The CGTO wants limited access for Indian people to resource locations under any action alternative.

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**P** rimary issues and concerns raised at scoping meetings regarding recreation and visual resource included general access, noise, public land management, and access for mining.



# RECREATIONAL AND VISUAL RESOURCES

4.12



## RECREATIONAL AND VISUAL RESOURCES

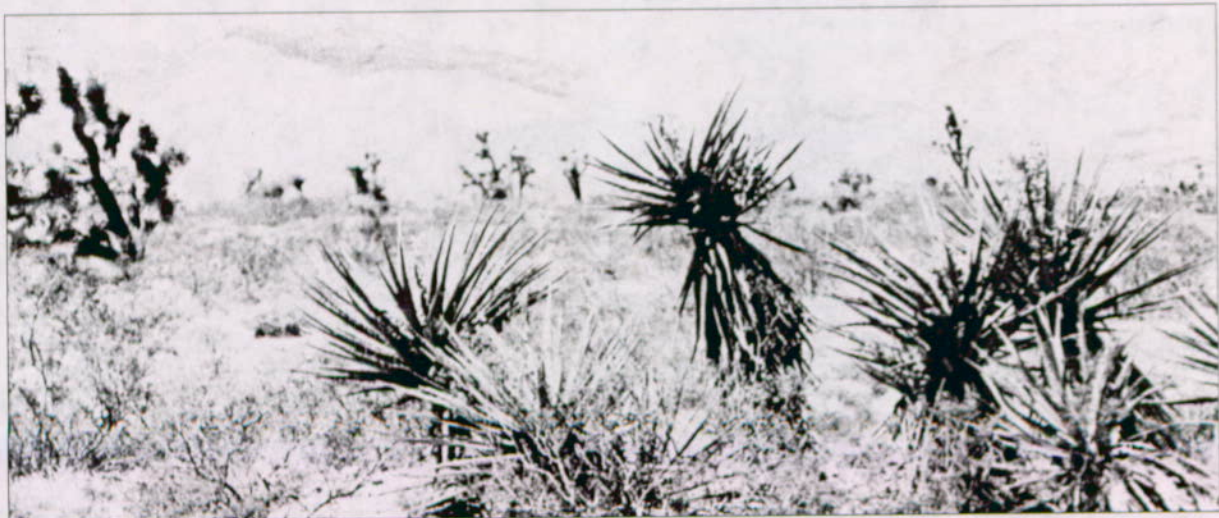


*If recreationists were to have access to NAFR, the continued visual effects of low-flying aircraft may affect the sense of solitude and naturalness for individuals seeking a primitive experience.*

**M**ilitary aircraft overflights are transitory, and would continue under both action alternatives. The nature of the impact depends on access to view the overflight, the sensitivity of the resource affected, the distance from which it is viewed, and the length of time it is visible.

Under any action alternative, there would be no change in visual intrusions from towers, buildings, roadways, or other facilities.

The No-Action Alternative would result in removal of DOD facilities and open lands not currently available for recreation. This has the benefit of increasing recreational opportunities on BLM land that has been previously inaccessible. An increase in recreation also has the potential for an increase in vandalism to cultural sites and off-road vehicle damage to the fragile arid environment. Conflicts could arise between visitors seeking isolated areas and those who operate vehicles as a recreational activity in those areas. Recreationists could also compete for space with other resource users such as mining companies. Opportunities for solitude would potentially increase as military overflights are expected to decrease by at least half.



*Under the No-Action Alternative, the visual quality of NAFR lands would be subject to and managed by BLM policies and guidelines such as Visual Resource Management (VRM).*

## 4.12 RECREATION AND VISUAL RESOURCES

Issues and concerns regarding recreation and visual resources primarily focused on increased access for recreation. In addition to a desire for increased access, scoping commentors were desirous of a decrease in the noise environment, a change to public land management, and a change in the visual environment.

The methodology for determining impacts on recreation resources focuses on (1) determining existing users, (2) determining the noise and visual impacts on recreational use due to any change in overflights, (3) identifying changes in recreational opportunities and access due to a change in management, and (4) identifying a change in the Recreation Opportunity Spectrum (ROS).

The methodology for determining impacts to visual resources involved review of the visual resources management (VRM) guidelines used by the BLM in some areas of the ROI. Where VRM is not used, scenic or specifically designated areas were identified. VRM is used by the BLM to identify the existing visual character of the landscape and define the allowable extent and type of development or modification that should be permitted in a given landscape. The VRM system is an expression of scenic quality, sensitivity, and remoteness (viewing distance from travel corridors). VRM guidelines range from the most sensitive (VRM Class I) to the least sensitive (VRM Class IV).

### 4.12.1 Alternative 1A — Indefinite Withdrawal

#### 4.12.1.1 RECREATION USE

Under this alternative, current access restrictions on NAFR would remain. Existing use and activities were identified in section 3.12. Limited hunting, as permitted through existing MOUs would continue to be coordinated with the NDOW and USFWS. No other routine recreational use would be anticipated.

Access for recreational use on lands under the NRC outside NAFR would remain the same as under current conditions. There would be no limitations or restrictions to recreation sites or their use, except by the governing land management agency. Therefore, current access would not be impacted as a result of continued withdrawal of NAFR.

The noise levels on lands under the associated airspace (ROI Three) are not expected to change under this alternative. Therefore, no impact as a result of noise under this alternative is expected. Refer to section 4.2 for a discussion of the noise environment.

The ROS, where applicable, is expected to remain the same and no impact is expected. The non-renewal area would require review by DOI to determine the VRM for this area.



#### **4.12.1.2 VISUAL RESOURCES**

Under this alternative, those areas managed by the BLM using VRM guidelines would continue to be managed as such and not change. Some visual changes will likely occur with continuing improvement of systems and target reconfiguration. Changes such as the planned replacement of Air Combat Maneuvering Instrumentation (ACMI) towers with a visually lower Global Positioning System (GPS)- based tracking system will have a minor positive effect on visual resources. No visual impacts to federal management of land are expected.

Impacts from aircraft overflights on the visual environment of an area are difficult to quantify. This difficulty stems from the inability to separate visual impacts from the noise of the aircraft overflight. Aircraft overflight is usually noticed primarily because of accompanying noise.

Military aircraft are transitory fixtures above a landscape. The nature of the impact depends on the sensitivity of the resource affected, the distance from which it is viewed, and the length of time it is visible. Altitude relative to the viewer also plays a key role in determining impacts from aircraft overflights. People's eyes are typically drawn to the horizon more than overhead and they are therefore less likely to notice aircraft at higher altitudes. Within highly vegetated mountainous areas, views would tend to be screened or extremely brief. In such areas, the lower the altitude, the more likely it is that views of passing aircraft would be screened.

In the broad valley areas, aircraft could be briefly visible. The most prevalent aircraft using the MOAs are F-16s. An F-16 traveling at an average speed of 480 knots true airspeed travels 1.5 miles in 10 seconds, 4.6 miles in 30 seconds, and 9.2 miles in one minute. At these high speeds, the visual impact of an aircraft is transitory. Military aircraft are also painted muted colors so as to be very difficult to pick out against a blue or gray sky.

The most visually sensitive areas in ROI Three include state parks and wildlife refuges. Most of these areas are avoided for safety purposes. Where the terrain is hilly or undulating, views are of short duration. In areas of flat terrain, however, the views can be expansive, and military aircraft can be detected.

In the wide open valleys where vegetation is low and visibility unimpaired, the visual effects of low-flying aircraft may also affect the sense of solitude and naturalness for individuals seeking a primitive recreation experience. However, these effects are usually very short (from seconds to a few minutes). No change is projected in visual resources from selection of continued withdrawal of NAFR.

#### **4.12.2 Alternative 1B — Indefinite Withdrawal/Modification of Lands and/or Administration**

##### **4.12.2.1 RECREATION USE AND OPPORTUNITIES**

Under this alternative, approximately 62,400 acres would be made available for public access short-term co-use (based on the range schedule) for mission-compatible, environmental

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resources management, including BLM-permitted recreation. Recreational access to this total of 62,400 acres would be subject to change, based on Air Force mission, security, and/or safety requirements. Those activities that conflict with Air Force mission, security, and/or safety requirements would not be approved.

These areas include the following:

- *Mud Lake*. Recreation activities, such as off-highway driving, land sailing, could occur on approximately 3,200 acres south of the northwestern corner of NAFR.
- *Kawich Range*. Recreation activities such as hiking and nature viewing could occur on approximately 3,200 acres north and east of the Kawich Range ridgeline in the northeastern corner of NAFR. National security interests would preclude access to the ridgeline.
- *EC South*. Recreational activities such as hiking, nature viewing, and rock-hounding could occur on approximately 56,000 acres in the southern portion of this range, south of Timber Mountain.

Future unknown or undefined changes to Air Force mission, security, and/or safety requirements could negatively or positively affect the amount of land available for co-use. Should future Air Force requirements change, co-use of some or all of the three potential co-use areas may become inconsistent with Air Force mission, security, and/or safety requirements. Should that occur, co-use of that particular area could be further restricted or terminated. Changes to future Air Force requirements could also increase the size of the three potential co-use areas and/or make other locations of the range available for possible co-use.

This alternative would also not renew approximately 30,000 to 35,000 acres of land along the western border of the current NAFR not supported by special use airspace. This could potentially open the area in the west to BLM multiple use, including recreational activities. The non-renewed area would include a portion of a mining district as defined in the Nevada State Senate Joint Resolution 25. In a part of the area, access would be determined under BLM regulations of this mining district.

Improved recreational opportunities in the co-use and non-renewed areas are directly responsive to public and agency concerns expressed during scoping for this LEIS. These improved recreational opportunities represent a positive, beneficial environmental consequence. The potential negative aspects of such access to other environmental resources are described in section 4.8 for biology and section 4.9 for cultural resources.

Except for those areas noted above, the environmental consequences for Alternative 1B are the same as for Alternative 1A.

#### **4.12.2.2 VISUAL RESOURCES**

As noted in section 4.12.2.1, some areas would become multiple or co-use areas. Should mining or extensive OHV use be permitted in the non-renewed area or extensive OHV use be permitted in the co-use areas, some degradation in visual quality could occur. In general, however, visual resources would not be expected to have a change in impacts within this alternative. Except for that noted above, the impact analysis for visual resources is the same as for Alternative 1A.

#### **4.12.3 Alternative 2A — 25-Year Withdrawal**

##### **4.12.3.1 RECREATION USE AND OPPORTUNITIES**

The duration of this alternative would not result in any difference from the environmental consequences.

##### **4.12.3.2 VISUAL RESOURCES**

Because this has only a duration change, the environmental consequences are the same as discussed for Alternative 1A.

#### **4.12.4 Alternative 2B — 25-Year Withdrawal/Modification of Lands and/or Administration**

##### **4.12.4.1 RECREATION USE AND OPPORTUNITIES**

The duration of this alternative would result in the same environmental consequences as discussed under Alternative 1B.

##### **4.12.4.2 VISUAL RESOURCES**

There would be no change from the environmental consequences discussed under Alternative 1B.

#### **4.12.5 No-Action Alternative**

##### **4.12.5.1 RECREATION USE AND OPPORTUNITIES**

Recreation activities such as off-highway vehicle use, hunting, camping, hiking, nature viewing, land sailing, etc. would increase. The No-Action Alternative would provide access to lands not currently available for recreation. This increase in access and activities could have both a positive and negative affect. An increase in land available would create more recreation opportunities and potentially shift recreation from surrounding areas.

While only a few recreation sites under the airspace require special management due to use, with the current growth of Las Vegas, more people would presumably be drawn to this area.

An area used only by the military would presumably draw curious public interested in areas few people have used for many years. This attraction could draw visitors away from other areas, thus alleviating overcrowding. Newly opened areas could also be developed for a specific recreational use or activity. These activities would require coordination through the appropriate management agency. For example, hunting would be available but must be coordinated with Nevada Department of Fish and Game to determine types of hunts, hunting units, seasons, etc. while the actual management of the land resources would be coordinated through the BLM.

With initial intense recreational use, the newly opened lands could also have the potential for overuse or damage to significant cultural, biological, geological, and/or botanical resources. For example, archaeological sites currently protected by the no-access policy could be subjected to vandalism, or sensitive habitats could be destroyed by recreation visitors and off-highway vehicles.

With the large increase in land available, conflicts between visitors would initially likely be minimal. However, as knowledge and familiarity of the area increases, overcrowding and user conflicts could occur. In addition, recreational visitors could compete for space with other resource users such as mining companies, transmission corridors, and agriculture.

Opportunities for solitude would potentially increase as military overflights are expected to decrease by at least half, thus resulting in a decrease in noise of approximately 4 dB L<sub>dn</sub>. Air-to-air military operations would continue, however. Therefore, military aircraft would continue to be a part of the surrounding viewshed.

While this alternative would allow access to the former NAFR, some areas on what was NAFR would be temporarily or permanently closed to the public due to unexploded ordnance or hazardous materials. DOE and the Air Force would work with DOI to reduce permanent closures to a minimum. What was NAFR would be expected to be open initially to primitive or ORV recreation subject to BLM resources to develop future recreation opportunities. Some archaeological, architectural, biological, or traditional resources could become quickly exhausted by recreationalists who may take advantage of a No-Action decision to access previously undisturbed locations.

#### **4.12.5.2 VISUAL RESOURCES**

As discussed above, sortie levels would decrease over NAFR, but air-to-air operations would continue. As these sortie levels would decrease by about half, potential intrusions by aircraft would similarly decrease.

As the areas surrounding NAFR provide scenic vistas, there are many areas on the NAFR that contain vistas of similar scenic quality. The visual quality would be subject to and managed by BLM policies and guidelines such as the VRM.

#### **4.12.6 American Indian Issues Concerning Recreation and Visual Resources**


The CGTO considers the issue of access (including access for recreation) to have two aspects:

- Increased access to cultural resource locations by non-Indian recreationists under the No-Action Alternative. These individuals could disturb cultural resources or intrude on ceremonies; and
- Limited access by Indian people to resource locations under any action alternative.

The CGTO recognizes the conflicting aspects of this issue: their desire for unlimited access and the protection provided by restricting access for recreation.

Under either an action alternative or the No-Action Alternative, visual intrusions could impact resources important to American Indians. The NARD reports:

All land forms within the NAFR have high sensitivity levels for American Indians. The ability to see the land without the distraction of buildings, towers, cables, roads, and other objects is essential for the spiritual interaction between Indian people and their traditional lands. Landscape modifications should be done in consultation with American Indians. [AIWS 1997]



**C**ontinuation of NAFR as an exclusive-use Air Force test and training range under either Alternatives 1A or 2A would not have a discernible socioeconomic impact. Under Alternatives 1B and 2B the Air Force would relinquish a portion of the Clarkdale and Wagner Mining Districts and approximately 30,000 to 35,000 acres of land along the western border of the current NAFR. Neither alternative would present significant added potential for private economic development, although there could be limited development. None of the four action alternatives would affect Air Force operations on the range in a way that could cause an economic impact on the ROI.

Alternatives 1B and 2B potentially provide for greater access to NAFR lands for Native American religious ceremonies than Alternatives 1A and 2A. Under Alternatives 1B and 2B, co-use would be permitted within the Mud Lake, Kawich Range, and EC South areas of the North Range. In addition, approximately 60 square miles of land would not be withdrawn and would be returned to the BLM for public use.

The No-Action Alternative would potentially provide the greatest access to NAFR lands, since military activities on the range would cease and lands would be managed for multiple use by BLM. Hazardous areas on the former NAFR would still be excluded to ensure public safety. Air-to-air operations by the Air Force would still continue in special use airspace.

# SOCIOECONOMICS

## 4.13

Under the No-Action Alternative, all Air Force ground activities at NAFR would be discontinued and the lands currently withdrawn for use by the Air Force would be returned to the BLM. Implementation of the No-Action Alternative would stop ground activities at NAFR and reduce many missions and support personnel at Nellis AFB. Subject to BLM approval, there could be mining, grazing, and production of irrigated crops, especially in Nye and Lincoln counties. The greatest absolute economic effects would be those of a negative nature experienced at Nellis AFB in Clark County, followed by those in Nye County. Some positive economic effects would be experienced in Nye County.

Although the total socioeconomic impacts are low relative to the ROI's employment base, the selection of the No-Action Alternative would be expected to have an impact on employment and on minority populations in Clark County.



*The greatest socioeconomic impact would be associated with the No-Action Alternative. A 390-job increase in Nye County, primarily in grazing and mining, would be offset by a loss of over 7,100 jobs in Clark County.*



*Under the No-Action Alternative, Air Force ground operations would end at TTR, Indian Springs, and all target maintenance locations.*

## **4.13 SOCIOECONOMICS**

### **4.13.1 Impact Analysis Method**

Economic effects of continued operation of NAFR or cessation of operation at NAFR are the driving factors behind the social and economic effects addressed in this section. The regional economic effects include employment and purchases by the Air Force in support of activities dependent on NAFR. Two economic models were used to quantify the economic consequences of the alternatives.

#### **4.13.1.1 REGIONAL ECONOMIC MODELS, INC. (REMI)**

A customized version of the Regional Economic Models, Inc. (REMI) (1996) model has been used to develop employment, income, and population projections for the State of Nevada and the three-county ROI for the period 1996 to 2026. The REMI model that was used to produce the population forecasts is a four-area model that integrates an input-output model, a structural econometric model, and a demographic model. Its four areas are (1) Clark, (2) Nye, and (3) Lincoln counties and (4) the rest of Nevada.

#### **4.13.1.2 REGIONAL INPUT-OUTPUT MODELING SYSTEM (RIMS II)**

The regional input-output modeling system (RIMS II), developed and maintained by the U.S. Bureau of Economic Analysis (BEA), was used to estimate the secondary economic effects of the alternative actions. The RIMS II modeling system has been used widely in socioeconomic impact analysis in a variety of studies, including DOD environmental impact statements of military base realignments, evaluations of effects of increasing expenditures by tourists, and studies of the socioeconomic impacts of industrial changes.

Input-output modeling depends on the observation that every industry and household buys goods and services from other industries and households. As a result of the interconnectedness of industries and households, economic changes (such as job and expenditure changes) that are a direct result of an action, lead to further changes in employment and spending. The further changes are known as secondary effects of the action. RIMS II computes secondary economic effects using a regionalized national input-output matrix for each county or collection of counties for which the model has been generated. The input-output matrix represents the buying and selling relationships among industries and households. The RIMS II system includes a household sector of the economy so that reductions in personal income are appropriately transmitted to the rest of the economy.

#### **4.13.1.3 PROJECTED ECONOMIC DEVELOPMENT ASSUMING A RENEWAL OF NAFR**

The REMI model projects economic development by estimating population growth within each region using the cohort component method that uses net migration plus births minus deaths. REMI considers two types of migration: economic and noneconomic. Economic migration is



driven within the model by changes in expected income in each region relative to that in the United States. Noneconomic migration, which REMI defines as flows of retired migrants, former military personnel and their dependents reentering civilian life, and international migrants, is based on historical patterns. The model applies a mathematical model to the year-by-year age distribution to project births, deaths, and other changes in the age distribution. REMI's yearly projected total population for a region is the yearly sum of all the age cohorts for the region.

Several adjustments were made to the 1996 REMI model, for which 1994 is the last year of historical data. The model incorporates Clark County employment growth data (1994-1995) from the Nevada Department of Employment, Training, and Rehabilitation. Net migration rates for retirees are also adjusted to incorporate cohort-component models of populations in Clark, Nye, and Lincoln counties between 1980 and 1990. Growth by county in each industry sector of the REMI model is driven by a United States economic forecast according to an estimated historical relationship between growth in each county and growth in the United States as a whole. Increments above the ordinarily predicted growth in hotel and transportation sectors were added as a result of projected hotel construction data from the Las Vegas Convention and Visitors Authority (LVCVA) through 1999. The resulting adjusted REMI population forecast for Clark County compares favorably with other Clark County forecasts, including those of the Southern Nevada Water Authority (1996), Southwest Gas (1997), the Regional Transportation Commission (1997), and the Nevada State Demographer (Figure 4.13-1).

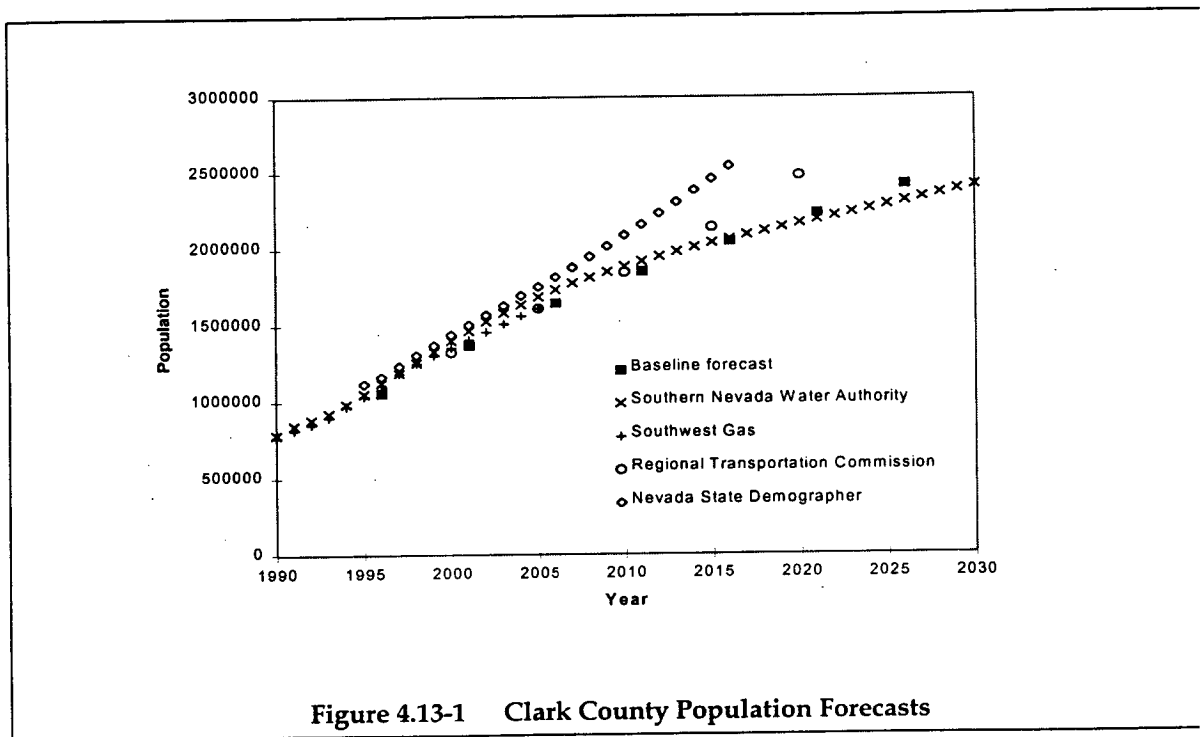


Figure 4.13-1 Clark County Population Forecasts

Projected additional local transportation expenditures by visitors were estimated based on corresponding increases in hotel inventory by 1999. Data on annual visitor room-nights, average length of stay, and average daily transportation expenditures were provided by the LVCVA. According to a 1996 survey conducted by the LVCVA, visitors spent an average of 1.27 days in the area for every night they stayed, and they spent \$8.16 per day for local transportation. Aggregated over a year, visitors spend on local transportation an estimated \$3,640 per hotel room. The LVCVA has data on other expenditures, that is, restaurants, shopping, and shows, but the extent to which such expenditures are made outside the hotel sector is unknown. Counting these expenditures at their full value would amount to double counting. Leaving them out constitutes undercounting. These expenditures were not included in this analysis.

#### **4.13.1.4 PROJECTED EMPLOYMENT ASSUMING A RENEWAL OF NAFR**

Over the forecast period from 1996 to 2026, the REMI forecast projects employment growth by place of employment in Nevada of approximately 560,000 jobs, or 56 percent over the 1996 level. Clark County alone is forecast to gain 440,000, or 80 percent of the new jobs created in the state (Table 4.13-1). Nye County is forecast to gain only 6,000 jobs or 1 percent of the new jobs created in the state (Table 4.13-2). Lincoln County is forecast to account for a still smaller number of new jobs, forecast to be approximately 800, which is just over 0.1 percent of the total (Table 4.13-3). Approximately 19 percent of the state's new jobs are projected to be created outside the three county ROI.

Nevada's services sector is forecast to grow by about 403,000 jobs from 1996 to 2026, which is 72 percent of the new jobs to be created in Nevada. Most of those jobs are projected to be created in Clark County, whose services sector is forecast to create approximately 300,000 jobs or 74 percent of Nevada services sector jobs and 54 percent of the total number of jobs created in Nevada over the period. The services sector in Nye County is forecast to produce a gain of nearly 5,000 jobs, which constitutes a growth of 75 percent over Nye County's 1996 figure, but only 1 percent of the statewide service-sector growth. Lincoln County is also expected to see proportionally large gains in service-sector employment, about 750 jobs, which is 92 percent of total job growth in Lincoln County, but only 0.2 percent of service-sector jobs statewide.

The number of state and local government employees in Nevada and each of the counties of the ROI is forecast to follow population growth. The forecast projects that the state overall will employ nearly twice the number of state and local government employees in 2026 (160,000 employees) as it did in 1996 (85,000 employees). Clark County, with the largest expected population growth, is forecast to employ more than twice the number of state and local government employees in 2026, that is, almost 106,000 employees, compared to 47,000 in 1996. By 2026, Nye County will employ approximately an additional 900 state and local government employees, which represent an increase of 74 percent over the 1996 figure. Lincoln County, with its smaller population and smaller growth rate, is forecast to employ an additional 100

**Table 4.13-1. Projected Employment Characteristics for Clark County, 1996-2026**

<i>Clark County Employment</i>	1996	2001	2006	2011	2016	2021	2026
Total Jobs	648,581	762,561	843,870	923,102	984,904	1,036,265	1,090,337
Farm	417	372	333	317	301	286	272
Nonfarm	648,164	762,189	843,537	922,785	984,603	1,035,979	1,090,065
Private	583,842	685,221	753,865	822,601	876,649	921,488	968,541
Ag. Services, Forestry, Fishing & Other	5,836	6,925	7,877	8,881	9,755	10,566	11,453
Mining	1,041	962	900	817	730	647	578
Construction	56,353	61,826	65,242	69,431	72,697	75,830	79,994
Manufacturing	17,798	17,237	17,016	16,842	16,323	15,595	14,895
Transportation & Public Utilities	29,859	33,252	34,851	35,210	34,899	34,247	33,715
Wholesale Trade	19,677	21,061	21,685	22,394	22,494	22,198	21,853
Retail Trade	101,128	114,754	122,381	130,628	135,532	138,833	142,699
Finance, Insurance, and Real Estate	45,005	49,633	52,426	54,591	55,506	55,871	56,495
Services	307,145	379,571	431,487	483,807	528,713	567,701	606,859
Govt. and Govt. Enterprises	64,321	76,968	89,672	100,184	107,953	114,489	121,523
Federal Civilian	7,557	6,876	6,595	6,718	6,717	6,658	6,611
Federal Military	9,554	8,536	8,411	8,703	8,859	8,943	9,056
State and Local	47,210	61,557	74,667	84,763	92,378	98,888	105,856

Source: Adjusted Regional Economic Models, Incorporated 1996-model baseline forecast

state and local government employees by 2026, which represents a growth of 20 percent over 1996.

The baseline forecast predicts a decline in federal military employment (including reserves) in Nevada of about 600 jobs from 1996 to 2026, or 5 percent of the 1996 figure. Clark County, the location of Nellis AFB, is forecast to experience a decline in federal military employment of over 1,000 jobs between 1996 and 2001 in proportion to projected reductions nationwide, and to gradually regain about half of the lost jobs by 2026. A stable level of federal military employment is forecast for Nye and Lincoln counties through 2026.

**4.13.2 Alternatives 1A or 1B — Indefinite Withdrawal or Withdrawal/Modification of Lands and/or Administration**

Under Alternative 1A or 1B, the Air Force would continue, indefinitely into the future, to have NAFR as a safe and secure test and training range. Cost savings associated with an indefinite withdrawal are expected from not having to undertake the analysis and reporting required for periodic land withdrawal renewal. Environmental resources would be planned to be managed for stewardship and public information activities above the levels required by law, regulation, or other agreement.

**Table 4.13-2. Projected Employment Characteristics for Nye County, 1996-2026**

<i>Nye County Employment</i>	1996	2001	2006	2011	2016	2021	2026
Total Jobs	11,463	12,883	14,028	15,156	15,904	16,498	17,147
Farm	174	155	139	132	125	119	113
Nonfarm	11,289	12,728	13,889	15,024	15,779	16,379	17,034
Private	9,858	11,149	12,137	13,111	13,733	14,219	14,755
Ag. Services, Forestry, Fishing & Other	80	99	116	130	141	151	161
Mining	1,083	953	857	755	657	572	504
Construction	533	605	661	705	730	752	783
Manufacturing	206	252	280	282	274	261	249
Transportation & Public Utilities	255	295	323	330	324	314	304
Wholesale Trade	102	112	117	120	118	114	110
Retail Trade	1,237	1,441	1,552	1,636	1,655	1,651	1,648
Finance, Insurance, and Real Estate	348	378	399	427	442	454	467
Services	6,014	7,014	7,832	8,726	9,392	9,950	10,529
Govt. and Govt. Enterprises	1,431	1,579	1,752	1,914	2,045	2,159	2,279
Federal Civilian	195	177	170	173	173	172	171
Federal Military	55	49	48	50	51	52	52
State and Local	1,181	1,352	1,533	1,691	1,820	1,935	2,056

Source: Adjusted Regional Economic Models, Incorporated 1996-model baseline forecast.

For Alternative 1A, the proposed action denotes a continuation of withdrawal of lands currently withdrawn for military use and a continuation of baseline conditions described in section 3.13. Under Alternative 1B, the Air Force would not renew a portion of the Clarkdale and Wagner Mining Districts and approximately 30,000 to 35,000 acres of land along the western border of the current NAFR. Limited mining activity could occur in the non-renewed area if permitted by BLM. If such mining were to occur within an estimated 10 year permitting period, it could somewhat increase employment in Nye County over what exists.

Alternative 1B also includes co-use for recreation consistent with Air Force mission, security, and safety of approximately 62,400 acres. This co-use has the potential for increased economic activity in recreation supply businesses in southern Nevada and in smaller communities on the western and southwestern sides of NAFR North Range. This increase is expected to be localized and small from a regional perspective since most recreation in these areas would be expected to represent a substitute for other southern Nevada recreation destinations. In less primitive southern Nevada locations, between approximately 50 percent and 90 percent of the recreationalists were from Nevada.

<i>Lincoln County Employment</i>	1996	2001	2006	2011	2016	2021	2026
Total Jobs	2,413	2,622	2,773	2,935	3,039	3,123	3,225
Farm	130	116	103	98	93	89	85
Nonfarm	2,283	2,506	2,670	2,837	2,946	3,034	3,140
Private	1,702	1,940	2,090	2,225	2,305	2,373	2,459
Ag. Services, Forestry, Fishing & Other	26	29	32	35	37	39	42
Mining	15	14	12	11	9	8	7
Construction	29	30	32	33	34	36	37
Manufacturing	0	0	0	0	0	0	0
Transportation & Public Utilities	110	112	108	98	86	76	67
Wholesale Trade	5	6	6	5	5	5	5
Retail Trade	269	301	312	318	316	312	312
Finance, Insurance, and Real Estate	72	73	71	69	67	63	61
Services	1,177	1,375	1,517	1,656	1,751	1,834	1,928
Govt. and Govt. Enterprises	582	568	581	611	640	661	682
Federal Civilian	39	35	34	35	35	34	34
Federal Military	8	7	7	7	7	7	8
State and Local	535	526	540	569	598	620	641

*Source:* Adjusted Regional Economic Models, Incorporated 1996-model baseline forecast.

Despite the potential under Alternative 1B of some economic growth, neither Alternative 1A nor 1B is estimated to result in significant regional economic development or to impact regional social or economic resources. NAFR land withdrawal renewal action alternatives constitute a request to continue military use of land that has been primarily used for military test and training activities for over 50 years. This is a sufficient duration so that individual and regional economic activities are fully adapted to the existing military use. The socioeconomic consequences that Air Force control of the range has on the three county ROI would continue as before. The proposed renewal would have negligible socioeconomic impact. There would be negligible projected deviation from the baseline forecast described in section 3.13.

#### **4.13.3 Alternatives 2A and 2B — 25-Year Withdrawal and 25-Year Withdrawal/Modification of Lands and/or Administration**

Alternatives 2A and 2B would continue the withdrawal as in Alternatives 1A and 1B. Prior to the end of the 25-year period, Alternatives 2A and 2B would require the Air Force to provide analysis and prepare reports according to the requirements of the FLPMA and the Engle Act.

The only difference between Alternatives 1 and 2 in the period before 2026 is due to a slightly higher administrative cost for Alternative 2. Under Alternative 2, the Air Force would not realize cost savings that would allow it to plan for resources for environmental enhancements and public information activities above the levels required by law, regulation, or other agreement. There would be a small change in the distribution of Air Force expenditures, but the economic influence of NAFR on the ROI would continue virtually unchanged.

Alternative 2B would allow BLM to permit mining operations that could have a limited effect on employment in Nye County. Relative to the baseline that has been adopted for this LEIS, Alternative 2B would have negligible socioeconomic impact, that is, there would be no identifiable deviation from the baseline forecast described in section 3.13.

#### **4.13.4 No-Action Alternative**

Under the No-Action Alternative, all air-to-ground activities at NAFR would be discontinued and ROI Two, the lands currently withdrawn for use by the Air Force, would be returned to the BLM or to jurisdiction by the USFWS. Implementation of this alternative would have the effect of reducing activities at both the NAFR (where military ground activities would cease completely) and Nellis AFB (where missions and support personnel would no longer be able to perform test or training activities from Nellis AFB).

Environmental clean-up of portions of what was NAFR would create construction-type employment for an indeterminate period. Neither the degree of nor scheduled clean-up required of DOE or the Air Force on NAFR lands under the No-Action Alternative is known. This socioeconomic analysis focuses on the known economic conditions prior to a No-Action decision and after the consequences of that decision have been felt in the region.

For the purpose of this No-Action Alternative, mining and agriculture (grazing of cattle and production of irrigated crops) are projected to be permitted by DOI and BLM, especially in Nye and Lincoln counties within 10 years after the closure of NAFR. The greatest short-term absolute economic effects would be those of a negative nature experienced in Clark County (the location of Nellis AFB), followed by those in Nye County. No discernible economic effects would be experienced in Lincoln County.

##### **4.13.4.1 ECONOMIC CONSEQUENCES OF NO-ACTION ALTERNATIVE**

Decreased levels of Air Force activity at NAFR and Nellis AFB would lead to lower employment than otherwise would be the case in Clark and Nye counties. Employment effects are of a direct and secondary nature. The direct effects include changes in the number of Air Force personnel (active duty, civilian, and contractor) associated with activities that will be discontinued at NAFR and support of those activities conducted at Nellis AFB. Secondary employment effects are the result of the multiplier effects on the surrounding ROI economy that are attributable to reduced expenditures by the Air Force for payroll and purchases of goods and services from the private sector.

It is assumed that reductions in activity levels at both NAFR and Nellis AFB would take place rapidly over a two-year period under the No-Action Alternative. It is assumed that one quarter of the total direct effect attributable to implementation of the No-Action Alternative would occur in the first year (2002) with the remainder taking place in the year 2003. The exception to this reduction is for temporary duty (TDY) expenditures related to NAFR activities, which are assumed to cease during the first year. A description of these Air Force-related direct effects are shown in Table 4.13-4. These changes include the loss (over the two-year period) of 3,090 active-duty military and 855 federal civilian personnel assigned to Nellis AFB and 800 contractor personnel (584 located in Clark County and 216 in Nye County). There would also be a reduction in TDY expenditures, purchases (by the Commissary/BX for other services and materials), and less construction activity.

It is estimated that secondary employment associated with Nellis AFB economic activity related to Air Force activities at NAFR numbers 2,667 jobs. Virtually all these jobs are in Clark County. Table 4.13-5 presents the number of secondary jobs associated with the different types of direct Air Force expenditures in fiscal year (FY) 2001.

The largest contribution (1,746 jobs and 40 percent of total secondary employment) is made by procurement in the local economy of goods and services, followed by active-duty military payroll expenditures (1,557 jobs and 36 percent of the total). If the No-Action Alternative were implemented, by FY2003, the level of secondary employment supported by economic activity at the NAFR and Nellis AFB would fall to 1,661 jobs. Secondary employment would be reduced by 2,677 jobs between FY2001 and FY2003.

The reduction in total employment (direct plus secondary) in the three-county ROI by the end of FY2003 would be 7,422 jobs. This total reduction would be comprised of the following components: 3,090 active-duty military, 855 federal civilian personnel assigned to Nellis AFB, 800 contractor personnel (584 located in Clark County and 216 in Nye County), and 2,677 secondary employment jobs (see Table 4.13-5.)

It is assumed that activities currently performed by employees of Sandia National Laboratory (and non-government employees under contract) at the Tonopah Test Range (TTR) would cease under the No-Action Alternative. Information concerning the level of activity at TTR is available for FY1998 and indicates the presence of 21 government employees and 77 contractor employees. One of the government employees and all contractor employees are assumed to reside in Nye County with the remainder living in Clark County. Annual salaries paid to all workers total \$4,960,000, purchases of goods and services in the local (Nye County) economy total \$700,000 annually and TDY expenditures (also made in Nye County) amount to \$22,400 annually.

The total Nellis AFB, NAFR, and TTR direct and secondary regional employment loss resulting from selection of No-Action Alternative is projected to be 7,531 jobs by 2003.

		CUMULATIVE IMPACT	
Location	Type of Effect	FY2002	FY2003
Clark County	Loss of Personnel		
	Range Contractor	- 584	- 584
	Active Duty Military	- 773	- 3,090
	Federal Civilian/Contractor	- 214	- 855
	Federal Civilian (TTR)	-5	-20
	Loss of Payroll (FY \$95)		
	Active Duty Military Personnel	- \$28,544,765	- \$114,105,204
	Federal Civilian Personnel	- \$6,471,416	- \$25,870,332
	Reduced TDY Expenditures (FY \$95)		
	Lodgings	- \$24,309,000	- \$24,309,000
	Eating	- \$12,483,000	- \$12,483,000
	Reduction of Procurements (FY \$95)		
	Construction (FY 95\$)	- \$1,576,920	- \$6,302,887
	Commissary/BX (FY 95\$)	- \$342,253	- \$1,368,128
	Education (FY 95\$)	- \$67,089	- \$268,181
Range Contractor Services (FY 95\$)	- \$58,400,000	- \$58,400,000	
Other Materials (FY 95\$)	- \$3,724,494	- \$14,886,655	
Nye County	Loss of Personnel		
	Range Contractor	- 216	- 216
	Federal Civilian (TTR)	0	-1
	Contractor (TTR)	-19	-77
	Reduction of Procurements		
Range Contractor Services (FY 95\$)	- \$21,600,000	- \$21,600,000	
Regional Total	Personnel	-1,811	-4,843
	Expenditures	-\$157,518,937	-\$279,593,387

Source: SAIC 1998

Associated with Expenditures Category	Baseline FY2001	FY2002	FY2003	Change FY2001-FY2003
Payroll				
Active Duty	1,557	1,390	890	-667
Federal Civilian	353	315	201	-152
TTR	7	0	0	-7
TDY	682	68	68	-614
Procurements	1,746	688	502	-1,244
Total	4,338	2,461	1,661	-2,677



The secondary employment effect associated with activities at TTR would amount to a total of 11 jobs, 7 in Clark County and 3 in Nye County, bringing total employment associated with activities at TTR to 109 jobs. By the year 2002, this employment level is estimated to drop to 82 jobs (62 in Nye County and 20 in Clark County) and to zero by 2003.

Following the transfer of NAFR land to the BLM under the No-Action Alternative, increased mining and agricultural activities could occur. For this analysis, it is assumed that the mining activity would be confined to Nye County and the additional agricultural activities would occur in equal amounts in both Nye and Lincoln counties.

Field studies and sampling results reported in the "Mineral and Energy Resource Assessment of the Nellis Air Force Range" published in 1996 by the Nevada Bureau of Mines and Geology suggests that, other than sand and gravel, hypothetical mines on former NAFR lands would be limited to precious metals. The report does not, however, address the economic feasibility of such mining activity. The analysis here assumes that mining activity will be primarily focused on gold with silver recovered as a by-product. Details of the analysis are contained in the Economic Impact Report.

Employment in mining is based on the assumption that the ratio of the price of gold to the cost of mining achieves a long-term ratio of 1.2:1. In mid 1998 the estimated ratio was 0.92:1. If the world price of gold were to sustain a value 30 percent higher than the current price and production costs stayed constant, total employment in the three-county ROI associated with these additional activities could reach 820 jobs (720 mining jobs, nine agricultural jobs, and 91 jobs in other sectors of the economies) by the year 2011.

It is not possible to predict precisely where Lincoln or Nye counties potential future mining operations may occur. Nor is it possible to identify which communities would economically benefit from hypothetical mining operations. The most likely communities to benefit would be Tonopah and Beatty in Nye County and Goldfield in Esmeralda County.

For purposes of analysis it is assumed that total employment will peak at about 720 mining operation jobs for a 25-year period. If future employment in mining were based on that evident in 1995, virtually all mining activity would occur in Nye County (the position taken here). The result would be virtually identical if the share were based on historical quantities of gold recovered historically as described in section 3.5 Earth Resources, Table 3.5-1. However, if the share were based on the amount of silver recovered historically, the share would be allocated almost equally between Lincoln and Nye counties.

#### ***EARNINGS***

In addition to changes in personnel levels, direct effects include reductions in procurements, reduced levels of activity at the Commissary and Base Exchange, and lower TDY expenditures. The loss of payroll expenditures associated with personnel reductions, by the year FY2003,

would total over \$140 million (Table 4.13-4). The greatest share of this is attributable to the loss of active-duty military payroll (\$114 million and 82 percent of total payroll loss). Reductions in other spending by the base by FY2003 would total \$140 million, the largest share of which (\$36.8 million and 26.4 percent) is associated with TDY expenditures. Contributions to this reduction also include \$80 million by services (57.3 percent of all spending), \$6.3 million (4.5 percent of the total) by construction, and \$14.9 million (10.7 percent of the total) by other materials.

If the assumptions associated with mining above were to be achieved, levels of activity in the mining and agricultural sectors of the economy following closure of NAFR could result in increases in personal income in Lincoln and Nye counties. During the 2015 peak employment year, mining and agriculture personal income could increase by \$65 million in Nye County and \$10 million in Lincoln County (in FY1995 dollars). This could partially offset the nearly \$22 million reduction in Nye County and the over \$250 million reduction in Clark County resulting from the adoption of the No-Action Alternative (again in 1995 dollars).

**POPULATION**

Projected population changes for the State of Nevada and each of the three counties contained in the ROI are presented in Table 4.13-6.

<b>Table 4.13-6. Population Projections in the State of Nevada and Clark, Lincoln, and Nye Counties in Nevada for 1996 to 2026</b>							
	1996	2001	2006	2011	2016	2021	2026
State of Nevada	1,596,093	1,957,354	2,259,587	2,525,818	2,763,475	2,990,152	3,218,472
Clark County	1,056,378	1,370,209	1,629,075	1,852,472	2,047,913	2,231,314	2,416,537
Lincoln County	3,727	3,641	3,669	3,873	4,127	4,351	4,552
Nye County	23,176	26,383	29,324	32,395	35,382	38,286	41,153

The reduction in total employment in the three-county ROI by the end of FY2003 would be 7,422 jobs. This total would be comprised of the following components: 3,090 active-duty military, 855 federal civilian personnel assigned to Nellis AFB, 800 contractor personnel (584 located in Clark County and 216 in Nye County), and 2,677 secondary employment jobs.

It is difficult to estimate the population impacts of the No-Action Alternative due to the rapid continuing growth projected for the Las Vegas metropolitan area. It is anticipated that a portion of the job-holders (and their families) displaced by a No-Action decision will leave the ROI. It is assumed that 90 percent of the active-duty military personnel will leave, as will 50 percent of the federal civilian personnel, 50 percent of contractor personnel working and residing in Nye County, and 50 percent of the secondary workers in Nye County. The remaining contractor personnel and secondary workers located in Clark County are assumed to remain in the ROI. Assuming average family sizes of 2.54 for civilians and 2.0 for military personnel, the out-migration of workers and their families implies the following population

losses relative to the forecast: (1) 5,562 military personnel and dependents, (2) 1,080 federal civilian employees and dependents, (3) 742 contractor employees and dependents from Clark County, (4) 274 contractor employees and dependents from Nye County, and (5) 90 secondary employees and dependents from Nye County. In sum, under the No-Action Alternative, it is anticipated that 7,390 people will leave Clark County and 364 people will leave Nye County. These numbers represent 0.5 percent and 1.4 percent, respectively, of the projected 2001 populations of Clark and Nye counties (Table 4.13-6).

The potential out-migration represents only a fraction of the average number of in-migrants entering each of the counties annually over the period 1990-1995. For Clark County, the average annual net in-migration during the period from 1990-1995 (inclusive) was 46,436 per year and for Nye County, 864 per year (see Table 3.13-17). Thus, the projected consequences of out-migration from Clark and Nye counties under the No-Action Alternative over the two-year period (2002-2003) represent 16 percent of the average annual net in-migration to Clark County and 42 percent of the average annual net in-migration to Nye County. The potential out-migration from Nye County could eventually be offset if increased employment due to the additional mining and agricultural activities were to occur within 10 years after a No-Action decision.

### ***HOUSING***

The number of persons per housing unit in Southern Nevada dropped between 1970 and 1980 but leveled off between 1980 and 1990. It is assumed that population per household unit will remain relatively constant for the foreseeable future. The current population estimates and projections, as provided by REMI, are divided by the assumed population per household values in each county, thereby providing estimates and projections of the housing stock for each county.

The use of this forecast method results in a projected growth of housing stock in Nevada from approximately 694,000 in 1996 to approximately 1,308,200 in 2026 (see Table 4.13-7). It is projected that Clark County will continue to constitute a large portion of this stock in the year 2026, growing from an estimated 450,742 units in 1996 to approximately 946,800 units. Nye County's housing stock is forecast to grow substantially as well, increasing from an estimated 11,039 units in 1996 to a forecast 17,412 units in 2026. The growth of Lincoln County's housing stock can be expected to be consistent with the moderate forecast rate of growth of population.

Of the active-duty military who are projected to leave Nellis AFB under a No-Action decision, a proportion occupy on-base military family housing. The remainder reside in surrounding communities. Assuming a scenario in which military on-base housing would be filled by remaining military personnel, all military personnel who would be leaving the ROI would impact housing off base. Assuming one housing unit vacated per migrating worker, the following number of housing units would be vacated by out-migrating military personnel, federal civilian employees, contractor employees, and secondary employees and their families: 3,463 housing units (3,209 in Clark County and 254 in Nye County). These levels correspond to

	1996	2001	2006	2011	2016	2021	2026
State of Nevada	694,194	815,874	927,171	1,030,346	1,124,591	1,215,907	1,308,158
Clark County	450,742	551,413	621,353	726,880	802,095	873,932	946,756
Lincoln County	1,908	1,817	1,810	1,899	2,019	2,126	2,221
Nye County	11,039	11,999	13,028	14,177	15,283	16,354	17,412

*Note:* 1. Assuming the following persons per housing unit:  
 State of Nevada: 2.27  
 Clark County: 2.30  
 Lincoln County: 1.94  
 Nye County: 2.06

*Source:* Population from Regional Economic Models, Inc. (see Table 3.13-5)  
 Population per household values are estimates

1.1 percent of the total number of housing units in Clark County in 1990 and 3.8 percent of those in Nye County (Table 3.13-18).

Given the projected population net in-migration rates, it is not anticipated that the projected number of vacated housing units (whether owned or rented) entering the housing market over a two-year period would cause a noticeable disruption in that market.

**PUBLIC SERVICES AND FACILITIES**

The selected public services and facilities considered below (health care, public schools, law enforcement, and fire protection) can be expected to respond to changes in the population contained within their respective service areas. To project such potential changes, it is necessary to forecast anticipated changes in both direct and secondary employment (with the number of family dependents) by place of residence. This level of spatial resolution is not available and, thus, detailed assessment by specific service area is not presented.

**HEALTH CARE**

It is not anticipated that the out-migration of people from the ROI over the period 2002 to 2003 will noticeably affect health care services and facilities. The loss of people attributable to implementation of the No-Action Alternative would be more than offset by the continued strong in-migration to the growing economy of the region.

**PUBLIC SCHOOLS**

The potential out-migration of families having dependents who attend local schools would result in reduced enrollment in selected schools and reductions in federal impact aid funds to certain school districts. The most probable schools affected by out-migration would be those

that accommodate the dependents of off-base active-duty military personnel at Nellis AFB. The back-filling of on-base housing by personnel transfers would result in reductions in students in off-base housing. This consequence would directly impact a limited number of local schools. As with housing, described above, projected population in-migration would be expected to negate these impacts within 1 to 2 academic years.

#### ***LAW ENFORCEMENT***

It is not anticipated that the out-migration of people from the ROI over the period 2002 to 2003 will noticeably affect law enforcement services. The loss of people attributable to implementation of the No-Action Alternative would be more than offset by the projected continued in-migration to the growing economy of the region.

#### ***FIRE PROTECTION***

It is not anticipated that the out-migration of people from the ROI over the period 2002 to 2003 will noticeably affect fire protection services. The loss of Air Force equipment supporting NAFR would result in local shortfalls of emergency services and could result in the need for additional equipment and personnel by local fire departments.

#### ***PUBLIC FINANCE***

It is not anticipated that the out-migration of people from the ROI over the period 2002 to 2003 will noticeably affect the finances of local government entities, other than in the increased lands, to backfill services that had been supported by Air Force cooperative agreements.

### **4.13.5 American Indian Issues Concerning Socioeconomics**

The CGTO is concerned that benefits and losses from NAFR be distributed equally among Indian and non-Indian populations.

The CGTO is interested in striking a balance between wages paid at NAFR and cost of living on the nearby reservations (AIWS 1997). Their goal is to encourage Indian people to continue to live on the reservations. They see this as a matter of cultural survival, as when people move away from their neighborhoods and families, children lose the cultural context important for raising the next generation of Indians.

The CGTO is concerned that the transportation of hazardous materials across reservations could cause potential businesses and investors to look elsewhere for locations. This concern is based on the potential disruption of business should there be an accident or other reason for a road closure stemming from some military activity.



**E**

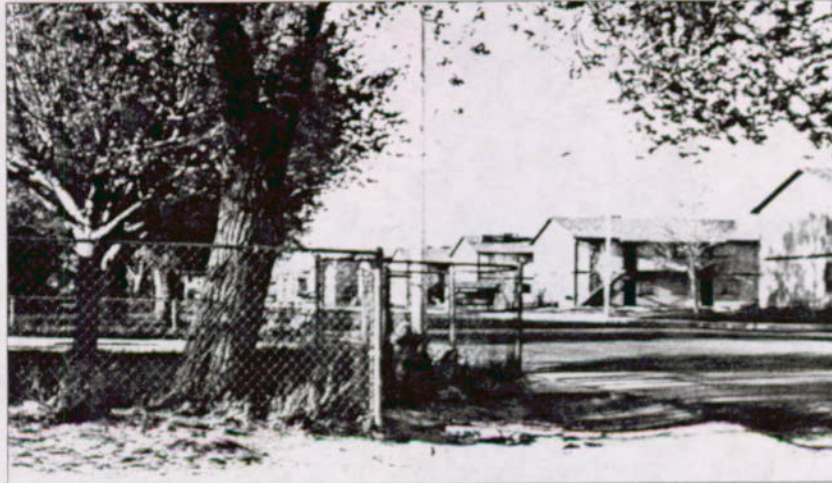
lements of environmental justice identified during scoping and evaluated in this LEIS focused on three broad areas:

- American Indians expressed the concern that activities on NAFR have resulted in sacred land violations and access restrictions that are within environmental justice concerns.
- Rural residents of Lincoln County, east of NAFR, who are affected by noise within the NRC, may fall within the low-income category of environmental justice.
- Lincoln and Nye Counties expressed the concern that county income levels were restricted by Air Force exclusionary use of NAFR.

# ENVIRONMENTAL JUSTICE

4.14

## ENVIRONMENTAL JUSTICE



*Within the socioeconomic ROI, Clark County has a greater population of minorities than Nye or Lincoln counties.*

The American Indian Writers Subgroup of the CGTO prepared a separate Native American Resource Reference Document as input to the land withdrawal process to provide decisionmakers with the significance of traditional cultural resources on NAFR.

Under the No-Action Alternative, Clark County, which is 24.5 percent minority, would lose approximately 7,200 jobs, of which approximately 1,770 would be expected to be minority jobs. Nye County, which is 12.0 percent minority, would lose approximately 300 jobs that could be offset by a gain of 720, primarily mining and agriculture jobs. The net effect could be an increase of 50 minority jobs. Lincoln County, which is 8.2 percent minority, would have no substantive change in employment.



*Changes in employment from the No-Action Alternative would be felt most heavily in Clark County, followed by Nye County.*

## **4.14 ENVIRONMENTAL JUSTICE**

The environmental justice analysis is included in this LEIS in response to EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, and Air Force guidance. Section 3.14 of this LEIS describes the environmental justice executive order and presents baseline information on minority or low-income populations living within the range of comparison (ROC) for the NAFR complex. This section examines potential environmental justice effects. The discussion below includes a description of the public participation program that is being conducted by the Air Force to ensure awareness of the proposal to renew NAFR and a discussion of environmental justice concerns associated with the alternatives.

### **4.14.1 Public Participation Program**

A public participation program was conducted by the Air Force to ensure that members of the public living in the area affected by NAFR are aware of the LEIS and have opportunities to participate. The Air Force held six public scoping meetings in June of 1996 in the communities of Las Vegas and Indian Springs in Clark County, the community of Caliente in Lincoln County, the communities of Beatty and Tonopah in Nye County, and in Reno. The Air Force has initiated government-to-government consultation with 18 American Indian groups. The Air Force public participation program also includes publication of newsletters and operation of a web site that contains information about NAFR and the LEIS process. The Air Force received approximately 320 written and verbal comments during the scoping meetings and scoping comment period on a variety of issues. Comments focused on biological and cultural resources and resource management; public land uses such as mining and grazing and returning unused land for recreational purposes; airspace management, noise, and supersonic flight; and preservation and protection of American Indian artifacts. Scoping comments addressing environmental justice issues included those involving American Indian resources and those dealing with noise in the relatively lower per-capita income communities east of NAFR.

As part of EO 12898, the Air Force has initiated consultation with 18 American Indian groups. The AIWS of the CGTO has prepared the NARD (AIWS 1997), which discusses the significance of traditional cultural properties on NAFR and environmental justice concerns.

### **4.14.2 Alternatives 1A and 1B—Indefinite Withdrawal and Indefinite Withdrawal/Modification of Lands and/or Administration**

Alternatives 1A and 1B both provide for indefinite withdrawal of NAFR lands. Alternative 1B provides for greater access than 1A, since co-use could be permitted within the Mud Lake, Kawich Range, or EC South areas of the North Range. In addition, approximately 38,400 acres of land would not be withdrawn under Alternative 1B and would be returned to the BLM for public use.



No significant adverse effects on human health or the environment have been identified for Alternatives 1A and 1B in sections 4.1 through 4.14 in this LEIS. Therefore, no disproportionately high and adverse effects on minority and low-income populations would result from these alternatives.

Specific environmental justice concerns were expressed during the scoping and consultation process for the LEIS. These concerns relate to socioeconomics and impacts to American Indian tribes and to communities surrounding NAFR.

#### ***LOCAL COUNTY CONCERNS***

Nye County officials submitted comments at the June 25, 1996 scoping meeting in Tonopah regarding a variety of issues affecting the county, including environmental justice. The county indicated that it should be given special consideration, opportunity for participation, and mitigations because it qualifies as a rural, low-income area under EO 12898. Lincoln County officials have expressed similar concerns.

The Draft Council on Environmental Quality (CEQ) Guidelines for Implementation of EO 12898 (CEQ 1997) indicate that poverty thresholds should be utilized to measure low-income status of populations that may be subject to disproportionately high environmental and health effects. Based on data from the 1990 Census of Population and Housing, 10.4 percent of persons living within the three-county area containing NAFR (Nye, Lincoln, and Clark counties) were living below the poverty threshold (\$12,674 for a family of four in 1989, and varying by number of persons in the household). By comparison, 10.3 percent of the population of Nye County was living below the poverty level, an approximately equal percentage. The comparable figures for Lincoln and Clark counties are 13.1 percent and 10.3 percent of persons below poverty, respectively. Thus, the population of Nye County, when compared to the general population that would potentially be affected by the project, does not have a measurably greater percent of low-income persons than the general population.

Under Alternatives 1A and 1B, employment and earnings effects of continued withdrawal would be similar to current levels and there would be no significant adverse socioeconomic effects. Therefore, socioeconomic effects of the proposed alternatives would not result in disproportionately high health and environmental effects on low-income populations.

Lincoln County has a higher percentage of persons living below poverty (13.1 percent), compared to 10.3 percent in Clark County, 10.3 percent in Nye County, and 10.4 percent in the three counties. Baseline subsonic noise levels in Lincoln County communities such as Caliente, Pioche and Panaca, located east of NAFR within the NRC, are approximately 54-56 Ldnmr. This noise level is substantially below 65 dB and is not considered to have a significant impact upon Lincoln County residents. Use of noise restriction cylinders (i.e., no-fly zones designed to reduce noise) decreases noise levels.

Areas of the associated airspace that are authorized for supersonic activity within Lincoln County are located in the Elgin and Coyote subdivisions of the Desert MOA. Baseline sonic boom levels are less than 56 LCdn in the Elgin subdivision and less than 50 LCdn in the Coyote subdivision. LCdn is the day-night average C-weighted sound level, which takes into consideration impulsive sounds by C-weighting the Ldn value.

The Moapa Indian Reservation is located southwest of the Town of Moapa in Clark County, approximately 10 miles south of the Nellis Range Complex. Baseline subsonic noise levels at the closest point within the Nellis Range Complex are approximately 46-47 Ldn. Baseline supersonic noise levels north of the reservation's northern boundary are 56 LCdn with 1-2 sonic booms per day.

Projected future noise levels from the alternatives are similar to baseline conditions. There would be no disproportionately high and adverse effects from noise on low-income or minority populations from these alternatives.

#### *AMERICAN INDIAN CONCERNS*

The following discussion addresses American Indian concerns in the areas of consultations and participation and the effects of past NAFR and TTR operations on American Indian sacred lands, cultural survival, restricted access, and vandalism. Section 4.9 addresses traditional cultural resources and American Indian concerns.

The Air Force has initiated consultation with 18 American Indian groups. In addition, it is complying with all other legislation and regulations designed to protect cultural and traditional cultural resources. The Air Force is respectful of tribal relations and sovereignty. Through its on-going NAIP for NAFR, the Air Force has worked closely with American Indian tribes and organizations in the CGTO to identify issues of concern, to provide a full opportunity for participation in the LEIS process, and to collect information on traditional cultural resources throughout NAFR. As part of this program, the Air Force has funded the preparation of the NARD by the AIWS.

The Air Force currently makes every effort to support access to NAFR lands for American Indian religious ceremonies where such access would not affect training schedules, public safety, or security. In addition, scheduled limited access for American Indian groups consistent with test and training missions is included in all action alternatives. Access would be planned on an annual basis, subject to change based on safety and security requirements. Full and unlimited access to NAFR conflicts with existing Air Force mission requirements, safety, and security and is not considered feasible.

Alternative 1B potentially provides for greater access than Alternative 1A. Under Alternative 1B, co-use could be permitted within the Mud Lake, Kawich Range, or EC South areas of the North Range. In addition, approximately 38,400 acres of land would not be withdrawn and would be returned to the BLM.

NAFR includes the TTR, which is within its northern boundary. The TTR consists of approximately 336,665 acres and is operated by Sandia National Labs for DOE. Activities on the TTR include projectile firings, rocket testing, missile flights, explosion effects tests, earth penetration tests, and many activities requiring a remote range for non-nuclear DOE Research and Development projects, or for other safety and security reasons. Operations on the TTR also include a single airfield run by the Air Force, associated facilities, and personnel housing.

Section 4.9 of the LEIS discusses impacts on cultural resources and American Indian traditional resources within NAFR from the withdrawal alternatives. Continued effects would occur to American Indian groups desiring increased access to cultural and traditional resources, as well as impacts from ground disturbance and visual and noise intrusions from overflights. No significant adverse impacts have been identified.

Effects of DOE operations on the TTR are addressed in the *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (DOE 1996a). Information provided by the AIWS is included in the NTS LEIS and the document includes a section addressing environmental justice issues.

#### **4.14.3 Alternatives 2A and 2B — 25-Year Withdrawal and 25-Year Withdrawal/Modification of Lands and/or Administration**

No significant adverse effects on human health or the environment have been identified for Alternatives 2A and 2B for resources addressed in sections 4.1 through 4.14 in this LEIS. Therefore, no disproportionately high and adverse effects on minority and low-income populations would result. Discussions related to socioeconomic, American Indian concerns, and noise levels contained in section 4.14.2 above (for Alternatives 1A and 1B) would also apply to these alternatives; however, the time frame would be 25 years rather than an indefinite withdrawal period.

#### **4.14.4 No-Action Alternative**

The No-Action Alternative would potentially provide the greatest opportunity for access to NAFR lands, since military activities on the range would cease and lands would be managed for multiple use by BLM. Hazardous areas on the former NAFR would still be excluded to ensure public safety. Air-to-air operations by the Air Force would still continue in the special use airspace in the NRC.

As described in section 4.9, potentially significant impacts could occur under the No-Action Alternative to preserved cultural and American Indian traditional resources. Potential access-related impacts include increased vandalism because alteration to land status could mean that cultural resource protection would be reduced. Multiple use management policies that expose cultural and American Indian traditional resources to impacts from consumptive and non-consumptive uses would also increase. Because of these effects, there is a potential for disproportionately high and adverse effects on American Indian populations.

With the exception of the above impacts, no significant adverse effects on human health or the environment have been identified for the No-Action Alternative. Therefore, no disproportionately high and adverse effects on minority and low-income populations would result. The discussion below addresses environmental justice concerns related to socioeconomic issues that were expressed during the scoping and public participation process for the LEIS and that are listed in section 3.1.3.

Sections 4.13.1 through 4.13.4 of this LEIS (Socioeconomics) discuss potential economic impacts on Nye, Lincoln, and Clark counties, including employment, income, and related effects of the LEIS alternatives. Under the No-Action Alternative, Clark County, which is 24.5 percent minority, would lose approximately 7,100 jobs, of which approximately 1,740 would be expected to be minority jobs. Nye County, which is 12.0 percent minority, could eventually have a net gain of 390 jobs, primarily in mining. Lincoln County, which is 8.2 percent minority, could eventually have no substantive change in employment.

Under the No-Action Alternative, Nye County would potentially lose jobs and related procurements and personal income, by 2002, related to the loss of contractor employment at NAFR. However, there could potentially be increases in mining employment resulting in a net gain of 390 jobs by 2015 if mining access to former NAFR lands were permitted by BLM and the long-term price of gold sustained a 30 percent increase over mid-1998 values.

Potential population out-migration resulting from the No-Action Alternative would likely be offset by projected continued baseline population growth in the county. The increased costs of providing public services to the in-migrating populations could continue to strain public finances at the county level and require other forms of revenue or reductions in services.

Under the No-Action Alternative, Clark County employment related to NAFR would potentially be reduced by 7,100 jobs. This potential reduction in jobs would not constitute a significant adverse effect given projected baseline job growth in Clark County of 81,309 jobs between the year 2001 and 2006. The population of Clark County is 24.5 percent minority compared to 8.2 percent minority in Lincoln County, 12.0 percent in Nye County, and 24.1 percent in the three counties. Clark County's much larger population relative to the other two counties heavily weights the three-county value. The minority population of the State of Nevada comprises 21.2 percent of the total state population. Relative to its total population, Clark County's minority population is 2.9 percentage points higher than the State of Nevada's, not a meaningfully higher value.

Minority job losses are calculated to be approximately 1,700 in Clark County. This absolute loss from a No-Action decision would impact individuals but would not have disproportionately high or adverse socioeconomic effects on minority and low-income populations in the region.

#### **4.14.5 American Indian Issues Concerning Environmental Justice**

The following concerns about environmental justice have been raised by the CGTO.

- **Centrality and Continuity.** Because the CGTO considers NAFR to comprise a portion of their traditional lands, NAFR is central to the functioning of American Indians from the surrounding region.
- **Usurpation of All Resources.** The CGTO sees the military land withdrawal as a continuation of the process that began with moving American Indians onto reservations and off the land, thereby causing a complete disruption of their way of life.

According to the CGTO, Air Force activities on Nellis constitute sacred land violations, perceived risks from radiation (in some areas) and cultural survival violations.

Although the Air Force and the CGTO are working together through the NAIP to provide access to portions of NAFR that are not dangerous and during time that will not conflict with training exercises, the CGTO has stated that "land disturbance and irreparable damage of cultural landscapes, traditional cultural properties and cultural resources may render certain locations unusable" (AIWS 1997).

**T**his chapter summarizes the cumulative impacts and the irreversible and irretrievable commitment of resources associated with continued use of NAFR. The National Environmental Policy Act (NEPA) requires that environmental analysis include identification of "...any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations.

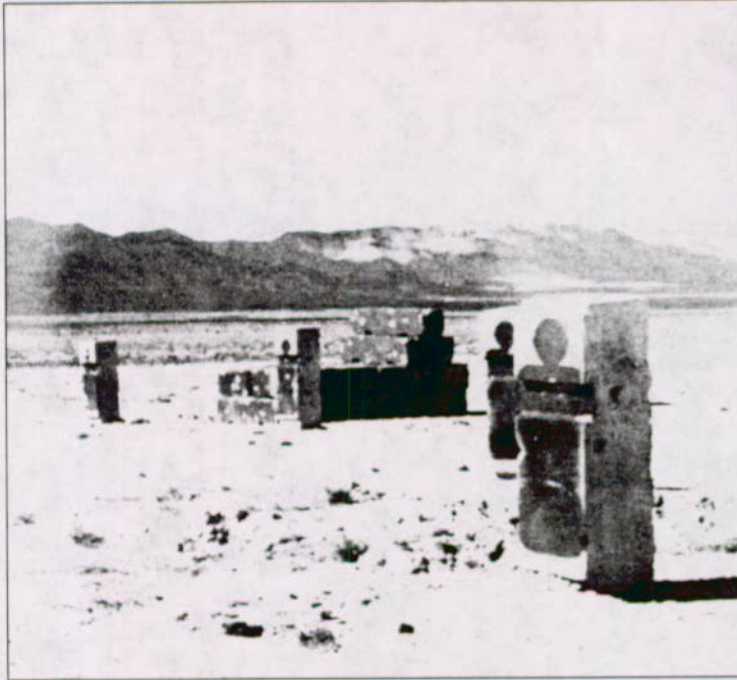
- Irreversible effects primarily result from use or destruction of a specific resource, such as energy and minerals that cannot be replaced within a reasonable time frame. The Nellis withdrawal action does not use any minerals except aggregate for roads. Mineral extraction is precluded from NAFR.
- Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action, such as disturbance of a cultural site. For 50 years, biological and cultural resources have been generally protected from the impacts of human use under multiple use by NAFR. However, military use of these lands has resulted in some limited impact from the construction of roads, simulated military targets, communications facilities and other facilities to support the testing and training mission. Other impacts have occurred as a result of the use of these lands for military testing and training. These impacts are generally limited to the areas delineated in the MOU between the USFWS and Air Force. Inadvertent or errant munitions releases have resulted in infrequent impacts to other lands and resources outside of the areas delineated in the MOU.

NAFR has resulted in few direct and indirect commitments of resources. Most resource commitments are related to construction or operation of the range components. Most impacts are short term and temporary. Those resources that may have a possible irreversible or irretrievable commitment are discussed in this chapter.

## IRREVERSIBLE / IRRETRIEVABLE COMMITMENT OF RESOURCES AND CUMULATIVE IMPACTS

5.0

## COMMITMENTS OF RESOURCES & CUMULATIVE IMPACTS



*Resources committed as targets are designed to be used as long as possible and then recycled. These concrete targets of personnel and a vehicle are examples of the existing commitments of resources.*

Cumulative analysis considers other activities that potentially could affect ROI Three and the region. These activities include test and evaluation for the F-22, DOE projects including Yucca Mountain, and nearby mining activities.



*Most irreversible commitments of resources occur at permanent facilities such as Indian Springs, pictured here.*

## **5.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES AND CUMULATIVE IMPACTS**

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### **5.1 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

The National Environmental Policy Act (NEPA) requires that environmental analysis include identification of "... any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource, e.g., energy and minerals, that cannot be replaced in a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action, e.g., the extinction of a threatened or endangered species or the disturbance of a cultural site.

The continuation of activities at Nellis Air Force Range (NAFR) as described under Alternative 1 or Alternative 2 would, for most resources, neither irreversibly nor irretrievably commit resources. As in the past, activities that have the potential to produce ground disturbance also have the potential to impact water resources, air quality, biological resources, and cultural resources. However, management policies and practices in place and proposed to continue are designed to minimize potential impacts to these resources.

Construction and maintenance of targets and other facilities on NAFR would require the consumption of limited quantities of aggregate, steel, concrete, petroleum, oil, and lubricants. The commitment of these resources would apply under all action alternatives.

Use of training ordnance during operations would involve the commitment of certain quantities of resources; however, none of these resources are considered rare and their long-term commitment would not have a substantial effect on their future availability.

All alternatives, including the No-Action Alternative, would involve fuel use by aircraft and some by surface vehicles. Training activities would continue under all alternatives (although to a lesser degree under the No-Action Alternative).

Changing world situations and shifts in the strategies for national defense defined by the President and Congress dictate the training activities and support needs for all armed services. In the future, should such changes and shifts alter the training requirements, the Air Force would evaluate possible options to fulfill these requirements. Such changes could mean a removal or reduction of a range. If a range were no longer needed in the future for training, the Air Force would relinquish the withdrawn land to Bureau of Land Management (BLM) or



U.S. Fish and Wildlife Service (USFWS). The Federal Land Policy Management Act (FLPMA) describes the process for such relinquishment, including any appropriate site restoration, in accordance with the Resource Management Plan (RMP).

## **5.2 CUMULATIVE IMPACTS**

### **5.2.1 Definition of Cumulative Impacts**

This section provides (1) a definition of cumulative impacts, (2) a listing of plans and projects used to evaluate cumulative impacts, and (3) a resource-specific evaluation of cumulative impacts associated with renewed withdrawal of the NAFR.

The Council of Environmental Quality (CEQ) regulations stipulate that the cumulative impact analysis within an environmental impact statement (EIS) should include the anticipated impacts to the environment resulting from "the incremental impacts of the action when added to other past, present and reasonably foreseeable future action regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 Code of Federal Regulations [CFR] 1508.7). Therefore, a cumulative impact analysis is based on a series of assumptions concerning future plans and/or projects and information about their character and timing. Cumulative impacts are examined by combining the impacts of the proposed project alternatives with the impacts of other past, present and reasonably foreseeable activities in a region of influence. The extent of the region of influence can vary widely from resource to resource. For the purposes of this analysis, public documents prepared by federal, state and local governmental agencies (including resource management plans and economic and demographic projections) are the primary sources of information regarding reasonably foreseeable projects. Actions planned by private persons are assumed to be captured in the information provided by these agencies.

In its determination of impacts associated with other projects, the cumulative impact analysis methodology uses assessments of environmental impacts contained in resource management plans. It is against these collective impacts that the impacts associated with implementation of the plans described in this document are compared. This approach is used rather than one that employs a compilation of specific future projects anticipated to occur in the region of influence. The geographical and temporal extent of this Legislative Environmental Impact Statement (LEIS) make it infeasible to achieve a project-by-project aggregation.

The resource management plans and economic and demographic projections developed by public agencies present a comprehensive picture of activities that are projected to occur in areas surrounding NAFR. In general terms the respective resource management plans apply to the large areas of relatively undeveloped land under federal ownership in Nye and Lincoln counties. The economic and demographic projections apply to the more urbanized areas of Clark and Nye counties. The resource management plans and economic and demographic projections utilized in this analysis include the following:

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- Bureau of Land Management – Tonopah Resource Area;
- Bureau of Land Management – Stateline Resource Area;
- Bureau of Land Management and U.S. Air Force – Nellis Air Force Range; and
- Economic and Demographic Projections for Clark, Lincoln, and Nye counties.

Resource management plans, and associated EISs, have been prepared by the BLM for the NAFR Complex (BLM 1990b) and the Stateline and Tonopah Resource Areas (BLM 1994a; 1994b). These plans identify objectives for each area, management directions designed to attain these objectives and restricted land use designations associated with management directions. The environmental resources commonly considered in these plans include air quality, soils, water, vegetation, wildlife, forestry, livestock and grazing, wild horses and burros, cultural and archaeological resources, natural areas, wilderness, minerals, fire management, socioeconomic values, land use, and visual resources.

As directed by Public Law (PL) 99-606, as amended, branches of the Department of Defense (DOD) are evaluating their need and impacts of the various military ranges covered in this Act. These include the following:

- Bravo-20 Bombing Range, Department of the Navy in Churchill County, Nevada;
- Nellis Air Force Range, Department of the Air Force, in Nye, Clark, and Lincoln counties, Nevada;
- Barry M. Goldwater Air Force Range, Department of the Air Force, in Maricopa, Pima, and Yuma counties, Arizona;
- McGregor Range, Department of the Army, in Otero County, New Mexico;
- Fort Greely Maneuver Area and Fort Greely Air Drop Zone, Department of the Army, in the Big Delta and Granite Creek Areas, Alaska; and
- Fort Wainwright Maneuver Area, Department of the Army, in the Fourth Judicial District, Alaska.

Other land withdrawal renewal activities under PL 99-606, as amended, outside of Nevada were not included here in the analysis of cumulative impacts since the regions of influence would not be expected to overlap.

## 5.2.2 Reasonable Foreseeable Future Actions

### Federal Actions

Actions of agencies of the federal government include those of the Air Force, U. S. Navy, Department of Energy (DOE), and Department of the Interior (DOI) (BLM and USFWS). It is expected that these agencies would continue to use the resources available to them and proceed with approved plans for the management and/or development of these resources.

#### DEPARTMENT OF DEFENSE

The DOD, in cooperation with the Federal Aviation Administration (FAA), has established various special-use airspaces near NAFR including military operations areas (MOAs), military training routes (MTRs), and alert areas. The use of Nellis Range Complex (NRC) airspace by aircraft not associated with the NAFR is included in the projected 200,000 to 300,000 sortie-operations evaluated in this LEIS. Table 5.2-1 lists the MTRs that are near or within the NRC airspace that are not associated with the operation of the NAFR.

MTR	Scheduling Agency	NAFR Airspace Accessed	Annual Sorties <sup>1</sup>
IR 286	Nellis AFB	Final segments in Desert MOAR-4807A	21
IR 234	Edwards AFB	First segment exits Reveille MOA	0
IR 235	Edwards AFB	Last segment enters Reveille MOA (reverse of IR 234)	0
IR 237	Edwards AFB	Last segment enters Reveille MOA	0
IR 238	Edwards AFB	First segment exits Reveille MOA (reverse of IR 237)	0
IR 425	Edwards AFB	Traverses Reveille and Desert MOAs	5
IR 285	Offutt AFB	First segment exits north Desert MOA	3
IR 310	Offutt AFB	Last segment enters north Desert MOA (reverse of IR 285)	3
VR 1406	Nellis AFB	None	2
VR 1252	NAS Lemoore	None	66
VR 1253	NAS Lemoore	Traverses Desert MOA	15
VR 1259	NAS Lemoore	Traverses Reveille and Desert MOAs	113
VR 1260	NAS Lemoore	First and last segments in Reveille MOA	7
VR 208	NAS Lemoore	None	441
VR 209	NAS Lemoore	Traverses Reveille and Desert MOAs	79
IR 200	Point Mugu	Traverses Reveille and Desert MOAs (reverse of IR 425)	100
IR 206	Point Mugu	None	5

Note: 1. Approximate number of sorties based on best available data.

## **AIR FORCE**

Nellis Air Force Base (AFB) is one of the key test and training bases in the nation. As such, Nellis AFB missions and mission activities on NAFR undergo near continuous updating and revisions to ensure that aircrews equipment are ready when required by national policy. The overall scope of analysis in this LEIS is designed to capture the expected levels of test and training activity into the indefinite future. Two representative test and training activities that are reasonably foreseeable are (1) the establishment of F-22 Operational Test and Evaluation (OT&E) and Fighter Weapons School at Nellis AFB with flight activity over NAFR and (2) the resumption of use of depleted uranium (DU) rounds at NAFR Target 63-10.

The planned F-22 activity consists of the introduction of seventeen F-22A aircraft at Nellis AFB starting in 2003 for OT&E and Fighter Weapons School. The role of the F-22 will be similar to that of the F-15C. These aircraft would use NAFR and the NRC in a similar manner to the existing F-15, flying the air superiority mission. This LEIS cumulative analysis assumes that F-22 aircraft will be tested and train similarly to the way F-15 aircraft fly. This is a reasonable assumption since:

- the F-22 has similar physical characteristics to the F-15 (single pilot, twin engine supersonic flight capabilities, air superiority mission); and
- the F-22 would be required to perform similar mission profiles with limited air-to-ground requirements.

Cumulative impacts of this project on NAFR would be primarily due to differences between the noise characteristics of the F-22 and F-15, and not due to differences in utilization.

The resumption of limited DU rounds fired from A/OA-10 aircraft on Target 63-10 would occur during 25 annual sorties. This activity would fill a critical need for instructor training, testing, evaluation of associated tactics, and software development. Target 63-10 is the only remaining air-to-ground gunnery range in the United States licensed for DU use. A cumulative increase of hazardous materials and waste would occur at the target.

## **U.S. NAVY**

The Navy has proposed to modify their existing training ranges near Naval Air Station (NAS) Fallon to include an expansion to accommodate new mission requirements (resulting from realignments) and to enhance public safety. The expansion could entail the withdrawal of approximately 127,365 acres to augment the current 56,499 acres. This action would result in some ground disturbance and between 20 and 30 percent of the withdrawn land would have exclusive use by the Navy. Some special use airspace supporting training would be changed from MOAs to restricted airspace. The total special use airspace is not expected to increase.

Under PL 99-606, as amended, the Navy is also preparing an analysis of the renewal of lands within the Bravo-20 Range. This action would renew the withdrawal of approximately 21,500

acres of land in Churchill County, Nevada. No additional lands would be disturbed. Special use airspace would not be changed. If approved, this land would continue to be reserved for military training.

#### **DEPARTMENT OF ENERGY**

The DOE recently completed an evaluation of potential site-wide impacts of future development of the Nevada Test Site (NTS) and other associated sites in Nevada. This evaluation included analysis of four development alternatives (current operations, discontinue operations, expand operations, alternative uses) with respect to its five major programs (defense, waste management, environmental restoration, non-defense research and development, and work for others). The framework for a NTS resource management plan was also presented in the site-wide EIS. The Record of Decision (ROD) identified an expanded use of the NTS pending other DOE decisions. If fully implemented, this decision would result in a multipurpose, multi-program use of lands withdrawn by DOE. Much of the NTS would remain in exclusive use. DOE will pursue diversification of interagency, private industry and public education use while meeting the mission requirements of the NTS and other Nevada sites.

Site characterization studies at Yucca Mountain in Nye County are ongoing and designed to determine whether the site is suitable for disposal of high-level radioactive materials and spent nuclear fuel. The DOE anticipates making a recommendation to the President on the suitability of the Yucca Mountain site for this purpose in 2001. If suitable, following Nuclear Regulatory Commission review and approval, construction could be completed and operations could commence by 2010. On August 7, 1995, DOE announced its intent to prepare an EIS for a geologic repository for the disposal of spent nuclear fuel and high level radioactive waste at Yucca Mountain, Nye County, Nevada.

The DOE proposes that low-level nuclear waste (LLW) be transported from a number of DOE/NV-approved LLW generators to a disposal site located on the NTS utilizing rail and truck transportation modes and an intermodal transfer facility. The use of rail and truck modes and alternative routes could reduce radiological risk, improve safety, and reduce costs for transporting LLW from generator sites to the NTS. LLW would be shipped via rail to an intermodal facility near the NTS where the cargo would be transferred to trucks for delivery to waste disposal sites at the NTS. The proposed action and alternatives address routes that would avoid the Las Vegas Valley and Hoover Dam.

Locations for the proposed intermodal facility are (1) an existing intermodal facility in Barstow, California operated by the Burlington Northern Santa Fe Railroad, (2) a facility proposed by the City of Caliente, Nevada (at either of two potential locations), and (3) an existing intermodal facility at the rail terminal of the Yermo Annex operated by the U.S. Army MCLB Barstow in Yermo, California.

## **BUREAU OF LAND MANAGEMENT**

The Stateline resource area (now part of the Las Vegas District) comprises approximately 3.7 million acres of public land in Clark and Nye counties. The resource area is bordered by the Caliente resource area, the USFWS Desert National Wildlife Range (DNWR), NAFR and the NTS. The Stateline *Resource Management Plan* (BLM 1992b) characterizes five alternative management plans (Alternatives A through D and the No-Action). Alternative D was the BLM's preferred alternative. An additional management alternative (Alternative E) was developed following public and agency review. The Supplemental EIS (BLM 1994a) evaluated the following alternative management actions:

- No-Action – a continuation of the current management direction within the present laws, regulation and other agreements;
- Alternative A – provides for the full spectrum of public land use. Consumptive and non-consumptive uses would be balanced;
- Alternative B – provides for the maximum opportunities for land-based growth and development while providing for multiple-use and sustained yield of the public lands;
- Alternative C – provides for the management of land on an ecosystem basis, with an emphasis on maintaining or enhancing biodiversity, nonconsumptive use and protection of the desert tortoise;
- Alternative D – provides for the multiple-use of public lands, permits maximum flexibility in the disposal of lands and the protection of the desert tortoise; and
- Alternative E – provides for the management of lands for multiple use and sustained yield, while emphasizing biodiversity and the protection of the desert tortoise.

The potential environmental consequences in each resource area were assessed for each alternative. For example, the total area potentially disturbed would reach approximately 197,000 acres. The effects attributable to these reasonable foreseeable actions are identified in the *Supplement to the Stateline Draft Resource Management Plan and EIS* (BLM 1994a).

The Tonopah Resource Area (now divided between the Las Vegas and Ely districts) includes approximately 6.1 million acres of land in Nye and Esmeralda counties. *The Tonopah Resource Management Plan and EIS* addressed four alternatives including No-Action in an effort to resolve issues concerning the following six major environmental topics (BLM 1994b).

1. Wild horse and burro management
2. Special management areas
3. Off-highway vehicle use

4. Management of released wilderness study areas (WSAs)
5. Utility corridor routing
6. Locatable and fluid minerals

The total area potentially disturbed from these alternatives could reach approximately 26,800 acres in Nye County.

#### **U.S. FISH AND WILDLIFE SERVICE**

##### ***DESERT NATIONAL WILDLIFE RANGE***

The USFWS withdrawal of the DNWR continues the limited access and single use of these lands and is not expected to increase the area of disturbance. Management of the DNWR resources, including occasional reintroductions and restricted hunting, will continue.

#### **Non-Federal Actions**

This section contains information for the following geographical areas: Clark County, Nye County, and Lincoln County.

#### **CLARK COUNTY**

The Regional Transportation Plan for Clark County (Regional Transportation Commission 1994) estimates an average annual growth rate from 1980 to 1990 of 5.2 percent for population and 5.7 percent for employment. Growth rates are projected to decrease to 3.9 and 4.6 (population and employment, respectively) for the 1990 to 2000 period and to 2.5 percent for each parameter for the period of 2000 to 2015. Such growth would result in a Clark County population of approximately 1.2 to 1.4 million persons by 2005. It is further projected that approximately 58,000 acres of undeveloped land in the Las Vegas Valley would be converted to urban uses in the same period.

The *Clark County Desert Conservation Plan* (Regional Environmental Consultants 1995) was prepared to support discussion with the USFWS regarding the desert tortoise and to develop a strategy to address the conservation and protection of habitats necessary to preserve plant and wildlife resources. It addresses these issues on approximately 525,000 acres of non-federal land in Clark County and about 2,900 acres of desert tortoise habitat associated with Nevada Department of Transportation (NDOT) activities in Clark, Esmeralda, Lincoln, and Nye counties.

An incidental take permit for desert tortoises was issued by the USFWS based on this and other analyses. It estimates that approximately 111,000 acres of Clark County and about 2,900 acres of NDOT lands will be developed in the next 30 years. The permit also establishes the Desert

Tortoise Recovery Plan with land use constraints and a mitigation fee on development projects in the permit area.

#### **NYE COUNTY**

Key economic and development forces that influence future private activities and the character of Nye County and its communities include federal activities at the NTS, NAFR, mining and tourist activity, migration and commuting patterns and the local service sector activity. Population projections for Nye County (Nye County Board of Commissioners 1993) indicate an average annual growth of 4.6 percent from 1990 to 2010. However, much of this growth is expected to be fueled by economic growth in the Las Vegas valley and the availability of low cost land and housing in the Pahrump area of Nye County. This area is expected to grow at approximately 7.6 percent per year during the same period. This would be expected to result in the conversion of approximately 2,000 acres of undeveloped land to urban uses by 2005.

#### **LINCOLN COUNTY**

Lincoln County is projected to retain a rural agriculture-based economy. Based on demographic projections prepared as part of this document, the population of Lincoln County is forecast to increase from 3,727 in 1996 to 4,552 in the year 2026.

#### **American Indian Actions**

The Las Vegas Paiute Tribe has developed plans for a destination resort including a 450-room hotel and four championship golf courses. This would be constructed on approximately 150 acres of land on the east side of U.S. Highway 95. A 300-acre theme park is under consideration immediately adjacent to this development. On the west side of the reservation, the tribe has plans for 200 single family homes for tribal members, a solar energy park, and other industrial facilities. The Bureau of Indian Affairs has prepared an environmental assessment for the construction of the golf courses.

### **5.2.3 Cumulative Resource Analysis**

A summary of the potential impacts, on a resource-specific basis, associated with each of the alternatives and scenarios for the renewal of the NAFR withdrawal and the No-Action Alternative is presented in Table 2-3. This table describes the overall impacts of the withdrawal renewal within the area (1) disturbed by past and projected military activities (Region of influence [ROI] One), (2) associated with the access restrictions within the withdrawn lands (ROI Two), and (3) within the associated airspace used by aircraft which utilize NAFR land-based infrastructure (ROI Three).

#### **5.2.3.1 AIRSPACE**

Discussions with FAA and State of Nevada air traffic and airspace representatives indicate that aviation activities within the Las Vegas region are projected to continue to increase in the



foreseeable future. No changes in the volume of airspace activities are expected to significantly affect NAFR airspace use. If any activities, such as airport expansion or greater than planned increase in aircraft operations, were to be proposed for this region, the FAA would review these activities to determine any potential cumulative impacts such growth may have on the compatible use of airspace by all military and civil aviation interests. Under the No-Action Alternative, military aircraft operations would be reduced resulting in lower cumulative regional demand for airspace.

### **5.2.3.2 NOISE**

The primary cumulative contribution to noise would be introduction of the F-22.

#### ***SUBSONIC NOISE CHARACTERISTICS OF THE F-22***

Comprehensive in-flight noise measurements have not yet been conducted on the F-22. However, noise data have been collected in ground runup tests (Downing 1997), and differences between the F-22 and F-15 can be estimated.

Ground runup measurements at idle power and full military power have shown that the overall sound pressure level of the F-22 is approximately 1 decibel (dB) lower than that of the F-15. The frequency characteristics of the F-22 are considerably different, with the highest levels being around 1,000 Hz, as opposed to the 300 to 350 Hz range for the F-15. This corresponds to the A-weighted noise level for the F-22 being about 4 dB higher than that of the F-15.

That higher noise level corresponds to a measurement about 40 feet from the aircraft, with the aircraft stationary. Noise from an F-22 operating in the NRC and over NAFR will differ in two ways. First, the F-22 is expected to operate at higher minimum altitudes than the F-15. Sound is attenuated as it propagates through the atmosphere, with high frequencies attenuated more than low. The higher-pitched F-22 engine noise will therefore fall off more rapidly than that of the F-15, and the difference between the two will diminish at larger distances.

The second factor is that at the high speeds on the range the engines are one of two major noise components. The second component is airframe noise. Because of its cleaner aerodynamic shape, airframe noise from the F-22 is expected to be no more than that of the F-15, and most likely less. For purposes of this cumulative assessment, the F-22, under range operating conditions, is estimated to be 2 dB (A-weighted) louder than the F-15. This is a conservative estimate, assuming that half of the near-field engine noise difference persists into the far field, and ignoring the dilution by airframe noise.

The F-22 has two subsonic performance characteristics that could, in principle, affect its average noise. One is that it has higher performance than the F-15. It is less likely to employ its afterburner, which reduces noise. The second is that it is capable of very low speed high angle of attack flight – virtually “standing on its tail.” This flight mode would result in higher local noise levels. This capability is not, however, expected to be used routinely or for extended periods. When used, it would be during air combat maneuvering, which takes place at high

altitudes. Low speed high angle of attack flight will therefore not occur often enough or low enough to affect cumulative noise at the ground.

Tables 5.2-2 and 5.2-3 show maximum sound level ( $L_{max}$ ) and sound exposure level (SEL) for several aircraft, including the F-22. They are the same data as shown earlier in Tables 4.2-1 and 4.2-2, but with the F-22 (estimated to be 2 dB louder than the F-15) added.

<b>Table 5.2-2. Aircraft Maximum A-weighted Sound Levels (dB) at Various Altitudes Above Ground Level<sup>1</sup></b>						
<i>Aircraft Type</i>	ALTITUDE IN FEET					
	500	1,000	2,000	5,000	10,000	20,000
B-1B	113	106	98	86	75	61
F-15	114	107	98	86	73	57
F-16	104	97	89	76	64	48
A-10	94	87	78	65	54	43
C-130	91	84	76	66	56	46
F-22 <sup>2</sup>	116	109	100	88	75	59

1. Level flights, steady high-speed conditions  
2. Projected

<b>Table 5.2-3. Sound Exposure Levels in dB at Various Altitudes Above Ground Level<sup>1</sup></b>						
<i>Aircraft Type</i>	ALTITUDE IN FEET					
	500	1,000	2,000	5,000	10,000	20,000
B-1B	112	107	101	92	82	69
F-15	112	107	101	90	80	65
F-16	103	98	91	81	70	56
A-10	95	89	82	72	63	53
C-130	96	91	85	77	69	61
F-22 <sup>2</sup>	114	109	103	92	82	67

1. Level flights, steady high-speed conditions  
2. Projected

**SONIC BOOM CHARACTERISTICS OF THE F-22**

Sonic boom depends on an aircraft's size, weight and geometry, and its flight altitude, Mach number, and maneuvering. When comparing the sonic boom from two aircraft, differences in boom are related to differences in size, weight and geometry.

Carlson (1978) has shown that the effect of aircraft geometry can be accounted for via a "shape factor," which is a function of aircraft type. Both the F-15 and F-22 are modern fixed-wing fighters, and have a similar shape. The length of the F-22 is approximately 2 feet shorter than the F-15; this is not a significant difference for sonic booms. Nominal weight (average of empty weight and maximum takeoff weight) is also close enough so as to be a negligible difference. A sonic boom from the F-22 will therefore be essentially the same as from the F-15.

The F-22 is expected to be supersonic more often than the F-15. Because of its higher acceleration capability and cleaner aerodynamics, it will reach supersonic speeds more quickly when accelerating from a setup point toward an engagement in approved airspace. Random excursions during engagement are likely to be more frequent. It has been estimated by the F-22 System Management Office that during air combat maneuvering, the F-22 will be supersonic approximately 10 percent of the time. This is more often than the 7.5 percent documented for F-15s on the Nellis Range (Frampton et al. 1993).

Sonic booms would be expected to increase by more than just the ratio of 10 to 7.5. Not all supersonic excursions will cause a boom at the ground; the aircraft must exceed the "cutoff" Mach number. Because the F-22 supersonic events will be longer in duration, a greater percentage will exceed cutoff conditions. F-22s engaged in air combat maneuvers (ACM) could generate up to twice as many booms per sortie as F-15s. F-22 parameters in BOOMAP have been adjusted to account for this increase. Table 5.2-4 presents the projected cumulative sonic boom consequences with the F-22 operations.

<b>Table 5.2-4. Sonic Boom Levels and Numbers per Day - Cumulative Operations</b>					
<i>Airspace</i>	200,000 SORTIE-OPERATIONS			300,000 SORTIE-OPERATIONS	
	<i>LCdn</i>	<i>Number/Day</i>	F-22	<i>LCdn</i>	<i>Number/Day</i>
Elgin	55	1.2	1:1	57	1.7
Coyote	51	0.5	1:5	52	0.6
Reveille	45	0.1	<1:10	45	0.1
EC East	46	0.1	<1:10	46	0.1
R-74	46	0.1	<1:10	46	0.1
All Others	<45	<0.1		<45	<0.1

### **CUMULATIVE NOISE CONSEQUENCES**

The proposed renewal of NAFR (Alternative 1A, 1B, 2A, or 2B) with the cumulative effects of the F-22 would not generate a noticeable change to noise levels to lands beneath the NRC overlying airspace. The result of the No-Action Alternative would be to noticeably (4 dB) decrease the noise levels from aircraft but could permit localized multiple use noise-generating activity including mineral extraction and processing and off-highway vehicle recreation. It is unlikely that the implementation of any foreseeable plans and projects (with the exception of the F-22 OT&E project discussed above) would change the overall noise levels within the lands withdrawn for NAFR.

#### **5.2.3.3 SAFETY**

NAFR permits the Air Force to provide a realistic testing and training environment for aircraft, weapons systems, and aircrews in an environment that safeguards national security interests and affords protection and safety to the public. Military operations on NAFR are conducted under strict safety criteria. Additionally, there are some other activities occurring in the region that have safety considerations.

The U.S. Navy has proposed to expand training ranges at Naval Air Station (NAS) Fallon, and to renew the withdrawal of approximately 21,500 acres of land in Churchill County, Nevada. The expansion at NAS Fallon to support additional mission requirements, and the continuance of operations on their Bravo 20 Range, may result in additional ground activities that would result in increased exposure to ground safety and fire risks. The use of ordnance on these ranges also contributes to explosive safety considerations. However, since mission requirements at NAS Fallon are expanding, the added land area serves to enhance and expand safety buffers between military activity and the public.

The DOE's proposals regarding the NTS could result in an expansion of operations. Any expansion of operations could lead to increased potential for exposure to ionizing radiation. Although under current technology such exposure risk is very slight, the potential still results in DOE industrial safety and human health policies and practices to ensure safety.

The BLM is considering several proposals regarding some management areas that would involve improved access to the land. The expansion of the scope of recreational opportunities available would most likely result in increased human presence. This would have the potential to increase fire and accident risk in the region.

Although there is other military training airspace in the region that is additional to that overlying NAFR, overall use of the airspace is not projected to change from current activities. It is unlikely that any significant risk of Class A mishaps will arise even considering cumulative operations.

There are 16 MTRs in the immediate vicinity of the NAFR. Some short segments of some of these routes interact with some of NAFR airspace, usually affording access to a MOA or range. However, use of these routes is low. Aircraft that may use these MTRs but not be scheduled on NAFR are in NAFR airspace for such brief periods that any flight risk associated with those aircraft is inconsequential.

In summary, while some ongoing and proposed activities in the region have some fire, ground, flight, and explosive safety considerations associated with them, none create any significant adverse cumulative safety impacts. Under the No-Action Alternative, activities conducted by the Air Force having safety implications would be reduced in number. However, increased access by the public could increase the risk of accidents.

#### **5.2.3.4 HAZARDOUS MATERIALS AND SOLID WASTE MANAGEMENT**

The proposal to continue withdrawal of NAFR is not expected to increase the volume or management of hazardous materials or solid waste. Depleted uranium (DU) fragments at Target 63-10 are normally concentrated in a 300- to 400-foot radius around the target with small amounts of materials extending 1,000 feet from the target. No cumulative or significant impacts to any environmental resource is anticipated from resumption of DU rounds on the licensed target.

Although increased population in Las Vegas and the surrounding region is expected to increase the generation of wastes, this change is not related to continuing NAFR land withdrawal. Cumulative impacts to hazardous materials or solid waste management are not expected. Implementation of the No-Action Alternative could reduce Nellis AFB fuel requirements, but is not expected to change cumulatively the amounts or management of hazardous materials or solid wastes.

#### **5.2.3.5 EARTH RESOURCES**

The cumulative impact of other plans would result in the disturbance of approximately 240,000 acres of land. Approximately 58,000 acres of this land disturbance would be a result of urban development in the Las Vegas Valley. Such development, as well as DOE environmental restoration and waste management activities on the NTS, would impact soil and construction materials (primarily sand and gravel). Erosion could increase impacts to air quality but no cumulative change in impacts is anticipated for these earth resources under any NAFR action or No-Action alternative.

The continued restriction of access to NAFR and the NTS for mining activities could result in the delay of extraction of potentially recoverable resources if economics made such recovery feasible. DOD and DOE activities would not be expected to prevent the physical recovery of these resources under the No-Action Alternative, although costs of permitting mineral extraction in specific locations could be substantially increased. Most mineral extraction is determined more by global market conditions than by any other single factor. In the absence of

increased worldwide demand for mineral resources, little additional activity would be expected to take place at NAFR under the No-Action Alternative.

#### **5.2.3.6 WATER RESOURCES**

As a result of their isolation and ephemeral nature, use of surface water resources on NAFR would not be expected to have a cumulative effect on water resources within any of the ROIs. Most surface drainage within NAFR terminates within alluvial valleys and playas within the boundaries of the range. Approximately 96 percent of the annual runoff is lost to evapotranspiration while 4 percent infiltrates into the shallow groundwater system (Eakin et al. 1976). Further, surface water appropriations held by the DOE are not used for mission-related activities on NAFR.

Groundwater resources would generally be preserved similar to existing conditions under Alternatives 1 and 2. Groundwater resources within and adjacent to the NAFR are generally recharged by regional precipitation events. The average annual recharge of the subsurface aquifers beneath NAFR is approximately 84,000 AFY (Air Force 1998b). Current groundwater use at NAFR is below appropriated amounts and below estimated perennial yield. Because groundwater use is anticipated to remain similar to existing conditions under Alternatives 1 and 2, impacts associated with incremental groundwater use, with respect to other projects outside the range, are not considered significant.

Water resources are expected to be needed by the growing population in Las Vegas and southern Clark County as well as to support American Indian developments along Highway 95. Potential new land uses could change the demand on water resources. Under the No-Action Alternative, existing groundwater appropriations on the range could be available for use by other public or private entities pending State of Nevada approval. The cumulative effects of groundwater extraction could potentially result in accelerated migration of groundwater potentially contaminated by historic DOE test activities. Any appropriations or permits for such groundwater extraction would require approval by the State Water Engineer's Office, and separate environmental documentation and decisions by the USFWS and BLM.

Water quality impacts associated with past underground testing would remain similar to existing conditions under Alternatives 1 and 2 and the No-Action Alternative. The results of resource management plans, other DOD activities, and economic and demographic projections developed for actions in areas surrounding NAFR would have little or no cumulative impact on existing adverse water quality conditions on the Pahute Mesa portion of NAFR.

Potential non-federal water development in the region that is outside the purview of the State Engineer (private, domestic wells) could alter groundwater flow paths, travel times, and could include the flow of contaminants thereby adversely affecting groundwater resources. However, given the average annual recharge of potentially affected groundwater basins, the widely distributed nature of wells, and the total water extraction, it is unlikely that there would be cumulative impacts to water resources.

### **5.2.3.7 AIR QUALITY**

The primary source of regional air quality impacts is the economic activity within Clark County. NAFR land withdrawal would not be a significant contributor to cumulative air quality impacts associated with growth in the Las Vegas Valley. Emissions produced by ground-based activities and aircraft flights under Alternatives 1 and 2 would remain essentially unchanged from baseline conditions. The ground-based activity emissions would primarily impact the area within the NAFR and would not overlap with emissions from any other reasonably foreseeable project anticipated to occur outside of the range. Likewise, NAFR flight activity emissions under Alternatives 1 and 2 would be released primarily above the mixing layer and would be prevented from downward transport and mixing with emissions from other known or proposed projects. Therefore, ambient air quality standards would not be exceeded by the cumulative impact of project-related emissions with emissions from other past, present, or reasonably foreseeable projects.

Cumulative impacts directly associated with the No-Action Alternative would also be insignificant. Potential reduction in emissions at Nellis AFB in conjunction with a no-action decision are not projected to substantially affect emissions in Clark County. No emission-producing activities are identified to occur within NAFR as a result of a decision to not renew the land withdrawal. Unless substantial emitters, such as mining operations, were to occur, the emissions from recreational activities would probably be offset by emission decreases associated with the loss of Air Force ground-based activities. Off-highway vehicle (OHV) use could have a marginal increase in emissions, but would primarily impact the area of the range and would not overlap with emissions from other projects outside of the range. Construction and operational cleanup activity emissions that would occur in the range subsequent to a No-Action decision would be regulated under the applicable local, state, and federal air pollution control rules.

### **5.2.3.8 BIOLOGICAL RESOURCES**

Under any of the action alternatives (1A, 1B, 2A, or 2B), activities on NAFR would contribute very little to regional cumulative impacts on biological resources. The most serious cumulative impacts region-wide are associated with continuing population growth and land development in Clark and Nye Counties and the Las Vegas Valley in particular. This growth results in the loss and degradation of Mojave Desert scrub habitats in southern Nevada. Continuing use of NAFR as projected under any of the four action alternatives would have beneficial cumulative impacts insofar as it would tend to protect regional vegetation, wildlife, and habitat resources from the impacts associated with increasing urbanization and related non-military land uses.

Under the No-Action Alternative, cumulative impacts of habitat loss and degradation could occur. No-Action would be expected to expose currently restricted access lands to a variety of public and private uses. These uses and users could, in general, result in greater disturbance of habitat, vegetation, and wildlife than occurs at present under Air Force use.

### 5.2.3.9 CULTURAL RESOURCES

The cumulative effect on cultural resources of foreseeable actions in southern Nevada is tied to the degree of protection those resources receive. The foreseeable actions in southern Nevada identified by the federal agencies noted in section 5.2, or by other federal entities, would be considered federal undertakings. The identification and evaluation of cultural resources, as described in Section 106 of the National Historic Preservation Act (NHPA), would be required, and appropriate measures to avoid or mitigate adverse effects would be implemented. The individual elements of these actions would not be expected to contribute to the cumulative impact on archaeological and architectural resources.

Continued use of facilities under the proposed action and alternatives has the potential to impact cultural resources, although all such undertakings would be subject to compliance with Section 106 to NHPA. In addition, there would be ongoing inventory of NAFR lands in compliance with Section 110 of NHPA. The latter inventory would allow the Air Force to plan undertakings in areas where the impact to cultural resources would be minimized. The draft Nellis AFB CRMP (Air Force 1997c) discusses procedures for mitigating impacts to significant cultural resources, whether the impact has already occurred and is recognized through inventory, or the impact is possible because of a proposed undertaking. These procedures include development of a research design to identify the significance criteria met, and a plan for data recovery to be developed in consultation with the SHPO. The CGTO will be included in the consultation to develop the plans if the cultural resource is a TCP, an American Indian site, or if it is deemed appropriate.

The effect of development activities planned by non-federal agencies or private interests would depend, in part, on the source of funding, required permits or land ownership. Local and state agencies that may use federal funds, permits or land, such as departments of transportation or housing agencies, may be required to comply with Section 106 of the NHPA. Adverse impacts to archaeological or architectural resources protected by NHPA could be avoided or mitigated through appropriate actions, including consultation with the State Historic Preservation Office (SHPO). However, archaeological or architectural resources affected by actions not requiring compliance with Section 106 may not receive the same level of protection under local or state laws.

The current restricted access to NAFR for safety and security also serves to protect cultural and traditional resources. The cumulative effect of a No-Action decision that does not renew the NAFR withdrawal, combined with projected other projects could be expected to contribute to the loss of cultural resources from the total of such resources in southern Nevada. The No-Action Alternative has the potential for having an adverse cumulative effect on cultural resources.

In the *Native American Resource Document* (NARD) (AIWS 1997), American Indians have expressed concern about all aspects of development in southern Nevada. Any action not initiated by members of the Consolidated Group of Tribes and Organizations (CGTO) and



affecting lands they consider theirs by tradition and heritage could potentially adversely affect traditional cultural properties. Thus, continued urban development and growth, actions by state and local agencies or private interests, as well as federal actions could contribute to the cumulative adverse effect to traditional cultural properties. Federal regulations include consultation provisions designed to reduce the potential for such impacts on lands under federal agency jurisdiction.

#### **5.2.3.10 LAND USE AND TRANSPORTATION**

Cumulative impacts to land use and transportation at NAFR are not anticipated. The DOE Cross NAFR Transportation Alternative is not considered compatible with Air Force test and training. Foreseeable future actions would be consistent with current activities within the area and would not precipitate changes in land use patterns, ownership, or management practices. Increased growth in the Las Vegas area is expected to continue to have an impact on regional traffic flow. Cumulative actions and delays or changes in the level of service in the Las Vegas area and southern Clark County road arterials are projected to occur. The decision to continue withdrawal of NAFR for test and training activities will not contribute to the expected cumulative impacts. These cumulative impacts from changes in land use patterns and traffic volume and plans will continue under either an action or No-Action Alternative.

#### **5.2.3.11 WILDERNESS AND WILDERNESS STUDY AREAS**

The proposed renewal of the NAFR land withdrawal would continue the 200,000 to 300,000 annual average sortie operations. The cumulative consequences of introduction of the F-22 would be to somewhat increase noise levels in airspace subdivisions. These increases are not expected to be discernible. The cumulative consequences are expected to include an increase in supersonic flight of from 7.5 percent of maneuvering time for an F-15 to 10.0 percent for an F-22. This will result in approximately twice the number of sonic booms currently created by F-15 aircraft and some increase in the total number of sonic booms.

The F-22 contribution to cumulative noise in the NRC that could include flights over wilderness areas or WSAs is not expected to alter the value of these lands as wilderness. The lands were designated as WSAs or wilderness areas while 200,000 to 300,000 annual sortie operations were occurring in the NRC. These sortie operations included supersonic flights. The cumulative consequences of military activities with the F-22 are not expected to change the number of sortie operations or to result in any but transitory environmental consequences over wilderness resources.

#### **5.2.3.12 RECREATION AND VISUAL RESOURCES**

Access to NAFR lands for recreational purposes is prohibited for reasons of safety and national security. The impact analysis in section 4.12 accounts for the past and present cumulative effects of the proposed range renewal. Impacts associated with future foreseeable actions are described below.

The proposed land withdrawal renewal would not contribute to a cumulative impact as it relates to recreation and visual resources from federally proposed actions. Increased demand for non-urban recreation opportunities from population growth in the Las Vegas area and southern Clark County is expected to cumulatively impact regional recreational resources. This would especially be the case under the No-Action Alternative.

BLM land management plans have assessed visual and recreation resources on public lands surrounding NAFR. These plans are expected to continue to address recreation and visual resources managed for this area. Cumulative impacts as a result of the proposed action are not expected to lands administered by BLM under management plans.

### **5.2.3.13 SOCIOECONOMICS**

Continued withdrawal of NAFR under any action alternative will not contribute measurably to regional cumulative socioeconomic impacts. The high cumulative growth scenario for southern Nevada is presented in section 4.13, Socioeconomics. The REMI model forecasts include the economic growth in each sector of the economy (for example, the growth in resort development in the services sector) and non-economic growth from activities such as retirement in-migration. The results of this cumulative growth are reflected in the population projections for the three counties through the year 2026 shown on Table 4.13-6. The cumulative employment forecasts for each of the three counties through the year 2026 are portrayed in Tables 4.13-1, 4.13-2, and 4.13-3 in section 4.13, Socioeconomics.

The No-Action Alternative results in a reduction in economic activity associated with the loss of air-to-ground activities on NAFR that substantially reduce Nellis AFB test and training-based activities and remove Tonopah Test Range (TTR) and Indian Springs Air Force Auxiliary Field (ISAFAF). These activities would slightly reduce the economic growth occurring from other on-going activities in the three-county economy. The highest cumulative growth impacts occur under Alternatives 1 and 2, where the employment associated with currently existing air-to ground activities on NAFR are included with other on-going activities in the ROI.

Under No Action, over 7,200 jobs (both direct and secondary) are calculated to be lost in Clark County by the end of 2003. This reduction will decrease the growth in employment that would be expected in the county by only a small amount (1.4 percent). This job loss amounts to less than 1.0 percent when compared to the expected level of employment in 2006. The population losses anticipated are smaller.

In Nye County, even though job losses and the out-migration of workers and their dependents involve smaller numbers (a net of 298 jobs), the relative magnitude of the impacts are greater. When the job loss is compared to expected employment levels, the reduction would be 2.5 percent in 2003.

Given the considerable projected cumulative growth of the Clark County economy, decreases of the magnitude described above will not severely impact the ability of county or other local governments to provide adequate public services to their residents. The same is true for Nye

and Lincoln counties; however, the decreases in the population of Nye County may result in impacts to community services when viewed from the perspective of the local communities where some NAFR ground activity-related contractors reside.

#### **5.2.3.14 ENVIRONMENTAL JUSTICE**

Potential subsonic noise impacts and supersonic noise events from continuation of the existing level of overflights would occur under the Alternatives 1A, 1B, 2A, or 2B but would not disproportionately affect the minority or low-income persons in Lincoln County, and therefore would not contribute to cumulative environmental justice impacts. Potential noise from continuation of the existing level of overflights would not disproportionately affect the Moapa Reservation in Clark County, and therefore would not contribute to cumulative environmental justice impacts.

Environmental justice concerns identified by the CGTO and members of the public regarding effects on American Indians include sacred land violations, perceived risks from radiation, protection of American Indian artifacts, cultural survival, access violations, and a request for government-to-government negotiations. The Air Force has initiated formal consultation with the 18 tribes and American Indian organizations in the CGTO and with the Nevada SHPO. The Air Force is working with these groups to identify cultural and traditional resources on NAFR and to increase participation in the LEIS process through preparation of the NARD by the AIWS (1997) and through other ongoing efforts. Under Alternatives 1A, 1B, 2A, and 2B, continued withdrawal of NAFR would continue to restrict access to American Indians and all personnel to NAFR due to safety and security needs of military training and testing missions, and could affect the sacred nature of the area due to increased land disturbance. American Indians have stated that land withdrawals, test and training activities, and land management activities by federal agencies such as DOD, DOE, the USFWS, U.S. Navy, and other Air Force and BLM actions in the region, may cause further land disturbance and restrictions on access by American Indians. They also believe these activities may create a cumulative impact that falls disproportionately upon them, since their access to use and perceptions of the land and natural resources of the area are critical to their maintaining traditional cultural and historic practices.

Environmental justice concerns raised by Nye and Lincoln counties include a request for special consideration, participation, and mitigation for Nye County as a rural low-income county and concerns about disproportionate noise effects in the communities east of NAFR in Lincoln County. Income levels and minority population numbers in those counties do not demonstrate a disproportionate impact upon minority or low-income populations.

Under the No-Action Alternative, potential loss of contractor and secondary employment jobs would potentially affect Nye County (i.e., short-term effects) and Clark County (i.e., long-term effects), but would not result in cumulative environmental justice impacts. Minority and low-income populations in Nye County would not be disproportionately affected by these job losses. In Clark County, where the majority of potential job losses would occur, minorities represent a higher portion of the population than in Lincoln or Nye counties, but this

percentage is not measurably higher than the statewide percentage. No-Action impacts include the absolute loss of an estimated 1,740 minority jobs. Rapid cumulative job gains in Clark County are projected to offset such losses over time.

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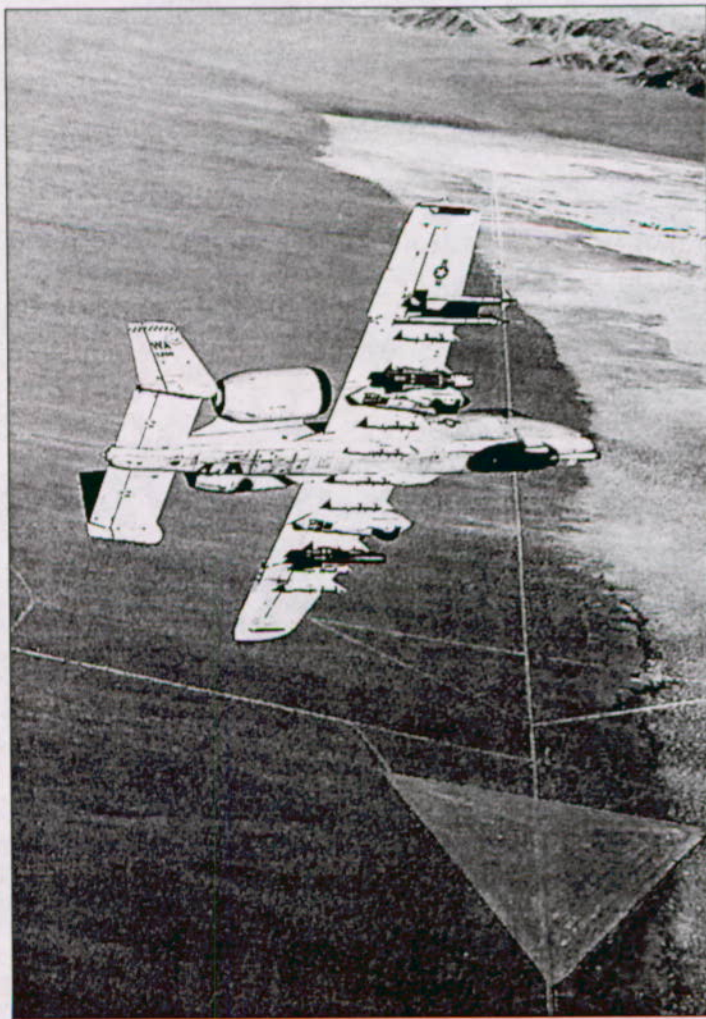


# REFERENCES

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## REFERENCES

References listed in this section are those that have been directly used in the development of this LEIS.



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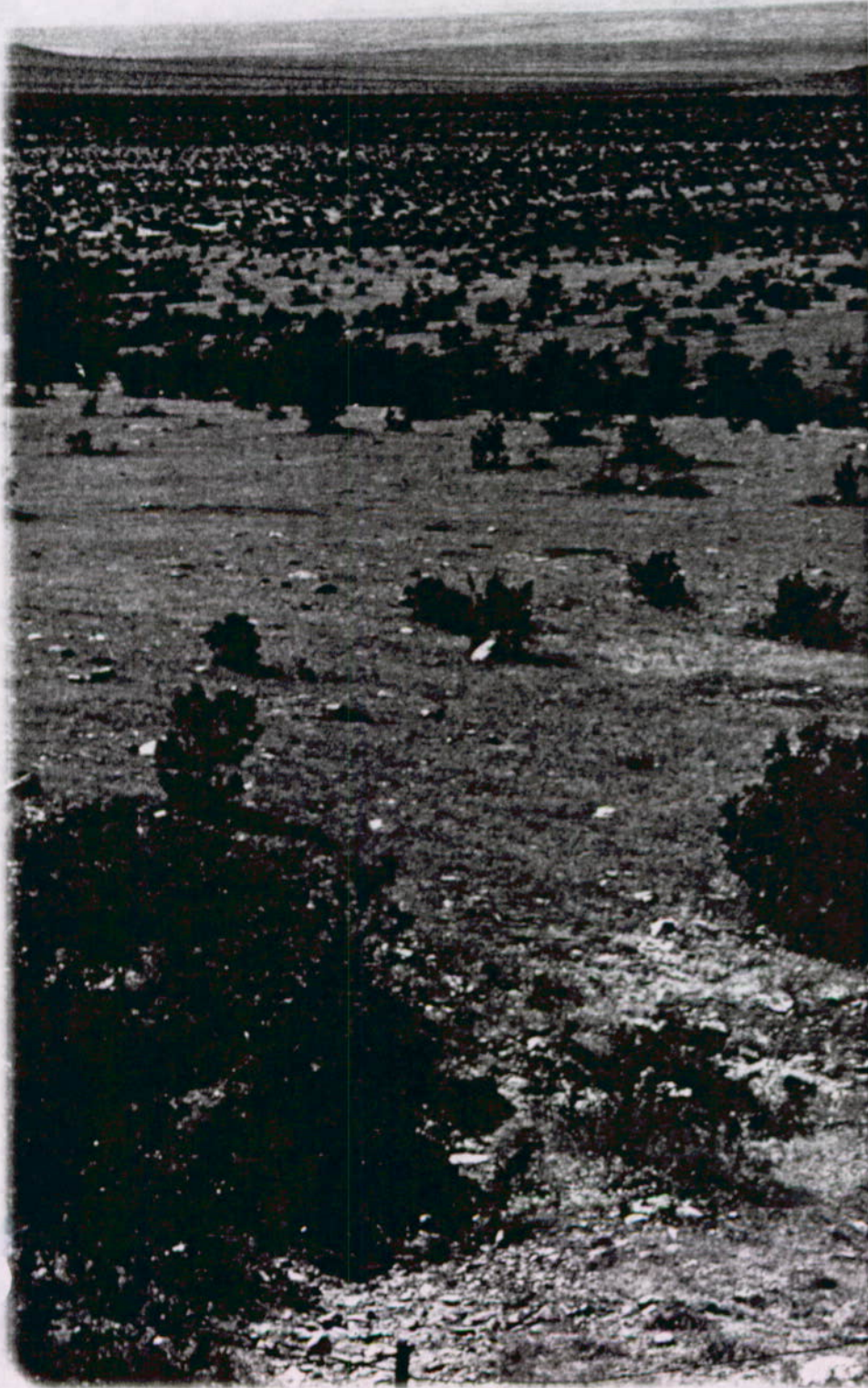
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*Nellis Air Force Range Renewal LEIS*

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Jeff M. Reece, Senior Chemical Engineer, SAIC

B.S., Chemical Engineering, Massachusetts Institute of Technology, 1968

Graduate Studies, Chemical Engineering, University of California, Berkeley, 1968-70

M.S., Civil/Sanitary Engineering, University of California, Berkeley, 1974

Years of Experience: 25

James L. Rudolph, Cultural Resources, SAIC

B.A., Anthropology, University of Georgia, 1972

M.A., Anthropology, Southern Illinois University-Carbondale, 1977

Ph.D., Anthropology, University of California, Santa Barbara, 1994

Years of Experience: 22

Perry Russell, Earth & Water Resources, SAIC

M.S., Geological Sciences, California State University, Northridge, 1988

B.A., Geological Sciences, University of California, Santa Barbara, 1984

Years of Experience: 11

Major Jeff Shea, 99 ABW/EMN

B.S., Civil Engineering, South Dakota State University, 1982

M.B.A., Oklahoma City University, 1990

M.S., Engineering Management, Air Force Institute of Technology, 1991

Professional Engineer, Civil (Nevada)

Years of Experience: 19

Forrest Smith, Manager, Document Production, SAIC

B.A., History and Political Science, University of California, Santa Barbara, 1970

Years of Experience: 25

Robert W. Smith, Deputy Project Manager, Description of Proposed Action/Operations, SAIC

B.A., Psychology, Willamette University, 1960

Years of Experience: 37

Lisbeth Springer, Environmental Justice, SAIC

B.A., Sociology, Colorado College, 1975

M.C.R.P., City and Regional Planning, Harvard University, 1980

Certified Planner, American Institute of Certified Planners, 1984

Certificate in Negotiation and Mediation, 1991

Years of Experience: 17

Bradford J. Stewart, Systems Analyst, SAIC

B.A., Geography/Environmental Studies, University of California, Santa Barbara, 1979

M.A., Geography, University of California, Santa Barbara, 1982

Years of Experience: 18



Carrie Stewart, Environmental Scientist, Economic Report, SAIC

B.S., Geology, California Polytechnic University, Pomona, 1993

Years of Experience: 9

Christa Stumpf, Land Use and Wilderness, SAIC

B.S., Resource Recreation and Tourism, University of Idaho, 1995

M.S., Forest Resources and Geographic Information Systems, University of Idaho, 1996

Years of Experience: 3

Eric Tambini, Earth & Water Resources, SAIC

B.A., Geological Sciences, University of California, Santa Barbara, 1984

Certificate in Hazardous Waste Management, 1992

Registered Geologist, 1995

Years of Experience: 11

Bryan Thomas, Socioeconomics, SAIC

B.A., Economics, University of California, Santa Barbara, 1970

M.A., Economics, University of California, Santa Barbara, 1972

Years of Experience: 25

Robert A. Thompson, Airspace, SAIC

B.S., Mathematics, Heidelberg College, 1968

M.A., Human Resources Management, Pepperdine University, 1979

Years of Experience: 29

Robert D. Thomson, Deputy Program Manager, SAIC

B.S., Zoology, University of California, Davis, 1973

M.S., Ecology, University of California, Davis, 1976

Years of Experience: 22

Robert E. Van Tassel, Program Manager, SAIC

B.A., Economics, University of California, Santa Barbara, 1970

M.A., Economics, University of California, Santa Barbara, 1972

Years of Experience: 25

William Wuest, Safety, SAIC

B.S., Political Science, St. Joseph's College, 1963

M.P.A., Public Administration, Auburn University, 1974

Years of Experience: 33

Stephen Ziemer, Air Quality, SAIC

B.S., Environmental Engineering, Southern Illinois University, 1976

M.A., Environmental Engineering, Southern Illinois University, 1978

Years of Experience: 20



# CONSULTATION

9.0

## 9.0 CONSULTATION

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As part of the environmental impact analysis process (EIAP), consultation and correspondence were performed with federal, state, and local agencies, listed below. Copies of the correspondence are included as part of this section.

- **Department of Energy (DOE)**
  - Memorandum of Understanding from 99 ABW/CC to Nevada Operations Office, Department of Energy: July 21, 1997
  - Letter from Department of Conservation and Natural Resources Division of Environmental Protection to Environmental Protection Division of Energy Nevada Operations Office: October 24, 1996
- **DOE, Las Vegas Operations Office**
  - Personal Contact from Science Applications International Corporation (SAIC), Las Vegas, Nevada with DOE Las Vegas Operations Office: May 29, 1997
- **U.S. Fish and Wildlife Service (USFWS)**
  - Memorandum of Understanding from U.S. Air Force, Air Combat Command and the USFWS: December 22, 1997
- **Nevada Division of Environmental Protection (NDEP)**
  - Letter from Department of Conservation and Natural Resources Division of Environmental Protection to 99 ABW/EM: August 18, 1997
  - Letter from 99 ABW/EM to DOD Branch, Bureau of Federal Facilities Division of Environmental Protection: October 21, 1997
  - Letter from Department of the Air Force HQ USAF WTC/EV to DOD Branch, Bureau of Federal Facilities Division of Environmental Protection: March 23, 1994
- **Native American Consultations**
  - Letter from Western Shoshone Resources Inc. U.S. Air Force: June 26, 1996
- **Beatty Town Advisory Board**
  - Letter from Beatty Town Advisory Board to the Secretary of Defense: January 14, 1998
  - Letter from Department of the Air Force (HQ USAF/XO) to the Beatty Town Advisory Board: February 3, 1998

- **Esmeralda and Nye Counties**
  - Memorandum of Understanding from 99 ABW/CC to Lincoln County, Nevada: May 21, 1997
  - Letter from Economic Development Authority, Esmeralda and Nye Counties, Nevada to Secretary of Defense: December 4, 1997
  - Memorandum of Understanding from 99 ABW/CC to Nye County, Nevada: July 8, 1997
  
- **Consolidated Group of Tribes and Organizations**
  - Consultations included several working groups, formal meetings, and discussions concerning the LEIS process.
  - Created Ethnographic and Ethnohistoric Overview in 1977.
  - Created American Indian Perspectives to the LEIS under the American Indian Writer's subgroup, in 1997. Information from this report was used to supplement each chapter of the LEIS.
  - Discussions at General meeting at NAFB (scoping): May 1996.
  - Discussion at General Meeting at NAFB for Draft LEIS: November 1998.
  - In association with the LEIS process in the NAIP program, trips were made to several sensitive sites on the NAFR.

**Memorandum of Understanding  
Between Nellis Air Force  
Base and the Nevada  
Operations Office,  
Department of Energy**

**July 21, 1997**

# MEMORANDUM OF UNDERSTANDING

DE-GM08-97NV13208

## I. PARTIES TO THE AGREEMENT

This Memorandum of Understanding (hereinafter "Agreement") is made by and between Nellis Air Force Base (hereinafter "Nellis") and the Nevada Operations Office, Department of Energy (hereinafter "DOE") to accomplish a legislative environmental impact statement (hereinafter "LEIS), consistent with the land management plan, as a joint document for the Nellis Air Force Range (hereinafter "NAFR") for submission along with Bureau of Land Management (hereinafter "BLM") findings and recommendations to the Secretary of the Interior and to participate in the extension of the NAFR withdrawal pursuant to the Military Lands Withdrawal Act of 1986, Public Law (P.L.) 99-606, *as amended*.

## II. PREAMBLE

**WHEREAS** NAFR lands were withdrawn from all forms of appropriation under the public land laws by P.L. 99-606, *as amended*, and by Public Land Order 7131; and

**WHEREAS** Nellis has a continuing need to train aircrews in the state of Nevada in order to maintain mission ready status in their assigned aircraft and to participate in large force integrated air missions; and

**WHEREAS** Nellis has announced its intention to seek an extension of the congressional withdrawal of NAFR; and

**WHEREAS** Nellis is the lead agency (40 C.F.R., Section 1501.5) and the DOE is a cooperating agency (40 C.F.R., Section 1501.6) in the extension of the NAFR withdrawal; and

**WHEREAS** the BLM is responsible for processing the extension of a withdrawal application from other federal agencies and is responsible for submitting preliminary findings and recommendations on the application to the Secretary of the Interior in accordance with 43 C.F.R. Section 2300 et seq., 43 C.F.R. Section 1701 et seq., and 43 C.F.R. Section 155 et seq.; and

**WHEREAS** Nellis and the DOE recognize the importance of government-to-government relations with Native Americans and the participation of Native Americans in the extension of the withdrawal of NAFR; and

**WHEREAS** the Economy Act, 31 U.S.C., Section 1535, *as amended*, allows a federal agency to enter into an agreement with another federal agency for services; and

**NOW, THEREFORE**, the parties agree to work cooperatively in the following manner:

### **III. AUTHORITY FOR ENTERING INTO THIS AGREEMENT**

The parties enter into this Agreement as authorized by § 307 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. § 1737), and 10 U.S.C. § 8013.

### **IV. PURPOSE**

The purpose of this agreement is to facilitate the preparation of the NAFR LEIS as a joint document that meets the requirements of the National Environmental Policy Act (hereinafter "NEPA"), Federal Land Policy Management Act (hereinafter "FLPMA"), and to develop BLM findings and recommendations to submit to the Secretary of the Interior on the extension of the withdrawal of NAFR, and to complete the extension of the withdrawal of NAFR.

### **V. RESPONSIBILITIES**

1. Nellis and the DOE together will:

a. Follow BLM procedures.

b. Inform one another of the date, time, location, and purpose of major meetings involving a designated representative and a third party to discuss issues and independent studies relating to the NAFR EIS and, in the event one party to this Agreement cannot attend, provide the absentee with a meeting summary.

2. Nellis will:

a. Communicate the execution of this Agreement to the appropriate installation, range, major command, and headquarters offices of the Department of the Air Force; and

b. Designate a point of contact for the NAFR LEIS; and

c. Chair a NAFR EIS Technical Working Group (hereinafter "Working Group") that:

i. Meets as needed to monitor the Project Management Plan (hereinafter "PMP"); and

ii. Gives action officers from the lead and cooperating agencies -- Nellis, DOE, BLM, and U.S. Fish and Wildlife Service, an opportunity to participate in the Working Group; and

iii. Invites action officers from other agencies/organizations (Native Americans, U.S. Army Corps of Engineers, State Historic Preservation Office, Nevada Governor's Office, Nevada Department of Fish and Game, Clark County, Lincoln County, and Nye County) to participate in the Working Group as appropriate; and

iv. Reviews alternatives for inclusion in the NAFR LEIS; and

v. Makes recommendations to the lead and cooperating agencies.

d. Prepare typed minutes of all meetings of the Working Group and provide a copy of the minutes to each Group member for review and comment; and

e. Provide DOE with a copy of all public comments during the scoping process and on the Draft LEIS in accordance with the PMP.

**3. The DOE will:**

a. Communicate the execution of this Agreement to the appropriate offices of the Department of Energy; and

b. Designate a point of contact for the NAFR LEIS, public land withdrawal process, and the Working Group; and

c. Provide Nellis with information that may be helpful in the NAFR LEIS; and

d. Review proposed methods and procedures in support of the NAFR LEIS prior to, and during, field work; and

e. Review results of field work for the NAFR LEIS and any reports prepared as a result of the field work prior to release of the information to the public.

**VI. FINANCIAL ADMINISTRATION**

This agreement shall not be used to obligate or commit funds or as the basis for the transfer of funds. Each agency shall use its own funds to support this agreement.




## **VII. DISPUTE RESOLUTION**

1. Conflicting scientific evidence of the parties will be discussed in the NAFR LEIS as long as such views are supported by credible scientific evidence.
2. Designated representatives for Nellis and DOE will make all reasonable efforts to informally resolve disputes relating to the NAFR LEIS.
3. If disputes cannot be resolved after 15 days following initiation of dispute resolution, either party may request elevation for dispute resolution by issuing a written statement of dispute.


## **VIII. CONDITIONS**

1. Nellis and DOE both understand, and agree, that:
  - a. Implementation of this Agreement is of mutual benefit;
  - b. The DOE will not undertake any activities at the expense of Nellis in advance of the complete execution of necessary funding documents;
  - c. This agreement does not constitute a commitment of funds, and that performance under this agreement by either party is dependent upon lawful appropriation, availability, and allocation of funds by proper authorities;
  - d. This agreement may be modified or amended only by mutual agreement of the parties in writing and signed by each of the parties hereto;
  - e. Nellis and DOE shall execute separate subagreements for any services beyond the scope of this Agreement;
  - f. Any documents or data exchanged between the parties to this Agreement will not be released to a third party unless the designated representative of the party that generated the document or data approves the release;
  - g. Nothing herein contained shall be construed as limiting or affecting in any way the vested or delegated authority of Nellis or the DOE; and
  - h. This agreement becomes effective when signed by all parties and shall remain in full force and effect until the last item of the mutually agreed upon Project Plan is

completed or the project is canceled, but may be terminated by either party upon 45 days notice, in writing, given to the other party.

  
JOHN D. LADIEU  
Colonel, USAF  
99th Air Base Wing Commander  
Nellis Air Force Base

17 July 97  
Date

  
G.W. JOHNSON  
Manager, Nevada Operations Office  
Department of Energy

6/6/97  
Date

STATE OF NEVADA

BOB MILLER

Governor



PETER C. MORROS, Director

L.H. DODGION, Administrator

(702) 687-4670

687-4678

Division

Mining Regulation and Reclamation

Water Pollution Control

Facsimile 687-5856

Address Reply to:

Capital Complex

Carson City, NV 89710

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES  
DIVISION OF ENVIRONMENTAL PROTECTION

Capitol Complex

Carson City, Nevada 89710

October 24, 1996

Waste Management

Corrective Actions

Federal Facilities

Facsimile 885-0858

Air Quality

Water Quality Planning

Facsimile 687-5396

Located at:

333 W. Nye Lane

Carson City, NV 89710

Kenneth A. Hoar, Director  
Environmental Protection Division  
U.S. Department of Energy  
Nevada Operations Office  
P. O. Box 98518  
Las Vegas, NV 89193-8518

RE: Closure and Remediation Plan for Underground Storage Tanks and  
Area 9 Spill Sites Located at the Tonopah Test Range

Dear Mr. Hoar:

The Nevada Division of Environmental Protection has received your response to our letter dated August 13, 1996 regarding the above referenced sites. DOE must provide complete original EPA 7531-1 forms to NDEP requesting changes to the UST database. Incomplete, partial or faxed copies are not acceptable. DOE must provide these forms to NDEP in the Carson City office by November 15, 1996.

NDEP will not concur with closure of sites that contain contamination above action levels until DOE provides documentation as follows:

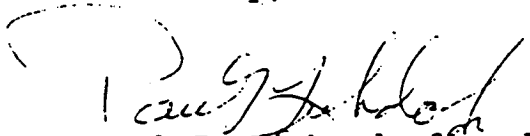
- 1) Land use restriction for the impacted areas must be recorded in the land deed or withdrawal documents which identify the type and extent of contamination that is still present and the limits this places on the future use of this property.
- 2) The US Air Force acknowledges it will discuss and identify this contamination in the EIS that is currently being prepared for the entire range complex. This identifies US Air Force as formally accepting responsibility for the contamination that is being left in place including any post closure care.

Kenneth A. Hoar, Director  
Page 2  
October 24, 1996

In the September 18, 1996 response from DOE to NDEP, DOE has stated that soils that are contaminated with TPH at TTR are not going to be moved to the NTS based on costs associated with this type of transfer. It should be noted that hydrocarbon contaminated soils have been moved from TTR to the NTS as late as September 24, 1996 through projects being managed by DOE/ER. DOE should be making cost determinations on a site wide basis to ensure that one program is not spending excessive funds on an activity while another program is utilizing an option to reduce costs associated with the same type of activity.

If you have any questions, please call Karen K. Beckley at 687-4670 extension 3033.

Sincerely,



Paul J. Liebendorfer, P.E.  
Chief  
Bureau of Federal Facilities

cc: Supervisor, NDEP/LV  
D. Shafer, DOE/ER  
J. Olav-Johnson, DOE/KAO  
T.E. Blejwas, SNL/AL  
S.J. Ward, SNL/AL  
V. Gabbard, SNL/TTR  
J. Najima, NDEP/CC  
Colonel M.F. Fukey, NAFB  
Colonel Walter J. Donegan, NAFB

NELLIS AIR FORCE RANGE LAND WITHDRAWAL  
ENVIRONMENTAL IMPACT STATEMENT  
PERSONAL CONTACT REPORT

Hazardous Materials and Solid Waste Management

Name of Contact: LES MONROE

Organization and Address of Contact: DOE, Las Vegas Operations Office  
PO Box 98518  
LAS VEGAS NV 89193-8518

Phone Number: 702-295-1744

Date of Contact: 29 MAY 1977

Summary of Discussion: Double Tracks and Clean State sites being  
cleaned up to a criteria of 200 pCi/gram. final closure  
is pending negotiations between DOE & the Nevada  
Division of Environmental Protection.

Included In EIS Reference List: Yes:  No:

Prepared by: Jerry Dougherty

# MEMORANDUM OF UNDERSTANDING

BETWEEN

THE U.S. AIR FORCE, AIR COMBAT COMMAND

AND

THE DEPARTMENT OF THE INTERIOR, U.S. FISH AND WILDLIFE SERVICE

## PARTIES

This Memorandum of Understanding (MOU) is made and entered into between the U. S. Fish and Wildlife Service, an executive agency of the United States Department of Interior hereinafter referred to as the "Service," and the Air Combat Command, a branch of the United States Air Force hereinafter referred to as the "Air Force."

## AUTHORITY

This MOU applies only to that portion of the Nellis Air Force Range (NAFR), hereinafter referred to as the "Range," that is located within the Desert National Wildlife Range, hereinafter referred to as the "Refuge." The Refuge was established on May 20, 1936 by Executive Order 7373. The Range was established on October 29, 1940 by Executive Order 8578, which states:

The withdrawal made by this order shall take precedence over, but shall not rescind or revoke as to any of the land affected thereby in the above-described area the withdrawal made by Executive Order No. 6918 of November 26, 1934, as amended, and Executive Order No. 7373 of May 20, 1936, withdrawing certain lands for wildlife and other purposes.

The Service enters into this MOU pursuant to the authority provided by the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd - 669ee). The Service is the federal agency primarily responsible for the welfare and management of the land, wildlife and other natural resources, and for protection of cultural and archeological resources, and for research thereon in the Refuge. The Service is also the federal agency with specific responsibilities for protection of threatened and endangered species and management of desert bighorn sheep, desert tortoises, and migratory birds.

One million, three hundred twenty-two thousand, nine hundred (1,322,900) acres of the Refuge have been proposed for inclusion in the National Preservation System, under the Wilderness Act of 1964 (16 U.S.C. 1131 - 1136). The Service shall manage those lands in accordance with the provisions of that act.

The Air Force enters into this MOU pursuant to authority provided by Public Law (P. L.) 99-606, the Military Lands Withdrawal Act of 1986. Under P. L. 99-606, the lands affected by this MOU were reserved for use by the Secretary of the Air Force (subject to Service management of the land and resources under the National Wildlife Refuge Administration Act) as an armament and high hazard testing area and for training for aerial gunnery, bombing, rocketry, electronic warfare, and for tactical maneuvering and air support.

The Air Force controls access to the areas affected by this MOU under the Internal Security Act of 1950 (50 United States Code [U.S.C.] 797, implemented by Department of Defense Directive 5200.8 and Air Force Instruction [AFI] 31-209) and the Wilderness Act of 1964. The Air Force has designated the land affected by this MOU as "controlled area" in accordance with AFI 31-209. The Air Force controls the restricted airspace above the land affected by this MOU under Federal Aviation Administration (FAA) regulations.

#### **APPLICABLE LAW**

The Military Lands Withdrawal Act of 1986 (P.L. 99-606), the Sikes Act of 1960 (42 U.S.C. 670a - 670m), The National Refuge System Administration Act of 1966 (16 U.S.C. 668dd - 668ee), the National Environmental Policy Act of 1969 (42 U.S.C. 4321, 4331 - 4335, and 4341 - 4347), the Endangered Species Act of 1973 (16 U.S.C. 1531 - 1544), the Archeological and Historic Preservation Act of 1974 (16 U.S.C. 469 - 469c), the National Historic Preservation Act of 1966 (16 U.S.C. 470 - 470b and 470c - 470n), the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 - 1771 and other U.S.C. sections), the Refuge Recreation Act of 1962 (16 U.S.C. 460k - 460k-4), The Wilderness Act of 1964 (16 U.S.C. 1131 - 1136), and the Internal Security Act of 1950, Chapter 1024, §21 (50 U.S.C. 797).

## AFFECTED LAND

The land affected by this MOU is delineated on the attached map hereinafter "affected land" and is described as:

- T9S - R59E, R58E, R57E, R56E, R55 1/2E, R55E to Nye County Line.
- T10S - R59E, R58E, R57E, R56E, R55 1/2E, R55E to Nye County Line.
- T11S - R59E, R58E, R57E, R56E, R55 1/2E, R55E to Nye County Line.
- T12S - R59E, R58E, R57E, R56E, R55 1/2E, R55E to Nye County Line.
- T13S - R59E, R58E, R57E, R56E, R55 1/2E, R55E, R54E to Nye County Line
- T14S - R59E West 1/2, R58E, R57E, R56E, R55 1/2E, R55E, R54E to Nye County Line
- T15S - R58E, R57E, R56E, R55 1/2E, (All of Sections within 1, 2, 11, 12, 13, 14 and 23, 24, 25, 26, 35 and 36).
- T16S - R58E (All of Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27 and 34).  
R57E (All of Sections 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, and NE 1/4 of Section 7).
- T18S - R62E (South 1/2 of Sections 33, 34, and 35 and all of Section 36) (Known as the Nellis Small Arms Range).

A total of +/- approximately eight hundred forty five thousand, seven hundred eighty seven (845,787) acres.

## PURPOSE

The parties enter into this MOU to provide a framework for cooperation between them, with the mutual goals of enhancing the ability of each to accomplish its mission, minimizing conflicts between those missions. This MOU replaces the MOU between the parties dated March 11, 1976, which expired on March 11, 1991 and was extended indefinitely by letter of agreement dated March 15, 1991.



## AGREEMENT

1. Airspace overlying the land affected by this MOU have flight or altitude restrictions as defined in AFI 13-212, Vol 2/NAFB SUP 1. Exceptions to this rule are listed as follows and are made to alleviate undue conflicts with resident wildlife and to promote aircraft and pilot safety:

a. All live air-to-air gunnery operations will be conducted above an elevation of ten thousand (10,000) feet Mean Sea Level (MSL) within air-to-air gunnery areas in R-4806W as described in the Nellis Air Force Base (NAFB) supplement to AFI 13-212.

b. Helicopters shall operate at or above 500 feet Above Ground Level (AGL), unless conducting tactical training in accordance with approved mission profiles. Low level training within the joint-use area, as described in the NAFB supplement to AFI 13-212, shall be limited to the absolute minimum required to meet approved training needs.

c. Tactical mission profiles will be developed to avoid the following wildlife watering points by 2000' AGL, within 0.5 nautical miles (NM), to the maximum extent possible:

<u>NAME</u>	<u>LOCATION</u>
Chuckawalla Guzzler	115° 20' 30" W X 36° 55' 60" N
White Sage Catchment	115° 22' W X 36° 43' N
Indian Canyon Catchment	115° 32' 30" W X 36° 56' 50" N
Quartz Spring Catchment	115° 36' 10" W X 36° 59' N
Gravel Canyon Guzzler	115° 35' W X 36° 53' 30" N
DeJesus Spring	115° 34' 30" W X 36° 52' 20" N
Tim Spring	115° 34' 35" W X 36° 50' 50" N
Sand Spring	115° 33' 50" W X 36° 49' 45" N
Spotted Range #2 Catchment	115° 39' 50" W X 36° 50' 20" N
Spotted Range #1 Catchment	115° 41' W X 36° 49' N
Foggy Catchment	115° 40' 35" W X 36° 48' 05" N
Patches Catchment	115° 40' 50" W X 36° 46' 25" N
Dain Peak Catchment	115° 31' 35" W X 36° 42' 30" N
Heaven's Well	115° 33' 20" W X 36° 40' 30" N

d. There will be no overflight of Corn Creek field station (36° 26' N, 115° 22' W below 8000 feet MSL when within one NM of the station).

e. In accordance with Air Force and FAA regulations, fixed and rotary wing aircraft flying visual flight rules (VFR) may deviate from these restrictions in order to remain clear of clouds and maintain VFR flight, or to maintain safety of flight. Aircraft that are unable to safely reach or maintain the appropriate altitude will fly at the highest altitude possible while continuing to maintain safety of flight. Course deviations to avoid obstructions are also deemed necessary for the safety of flight.

2. Normal maintenance of existing facilities, road right-of-ways and targets within the area described

in the NAFB supplement to AFI 13-212, is accomplished by annual maintenance plans which incorporate environmental concerns (such as the current Service Biological Opinion for desert tortoise). The construction or relocation of any road, trail, target, target area or military facility on the refuge will not commence without proper environmental analyses, and consultation with the Service.

3. The Air Force, with Service concurrence, has established training and testing facilities in the following areas:

a. Indian Springs Valley: (85,851 acres). All lands within the Indian Springs Valley below the thirty-six hundred (3600) feet (1097 meters) elevation contour line as shown on the attached map.

b. Three Lakes Valley: (136,758 acres). All lands within the Three Lakes Valley below the four thousand (4000) foot (1219 meters) elevation contour line as shown on the attached map. The transition from thirty-six hundred (3600) foot contour line of Indian Springs Valley to the four thousand (4000) foot contour line of Three Lakes Valley will begin in the center of Section 20, T15S, R57E.

c. Spotted Range (old - Nellis Close Air Support Range): (24,541 acres). Commencing at the southwest corner of T13S, R56E; thence west to the southwest corner of T13S, R55 1/2E; thence north five miles to the Lincoln and Clark County line; thence west two miles along said county line; thence south approximately six miles to the Spotted Range Road; thence along Spotted Range Road to the point where it intercepts the military reservation boundary at the southwest corner of Section 35, T14S, R55E; thence east along the military reservation boundary to where it intercepts the R55 1/2E and R56E division line; thence north along said line to the point of origin. Plus T14S-R55E, The portions of the E 1/2 Section 21 and the NW 1/4 Section 22 lying westerly of Spotted Range Road.

d. Tikaboo Valley (old - Desert Valley) Impact Area: (640 acres). In T9S, R59E consisting of Section 19.

4. Within the above described areas, delivery of air-to-ground ordnance shall be confined to impact areas as listed below, as shown on the attached map, approximately 111,527 acres.

a. Indian Springs Valley: (38,168 acres).

South Area (23,333 acres)

T14S - R56E S1/2  
T15S - R56E N 1/2

North Area (14,835 acres)

T12S - R56E Sections 12, 13, 24, 25, 36  
T12S - R57E Sections 7, W 1/2 of 17, 18, 19, W 1/2 of 20, W 1/2 of 29, 30, 31 and  
W 1/2 of 32  
T13S - R56E Sections 1, 2, 11, 12, 13, 14, 23, 24, 25, 26, 35 and 36

b. Three Lakes Valley (48,178 acres):

South Area (15,723 acres)

T15S - R57E Sections E 1/2 of 1, SE 1/4 of 11, Section 12 except the NW 1/4, 13, E 1/2 of 14, E 1/2 of 23, Sections 24, 25, 26, excluding the NW 1/4 Section 26, section 34 excluding the NW 1/4 Section 34, 35, 36

T16S - R57E Sections 1, 2, 3, 10, 11 and 12

T15S - R58E Sections 6, 7, 18, 19, 30, 31

T16S - R58E Sections 6, 7, 18, 19

North Area (32,455 acres)

T11S - R58E Sections 25, excluding the NE 1/4, Sections 26, 27, 34, 35, 36

T12S - R58E E 1/2

T12S - R59E, Sections 18 and N 1/2 of 19

T13S - R58E Sections 3, 4, 5, 8, 9, 10, 15, 16, 17, 20, 21, 22, 27, 28, 29, 32, 33 and 34

T14S - R58E Sections 3, 4, 5, 8, 9, 10, 15, 16 and 17

c. Nellis Close Air Support Range (24,541 acres):

All land that lies within this area.

d. Desert Valley Impact Area (640 acres):

All land that lies within this area.

5. The type of munitions deployed on specific targets is outlined in AFI 13-212, Vol 2/NAFB SUP 1. Input from the Service for annual revisions will be submitted to 99th Range Squadron Commander. The Air Force has access to and use of FAC Hill, T15S-R55E, Section 11 for use by Forward Air Controllers (FAC).

6. An Air Combat Maneuvering Instrumentation (ACMI) Range was installed during 1975-76 within Refuge, consisting of seven (7) instrumented sites, serviced and maintained by the Air Force. The ACMI equipment was withdrawn in 1988. The Air Force has retained an option to reopen the former ACMI sites. Should the Air Force reactivate these sites, access and service will be coordinated with the Refuge Manager. Environmental regulations in effect at the time of reactivating will apply.

7. During the Air Force occupancy and use of Desert National Wildlife Refuge (DNWR), target debris, ordnance residue and facilities no longer needed or abandoned by the Air Force will be gathered to central holding areas and removed from Refuge expeditiously as possible and IAW AFI 13-212 and its supplements.

8. The Air Force agrees to appoint a military liaison officer in 99th Range Group, responsible for range management who will work cooperatively with the Refuge Manager or designated representative. The liaison officer shall be responsible for dealing with all problems relating to Air

Force activities on the Refuge. The liaison officer shall assist the Service in securing necessary range clearances in 4806W in order for the Service to conduct wildlife/resource management activities. The Service and the liaison officer shall meet on a regular basis for updates and to resolve immediate issues or problems. Also, to foster a better understanding between both agencies, Air Force and Service should provide the other party copies of natural resource studies/surveys accomplished on the DNWR.

9. Service personnel shall have access to the lands of Refuge described in the NAFB supplement to AFI 13-212 for the purposes of wildlife inventory, law enforcement, water development, public hunting, facility maintenance, and other management activities during periods of Air Force inactivity, provided the necessary range clearances have been received by the Refuge Manager from the liaison officer or designated representative.

a. Access on the Refuge north of latitude 37 degrees and west of longitude 115 degrees, 35 minutes will be coordinated through the USAF/DOE Liaison Office.

b. Access to joint-use area within NAFR will be controlled by the Air Force. Entry/exit requirements are stated in the local NAFB regulation. Permanent party DOI/Refuge personnel will be given controlled area badges with escort privileges for DOI sponsored personnel.

10. The Air Force will make available a period of not less than fourteen (14) consecutive days annually during the months of December and/or January when the service will have uninterrupted use and access to the lands described in the NAFB supplement to AFI 13-212 to conduct a bighorn sheep hunt. The fourteen (14) day period shall be mutually agreed upon by the Commander, Air Warfare Center, Nellis Air Force Base and the Refuge Manager. The Service shall ensure all hunters sign a hold-harmless agreement provided by the Air Force. The Refuge Manager will retain completed forms for a period of three years, unless otherwise directed by the Air Force. The Air Force, in conjunction with the Service, will provide to the hunters a Range Safety Briefing (to include explosives safety hazard awareness) as well as a Natural/Cultural Resource Briefing. The Air Force will also provide cleared and marked entry/exit routes for each valley and designate camping areas for hunting parties within the authorized hunt areas. Access will be controlled in accordance with Nellis Air Force Base range entry/exit regulations. Hunters will be allowed unescorted access after attending explosive ordnance disposal, safety, security, and natural/cultural resource briefings. Access north of latitude 37 degrees north and west of longitude 115 degrees 30 minutes west is restricted. The Air Force, in coordination with the Service shall supply maps delineating access for the hunt. The maps will show the confines of authorized, restricted, and hazardous areas.

11. Air Force personnel and personnel of their contractor(s) designated for law enforcement and security purposes may possess firearms only while on official duty on those joint-use lands described in the NAFB supplement to AFI 13-212. Service personnel with Federal law enforcement credentials are required to carry firearms when conducting Federal law enforcement duties. Special permitted hunters (reference item 10) will be authorized to possess a sporting arm for the hunting of bighorn sheep, during the period set aside for bighorn sheep hunting only. The Air Force has the right, at its convenience, to conduct ground patrols (on designated roads) or air patrols, for the surveillance of unauthorized entry on those lands described in the NAFB supplement to AFI 13-212. Off-road vehicle travel is prohibited unless expressly authorized by the Refuge Manager or the 99th Range Squadron Commander. The liaison officer will report any observations of illegal entry or use of lands

within Refuge boundaries to a Refuge Officer.

12. The Service agrees to the use of its facilities by the Air Force and the cooperation of its personnel to aid in the recovery of downed aircraft and aircrew. The Air Force shall immediately notify the Refuge Manager LAW OPLAN 6 whenever any military aircraft crashes within the boundaries of the Refuge. When feasible, the designated search and rescue coordinator and the officer in charge of the crash investigation and recovery of aircraft wreckage shall consult with the Refuge Manager as to the best route to reach the crash site. Off-road vehicle travel will be coordinated with Service to ensure minimum damage to the land and environment of the Refuge. Recovery of aircraft wreckage from lands designated or proposed as wilderness areas will be conducted with special care to minimize impact on wilderness values. Consideration will be given to alternatives to using off-road vehicles to retrieve wreckage, to include use of helicopters, or not removing wreckage when doing so would be more detrimental to the area than leaving it. The Air Force will make efforts to mitigate damage to Refuge lands resulting from military activity. Such mitigation shall be jointly agreed upon by the Refuge Manager and the designated Installation Commander of Nellis AFB.

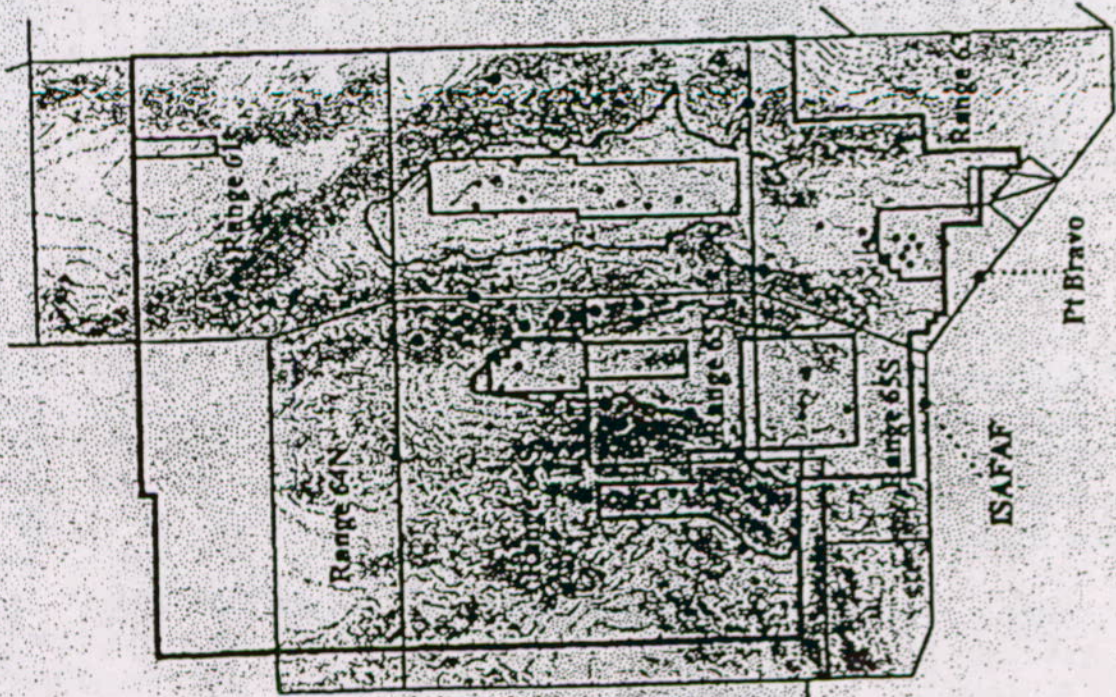
13. To facilitate management of the range and minimize the time required for management, the Air Force agrees to furnish the Service a minimum of twenty (20) hours of aircraft support annually, and if available, other support equipment with operating personnel as negotiated on a case-by-case basis for the purposes of aerial patrol, search and rescue, maintenance of the Wildlife Range, wildlife inventory, water hole inspection, and other wildlife management practices on the Refuge.

14. The Air Force shall bear all the costs of suppressing and reporting wildfires on the Refuge when such fires are the result of Air Force activities. The Service is responsible for pre-suppression fire costs of lands in the withdrawal. Fire suppression will be provided by the Bureau of Land Management (BLM) for all range fires within the area described in the NAFB supplement to AFI 13-212. A separate agreement between Nellis AFB and BLM covers fire fighting operations on the Refuge.

15. The duration of the MOU shall begin with the date of signing of this agreement and end with the expiration date of PL 99-606, which is November 6, 2001. A semi-annual meeting shall be scheduled (target months of April and October) to include representatives of the Service, the 99 RANG, the 57th and 53rd Wings and 99ABW/EM. The purpose of these meetings is to provide mutual updates and to discuss any pending issues. Terms of this MOU may be negotiated, renewed and/or amended as necessary at the mutual consent of both signatory parties.

16. The signatory parties agree that the MOU dated March 11, 1986, was extended by letter of agreement dated March 15, 1991, to the effective date of this MOU. Satisfaction of the terms of this MOU will constitute full compliance with Air Force obligations under any prior agreements, and shall extinguish all current, continuing, and future obligations of the Air Force under those agreements.

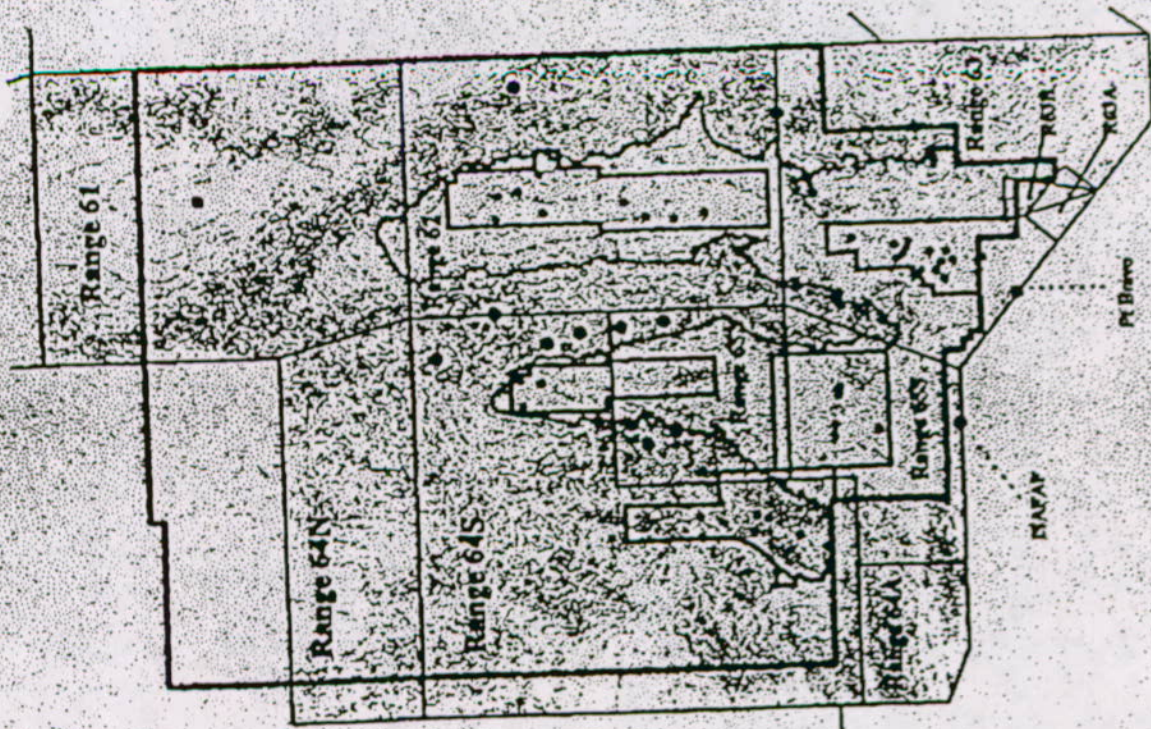
# 1976 MOU



## Nellis Southern Ranges

### Legend

- Water Catchments (Blue) ●
- Targets (Red) ◆
- Range Airspace Boundary (Black) —
- USFWS Refuge Boundary (Green) —
- Test/Training Boundary (Brown) —
- Impact Boundary (Purple) —
- Coasters (Gray) —
- Airfield/Complexes (Orange) ☼



### Nellis Southern Ranges

Legend

- Water Catchments (Blue) ●
- Targets (Red) ●
- Range Airspace Boundary (Black) —
- USFWS Refuge Boundary (Green) —
- Test/Training Boundary (Brown) —
- Impact Boundary (Purple) —
- Contours (Gray) —
- Abfield/Complexes (Orange) ●

# Range 61



**Nellis Southern Ranges**

**Legend**

- Water Catchments (Blue) ●
- Targets (Red) ●
- Range Airspace Boundary (Black) —
- USFWS Refuge Boundary (Green) —
- Test/Training Boundary (Brown) —
- Impact Boundary (Purple) —
- Contours (Gray) —
- Airfield/Complexes (Orange) ●

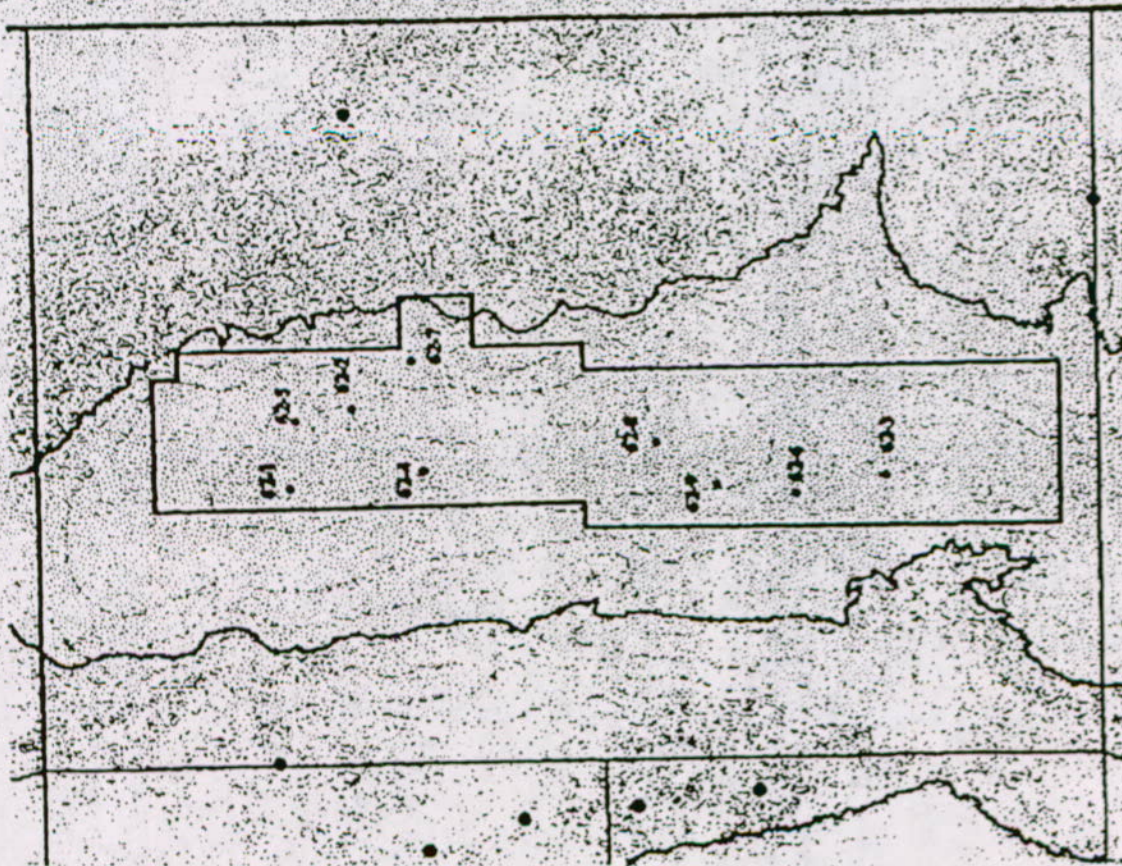


# Range 62

## Nellis Southern Ranges

### Legend

- Water Catchments (Blue) ●
- Targets (Red) ◆
- Range Airspace Boundary (Black) —
- USFWS Refuge Boundary (Green) —
- Test/Training Boundary (Brown) —
- Impact Boundary (Purple) —
- Contours (Gray) —
- Airfield/Complexes (Orange) ●

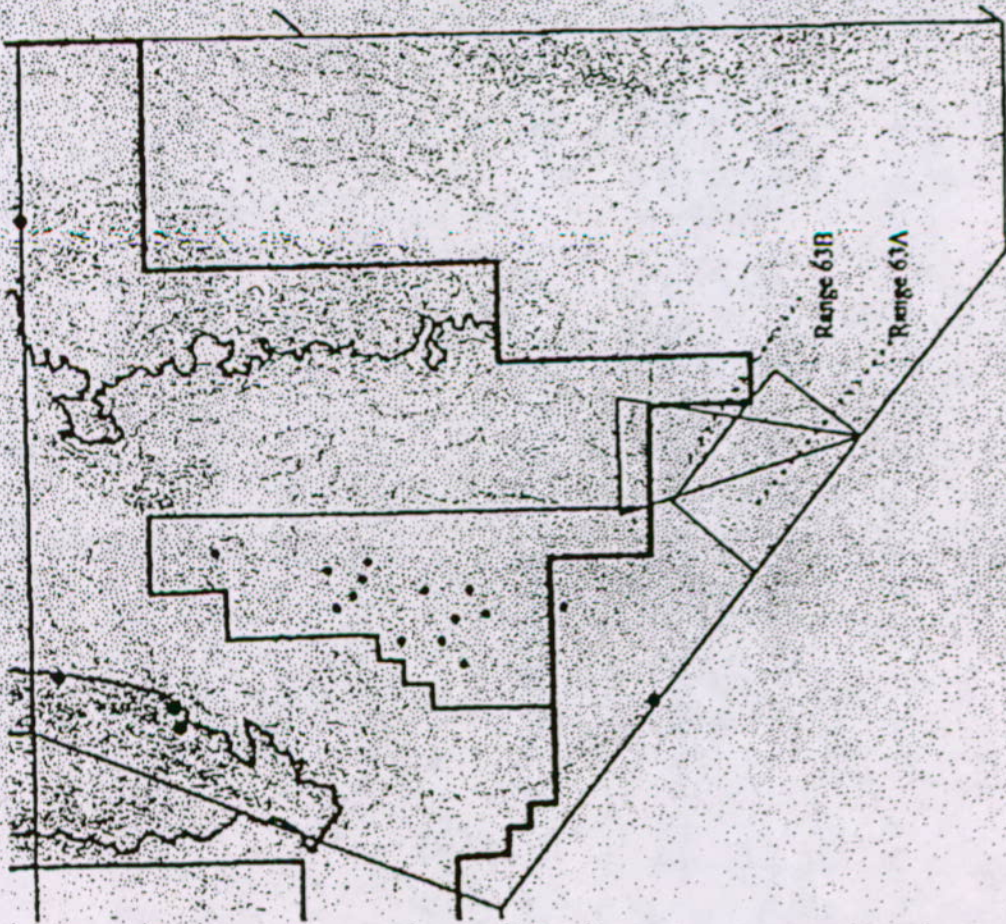


# Range 63

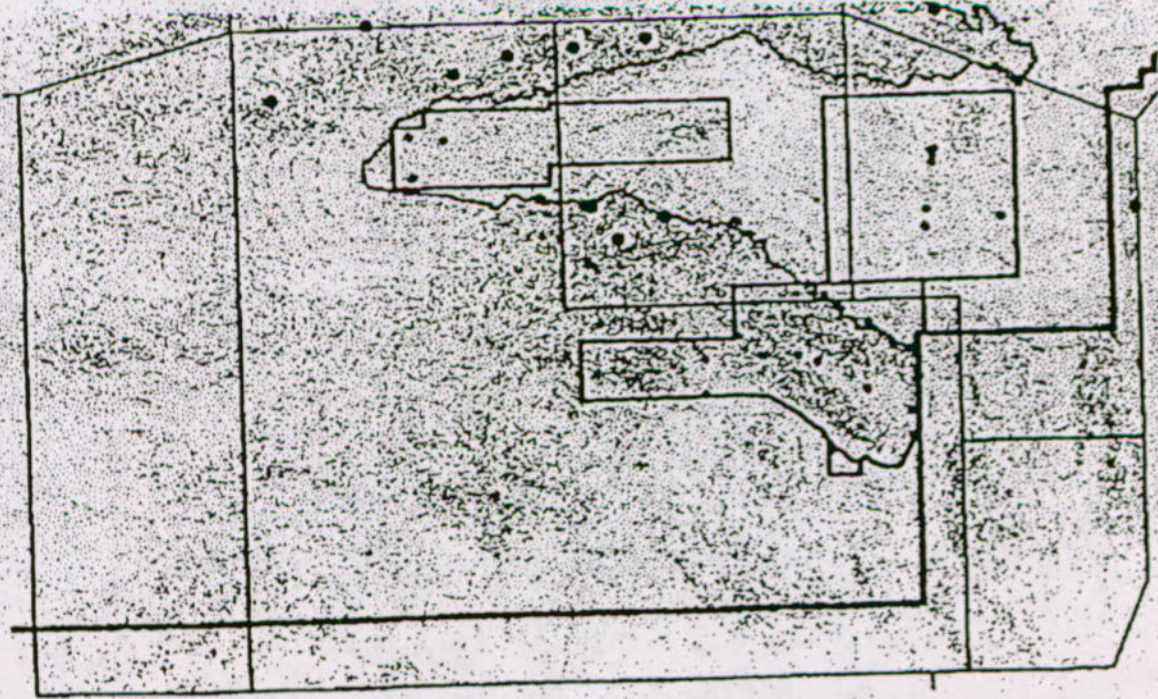
## Nellis Southern Ranges

### Legend

- Water Catchments (Blue) ●
- Targets (Red) ◆
- Range Airspace Boundary (Black) —
- USFWS Refuge Boundary (Green) —
- Test/Training Boundary (Brown) —
- Impact Boundary (Purple) —
- Contours (Gray) —
- Airfield/Complexes (Orange) #



# Range 64



## Nellis Southern Ranges

### Legend

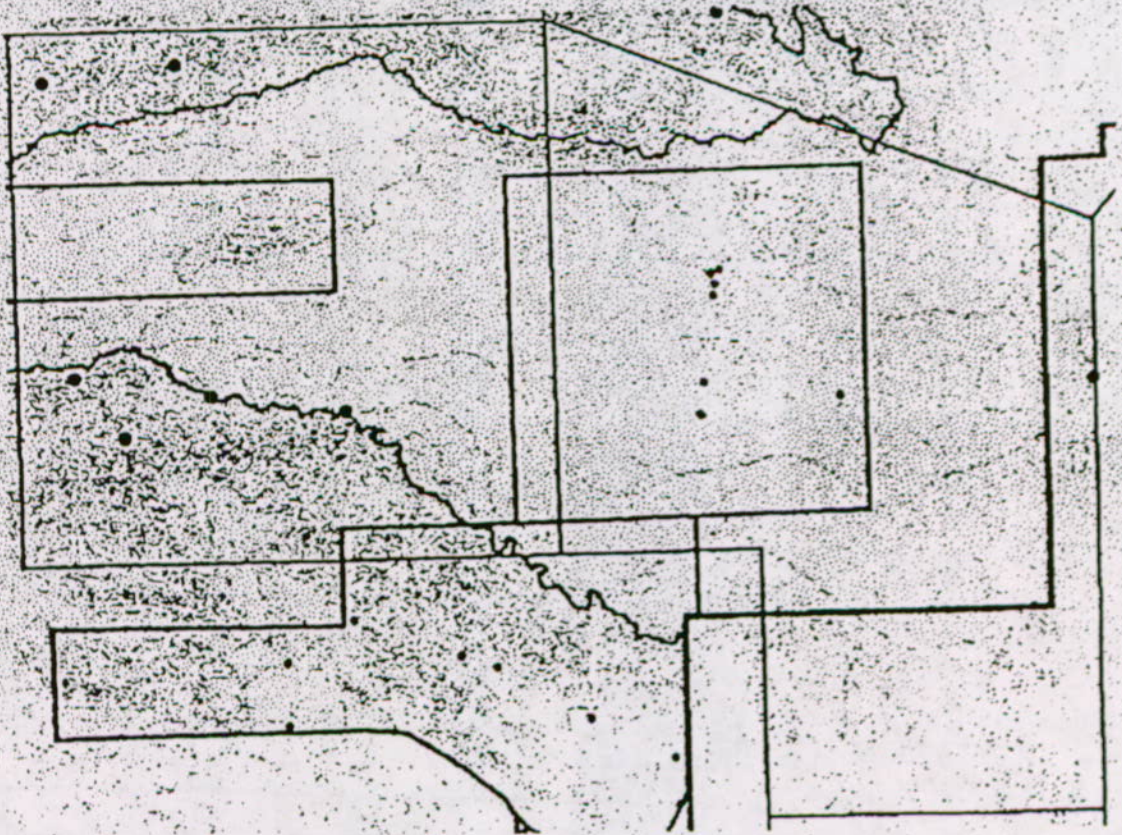
- Water Catchments (Blue) ●
- Targets (Red) ◆
- Range Airspace Boundary (Black) —
- USFWS Refuge Boundary (Green) —
- Test/Training Boundary (Brown) —
- Impact Boundary (Purple) —
- Contours (Gray) —
- Airfield/Complexes (Orange) ■

# Range 65

## Nellis Southern Ranges

### Legend

- Water Catchments (Blue) ●
- Targets (Red) ◆
- Range Airspace Boundary (Black) —
- USFWS Refuge Boundary (Green) —
- Test/Training Boundary (Brown) —
- Impact Boundary (Purple) —
- Contours (Gray) —
- Airfield/Complexes (Orange) ●



MOU Between  
the U.S. Air Force, Air Combat Command  
and  
the Department of the Interior

Signature Page

IN WITNESS THEREOF, the signatures have been affixed hereto on the respective dates herein indicated.

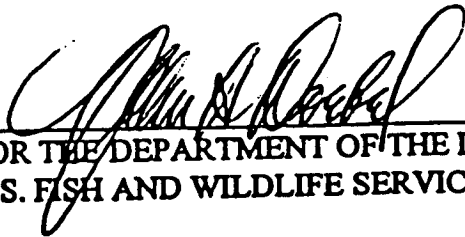


\_\_\_\_\_  
FOR THE U.S. AIR FORCE, AIR COMBAT COMMAND

RUSSELL T. BOLT  
Colonel, USAF  
Commander, 99<sup>th</sup> Air Base Wing

12 DEC 1997

\_\_\_\_\_  
Date



\_\_\_\_\_  
FOR THE DEPARTMENT OF THE INTERIOR,  
U.S. FISH AND WILDLIFE SERVICE

DEC 22 1997

\_\_\_\_\_  
Date

*for* MIKE SPEAR  
Regional Director, Region 1  
U.S. Fish and Wildlife Service

STATE OF NEVADA

BOB MILLER  
Governor

PETER C. MORROS, Director  
L.H. DODGION, Administrator

(702) 687-4670  
TD 687-4678

Administration  
Mining Regulation and Reclamation  
Water Pollution Control  
Facsimile 687-5856



Waste Management  
Corrective Actions  
Federal Facilities  
Facsimile 885-0868

Air Quality  
Water Quality Pla.  
Facsimile 687-6396

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES  
DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138  
Carson City, Nevada 89706-0866

August 18, 1997

Mr. Dan Schickler  
99 ABW/EM  
4349 Duffer Drive, Suite 1601  
Nellis AFB NV 89191-7007

SUBJECT: Response to written correspondence From Colonel Michael F. Fukey to Mr. Dennis La Prairie dated June 6, 1997

Dear Mr. Schickler:

The Nevada Division of Environmental Protection (NDEP) has received and evaluated your written correspondence to Mr. Dennis La Prairie dated June 6, 1997 regarding your request to bury concrete target debris in the craters left by bombs at various target sites located on the Nellis Range Complex. This office has the following comments and concerns:

Mr. Dennis La Prairie of the NDEP Bureau of Waste Management, Solid Waste Branch is your point of contact and has Solid Waste authority in this case. However, this office requests clarification of the following:

- 1) Per the attached letter from Ms. Eloisa V. Hopper to me, dated March 23, 1994, the burial of concrete debris appears to be inconsistent with the AFR 5046 five year surface debris removal plan. This office has not received the written plan referenced. Please provide a written plan.
- 2) Please provide documentation that this disposal practice is consistent with and will be identified in the Environmental Impact Statement (EIS) that is currently be drafted for the Nellis Range Complex.
- 3) This office is concerned that burial of debris without appropriate surveying and monument installation may cause confusion during future hazardous waste reconnaissance and investigation on the range complex. Please provide a plan that addresses this concern and is consistent with Installation Restoration Program

Mr. Dan Schickler  
Page 2  
August 18, 1997

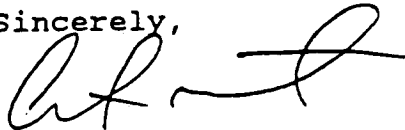
(IRP) sites that have been monumented and closed by this office.

4) Please provide clarification if other target debris of a non-hazardous nature is to be buried also.

Accordingly, please provide the information requested. This information must be received by this office not later than September 18, 1997. Further review of your request will not proceed until all requested information has been received by this office.

Should you have any questions or if I can be of any assistance, please do not hesitate to contact me at 702-687-4670 Extension 3032 (FAX 702-687-6396). All future correspondence regarding this subject should be addressed to the undersigned.

Sincerely,



Arthur G. Gravenstein  
Environmental Scientist  
Department of Defense Branch  
Bureau of Federal Facilities

cc: Mr. Paul Liebendorfer, NDEP  
Mr. Dennis La Prairie, NDEP  
Mr. Dave Minedew NDEP  
Mr. Kenneth W. Voget, Project Leader, Desert Refuge Complex,  
USDI, U.S. Fish and Wildlife Service, 1500 North Decatur  
Blvd., Las Vegas, NV 89108  
Mr. Stan Wiemeyer, USDI, U.S. Fish and Wildlife Service, 4600  
Kietzke Lane, Building C-125, Reno, Nevada 89502  
Mr. William Offutt, Nye County Manager, P.O. Box 153, Tonopah,  
Nevada 89049  
Mr. Robert S. Nelson, Emergency Management Supervisor, Office  
of Emergency Management, P.O. Box 153, Tonopah, NV 89049  
Mr. Alan Tinney, Nevada Health Protection Services, 505 King  
St. Carson City, NV 89710

Enclosures: (1)

Written Correspondence from Ms. Eloisa V. Hopper to Mr. Arthur  
Gravenstein, dated March 23, 1994



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 99TH AIR BASE WING (ACC)  
NELLIS AIR FORCE BASE, NEVADA

21 OCT 1997

99 ABW/EM  
4349 Duffer Drive, Suite 1601  
Nellis AFB NV 89191-7007

Mr. Arthur G. Gravenstein  
Environmental Scientist  
Bureau of Federal Facilities  
Nevada Division of Environmental Protection  
333 W. Nye Lane  
Carson City NV 89706-0866

Dear Mr. Gravenstein

The following comments are provided in response to concerns with burying concrete target debris at the target sites on the Nellis Air Force Base Range Complex.

Since our letter of March 23, 1994, Air Force Regulation (AFR) 50-46 has been replaced by Air Force Instruction (AFI) 13-212. Target debris, other than concrete rubble, remaining after test/training missions is cleared from the target areas according to AFI 13-212, Nellis Supplement 1, Chapter 6. A copy of this chapter is attached for your records. Each target site is cleaned and rebuilt annually with a more extensive cleanup on a five year rotation. The instruction is very general and only refers to the "unusable target debris", not specifically concrete target debris, in section 6.4.2.

All correspondence in regard to this subject has been forwarded to the Environmental Impact Statement (EIS) team. The EIS team will document and analyze any action or foreseeable actions regarding this request. If you have any questions concerning the relationship of this issue to the EIS, please contact Major Jeff Shea at (702) 652-4354.

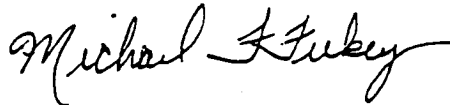
It would be difficult to maintain a monument at the target site since the targets would remain operational. In addition, since the concrete rubble would be buried within the target site, the covered rubble could possibly be hit during a future mission and the previously buried rubble could be destroyed. This process would require extensive and costly surveying and record keeping which may outweigh any benefit from burying the rubble at the target sites. The Range Squadron does however maintain records which show the limits of the target sites. These records could be used during any future investigations to show the overall limits of the burial areas. The blocks are generally destroyed by the bombing. The larger pieces that remain are reused when possible, however some fragments cannot be reused. Using these pieces to backfill the bomb craters which must be filled to provide access to the target sites and rebuild the targets reduces the amount of fill and cover material required to maintain the sites.



The concrete blocks used to construct the targets do have steel lifting rings embedded in the concrete. This steel would remain in some pieces of the concrete rubble we propose to bury. There would be no other target debris buried at the target sites.

Request your consideration of the above clarifications. If you have any questions, please contact Mr. Dan Schickler at (702) 652-2072.

Sincerely

A handwritten signature in cursive script that reads "Michael F. Fukey".

MICHAEL F. FUKEY  
Colonel, USAF  
Director, Environmental Management

Attachment:  
AFI 13-212, Nellis Supplement 1, Chapter 6

## Chapter 6

### RANGE DECONTAMINATION AND MAINTENANCE

**6.1. Range Decontamination.** Range decontamination includes the removal or disposal of unexploded ordnance, classified ordnance, inert ordnance residue, training projectile (TP) ammunition, and other range material. Explosive ordnance disposal (EOD) personnel inspect ordnance residue, and render safe unexploded ordnance by detonation or burning (where allowed). Non-EOD range or contractor personnel may then remove safe or inert ordnance residue, TP ammunition, and other range material. EOD personnel must brief the range clearance personnel on the possible hazards and the safe handling of debris. Dispose of safe ordnance debris according to appropriate Defense Reutilization and Marketing Office (DRMO) directives.

**6.2. Decontamination Responsibility.** Each MAJCOM is responsible for decontaminating active, inactive and excess ranges under its control. MAJCOMs are responsible for ensuring non-specialized equipment is available for decontamination. The operating agency is responsible for funding and scheduling all range decontamination. A "straw-man" schedule will be published in the local comprehensive range plan. This plan must address Air Force, federal, state, local, and host nation requirements and standards for land management and pollution abatement. The ROO or range manager/QAE may temporarily postpone decontamination on a case-by-case basis for severe weather or other circumstances that warrant delays. In addition to decontamination, periodic despecularization must be accomplished on those ranges used for laser training (see paragraph 6.7).

**6.3. Decontamination Types and Requirements.** An aggressive program to clear and dispose of surface hazards on the range is essential for the safety of personnel and efficient use of the ranges. For this reason, a chronological history of all ordnance used on the range should be maintained. Range decontamination is categorized as active, inactive or excess depending on the status of the range concerned. It is Air Force policy to decontaminate and issue certificates of clearance for excess ranges or ranges converted to other uses but remaining on the installation property inventory. Active range decontamination is limited to the range surface, and specific munitions detected by probing techniques. Subsurface range decontamination is done only with equipment designed for such operation.

**6.4. Active Ranges.** An active range or in-use target area programmed for continued use is periodically decontaminated. The frequency of decontamination is established by the FAC or QAE, based on the type of range and specific circumstances surrounding its use, but will not be less frequent than that listed below. Specific target areas used for testing live munitions containing extremely hazardous fuzing are identified as "Contaminated Target Areas." These target areas are decontaminated IAW guidance in paragraph 6.5.1.1.

#### **6.4.1. Partial Clearance.**

**6.4.1.1. Class A/Test Ranges.** Every two months or 50 Use-Days. The area surrounding the targets used for missile, rockets and bomb training/testing is cleared of all unexploded

ordnance and inert residue to a radius of 152 meters (500 feet). This requirement does not apply to the ANG. NOTE: Strafe targets are hand-policed daily and more detailed maintenance is performed every week or six use-days.

6.4.1.2. Class A Ranges. Each Year. The area surrounding the targets used for missile, rocket and bomb training is cleared IAW AFI 91-201 of all unexploded ordnance and inert residue to a radius of 610 meters (2,000 feet). Nuclear training target areas are cleared to a radius of 1,220 meters (4,000 feet). The ANG requirement is to perform EOD on any target that has had 20,000 bombs dropped on it or all targets each year, whichever occurs first, as prescribed above.

6.4.1.3. Class B and C Ranges. Each year. All unexploded ordnance and inert residue are cleared to a radius of 305 meters (1,000 feet) from each tactical target. The access ways into the tactical targets and 30.5 meters (100 feet) on either side of the access ways are also cleared each year. When targets are being relocated, access ways and new target areas are cleared according to the annual clearance requirement.

6.4.2. Complete Clearance. Five Year. A one-time complete clearance, within the hazard area, must be completed on each existing range. This clearance includes inspection, removal and disposal of munitions and unusable target debris. After completing this one-time clearance, the criteria for subsequent clearance may be reduced to an area of one nautical mile (NM) surrounding each target, or until a density factor of five complete ordnance items per acre is reached, whichever is farther from the target. This clearance should be completed every five years. Also, ten percent of the area between the clearance boundaries, defined by the reduced criteria, and the permanent range boundaries will be sampled on an annual basis.

These sampled areas will be cleared when an ordnance density factor of six complete ordnance items per acre is found. For conventional ranges and targets with restricted attack headings, sampling should be concentrated in areas most likely to be contaminated, which can be determined by the safety footprints or through use of the Hazard program. For tactical targets which permit random attack headings, random sampling around the target should be performed. Existing ranges that have not had completed boundary-to-boundary clearance may not use the reduced clearance criteria but must use the full boundary-to-boundary clearance criteria. New ranges may use the reduced clearance criteria. Boundary-to-boundary clearances accomplished before the publication of this instruction are valid, provided it is documented.

6.5. Inactive Range Decontamination. An active range which is no longer used as a weapons range, but remains on an installation's property inventory for other purposes, is decontaminated when it becomes inactive. Decontamination consists of searching for and clearing all explosive ordnance and ordnance residue reasonably possible to detect.

6.6. Excess Range Decontamination. Excess range decontamination is performed when range property is no longer required for military purposes. Requests for decontamination are submitted through the owning base and MAJCOM Real Property channels IAW AFI 32-9004. The following certificates are required when range property has been declared an excess range:

1. Declaration of Excess Property.

6.6.2. Notice of Contamination.

6.6.3. Land Use Determination.

**6.7. Despecularization.** Despecularization is the name given to a special type of decontamination on ranges where laser training occurs. A periodic despecularization of the hazard zone surrounding the targets must be accomplished as outlined in AFOSH Standard 161-10. Despecularization consists of removing any highly reflective materials (broken glass, polished metal, etc.) from the range so that laser energy is safely contained within the projected footprint area.

**6.8. Useful Equipment.** The type of equipment used for range maintenance will depend on location and surface of the range. Some ranges are on desert soil while others may be on swamp land. The following are suggested ideas for ranges constructed on normal soil.

**6.8.1. Practice Ordnance Targets.** Equipment used to maintain and decontaminate these types of targets are normally standard vehicles found at any military base. Primary vehicles will be a front end loader and a dump truck. The front end loader "bucket" should be placed at a height so that workers have to reach up to drop debris into it. This will help protect the workers if any of the practice munitions go off as they are placed into the bucket. As the bucket is filled, it will be emptied into the dump truck for transport to an appropriate site. If reclamation/salvage operations are also being conducted, a heavy duty all terrain vehicle (ATV) pulling a modified utility trailer, containing skid boxes for separating scrap, is also very useful. ATVs with trailers are also useful when doing the complete range clearance described in paragraph 6.5.2.

**6.8.2. Strafe Pits.** For strafe pit maintenance, a heavy tractor pulling a chisel plow or scarifying plow should be used to loosen the soil. A disc-harrow may be used to supplement the process but should not be used as the primary device as it has a tendency to compress and harden the soil. After the chisel plow and/or disc-harrow is used, the strafe impact area should be swept with a magnetic sweeper equipped with wide tires to avoid settling into the soft soil. A digger strainer should be used periodically, when soil moisture content permits, to remove subsurface debris and rocks from the plowed soil. The digger strainer works well in loose soil and effectively "super-cleans" the strafe bed to a depth of 8 to 10 inches.

**6.8.3. Live and Heavy Inert Ordnance.** After these items have been declared safe or inert by the EOD supervisor, various equipment may be used to extract, load and transport them to salvage processing or disposal areas. Chains for dragging ordnance out, front end loaders, tractors, trailers, dump trucks and other equipment may be used as required, depending on what is available.

**6.9. Request for Assistance.** Requests for partial and complete range decontamination assistance must be sent to the EOD flight responsible for that range. If manning assistance is required, the EOD flight will forward a request to MAJCOM EOD functional management office at least 90 days before the proposed start of the operation. This request should include:

6.9.1. Periods of required assistance (days, weeks, etc.);

6.9.2. Number of personnel required.

6.9.3. Names and telephone numbers of the operating agency point of contact.

## 6.10. Ensuring Safety.

6.10.1. **Training.** Extreme caution must be exercised when working within weapon impact areas to preclude inadvertent detonation of exploded ordnance. Ground and explosive safety briefings will be given to all non-EOD personnel engaged in range decontamination operations. They must be briefed on the markings used for practice and inert ordnance, on ordnance rendered safe, and the hazards they may encounter. The non-EOD personnel may assist in removing training ordnance and other inert ordnance that has been inspected and marked for removal by EOD personnel.

6.10.1.1. **WARNING** - At no time will non-EOD personnel attempt to move munitions (except training projectile gun ammunition) until the munitions have been examined by EOD personnel and found to be safe or inert. Disposal of hazardous items must be handled only by EOD technicians.

6.11. **Safety Requirements.** During decontamination of Class A, B, and C ranges, specific arrangements must be made to ensure that aircraft operations do not pose a hazard to ground personnel. Each working team must have a signaling device for use in the event an uninformed flight crew attempts to use the range. In addition, all ground personnel must maintain two-way communications with the range control tower or range office while engaged in decontamination operations.

6.11.1. **Class A Range.** Maintenance and decontamination can be conducted on one side of a dual Class A range (except behind strafe targets) while the RCO is controlling aircrew training missions on the other side of the range.

6.11.2. **Class B and C Ranges.** Normally, a Class B or C range is closed during decontamination and maintenance. However, if several Class B and C ranges are located together, or if the range is of sufficient size, decontamination can occur on a portion of the range while the remainder is being used. The operating agency must ensure that aircrews are briefed concerning the location of ground personnel and that no ordnance is released until target identification is certain.

6.11.3. **Overflight.** Overflight of areas or portions of ranges which are in the process of being decontaminated is not authorized below 10,000 feet AGL. This not only ensures the protection of ground personnel but also ensures aircraft will not be damaged by fragments from demolition operations. Overflight of these areas is permitted below 10,000 feet AGL but no lower than 3000 feet AGL when no drop/no laser flights are prescheduled. Overflight is also permitted before and after posted decontamination hours. Specific overflight of the decontamination area(s) must be obtained from the RCO on Class A ranges.

2. **Certificate of Clearance.** A Certificate of Clearance is the official document verifying that the cleared range land was carefully searched and cleared. It certifies that all dangerous

and explosive materials reasonably possible to detect have been removed. The certificate must be dated and must have a range decontamination report attached. The decontaminated areas must be identified in red cross-hatch on a map and annotated in the map legend.

**6.12.1. Active Range.** A Certificate of Clearance is not usually required for active range decontamination.

**6.12.2. Inactive Range.** The range decontamination project officer prepares a Certificate of Clearance if the range is not converted to another use, but stays on the installation proper inventory and in the base comprehensive range plan. The range decontamination report is attached to the Certificate of Clearance.

**6.12.3. Excess Range.** The range decontamination project officer prepares the Certificate of Clearance and the range decontamination report and submits them as outlined in AFI 32-9004.

**6.13. Range Decontamination Report.** A range decontamination report is a record of events involved in decontamination of a range. It must include the number of people, amount of money, and material required to do the work. The report indicates the precise legal boundaries of the areas that have been decontaminated, including legal land descriptions of known ordnance impact areas, and explosive and chemical burial sites. A range decontamination report is not a Certificate of Clearance, nor is it to be used as one.

**6.13.1. Active Range.** Decontamination activities are reported IAW AFI 32-30 and TO 6OA-2-1-13.

**6.13.2. Inactive ranges.** A range decontamination report is required when inactive ranges are decontaminated and serves as a supporting document to the Certificate of Clearance if the range is declared excess. Documentation will be in appropriate tabs of the base comprehensive range plan required by AFI 32-7062 and this instruction. Two copies of the report are given to the installation responsible for the range. The original copy is filed with the real estate records maintained by the base civil engineer.

**6.13.3. Excess Range.** Range decontamination reports for excess ranges are processed according to AFI 32-9004.



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS USAF WEAPONS AND TACTICS CENTER (ACC)  
NELLIS AIR FORCE BASE, NEVADA

MAR 23 1994

USAFWTC/EV  
4551 Devlin Dr  
Nellis AFB NV 89191-6546

Mr Arthur Gravenstein  
Environmental Management Specialist  
DoD Branch, Bureau of Federal Facilities  
Division of Environmental Protection  
333 West Nye Lane  
Carson City NV 89710

Dear Mr. Gravenstein

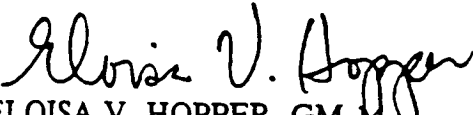
As per your February 24, 1994, letter requesting additional information on surface debris in the vicinity of Nellis Range Complex (NRC) Installation Restoration Program (IRP) sites, please find below answers to each concern.

a. In our February 14, 1994, letter, all reference to "subsurface" should be replaced with "surface". All surface debris located on or around IRP sites will be removed and then either recycled or disposed in an approved landfill. It will not be buried or remain at NRC.

b. In accordance with AFR 5046, all NRC surface debris (targets have top priority) will be removed on a five year cycle. Ideally, this process will clean up 1/5 of the NRC every year; however, due to changing mission requirements, target size and type, access, and funding, area and quantity of debris removed will vary. Currently, a specific written plan depicting exact quantities and areas of surface debris to be removed/recycled for each year doesn't exist. However, with close coordination with 554 RANS, Captain Schofield, we are in the process of developing one. Our estimated completion date is April 8, 1994.

If you have any questions or require additional information, please contact Mr. Douglas Fitzpatrick at (702) 652-3568.

Sincerely

  
ELOISA V. HOPPER, GM-14  
Director, Environmental Management

cc:  
Ken Voget  
554 RANS/RXF

*Global Power for America*

# Western Shoshone Resources Inc.

ORR  
LSON

ENNIS H. CHARLEY  
VICE-CHAIRPERSON

TERRY L. HUNT  
SECRETARY

ARA J. CULBERTSON  
TREASURER

ALTER SAM MARSH  
PARLIAMENTARIAN

Col. Michael Fukey,  
Nellis Air Force Base  
Box 9919  
Las Vegas, Nevada 89191

26 June 1996

RE: Bombing Range EIS and NAIP

Col. Fukey:

As you are aware a letter from the Western Shoshone National Council, was sent to Col. Donegan on 1 January 1996, in regard to the formation of a 16 Tribe Native American Inter-Action Program. This letter informed you of our rights under the "Treaty of Ruby Valley of 1863" and that The United States Air Force is in direct violation of that treaty. You chose to ignore our legal rights under this treaty.

The Western Shoshone Resources Inc., wishes to express its support of the position taken by the Western Shoshone National Council.

We also wish to take to task your effort to degradate our title to our National Territory. The "Treaty of Ruby Valley of 1863" did not cede any lands. The Treaty has not been modified and has not been changed by any court decree nor congressional action and is still in full force and effect.

At this very moment the 9th Circuit Court of Appeals is deciding our position in relation to the US vs Nye County Court Case and that issue has yet to determine the so-called U.S. ownership of any land belonging to the Western Shoshone Nation.

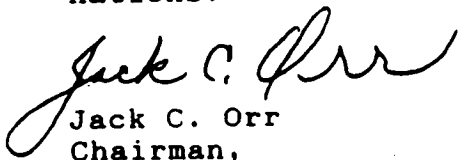
Your Government has caused a quiet invasion of our lands through manipulation of your own laws and under the guise of your National Security while violating ours.

You are attempting to further lessen our territorial rights by creating a Native American Inter-Action Program. You have created a paid panel of individual Indian Persons to justify your entering our lands with the intent to rape our National Heritage. You have invited IRA (Indian Re-Organization Act) Reservation Tribal Government representatives to be a part of NAIAP. The Government of the Western Shoshone Nation does not recognise the authority of these persons outside of their respective reservation boundaries. You have also invited Native American Tribes other than Western Shoshone to participate and to enter upon our lands as if it was their right to do so. We have been at peace with neighboring Nations for some centuries, but you hope to now disturb that peace. You should know that we have defended our boundaries against all intruders including you for centuries. We will continue to do so.



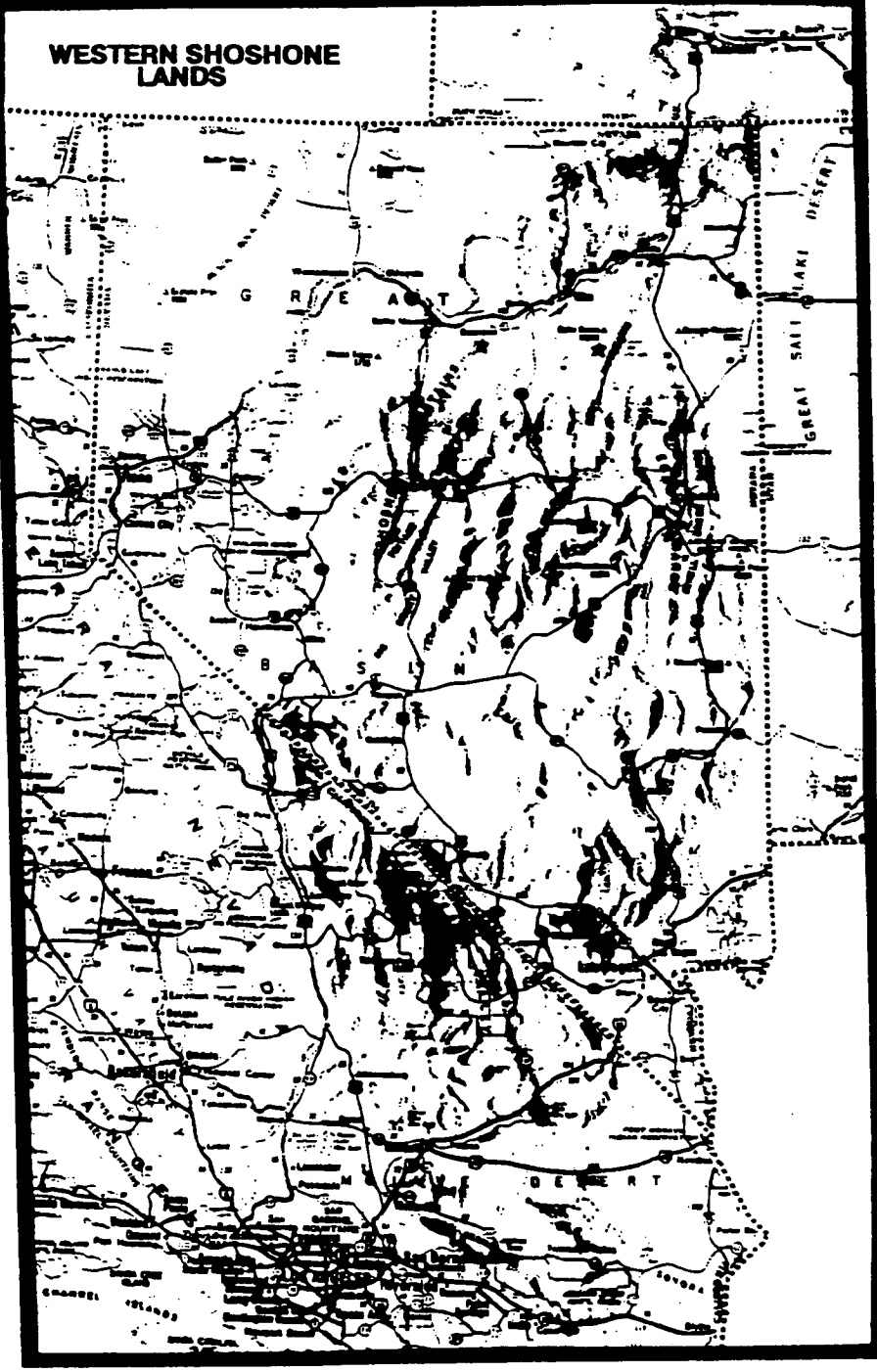
We resent the idea that you claim to protect our sites better even than the BLM or any other U.S. Governmental entity. Because of your claim, we must ask why have the artifacts disappeared that were in the Pint water Cave and why have our sacred petroglyphs been shot full of holes by your war machines?

You are doing our Nation and our peoples a great disservice by your presence and continued activity within the boundaries of the Western Shoshone Nation. You are not welcome there and should be viewed as a hostile intruder by other civilized nations.



Jack C. Orr  
Chairman,  
W.S.R.I.

**WESTERN SHOSHONE  
LANDS**





# Beatty Town Advisory Board

P.O. Box 837

Beatty, Nevada 89003

Phone/Fax: (702) 553-2050

January 14, 1998

The Honorable William Cohen  
Secretary of Defense  
1000 Defense, The Pentagon  
Washington, D.C. 20301-1000

Dear Secretary Cohen:

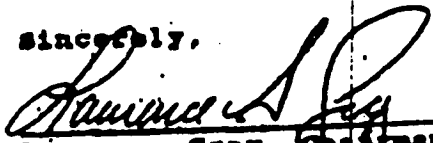
Enclosed is the Beatty Town Advisory Board Resolution No. 98-01 urging opening of the western border of the Nellis Air Force Gunnery Range to mining of precious and industrial minerals.

Emerald and Nye Counties encompass an area of 22,000 square miles. Ninety Seven (97) percent of Esmeralda County and Ninety three (93) percent of Nye County is Federally owned, much of which is controlled either by the Department of Defense or Department of Energy. These two counties have been adversely impacted by these Federal reservations for many years; a majority of the Federal and contractor employees reside in Clark County and commute here; spending no money locally. Federal agencies and contractors purchase goods and services primarily from Clark County with little spent locally. Federal agencies and contractors are minimally involved with the local governments and other organizations. No support is given to economic development activities by any organization involved with the Department of Defense.

Opening of these lands to mineral exploration and development will greatly offset the adverse impact of Federal operations in this area and potentially save several communities from their current state of near-depression.

We cannot express strongly enough our feeling of urgency in this matter and thank you for your consideration.

Sincerely,

  
\_\_\_\_\_  
Laurence Gray, Chairman

OFFICE OF THE  
SECRETARY OF DEFENSE  
978 JUN 21 PM 3 49



# Beatty Town Advisory Board

P.O. Box 837

Beatty, Nevada 89003

Phone/Fax: (702) 553-2050

Resolution 98-01  
BEATTY TOWN ADVISORY BOARD

## BEATTY TOWN ADVISORY BOARD COUNTY OF NYE, STATE OF NEVADA

Resolution urging the Secretary of Defense and the Secretary of the Interior to make Certain Areas of the Nellis Air Force Range Available for use by the Public.

WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and

WHEREAS, soon after the creation of the Range its lands were made unavailable to the public for multiple use and were reserved exclusively for military use; and

WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishment of the range its lands were used for various purposes, including prospecting, mining and recreation; and

WHEREAS, prospecting and mining within the area now known as the Range began in the late 1860's and continued until terminated by the Federal Government in the early 1940s; and

WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, and most mining taking place in the western and northern part of the area now known as the Range; and

WHEREAS, all or part of some 25 major mining districts are located in the western and northern part of the Range, and precious metals were mined in these districts, and

WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-606) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and

WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the year 2001, unless certain areas of the Range are found suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act; and

WHEREAS, the communities adjacent to the Range suffer from poor economical conditions as well as continuing to suffer the adverse economic impact caused by the Range, both of which would



# Beatty Town Advisory Board

P.O. Box 837

Beatty, Nevada 89003

Phone/Fax: (702) 553-2050

be partially offset by precious and industrial metal development, and

WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) To support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities; and

WHEREAS, The U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and

WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 or the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register.

NOW THEREFORE, it is hereby resolved as follows:

1. The Beatty Town Advisory Board urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see attachments 1 and 2) and having a total area of approximately 127,000 acres.
2. The Beatty Town Advisory Board urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U. S. mining laws, pursuant to Section 12 of the Act.
3. The Beatty Town Advisory Board urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, The Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities to support this resolution.
4. The Beatty Town Advisory Board is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, Esmeralda and Nye County Commissioners, the Governor of the State of Nevada, each member of the Nevada



# Beatty Town Advisory Board

P.O. Box 837

Beatty, Nevada 89003

Phone/Fax: (702) 553-2050

Legislature, the Nevada Association of Counties and the Nevada League of Cities.

DATED this 13<sup>th</sup> day of January, 1998.

Beatty Town Advisory Board

BY: Laurence Gray  
Laurence Gray, Chairman

BY: Harmon B. Forsyth Jr.  
Harmon B. Forsyth Jr., Sec-Treas

BY: Joannie Jarvis  
Joannie Jarvis, Member

BY: Jeff Taguchi  
Jeff Taguchi, Member

BY: Jerry Adcox  
Jerry Adcox, Member

ATTEST:

Mary Ball  
Mary Ball, Notary



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE



3 February 1998

HQ USAF/XO  
1680 Air Force Pentagon  
Washington, DC 20330-1480

Mr. Laurence Gray, Chairman  
Beatty Town Advisory Board  
P.O. Box 837  
Beatty, Nevada 89003

Dear Mr. Gray

Thank you for your interest in the western border of the Nellis Range and the possibility of mineral exploration. As required by Public Law 99-606, every five years, the Secretary of the Interior, with concurrence of the Air Force, determines which withdrawn lands are suitable for opening to the Mining Law of 1872. The Air Force and the Department of the Interior have determined that military operations, public safety, and national security require the closure of public access to the range for mining. We will continue to assess this need, and will inform the public of any changes in policy.

Your input on this matter will be made an official part of our administrative record for the Nellis Range Renewal proposal. It will be addressed as part of the procedures followed by the Air Force in preparation of the Range Renewal draft Legislative Environmental Impact Statement (LEIS), in accordance with Public Law 99-606 and the National Environmental Policy Act (NEPA).

The NEPA requirement for public input ensures the consistent consideration of public concerns and allows us to provide for the widest possible dissemination, including Congress, of responses to these concerns. One option the Air Force is proposing in the LEIS is to not renew the withdrawal of approximately 38,000 acres along the western border of the range. Any decision regarding this proposal will be made by Congress, after thorough investigation and public comment.

Thank you for the opportunity to discuss this issue with you. The Air Force has benefited from a long-standing, supportive relationship with the citizens and government agencies in Nevada, and we will continue to take whatever steps we can to preserve that relationship.

Sincerely,

  
PATRICK K. GAMBLE, Lt Gen, USAF  
Deputy Chief of Staff  
Air & Space Operations

*Golden Legacy, Boundless Future... Your Nation's Air Force*

# MEMORANDUM OF UNDERSTANDING

BETWEEN

NELLIS AIR FORCE BASE

AND

LINCOLN COUNTY, NEVADA

## I. PREFACE

WHEREAS, the United States Air Force trains aircrews in the state of Nevada to maintain mission ready status in their assigned aircraft and to participate in large force integrated air missions; and

WHEREAS, the Nellis Air Force Range (hereinafter "NAFR") lands were withdrawn from all forms of appropriation under the public land laws of P.L. 99-606, *as amended*, and by Public Land Order 7131; and

WHEREAS, the Air Force has announced its intention to seek an extension of the congressional withdrawal (hereinafter "renewal") of the NAFR; and

WHEREAS, the Air Force is the lead agency (40 C.F.R. § 1501.5) and the Bureau of Land Management, United States Fish and Wildlife Service, and the Department of Energy are cooperating agencies pursuant to 40 C.F.R. § 1501.6 in the NAFR renewal; and

WHEREAS, Nellis Air Force Base (hereinafter "Nellis") and Lincoln County (hereinafter "Lincoln") recognize the importance of working together in an effort to keep local government involved in the legislative environmental impact statement (hereinafter "LEIS") process.

NOW, THEREFORE, the parties agree, in order to facilitate the implementation of their cooperative efforts, agree to the following:

## II. PURPOSE

The purpose of this agreement is to establish the terms and conditions of a cooperative working relationship between Nellis and Lincoln in the preparation of the LEIS for the NAFR renewal.



### III. AUTHORITY

National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4370d, *as amended*, (hereinafter "NEPA"); Federal Land Policy Management Act of 1976, 43 U.S.C. §§ 1701-84 (hereinafter "FLPMA"); Military Lands Withdrawal Act of 1986, P.L. 99-606, (hereinafter "MLWA"); Intergovernmental Cooperation Act of 1968; Executive Order 12372 (Intergovernmental Review of Federal Programs); Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the NEPA, 40 C.F.R. Parts 1500-1508 (hereinafter "CEQ Regulations"); Department of Defense Instruction (DoDI) 4000.19 (Interservice and Intergovernmental Support); and Air Force Instruction (AFI) 250201 (Support Agreements Procedures).

### IV. GENERAL

This Memorandum of Understanding (hereinafter "MOU") establishes the framework and guidance, and also documents the agreement by and between Nellis and Lincoln for a cooperative relationship during the preparation of the LEIS for the NAFR renewal pursuant to the MLWA and applicable Department of Interior regulations.

### V. RESPONSIBILITIES

1. Nellis and Lincoln agree to:

- a. Follow any and all applicable federal statutory or regulatory laws and procedures.
- b. Inform each other of the date, time, location, and purpose of quarterly NAFR LEIS meetings attended by all cooperating agencies, and in the event either party is unable to attend, the attending party will provide the absentee with a meeting summary.
- c. Meet at the request of either party at mutually agreed upon dates, times, and locations to discuss Lincoln County LEIS-related concerns.
- d. Provide Lincoln with applicable portions of information and analysis bearing on Lincoln issues or concerns.

2. Nellis will:

- a. Communicate the execution of this MOU to the appropriate installation, range, major command, and headquarters offices; and
- b. Designate a point of contact for the NAFR LEIS.

3. Lincoln will:

- a. Communicate the execution of this MOU to the appropriate Lincoln officials; and
- b. Designate a point of contact for the NAFR LEIS; and
- c. Provide Nellis with any and all relevant Lincoln information that may be helpful in the preparation of the NAFR LEIS.

FURTHERMORE, both parties understand and mutually agree that:

4. Implementation of this MOU is of mutual benefit and any costs incurred by either party shall be at that party's expense;
5. This MOU may be modified or amended only by mutual agreement of the parties in writing and signed by each of the parties hereto;
6. Any documents or data exchanged between the parties to this MOU will not be released to any third party unless the designated representative of the party that generated the document or data approves the release, in writing;
7. Nothing in this MOU shall be construed as a commitment of funds by either party;
8. Nothing herein contained shall be construed as limiting or affecting, in any way, the vested or delegated authority of the United States Air Force, Nellis, or Lincoln;
9. This MOU becomes effective when signed by all parties and shall remain in full force and effect until the Final LEIS is completed or the project is canceled, but may be terminated by either party upon 45 days notice, in writing, given to the other party.

John D. Ladieu  
JOHN D. LADIEU  
Colonel, USAF  
99ABW/CC

21 May 97  
Date

Edward E. Wright  
EDWARD E. WRIGHT  
Date

Lincoln County Commissioners



The Honorable William Cohen  
 Secretary of Defense  
 1000 Defense, The Pentagon  
 Washington, D.C. 20301-1000

December 4, 1997

- Sandy Harmon  
 Executive Director
- Chris L. Blair  
 Administrative Assistant
- Board of Directors  
 Virginia Ridgway  
 Chairman
- R.M. Carrigan, C.P.M.  
 Vice Chairman
- Louis Becker  
 Joe Deppa  
 Alphaeus Brunson  
 Ron Hunsinger  
 Michael Parsons  
 Bob Revert  
 Trish Rippe  
 Tony Vidler  
 Alternatives
- Walter Boston  
 Robin Conrad  
 Joel Emalley  
 Norman Payton  
 Ralph Ross  
 Mattie Anderson  
 Ira "Red" Capote
- Gold Manufacturers  
 Val Nevada  
 an Investment  
 Company
- Citizen's Tobacco
- Dr. Rudolph Myers
- Goldfield
- Chairman of Commerce
- Nevada  
 Exploration Company
- Longstreet / Santa Fe  
 Station
- Nevada  
 Business Service
- Palumbo  
 Valley Gemstone
- Round Mountain Gold
- Teropah  
 Chairman of Commerce
- Western Pacific Development  
 Corporation
- Gold Manufacturer
- Nevada State Bank

Dear Secretary Cohen:

I am pleased to present to you the enclosed EDEN resolution No. 97-2 urging opening of the western border of the Nellis Airforce Gunnery Range to mining of precious and industrial minerals.

EDEN is the Economic Development Authority for Esmeralda and Nye Counties, encompassing an area of 22,000 square miles. Ninety Seven per cent of Esmeralda County is federally owned. Ninety 93 percent of Nye county is federally owned, much of which is controlled either by the Department of Defense or Department of Energy. Our two counties have been adversely impacted by these federal reservations for many years; a majority of the federal and contractor employees reside in Clark county and commu... spending no money locally, federal agencies and contractors purchase goods and services primarily from Clark county with little spent locally. federal agencies and contractors are minimally involved with local governments and other organizations. No support is given to economic development activities by any organization involved with the Department of Defense.

Opening of these lands to mineral exploration and development will greatly offset the adverse impact of federal operations in this area and potentially save several communities from their current state of near-depression.

We cannot express strongly enough our feeling of urgency in this matter and thank you for your consideration.

Sincerely,  
  
 (Mr.) Sandy Harmon  
 Executive Director

Resolution No. 97-02  
ECONOMIC DEVELOPMENT AUTHORITY  
ESMERALDA/NYE COUNTIES

EXECUTIVE BOARD OF THE ECONOMIC DEVELOPMENT AUTHORITY  
ESMERALDA/NYE COUNTIES (EDEN)

Resolution urging the Secretary of Defense and the Secretary of the Interior  
to make certain areas of the Nellis Air Force Range available for use by the public

WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range, and

WHEREAS, soon after the creation of the Range its lands were made unavailable to the public for multiple use and were reserved exclusively for military use; and

WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishment of the Range its lands were used for various purposes, including prospecting, mining and recreation; and

WHEREAS, prospecting and mining within the area now known as the Range began in the late 1860s and continued until terminated by the federal government in the early 1940s; and

WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, and most mining taking place in the western and northern part of the area now known as the Range, and

WHEREAS, all or part of some 25 major mining districts are located in the western and northern part of the Range, and precious metals were mined in these districts, and

WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-606) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and

WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the Year 2001, unless certain areas of the Range are found suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act; and

WHEREAS, the communities adjacent to the Range suffer from poor economic conditions as

well as continuing to suffer the adverse economic impact caused by the Range, both of which would be partially offset by precious and industrial metal development; and

WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) To support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities; and

WHEREAS, the U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and

WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 of the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register.

NOW THEREFORE, it is hereby resolved as follows:

1. The Economic Development Authority Nye/Esmeralda Counties urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see Attachments 1 and 2) and having a total area of approximately 127,000 acres.

2. The Economic Development Authority Nye/Esmeralda Counties urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U.S. mining laws, pursuant to Section 12 of the Act.

3. The Economic Development Authority Nye/Esmeralda Counties urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities to support this resolution.

4. The Economic Development Authority Nye/Esmeralda Counties Staff is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, Esmeralda and Nye County Commissions, the Governor of the State of Nevada, each member of the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities.

DATED this 20th day of November, 1997.

PROPOSED on the 20th day of November, 1997, by the Executive Board of the Economic Development Authority Esmeralda/Nye Counties.

VOTE: AYES Belcher  
Boyer  
Harmon  
Rosen  
Winters  
Wright  
Wright  
Wright  
Wright  
Wright  
Wright  
Wright  
ABSENT: Wright  
Wright

NAYS: None  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

EFFECTIVE this 20th day of November, 1997.

EXECUTIVE BOARD OF THE ECONOMIC  
DEVELOPMENT AUTHORITY  
ESMERALDA/NYE COUNTIES

By: Virginia Redick  
Executive Board Chairman

ATTEST:

[Signature]  
K. R. "Buddy" Harmon, Executive Director

**ROUND MOUNTAIN TOWN BOARD  
COUNTY OF NYE STATE OF NEVADA**

**Resolution urging the Secretary of Defense and the Secretary of the Interior to  
make certain areas of the Nellis Air Force Range available for use by the public**

WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and

WHEREAS, soon after the creation of the Range its lands were made unavailable to the public for multiple use and were reserved exclusively for military use; and

WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishing of the Range its lands were used for various purposes, including prospecting, mining and recreation; and

WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, with most mining taking place in the northern part of the area now known as the Range; and

WHEREAS, all or part of some 25 major mining districts are located in the northern part of the Range, and precious metals were mined in these districts; and

WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-606) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and

WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the Year 2001, unless certain areas of the Range are found suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act, and

WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) to support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities, and

WHEREAS, the U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and

WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 of the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register.

NOW THEREFORE, it is hereby resolved as follows:

1. The Round Mountain Town Board urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see Attachments 1 and 2) and having a total area of approximately 127,000 acres.

2. The Round Mountain Town Board urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U.S. mining laws, pursuant to Section 12 of the Act.

3. The Round Mountain Town Board urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, the Nevada Legislature, the Nevada Association of Counties, and the Nevada League of Cities to support this resolution.

4. The Town Administrative Supervisor is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, each member of the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities.

Dated this 25 day of November, 1997.

PROPOSED on the 25 day of November, 1997 by the Round Mountain Town Board.

VOTE: AYES: Stedus Amundell Nays: Johanny Archuleta  
Joni Eastley  
Bill Hanson  
Marianne Firebaugh

ABSTENTIONS: None ABSENT: None

EFFECTIVE this 25 day of November, 1997.

ROUND MOUNTAIN TOWN BOARD  
COUNTY OF NYE, STATE OF NEVADA

By: Joni Eastley  
Joni L. Eastley, Chairperson

ATTEST:

Marianne Firebaugh  
Marianne Firebaugh, Town Clerk



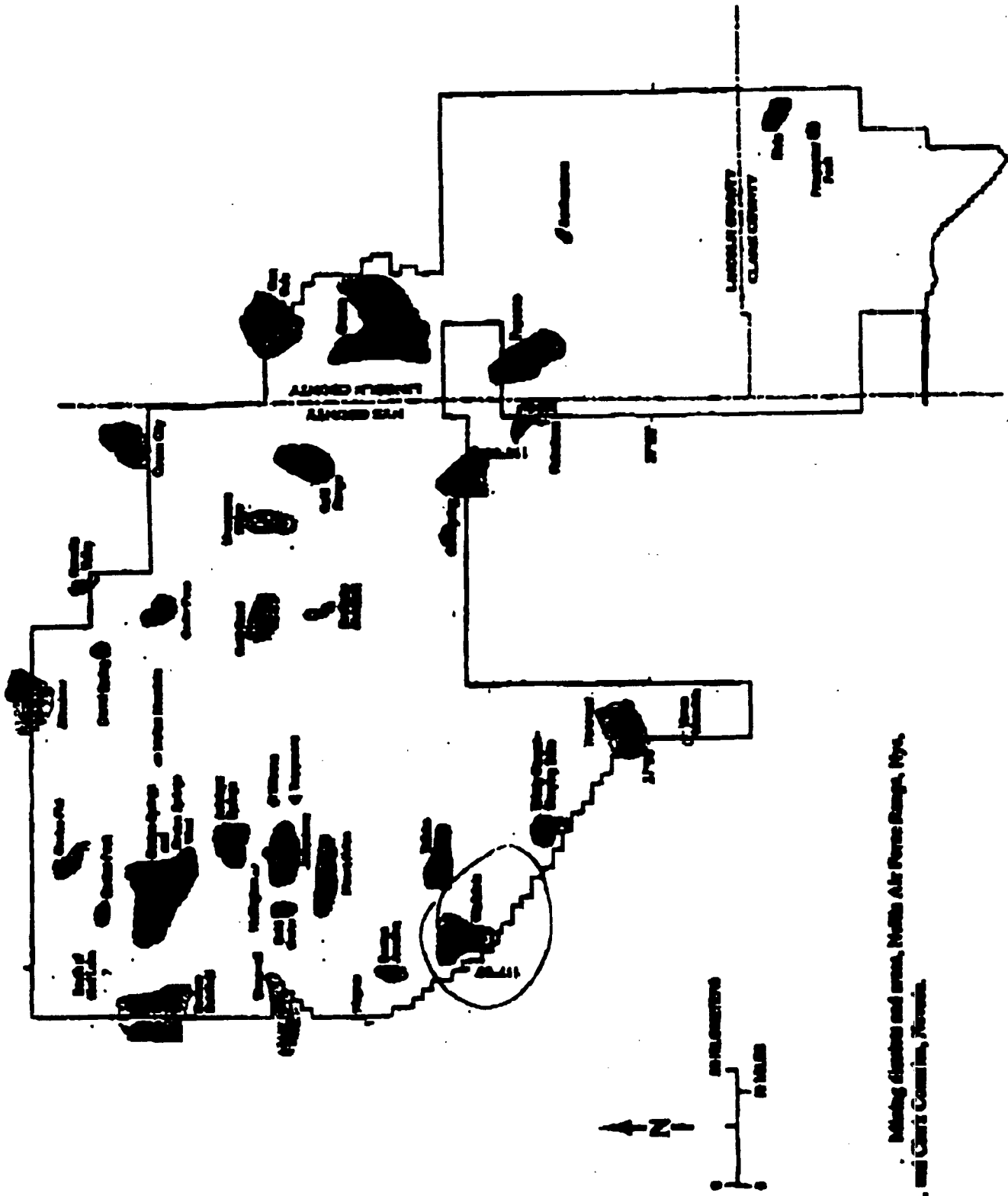
**MINING DISTRICTS OF INTEREST ALONG FRINGES OF NELLIS RANGE**

**APPROXIMATE LOCATION AND ACRE**

**BY WALT LOMBARDO, NEVADA DIVISION OF MINERALS**

REVELLE VALLEY -	T.2S., R.51E., SEC. 1,2,11,12 (Unsurveyed)	2,560 ACRES
CORRAL SPRINGS -	T.2S., R.50E., SEC. 1 - 4, 9 - 12 (Unsurveyed)	5,120 ACRES
SILVERBOW -	T.1S., R.49E., SEC. 1 - 12 (Unsurveyed)	7,680 ACRES
CACTUS FLAT -	T.1N., R.48E., SEC. 13 - 36 (Unsurveyed) T.2N., R.48E., SEC. 1 - 24 (Unsurveyed)	30,720 ACRES
CACTUS PEAK -	T.1S., R.45E., SEC. 33 - 36 (Unsurveyed) T.1S., R.46E., SEC. 31 - 33 (Unsurveyed) T.2S., R.45E., SEC. 1 - 4, 9 - 16, 21 - 24 (Unsurveyed) T.2S., R.46E., SEC. 4 - 9, 16 - 21 (Unsurveyed)	22,400 ACRES
SOUTH OF MUD LAKE -	T.2S., R.44E., SEC. 1 - 12 (Unsurveyed)	7,680 ACRES
EASTERN GOLDFIELD -	T.2S., R.44E., SEC. 16 - 21, 28 - 33 (Unsurveyed) T.3S., R.44E., SEC. 3 - 10, 15 - 18 (Unsurveyed)	15,360 ACRES
GOLD CRATER -	T.4S., R.45E., SEC. 36 (Unsurveyed) T.4S., R.46E., SEC. 31 (Unsurveyed) T.5S., R.45E., SEC. 1, 12 (Unsurveyed) T.5S., R.46E., SEC. 6, 7 (Unsurveyed)	3,840 ACRES
WAGNER -	T.6S., R.44E., SEC. 18, 19, 30 (Unsurveyed)	1,920 ACRES
CLARKDALE -	T.7S., R.45E., SEC. 34 - 35 (Unsurveyed) T.8S., R.45E., SEC. 2, 3, 9 - 11, 15, 16, 21, 22 (Unsurveyed)	7,040 ACRES
THIRSTY CANYON -	T.9S., R.47E., SEC. 13 - 30, 32 - 36 (Unsurveyed) T.10S., R.47E., SEC. 1, 2, 12 (Unsurveyed)	16,640 ACRES
TRANSVAAL -	T.10S., R.48E., SEC. 25, 26, 36 (Unsurveyed) T.10S., R.49E., SEC. 30 - 33 (Unsurveyed) T.11S., R.49E., SEC. 4 - 6 (Unsurveyed)	6,400 ACRES

127,360 acres



Mining clusters and areas, Nellis Air Force Range, Nye, Lincoln, and Clark Counties, Nevada.

# MEMORANDUM OF UNDERSTANDING

BETWEEN

NELLIS AIR FORCE BASE

AND

NYE COUNTY, NEVADA

## I. PREFACE

WHEREAS, the United States Air Force trains aircrews in the state of Nevada to maintain mission ready status in their assigned aircraft and to participate in large force integrated air missions; and

WHEREAS, the Nellis Air Force Range (hereinafter "NAFR") lands were withdrawn from all forms of appropriation under the public land laws of P.L. 99-606, *as amended*, and by Public Land Order 7131; and

WHEREAS, the Air Force has announced its intention to seek an extension of the congressional withdrawal (hereinafter "renewal") of the NAFR; and

WHEREAS, the Air Force is the lead agency (40 C.F.R. § 1501.5) and the Bureau of Land Management, United States Fish and Wildlife Service, and the Department of Energy are cooperating agencies pursuant to 40 C.F.R. § 1501.6 in the NAFR renewal; and

WHEREAS, Nellis Air Force Base (hereinafter "Nellis") and Nye County (hereinafter "Nye") recognize the importance of working together in an effort to keep local government involved in the legislative environmental impact statement (hereinafter "LEIS") process.

NOW, THEREFORE, the parties, in order to facilitate the implementation of their cooperative efforts, agree to the following:

## II. PURPOSE

The purpose of this agreement is to establish the terms and conditions of a cooperative working relationship between Nellis and Nye in the preparation of the LEIS for the NAFR renewal.

### III. AUTHORITY

National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4370d, *as amended*, (hereinafter "NEPA"); Federal Land Policy Management Act of 1976, 43 U.S.C. §§ 1701-84 (hereinafter "FLPMA"); Military Lands Withdrawal Act of 1986, P.L. 99-606, (hereinafter "MLWA"); Intergovernmental Cooperation Act of 1968; Executive Order 12372 (Intergovernmental Review of Federal Programs); Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the NEPA, 40 C.F.R. Parts 1500-1508 (hereinafter "CEQ Regulations"); Department of Defense Instruction (DoDI) 4000.19 (Interservice and Intergovernmental Support); and Air Force Instruction (AFI) 250201 (Support Agreements Procedures).

### IV. GENERAL

This Memorandum of Understanding (hereinafter "MOU") establishes the framework and guidance, and also documents the agreement by and between Nellis and Nye for a cooperative relationship during the preparation of the LEIS for the NAFR renewal pursuant to the MLWA and applicable Department of Interior regulations.

### V. RESPONSIBILITIES

1. Nellis and Nye agree to:

- a. Follow any and all applicable federal statutory or regulatory laws and procedures.
- b. Inform each other of the date, time, location, and purpose of quarterly NAFR LEIS meetings attended by all cooperating agencies, and in the event either party is unable to attend, the attending party will provide the absentee with a meeting summary.
- c. Meet at the request of either party at mutually agreed upon dates, times, and locations to discuss Nye County LEIS-related concerns.
- d. Provide Nye with applicable portions of information and analysis bearing on Nye issues or concerns.

2. Nellis will:


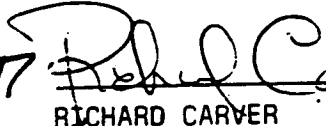
- a. Communicate the execution of this MOU to the appropriate installation, range, major command, and headquarters offices; and
- b. Designate a point of contact for the NAFR LEIS.

3. Nye will:

- a. Communicate the execution of this MOU to the appropriate Nye officials; and
- b. Designate a point of contact for the NAFR LEIS; and
- c. Provide Nellis with any and all relevant Nye information that may be helpful in the preparation of the NAFR LEIS.

**FURTHERMORE**, both parties understand and mutually agree that:

4. Implementation of this MOU is of mutual benefit and any costs incurred by either party shall be at that party's expense;
5. This MOU may be modified or amended only by mutual agreement of the parties in writing and signed by each of the parties hereto;
6. Any documents or data exchanged between the parties to this MOU will not be released to any third party unless the designated representative of the party that generated the document or data approves the release, in writing;
7. Nothing in this MOU shall be construed as a commitment of funds by either party;
8. Nothing herein contained shall be construed as limiting or affecting, in any way, the vested or delegated authority of the United States Air Force, Nellis, or Nye;
9. This MOU becomes effective when signed by all parties and shall remain in full force and effect until the Final LEIS is completed or the project is canceled, but may be terminated by either party upon 45 days notice, in writing, given to the other party.

		<u>6-3-97</u>
JOHN D. LADIEU	RICHARD CARVER	Date
Colonel, USAF	Chairman	
99ABW/CC	Nye County Commissioners	



LIST OF REPOSITORIES

10.0

## 10.0 LIST OF REPOSITORIES

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Alamo Branch Library  
Box 239  
Alamo, NV 89001

Beatty Library  
4<sup>th</sup> and Ward Streets  
Beatty, NV 89003

Boulder City Library  
813 Arizona  
Boulder City, NV 89005

Carson City Library  
900 N. Roop Street  
Carson, City, NV 89701

Clark County Library  
1401 E. Flamingo Rd.  
Las Vegas, NV 89119

Community College of Southern Nevada  
Library  
3200 E. Cheyenne Ave.  
North Las Vegas, NV 89030

Henderson District Public Library  
280 S. Water St.  
Henderson, NV 89015

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

Las Vegas Library  
833 North Las Vegas Boulevard  
Las Vegas, NV 89101

Lincoln City Library - Pioche  
15 Main Street  
Pioche, NV 89043

Lincoln County Library - Caliente  
100 Depot Street  
Caliente, NV 89008

North Las Vegas Library District  
2300 Civic Center Dr.  
North Las Vegas, NV 89030

Nye County Commissioners Office  
101 Radar Road  
Tonopah, NV 89049

Pahrump Community Library  
2101 E. Calvada Blvd.  
Pahrump, NV 89041

Tonopah Public Library  
171 Central St.  
Tonopah, NV 89049

University of Nevada at Las Vegas  
James Dickinson Library  
4505 South Maryland Parkway  
Las Vegas, NV 89156

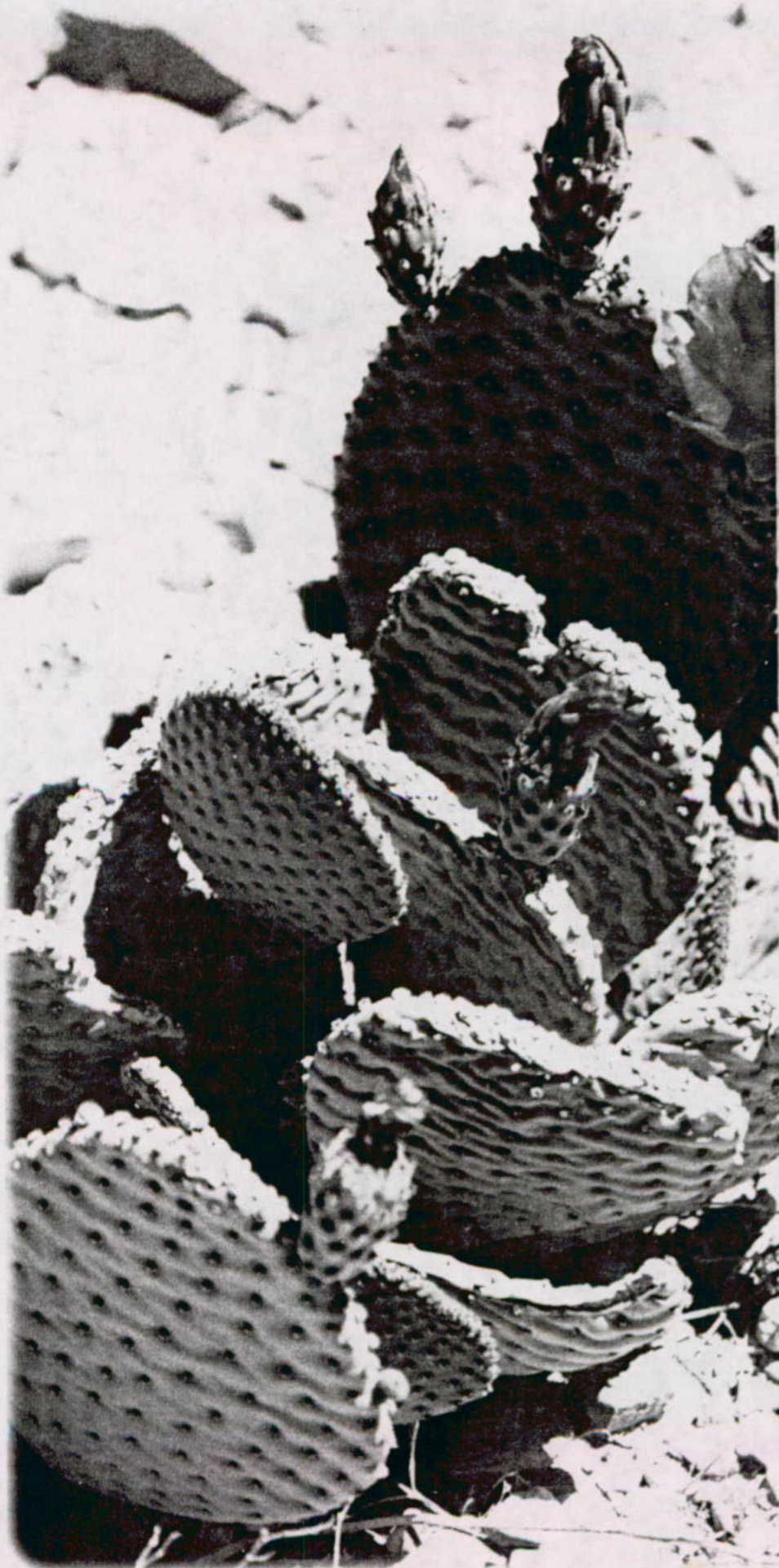
University of Nevada, Reno Libraries  
Business and Government Information Center  
1664 N. Virginia Street  
Reno, NV 89557-004

Washoe County Library  
301 S. Center Street  
Reno, NV 89505

White Pine County Public Library  
950 Campton  
Ely, NV 89301

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# ACRONYMS & ABBREVIATIONS

AAA	anti-aircraft artillery	CFT	combined forces training
ACC	Air Combat Command	CGTO	Consolidated Group of Tribes and Organizations
ACEC	Areas of Critical Environmental Concern	CO	carbon monoxide
ACHP	Advisory Council on Historic Preservation	CRMP	Cultural Resources Management Plan
ACM	air combat maneuvers	CSEL	"C-weighted" sound exposure level
ACMI	Air Combat Maneuvering Instrumentation	CWA	Clean Water Act
AEC	Atomic Energy Commission	DAC	derived air concentrations
AFB	Air Force Base	dB	decibel
AFI	Air Force Instruction	dBp	decibel pressure
AFM	Air Force Manual	DD	Decision Documents
AFOSH	Air Force Occupational Health and Safety	DNWR	Desert National Wildlife Range
AFR	Air Force Regulation	DOD	Department of Defense
AFY	acre-feet per year	DODI	Department of Defense Instruction
A/G	air-to-ground	DOE	Department of Energy
AGL	above ground level	DOI	Department of the Interior
AIRFA	American Indian Religious Freedom Act	DRMO	Defense Reutilization and Marketing Office
AIWS	American Indian Writers Subgroup	DTRA	Defense Threat Reduction Agency
AML	Appropriate Management Level	DU	depleted uranium
AMSL	above mean sea level	DT&E	developmental test and evaluation
API	armor-piercing incendiary	EC	electronic combat
APIT	armor-piercing incendiary tracer	ECAMP	environmental compliance assessment and management
AR	aerial refueling	ECM	electronic countermeasures
ARPA	Archaeological Resource and Protection Act	ECR	electronic combat range
ARTCC	Air Route Traffic Control Center	EIAP	environmental impact analysis process
AST	above-ground storage tanks	EIS	Environmental Impact Statement
ATC	air traffic control	EO	Executive Order
ATCAA	Air Traffic Control Assigned Airspace	EOD	explosive ordnance disposal
AWACS	Airborne Warning and Control System	EPCRA	Emergency Planning and Community Right-to-Know Act
AWFC	Air Warfare Center	EPU	Emergency Power Unit
BASH	Bird-Aircraft Strike Hazard	ERP	Environmental Restoration Program
BEA	U.S. Bureau of Economic Analysis	ER/CP	Emergency Response/Contingency Plans
BLM	Bureau of Land Management	FAA	Federal Aviation Administration
BNA	block numbering area	FAC	Forward Air Controller
B.P.	[years] before present	FFACO	Federal Facility Agreement and Consent Order
BWPC	Bureau of Water Permits and Compliance	FICON	Federal Interagency Committee on Noise
C <sup>2</sup>	command and control	FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
C <sup>3</sup>	command, control, and communications	FL	flight level
C <sup>3</sup> I	command, control, and communication interface	FLPMA	Federal Land Policy and Management Act
CAA	Clean Air Act of 1969	FY	fiscal year
CAAA	1990 Clean Air Act Amendments	GBU	glide bomb unit
CAU	corrective action unit	GIS	Geographic Information System
CBU	cluster bomb unit	GPS	Global Positioning System
CCAPCD	Clark County Air Pollution Control District	H <sub>2</sub> S	hydrogen sulfide
CCSD	Clark County School District	HAP	High Accident Potential
CDP	Census Designated Place	HE	high explosives
CEQ	Council on Environmental Quality	HEI	high explosive incendiary
CERCLA	Comprehensive Environmental Response, Compensations, and Liability Act	HMA	Wild Horse Management Area
CFR	Code of Federal Regulations		

HWAP	Hazardous waste accumulation point	NAIP	Native American Interaction Program
Hz	herz	NAPS	Noise Assessment Prediction System
IFR	instrument flight rules	NARD	Native American Resource Document
IMP	Interim Management Policy	NAS	Naval Air Station
INRMP	Integrated Natural Resources Management Plan	nCi/g	nanoCuries/gram
IR	instrument route	NEPA	National Environmental Policy Act
IRP	Installation Restoration Program	NDEM	Nevada Division of Emergency Management
ISAFAP	Indian Springs Air Force Auxiliary Field	NDEP	Nevada Division of Environmental Protection
JASSM	Joint Air-to-Surface Standoff Missile	NDOT	Nevada Department of Transportation
JDAM	Joint Direct Attack Munitions	NDOW	Nevada Division of Wildlife
JSF	Joint Strike Fighter	NFA	no further action
JSOW	Joint Standoff Weapon	NHPA	National Historic Preservation Act
J-STARS	Joint Surveillance and Target Attack Radar System	NHWAP	Nonhazardous waste accumulation point
kg	kilograms	NM	nautical mile
L	sound level	NO2	nitrogen dioxide
LCdn	C-Weighted Day-Night Sound Level	NOI	Notice of Intent
Lmax	maximum sound level	NOTAM	Notice to Airmen
Ldn	Day-Night Average Sound Level	NPDES	National Pollutant Discharge Elimination System
Ldnmr	Onset Rate Adjusted Monthly Day-Night Average Sound Level	NRC	Nellis Range Complex
LADAR	laser detection and ranging	NRHP	National Register of Historic Places
LANTIRN	low-altitude navigation targeting infrared for night	NRS	Nevada Revised Statute
LATN	Low Altitude Tactical Navigation	NTS	Nevada Test Site
LEIS	legislative environmental impact statement	NTTR	Nevada Test & Training Range
LLW	low level nuclear waste	NV	Nevada
LOA	letter of agreement	NVSWEO	Nevada State Water Engineer's Office
LOCAAS	Low-Cost Autonomous Attack System	NWHR	Nevada Wild Horse Range
LPN	licensed practical nurse	NWR	National Wildlife Refuge
LTO	landing and takeoff	O3	ozone
LV&T	Las Vegas & Tonopah Railroad	O&M	operations and maintenance
LVCVA	Las Vegas Convention and Visitors Authority	OAR	open air range
MCL	maximum contaminant level	ORV	off-road vehicle
µg/m <sup>3</sup>	micrograms per cubic meter	ORM	Operational Risk Management
mg	milligrams	OSHA	Occupational Safety and Health Administration
Mil	military power	OT&E	operational test and evaluation
MLWA	Military Lands Withdrawal Act	PA	preliminary assessment
mm	millimeters	PAH	polynuclear aromatic hydrocarbons
MOA	military operations area	Pb	lead
MoM	Measure of Merit	PCB	polychlorinated biphenyl
MOU	memorandum of understanding	pCi/g	picoCuries/gram
mph	miles per hour	PEL	permissible exposure limit
MRTFB	major range and test facility base	PILT	payment-in-lieu-of-taxes
MR_NMAP	MOA Range Noise Map computer program	PL	Public Law
MTR	military training route	PLO	Public Land Order
mw/cm <sup>2</sup>	milliwatts/square centimeter	PL 99-606	Land Withdrawal Act of 1986
NAAQS	National Ambient Air Quality Standards	PM2.5	particulate matter less than 2.5 microns in diameter
NAC	Nevada Administrative Code	PM10	particulate matter less than 10 microns in diameter
NAFR	Nellis Air Force Range	POL	petroleum oil liquids
NAGPRA	Native American Graves Protection and Repatriation Act	ppm	parts per million
		PRG	Preliminary Remediation Goals
		psf	pounds per square foot

## *Nellis Air Force Range Renewal LEIS*

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RCRA	Resource Conservation and Recovery Act	UXO	Unexploded ordnance
REMI	Regional Economic Models, Inc.	VFR	visual flight rules
RF	radio frequency	VOC	volatile organic compounds
RFA	RCRA Facility Assessment	VR	visual route
RFMDS	Red Flag Measurement and Debriefing System	VRM	visual resources management
RIMS II	regional input-output modeling system	WCMD	wind corrected munition dispenser
RMP	Resource Management Plan	WMA	Wildlife Management Area
ROC	region of comparison	WSA	Wilderness Study Area
ROI	region of influence		
ROS	Recreation Opportunity Spectrum		
RP	Resource Plan		
SAM	surface-to-air missile		
SCCRT	Supplemental City-County Relief Taxes		
SEAD	suppression of enemy air defense		
SEL	Sound Exposure Level		
SHPO	State Historic Preservation Office		
SI	Site Investigation		
SIP	State Implementation Plan		
Smokey SAM	simulated surface-to-air missile		
SO2	sulfur dioxide		
SOP	standard operating procedures		
SPCC	Spill Prevention, Control, and Countermeasures		
SPLA&SL	San Pedro, Los Angeles & Salt Lake City Railroad		
SRMA	Special Recreation Management Areas		
STOVL	short take-off and vertical landing		
SVOC	semi-volatile organic compounds		
SWDA	Solid Waste Disposal Act		
SWMU	Solid Waste Management Units		
T&E	Test and Evaluation		
TCP	traditional cultural property		
TDS	total dissolved solids		
TDY	temporary duty		
TECR	Tonopah EC Range		
TGO	touch-and-go		
TNC	The Nature Conservancy		
TPECR	Tolicha Peak EC Range		
TRPH	Total recoverable petroleum hydrocarbons		
TSCA	Toxic Substance Control Act		
TSD	Technical Support Document		
TTR	Tonopah Test Range		
UAV	unmanned aerial vehicle		
UCAV	Uninhabited Combat Aerial Vehicles		
UNLV	University of Nevada, Las Vegas		
US	United States		
USC	United States Code		
USDA	U.S. Department of Agriculture		
USEPA	U.S. Environmental Protection Agency		
USFS	U.S. Forest Service		
USFWS	U.S. Fish and Wildlife Service		
USGS	U.S. Geological Survey		
UST	Underground storage tanks		
UTTR	Utah Test and Training Range		

# RENEWAL OF THE NELLIS AIR FORCE RANGE LAND WITHDRAWAL

Department of the Air Force  
Legislative Environmental Impact Statement

March 1999



NELLIS RANGE RENEWAL

VOLUME 2  
Comments, Responses,  
and Appendices

*Legislative Environmental Impact Statement (LEIS)  
Frequently Referenced Information*

***LEIS Purpose***

This LEIS responds to the November 6, 1986 Military Lands Withdrawal Act (Public Law [PL] 99-606).

The Air Force proposes to continue the use of Nellis Air Force Range (NAFR) for test and training. The Air Force does not propose to add any lands not currently withdrawn for defense use nor to add any airspace.

***Lead Agency & Cooperating Agencies***

The lead agency is the Department of the Air Force (Air Force). Cooperating agencies are the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and the Department of Energy (DOE).

***Frequently Referenced Figures***

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***Text Changes From Draft LEIS***

This LEIS contains vertical lines in the right or left margin on certain pages. These vertical lines are used to indicate text changes made from the Draft LEIS to this version in response to agency and public comments.

***LEIS Contents***

- **Executive Summary** provides a concise synopsis of the LEIS's analysis and conclusions.
- **Chapter 1.0** discusses the purpose and need for NAFR.
- **Chapter 2.0** describes the four action alternatives that would permit continuation of NAFR test and training missions. The No-Action Alternative is also described. Chapter 2.0 also discusses alternatives considered but not carried forward.
- **Chapter 3.0** provides an overview of the baseline environmental conditions of NAFR and the potentially affected environment.
- **Chapter 4.0** addresses the potential environmental consequences of implementing the alternatives (from Chapter 2.0), within the baseline (from Chapter 3.0).
- **Chapter 5.0** summarizes cumulative effects and irreversible and irretrievable commitment of resources associated with the alternatives.
- **Chapters 6.0, 7.0, 8.0, 9.0, 10.0, and 11.0** present references, persons and agencies contacted, a list of preparers and contributors, consultation information, a list of repositories, and an index.
- **Volume 2** provides comments on the Draft LEIS, responses to the comments, and additional technical support data in the form of appendices.

***Acronyms***

Acronyms are provided on the last several pages of this volume.





DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE  
WASHINGTON DC

MEMORANDUM FOR INTERESTED INDIVIDUALS, ORGANIZATIONS, AND PUBLIC  
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260 Air Force Pentagon  
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SUBJECT: Legislative Environmental Impact Statement (LEIS) for Renewal of the  
Nellis Air Force Range (NAFR) Land Withdrawal, Nevada

We are pleased to provide you the subject completed LEIS. This document is provided in compliance with the regulations of the President's Council on Environmental Quality implementing the National Environmental Policy Act. Libraries should file this document for public access and reference.

If additional information is needed,  
please contact:

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sent to:

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Langley AFB, VA 23665-2769

A handwritten signature in black ink, appearing to read "K. Reinertson".

KENNETH L. REINERTSON  
Chief, Environmental Planning Division  
DCS/Installations & Logistics

Attachment:  
LEIS, Volumes 1 & 2

TEST 22  
1979-02-27

TABLE E:7 PRESSURES ALONG THE DISCHARGE LINE \*

TIME (S)	PRESSURE (KPA)										
	001M106	109	P(217) 0.727M	P(218) 0.632M	P(222)	P(223)	P(224)	P(225)	P(226)	P(227) 0.332M	P(228) 0.432M
60:00	1266.	159.	145.	173.						176.	167.
61:00	1272.	133.	153.	167.						172.	163.
62:00	1279.	131.	137.	150.						152.	143.
63:00	1281.	131.	134.	146.						151.	140.
64:00	1288.	131.	133.	144.						145.	135.
65:00	1288.	131.	133.	144.						145.	135.
66:00	1297.	131.	133.	144.						152.	139.
67:00	1298.	131.	136.	146.						147.	141.
68:00	1298.	131.	136.	146.						147.	141.

\* AVERAGED 200:1  
PRESSURES 106 AND 109 AVERAGED 20:1



TEST 22  
1979-02-27

TABLE E-8 PRESSURES ALONG THE DISCHARGE LINE\*

TIME (S)	P (229) 0.532M	P (230) 0.232M	P (281) 0.136M	REF LEV	121 0.076M	123 0.030M	124 0.015M	125 0.008M
17.00	134.	155.	197.	040.	191.	1800.	1718.	1696.
18.00	125.	145.	200.	045.	1880.	1777.	1730.	1686.
19.00	128.	150.	201.	045.	1894.	1783.	1738.	1678.
20.00	142.	159.	202.	046.	1862.	1795.	1720.	1690.
21.00	146.	163.	203.	047.	1885.	1789.	1720.	1690.
22.00	143.	161.	204.	047.	1896.	1801.	1720.	1690.
23.00	145.	163.	205.	047.	1931.	1851.	1759.	1746.
24.00	140.	157.	206.	047.	1935.	1851.	1759.	1746.
25.00	140.	157.	207.	047.	1922.	1887.	1809.	1859.
26.00	140.	157.	208.	047.	1922.	1887.	1809.	1859.
27.00	140.	157.	209.	047.	1922.	1887.	1809.	1859.
28.00	140.	157.	210.	047.	1922.	1887.	1809.	1859.
29.00	140.	157.	211.	047.	1922.	1887.	1809.	1859.
30.00	140.	157.	212.	047.	1922.	1887.	1809.	1859.
31.00	140.	157.	213.	047.	1922.	1887.	1809.	1859.
32.00	140.	157.	214.	047.	1922.	1887.	1809.	1859.
33.00	140.	157.	215.	047.	1922.	1887.	1809.	1859.
34.00	140.	157.	216.	047.	1922.	1887.	1809.	1859.
35.00	140.	157.	217.	047.	1922.	1887.	1809.	1859.
36.00	140.	157.	218.	047.	1922.	1887.	1809.	1859.
37.00	140.	157.	219.	047.	1922.	1887.	1809.	1859.
38.00	140.	157.	220.	047.	1922.	1887.	1809.	1859.
39.00	140.	157.	221.	047.	1922.	1887.	1809.	1859.
40.00	140.	157.	222.	047.	1922.	1887.	1809.	1859.
41.00	140.	157.	223.	047.	1922.	1887.	1809.	1859.
42.00	140.	157.	224.	047.	1922.	1887.	1809.	1859.
43.00	140.	157.	225.	047.	1922.	1887.	1809.	1859.
44.00	140.	157.	226.	047.	1922.	1887.	1809.	1859.
45.00	140.	157.	227.	047.	1922.	1887.	1809.	1859.
46.00	140.	157.	228.	047.	1922.	1887.	1809.	1859.
47.00	140.	157.	229.	047.	1922.	1887.	1809.	1859.
48.00	140.	157.	230.	047.	1922.	1887.	1809.	1859.
49.00	140.	157.	231.	047.	1922.	1887.	1809.	1859.
50.00	140.	157.	232.	047.	1922.	1887.	1809.	1859.
51.00	140.	157.	233.	047.	1922.	1887.	1809.	1859.
52.00	140.	157.	234.	047.	1922.	1887.	1809.	1859.
53.00	140.	157.	235.	047.	1922.	1887.	1809.	1859.
54.00	140.	157.	236.	047.	1922.	1887.	1809.	1859.
55.00	140.	157.	237.	047.	1922.	1887.	1809.	1859.
56.00	140.	157.	238.	047.	1922.	1887.	1809.	1859.
57.00	140.	157.	239.	047.	1922.	1887.	1809.	1859.
58.00	140.	157.	240.	047.	1922.	1887.	1809.	1859.
59.00	140.	157.	241.	047.	1922.	1887.	1809.	1859.
60.00	140.	157.	242.	047.	1922.	1887.	1809.	1859.

\* AVERAGED 20:1  
 PRESSURES 229, 230, AND 281 AVERAGED 200:1

TABLE E:8

PRESSURES ALONG THE DISCHARGE LINE\*

TEST 22  
1979-02-27

TIME (S)	P(229) 0.332M	P(230) 0.232M	P(281) 0.136M	REF LEV	118	121	123	124	125
					0.076M	0.030M	0.015M	0.008M	
62.00	169.	184.	162.	137.	91.	97.	84.	102.	
63.00	170.	172.	167.	131.	91.	93.	82.	96.	
64.00	152.	153.	153.	130.	91.	94.	82.	94.	
65.00	148.	154.	150.	129.	91.	93.	83.	95.	
66.00	148.	148.	146.	128.	91.	93.	83.	96.	
67.00	149.	147.	144.	128.	91.	92.	82.	96.	
68.00	145.	147.	147.	129.	91.	92.	81.	98.	
69.00	145.	147.	147.	127.	91.	92.	83.	98.	

\* AVERAGED 20:1

PRESSURES 229, 230, AND 281 AVERAGED 200:1

TABLE E:9 DENSITY, VOID FRACTIONS, QUALITY AND ENTHALPY IN THE VESSEL BASED ON\*

TEST 22-27  
1979-02-27

TIME (S)	DP-MEASUREMENT ELEVATION DENSITY (KG/M**3)	VOID QUALITY	STATIC ENTHALPY (KJ/KG)	DP-MEASUREMENT ELEVATION DENSITY (KG/M**3)	VOID QUALITY	STATIC ENTHALPY (KJ/KG)	DP-MEASUREMENT ELEVATION DENSITY (KG/M**3)	VOID QUALITY	STATIC ENTHALPY (KJ/KG)
0-50	807-	0-0000	1063-	848-	0-0000	927-	642-	182	1161-
1-50	802-	0-0000	1076-	846-	0-0000	930-	618-	-2307	1108-
2-50	796-	0-0000	1099-	844-	0-0000	943-	598-	-2558	1143-
3-50	788-	0-0000	1121-	837-	0-0000	963-	588-	-2585	1143-
4-50	751-	0-0014	1128-	830-	0-0000	989-	590-	-2605	1137-
5-50	680-	0-0147	1131-	820-	0-0000	1060-	603-	-2430	1122-
6-50	500-	0-0105	1137-	759-	0-0012	1111-	646-	-2201	1115-
7-50	427-	0-0136	1144-	631-	0-0070	1111-	667-	-1915	1108-
8-50	389-	0-0279	1146-	509-	0-0106	1113-	685-	-1647	1102-
9-50	389-	0-0270	1138-	525-	0-0135	1115-	691-	-1477	1095-
10-50	390-	0-0270	1134-	489-	0-0180	1115-	684-	-1476	1095-
11-50	309-	0-0298	1135-	465-	0-0200	1115-	625-	-1288	1093-
				430-	0-0214	1114-	577-	-861	1094-
				414-	0-0231	1114-	520-	-530	1098-
				397-	0-0249	1115-	466-	-430	1108-
				375-	0-0271	1116-	365-	-559	1122-
				353-	0-0301	1117-	289-	-617	1129-
							256-	-699	1138-
							226-	-737	1130-

\* EVALUATIONS BASED ON MEASURED DATA AVERAGED 100:1

TEST 22  
1979-02-27

TABLE E: 10 DENSITY, VOID FRACTION, QUALITY AND ENTHALPY IN THE VESSEL BASED ON\*  
DP-MEASUREMENT 9.23 -11.43 M STATIC  
ELEVATION 9.23 -11.43 M STATIC  
(KG/M\*\*3) (KJ/KG)

DP-MEASUREMENT 6.91  
ELEVATION 6.91  
(KG/M\*\*3)

DP-MEASUREMENT 4.97  
ELEVATION 4.97  
(KG/M\*\*3)

DP-MEASUREMENT 0.91  
ELEVATION 0.91  
(KG/M\*\*3)

DP-MEASUREMENT 0.00  
ELEVATION 0.00  
(KG/M\*\*3)

T (S)	740	736	743	753	769	786	848	848	848	847	845	841	832	832	831	822	819	820	808	783	754	727	696	630
0.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
14.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
15.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
17.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
19.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
21.50	0.52	0.078	0.018	0.018	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

\* EVALUATIONS BASED ON MEASURED DATA AVERAGED 100:1

TABLE E: 10 DENSITY, VOID FRACTION, VOID MEASUREMENTS MADE IN THE VESSEL AND ENTHALPY IN THE VESSEL BASED ON\*  
 SPLINED, DP-MEASUREMENTS MADE IN THE VESSEL AND DP-PROBES II AND III  
 DP-MEASUREMENT 001M204 DP-MEASUREMENT 007M253  
 ELEVATION 9.23 - 11.43 M STATIC ELEVATION 6.91 - 9.23 M STATIC ELEVATION 4.97 - 6.91 M STATIC

TIME (S)	VOID QUALITY (KG/M**3)	STATIC ENTHALPY (KJ/KG)	DENSITY (KG/M**3)	VOID QUALITY (KG/M**3)	STATIC ENTHALPY (KJ/KG)	DENSITY (KG/M**3)	VOID QUALITY (KG/M**3)	STATIC ENTHALPY (KJ/KG)
21.50			690.	166		690.	0035	1008.
22.50			669.	191		669.	0042	1010.
23.00			646.	220		646.	0049	1007.
23.50			625.	267		625.	0057	1009.
			601.	277		601.	0066	1010.

TEST 22  
1979-02-27

007M244

\* EVALUATIONS BASED ON MEASURED DATA AVERAGED 100:1



TABLE E:11 DENSITY, VOID FRACTION, QUALITY AND ENTHALPY IN THE VESSEL AND DISCHARGE\* TEST 22 1979-02-27

Table with 14 columns: TIME (S), DP-MEASUREMENT ELEVATION, VOID DENSITY, VOID QUALITY, STATIC ENTHALPY, PIPE PRESSURE DROP, VOID FRACTION, QUALITY AND ENTHALPY MADE IN OP-PROBE II AND THE DISCHARGE PIPE INLET (M205), DP-MEASUREMENTS VOID QUALITY, INSTRUMENT RING 2 VOID QUALITY, DP-MEASUREMENTS 246 AND 205 VOID QUALITY, STATIC ENTHALPY, and TEST 22 1979-02-27.

\* EVALUATIONS BASED ON MEASURED DATA AVERAGED 100:1

TABLE E:11 DENSITY VOID FRACTION QUALITY AND ENTHALPY IN THE VESSEL AND DISCHARGE \* TEST 22  
 1979-02-27

DP-MEASUREMENT 3.03 - 4.97 M STATIC ENTHALPY (KJ/KG) DP-MEASUREMENTS 246 AND 205  
 ELEVATION VOID QUALITY (KG/M\*\*3) STATIC ENTHALPY (KJ/KG) INSTRUMENT RING 2 STATIC  
 ENTHALPY (KJ/KG) DP-MEASUREMENT 1.08 - 3.03 M VOID QUALITY (KG/M\*\*3) DENSITY VOID QUALITY (KG/M\*\*3)

TIME (S)	769.	.076	.0013	982.	718.	.0026	982.
31.00	760.	.088	.0015	978.	708.	.0028	978.
32.00	753.	.097	.0017	977.	702.	.0030	977.
33.00	746.	.105	.0018	976.	704.	.0029	977.
34.00	735.	.112	.0020	975.	700.	.0030	976.
35.00	731.	.119	.0021	974.	697.	.0031	975.
36.00		.125	.0022		699.	.0030	974.
37.00							

\* EVALUATIONS BASED ON MEASURED DATA AVERAGED 100:1

TABLE E:12 DENSITY, VOID FRACTION, QUALITY AND ENTHALPY IN THE DISCHARGE PIPE AND \*  
 AT THE VESSEL BOTTOM EVALUATED USING THE GAMMA DENSITOMETER, THE STAGNATION PIPE AND \*  
 VALUES EVALUATED ASSUMING ADIABATIC FLUID EXPANSION USING 001M106 AND 001M205  
 STAGNATION VESSEL BOTTOM DENSITY (KG/M\*\*3) TEST 22  
 VESSEL BOTTOM VOID QUALITY (KJ/KG) THE STAGNATION 1979-02-27  
 VESSEL BOTTOM VOID ENTHALPY (KJ/KG) GAMMA DENSITOMETER, 0.34M ABOVE  
 STAGNATION VESSEL BOTTOM VOID QUALITY (KJ/KG) STAGNATION  
 DENSITY (KG/M\*\*3) ENTHALPY (KJ/KG)

TIME (S)	STAGNATION VESSEL BOTTOM DENSITY (KG/M**3)	VESSEL BOTTOM VOID QUALITY (KJ/KG)	VALUES EVALUATED ASSUMING ADIABATIC FLUID EXPANSION USING 0.34M ABOVE STAGNATION VESSEL BOTTOM VOID ENTHALPY (KJ/KG)	STAGNATION VESSEL BOTTOM VOID QUALITY (KJ/KG)	DENSITY (KG/M**3)	ENTHALPY (KJ/KG)	STAGNATION VESSEL BOTTOM VOID QUALITY (KJ/KG)	ENTHALPY (KJ/KG)
0.00	877.00	0.0000	815.00	0.0000	877.00	0.0000	0.0000	816.00
0.50	853.00	0.0000	907.00	0.0000	853.00	0.0000	0.0000	905.00
1.00	801.00	0.0000	1083.00	0.0000	801.00	0.0000	0.0000	907.00
1.50	852.00	0.0000	909.00	0.0000	852.00	0.0000	0.0000	909.00
2.00	852.00	0.0000	910.00	0.0000	852.00	0.0000	0.0000	910.00
2.50	852.00	0.0000	911.00	0.0000	852.00	0.0000	0.0000	911.00
3.00	851.00	0.0000	911.00	0.0000	851.00	0.0000	0.0000	911.00
3.50	851.00	0.0000	912.00	0.0000	851.00	0.0000	0.0000	912.00
4.00	851.00	0.0000	912.00	0.0000	851.00	0.0000	0.0000	912.00
4.50	851.00	0.0000	913.00	0.0000	851.00	0.0000	0.0000	913.00
5.00	851.00	0.0000	913.00	0.0000	851.00	0.0000	0.0000	913.00
5.50	850.00	0.0000	913.00	0.0000	850.00	0.0000	0.0000	913.00
6.00	850.00	0.0000	913.00	0.0000	850.00	0.0000	0.0000	913.00
6.50	850.00	0.0000	914.00	0.0000	850.00	0.0000	0.0000	914.00
7.00	850.00	0.0000	914.00	0.0000	850.00	0.0000	0.0000	914.00
7.50	850.00	0.0000	915.00	0.0000	850.00	0.0000	0.0000	915.00
8.00	850.00	0.0000	915.00	0.0000	850.00	0.0000	0.0000	915.00
8.50	850.00	0.0000	916.00	0.0000	850.00	0.0000	0.0000	916.00
9.00	850.00	0.0000	916.00	0.0000	850.00	0.0000	0.0000	916.00
9.50	850.00	0.0000	917.00	0.0000	850.00	0.0000	0.0000	917.00
10.00	850.00	0.0000	917.00	0.0000	850.00	0.0000	0.0000	918.00
10.50	850.00	0.0000	919.00	0.0000	850.00	0.0000	0.0000	918.00
11.00	850.00	0.0000	919.00	0.0000	850.00	0.0000	0.0000	922.00
11.50	850.00	0.0000	921.00	0.0000	850.00	0.0000	0.0000	922.00
12.00	850.00	0.0000	921.00	0.0000	850.00	0.0000	0.0000	923.00
12.50	850.00	0.0000	923.00	0.0000	850.00	0.0000	0.0000	923.00
13.00	850.00	0.0000	923.00	0.0000	850.00	0.0000	0.0000	923.00
13.50	850.00	0.0000	927.00	0.0000	850.00	0.0000	0.0000	923.00
14.00	850.00	0.0000	927.00	0.0000	850.00	0.0000	0.0000	923.00
14.50	850.00	0.0000	931.00	0.0000	850.00	0.0000	0.0000	923.00
15.00	850.00	0.0000	931.00	0.0000	850.00	0.0000	0.0000	923.00
15.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
16.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
16.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
17.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
17.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
18.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
18.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
19.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
19.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
20.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
20.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
21.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
21.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
22.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
22.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
23.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
23.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
24.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
24.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
25.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
25.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
26.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
26.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
27.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
27.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
28.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
28.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
29.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
29.50	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00
30.00	850.00	0.0000	937.00	0.0000	850.00	0.0000	0.0000	923.00

\* EVALUATIONS BASED ON MEASURED DATA AVERAGED 30:1  
 NOTE: Density obtained from 003M601 only.

TEST 22  
 THE STAGNATION  
 001M106 AND 001M205

TABLE E:12 DENSITY, VOID FRACTION, QUALITY AND ENTHALPY IN THE DISCHARGE PIPE AND\*  
 AT THE VESSEL BOTTOM EVALUATED USING THE GAMMA DENSITY METER. THE STAGNATION  
 VALUES FROM GAMMA-D INSTRUMENT RING 2, 0.34 STATIC ENTHALPY  
 STAGNATION VALUES FROM GAMMA-D INSTRUMENT RING 2, 0.34 STATIC ENTHALPY  
 VESSEL BOTTOM VOID QUALITY (KG/M\*\*3)

TIME (S)	DENSITY (KG/M**3)	VOID FRACTION	QUALITY	AND ENTHALPY	IN THE DISCHARGE	PIPE AND*	AT THE VESSEL	BOTTOM EVALUATED	USING THE GAMMA	DENSITY METER.	THE STAGNATION	VALUES FROM	GAMMA-D	INSTRUMENT	RING 2,	0.34	STATIC	ENTHALPY	STAGNATION	VALUES FROM	GAMMA-D	INSTRUMENT	RING 2,	0.34	STATIC	ENTHALPY
1.00	834	0.000	0.000	967	0.000	968	0.000	0.000	0.000	968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	968
3.00	834	0.000	0.000	967	0.000	968	0.000	0.000	0.000	968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	968
3.34	834	0.000	0.000	967	0.000	968	0.000	0.000	0.000	968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	968
3.50	833	0.000	0.000	972	0.000	973	0.000	0.000	0.000	973	0.000	0.000	0.000	0.000	0.000	0.000	0.000	973	0.000	0.000	0.000	0.000	0.000	0.000	0.000	973
3.67	833	0.000	0.000	972	0.000	973	0.000	0.000	0.000	973	0.000	0.000	0.000	0.000	0.000	0.000	0.000	973	0.000	0.000	0.000	0.000	0.000	0.000	0.000	973
3.80	834	0.000	0.000	968	0.000	969	0.000	0.000	0.000	969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	969
3.90	834	0.000	0.000	968	0.000	969	0.000	0.000	0.000	969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	969
4.00	834	0.000	0.000	965	0.000	965	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965
4.10	834	0.000	0.000	965	0.000	965	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965
4.20	834	0.000	0.000	965	0.000	965	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965
4.30	834	0.000	0.000	965	0.000	965	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965
4.40	834	0.000	0.000	965	0.000	965	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	965
4.50	838	0.000	0.000	956	0.000	956	0.000	0.000	0.000	956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	956
4.60	838	0.000	0.000	956	0.000	956	0.000	0.000	0.000	956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	956
4.70	838	0.000	0.000	953	0.000	953	0.000	0.000	0.000	953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	953
4.80	838	0.000	0.000	953	0.000	953	0.000	0.000	0.000	953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	953
4.90	830	0.083	0.000	950	0.000	950	0.000	0.000	0.000	950	0.000	0.000	0.000	0.000	0.000	0.000	0.000	950	0.000	0.000	0.000	0.000	0.000	0.000	0.000	950
5.00	835	0.192	0.000	990	0.000	990	0.000	0.000	0.000	990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	990
5.10	835	0.887	0.000	1098	0.000	1098	0.000	0.000	0.000	1098	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1098	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1098
5.20	815	0.887	0.000	1135	0.000	1135	0.000	0.000	0.000	1135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1135
5.30	817	0.956	0.000	1127	0.000	1127	0.000	0.000	0.000	1127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1127
5.40	822	0.978	0.000	1463	0.000	1463	0.000	0.000	0.000	1463	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1463	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1463
5.50	813	0.993	0.000	1932	0.000	1932	0.000	0.000	0.000	1932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1932
5.60	811	0.996	0.000	2061	0.000	2061	0.000	0.000	0.000	2061	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2061	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2061
5.80	810	0.999	0.000	2455	0.000	2455	0.000	0.000	0.000	2455	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2455	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2455
5.90	810	0.999	0.000	2455	0.000	2455	0.000	0.000	0.000	2455	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2455	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2455

\* EVALUATIONS BASED ON MEASURED DATA AVERAGED 30:1

NOTE: Density obtained from 003M601 only.

D A T A P L O T S

## LIST OF M-DATA PLOTS

PRESSURE VESSEL

Plot M:1      Vessel pressures 101 and 103 ( $t = -10$  to 100 s)  
M:2      Vessel pressures 101 and 103 ( $t = 0$  to 4.4 s)  
M:3      Vessel pressure 106

M:4      Vessel temperatures 401 and 501  
M:5      Vessel temperatures 502 through 505  
M:6      Vessel temperatures 506 through 509  
M:7      Vessel temperatures 510 through 512, and 514  
M:8      Vessel temperatures 515 through 518  
M:9      Vessel temperatures 519 through 521, and 402  
M:10      Vessel temperatures 419 through 421

M:11      Vessel differential pressures 201 through 203  
M:12      Vessel differential pressures 247 through 249  
M:13      Vessel differential pressures 244 through 246, and 253  
M:14      Vessel differential pressures 204, and 250 through 252

DISCHARGE PIPE

Plot M:15      Pressure 107 at instrumentation ring I  
M:16      Pressure 108 at instrumentation ring II

M:17      Temperatures 403 through 405 at instrumentation rings I and II and near the nozzle entrance  
M:18      Temperatures 556 through 559 at instrumentation ring II  
M:19      Temperatures 560 through 562 at instrumentation ring II  
M:20      Temperatures 563 through 565 at instrumentation ring II

M:21      Densities 601 through 603 at the gamma densitometer location

M:22      Differential pressure 205 across the discharge pipe inlet  
M:23      Differential pressures 256 through 259 at instrumentation ring II

- M:24 Differential pressures 260 through 262 at instrumentation ring II
- M:25 Differential pressures 263 through 265 at instrumentation ring II
- M:26 Differential pressure 216 from instrumentation ring I to the nozzle entrance

#### NOZZLE

- Plot M:27 Pressure 109 near the nozzle entrance
- M:28 Pressure 118 at the nozzle reference level
- M:29 Pressures 121, and 123 through 125 near the nozzle exit
  
- M:30 Temperatures 405, 532, and 534 near the nozzle entrance
  
- M:31 Differential pressure 217 across the nozzle inlet
- M:32 Differential pressure 218 in the nozzle test section
- M:33 Differential pressure 227 in the nozzle test section
- M:34 Differential pressure 228 in the nozzle test section
- M:35 Differential pressure 229 in the nozzle test section
- M:36 Differential pressure 230 in the nozzle test section
- M:37 Differential pressure 281 in the nozzle test section

#### CONTAINMENT

- Plot M:38 Pressures 112 through 116, 119, and 120 in the containment and the exhaust tube
- M:39 Pressure 126 in the containment room 124
  
- M:40 Temperatures 406, 412, and 533 in containment room 112, fuel transport channel, and containment room 111, respectively
- M:41 Temperatures 415 through 418 in the wetwell

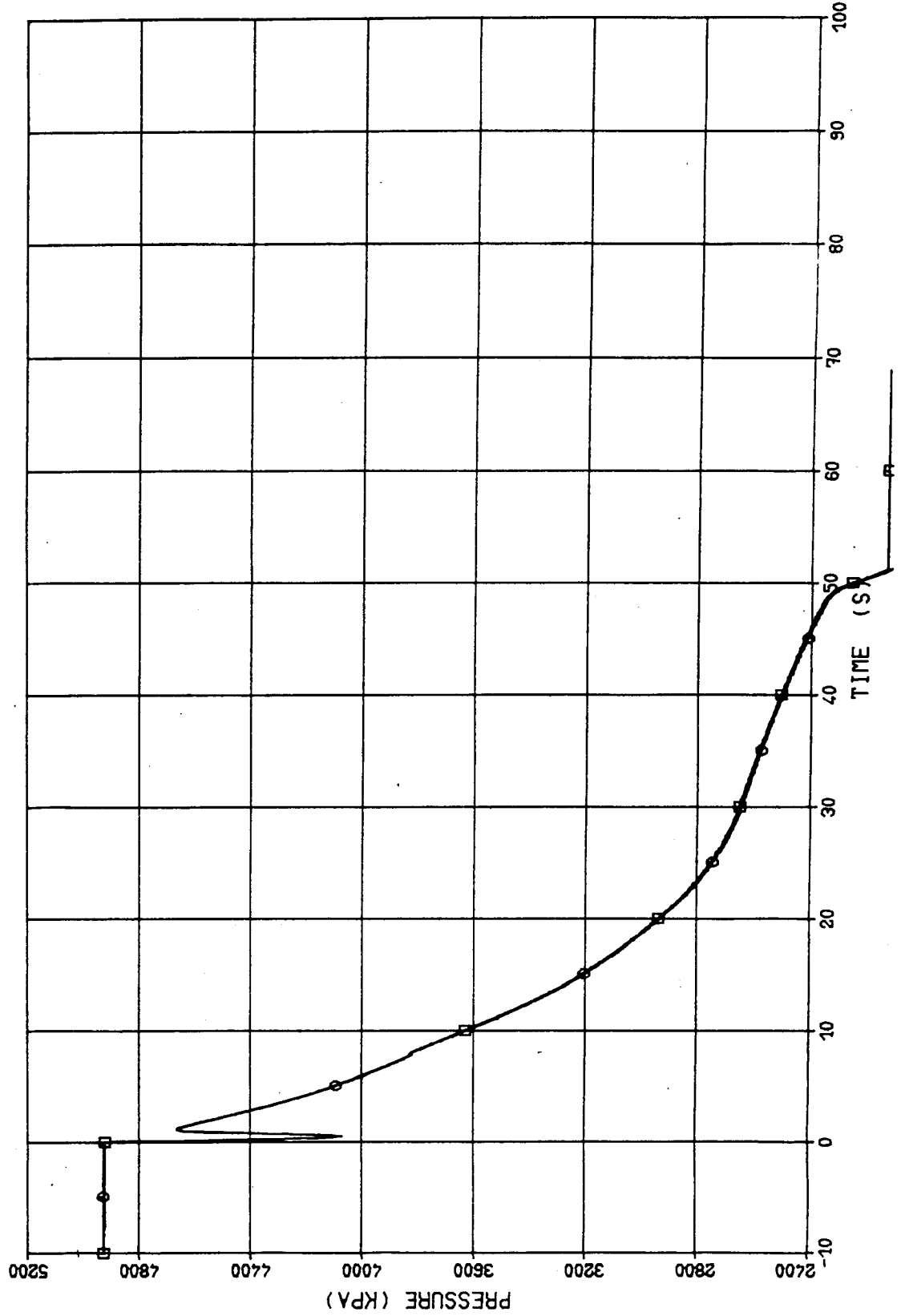
#### MISCELLANEOUS

- Plot M:42 Temperatures 422, 423, and 425 on sense lines outside the vessel
- M:43 Temperatures 444, 445, and 446 in vessel DP probe II
- M:44 Temperatures 450, 451, and 452 in vessel DP probe III

Plot M:1 Vessel pressures 101 and 103 (t = -10 to 100 s)

TEST 22

- 001M101 23.13 m ELEVATION (AVERAGED 20:1) - High by 5 - 10 kPa.
- 001M103 23.13 m ELEVATION (AVERAGED 20:1)

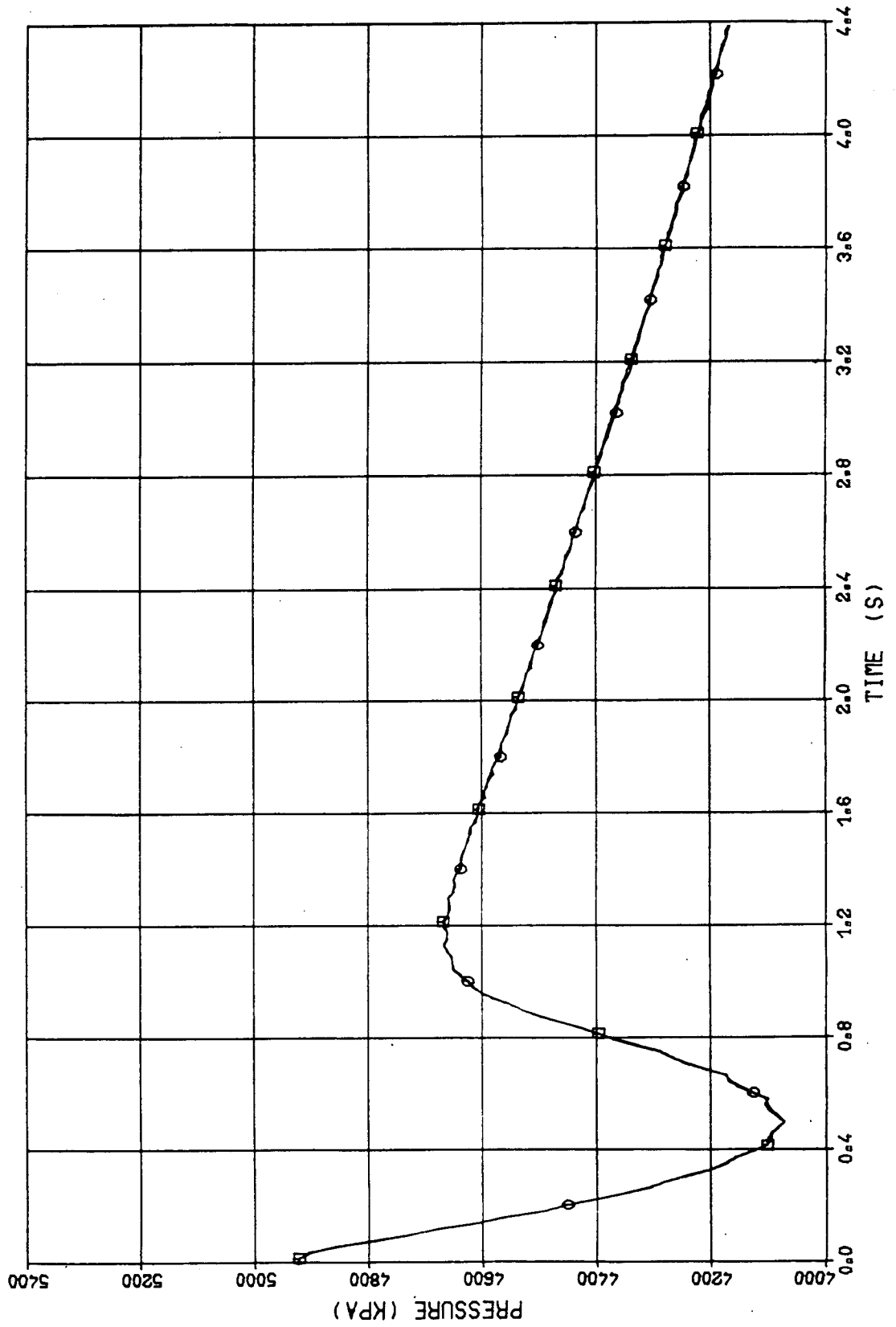




Plot M:2 Vessel pressures 101 and 103 (t = 0 to 4.4 s)

TEST 22

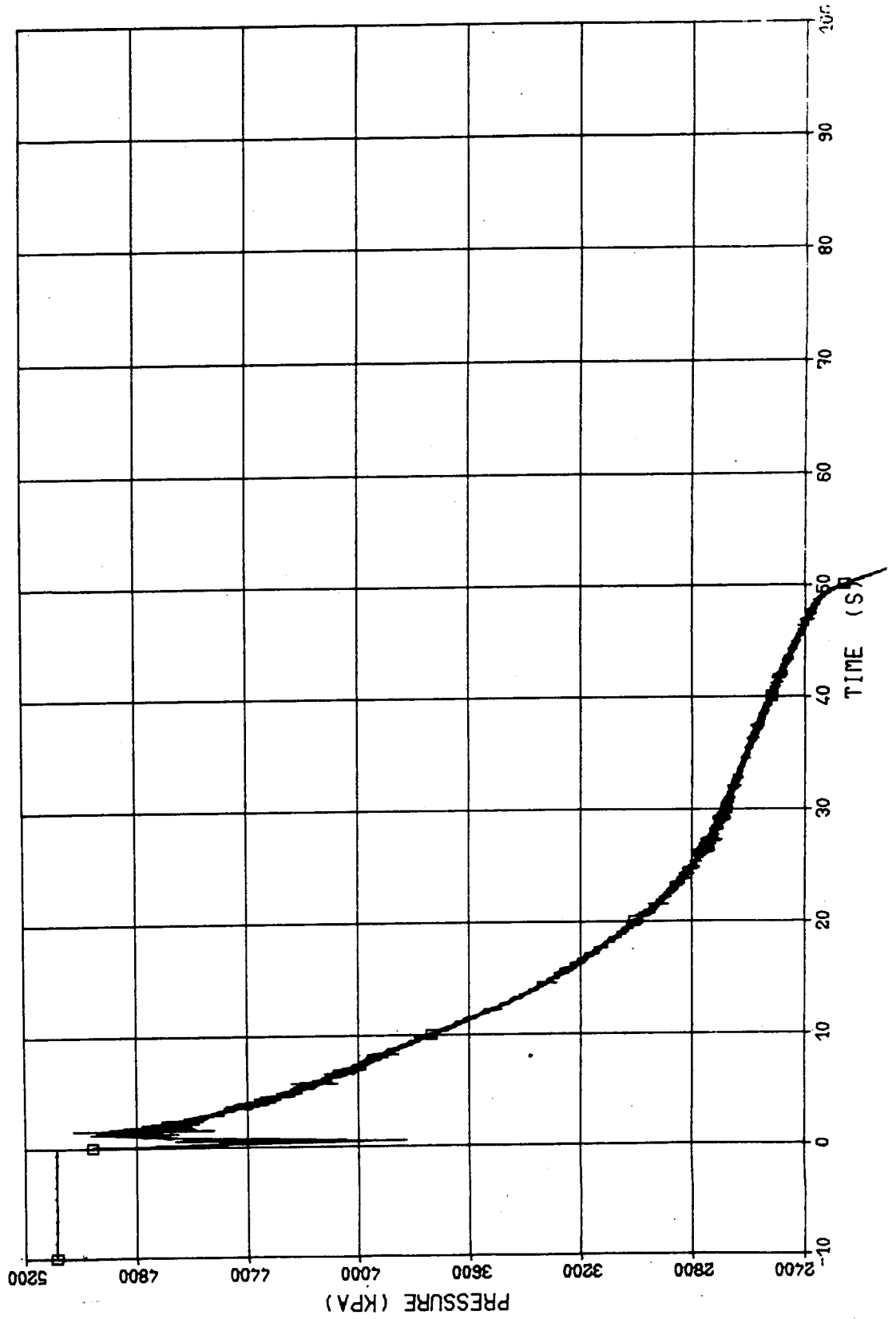
□ 001M101 23.13 m ELEVATION (AVERAGED 20:1) - High by 5 - 10 kPa.  
○ 001M103 23.13 m ELEVATION (AVERAGED 20:1)



Plot M:3 Vessel pressure 106

TEST 22

□ 00111106 0.53 M ELEVATION (AVERAGED 20:1)

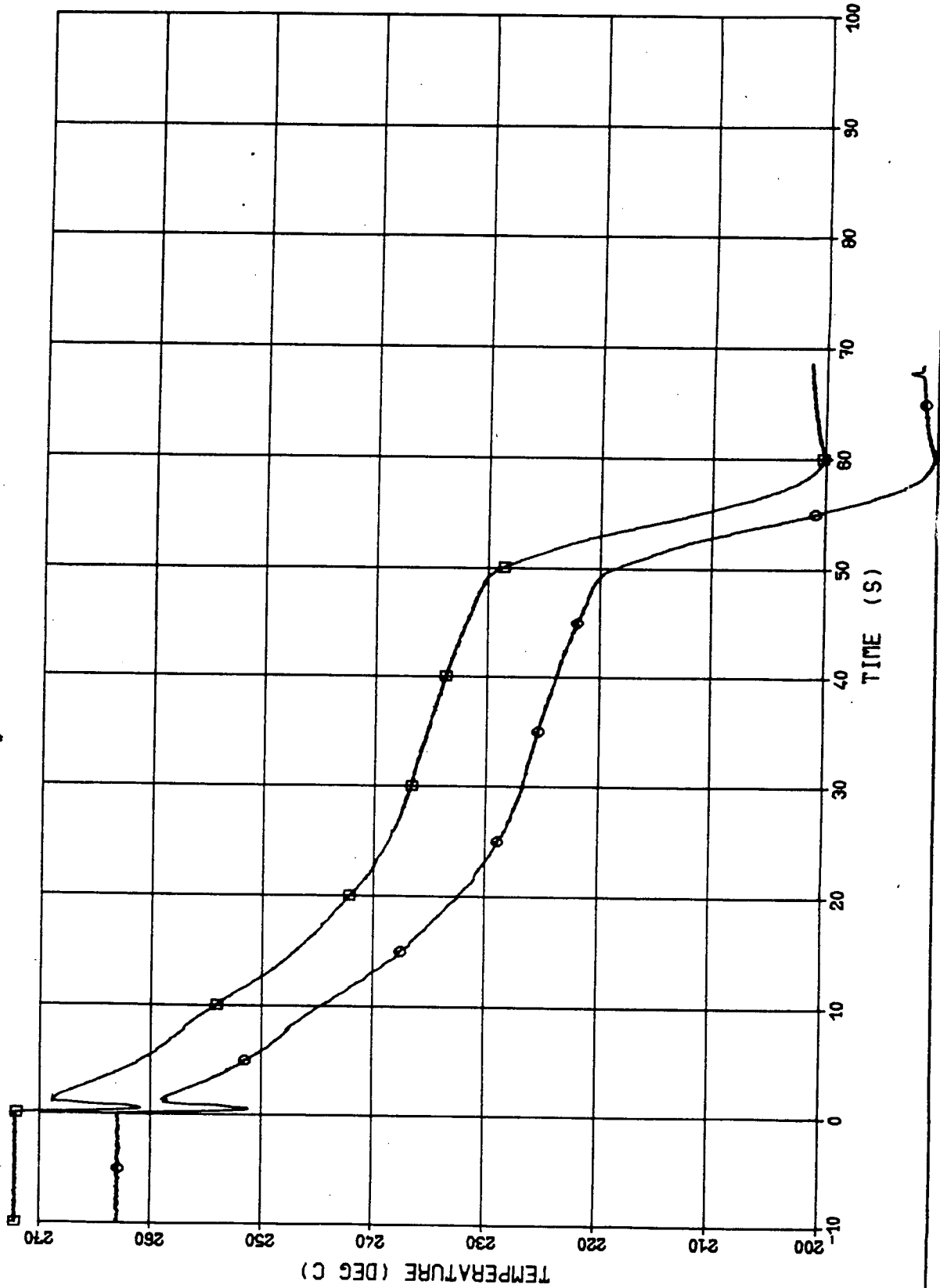


Plot M:4 Vessel temperatures 401 and 501

TEST 22

□ 0017401 20.54 H ELEVATION (AVERAGED 50:1)  
○ 0017501 19.56 H ELEVATION (AVERAGED 50:1)

DISPLACED 10 DEG C - Low by 0.5°C.



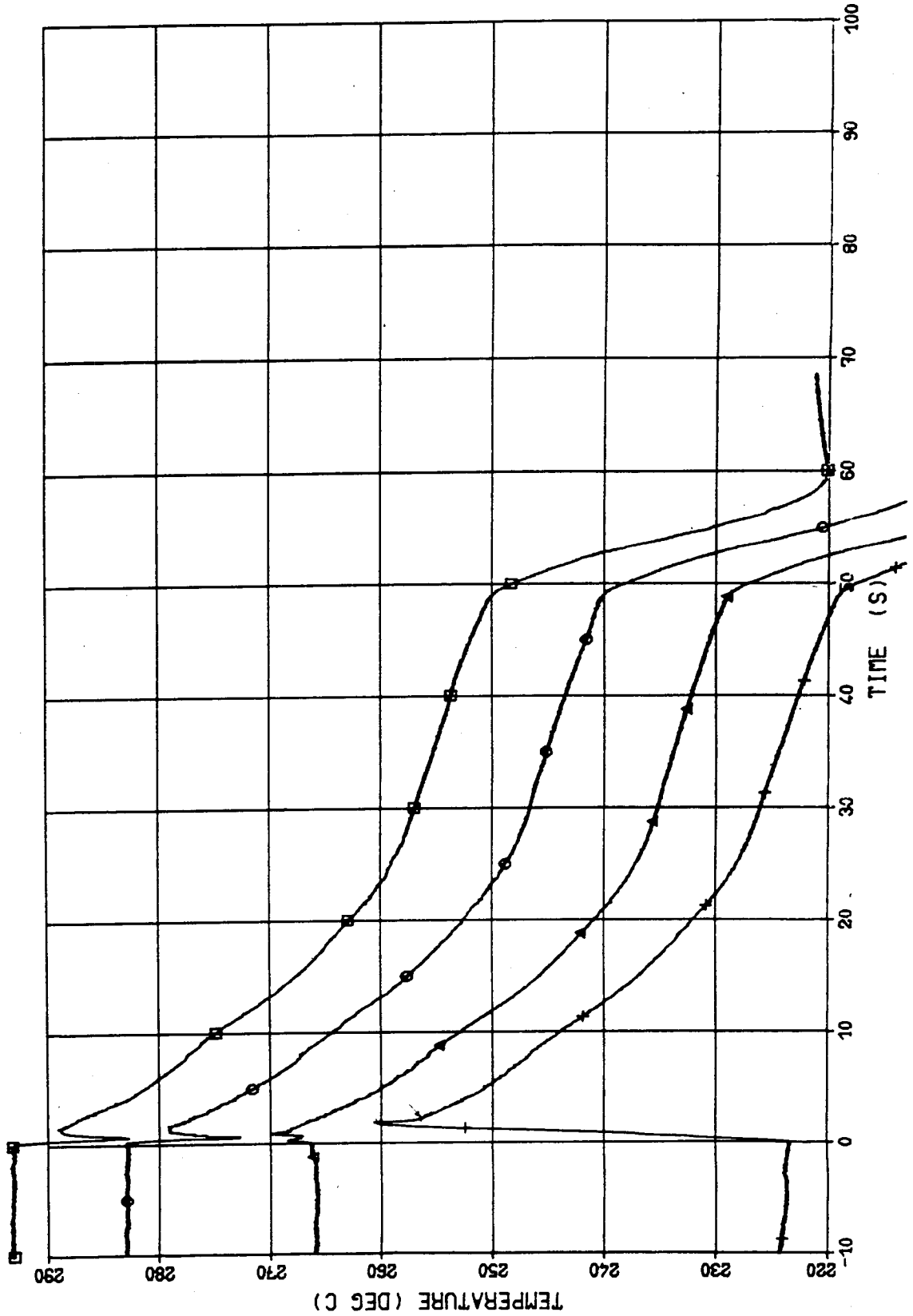
Plot M:5 Vessel temperatures 502 through 505

TEST 22

□ 0017502 18.59 N ELEVATION (AVERAGED 50:1)  
 ○ 0017503 17.64 N ELEVATION (AVERAGED 50:1)  
 △ 0017504 16.67 N ELEVATION (AVERAGED 50:1)  
 + 0017505 15.68 N ELEVATION (AVERAGED 50:1)

30 DEG C - Low by 0 - 0.5°C.  
 20 DEG C - Low by 0 - 0.5°C.  
 10 DEG C - Low by 2°C.  
 - Low by 1 - 1.5°C.

DISPLACED  
 DISPLACED  
 DISPLACED



Plot M:6 Vessel temperatures 506 through 509

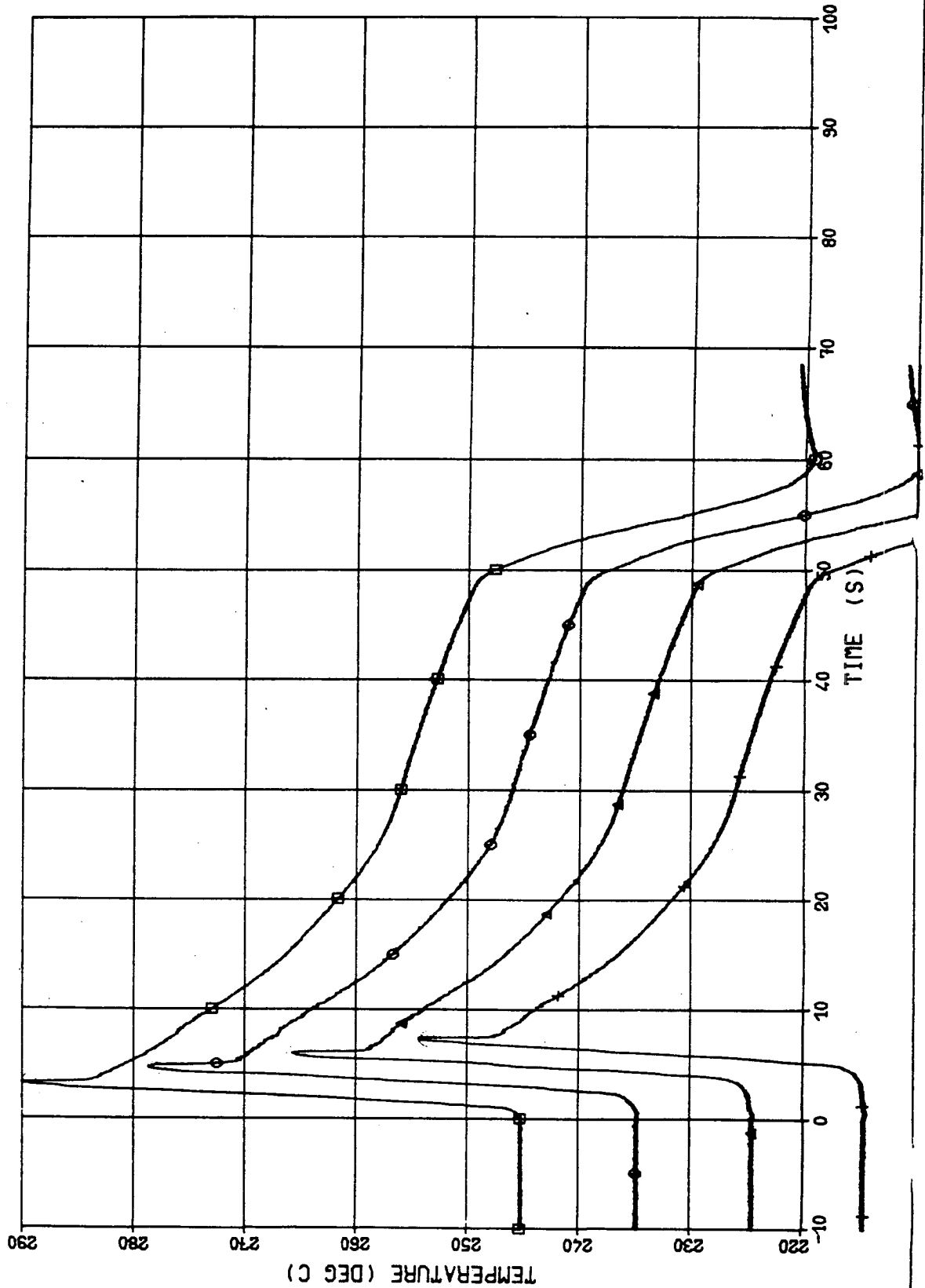
TEST 22

- Low by 1.5°C.  
 - Low by 1°C.  
 - Low by 1°C.  
 - Low by 1°C.

30 DEG C  
 20 DEG C  
 10 DEG C

DISPLACED  
 DISPLACED  
 DISPLACED

□ 00JT506 14.71 N ELEVATION (AVERAGED 50:1)  
 ○ 00JT507 13.75 N ELEVATION (AVERAGED 50:1)  
 △ 00JT508 12.78 N ELEVATION (AVERAGED 50:1)  
 + 00JT509 11.81 N ELEVATION (AVERAGED 50:1)



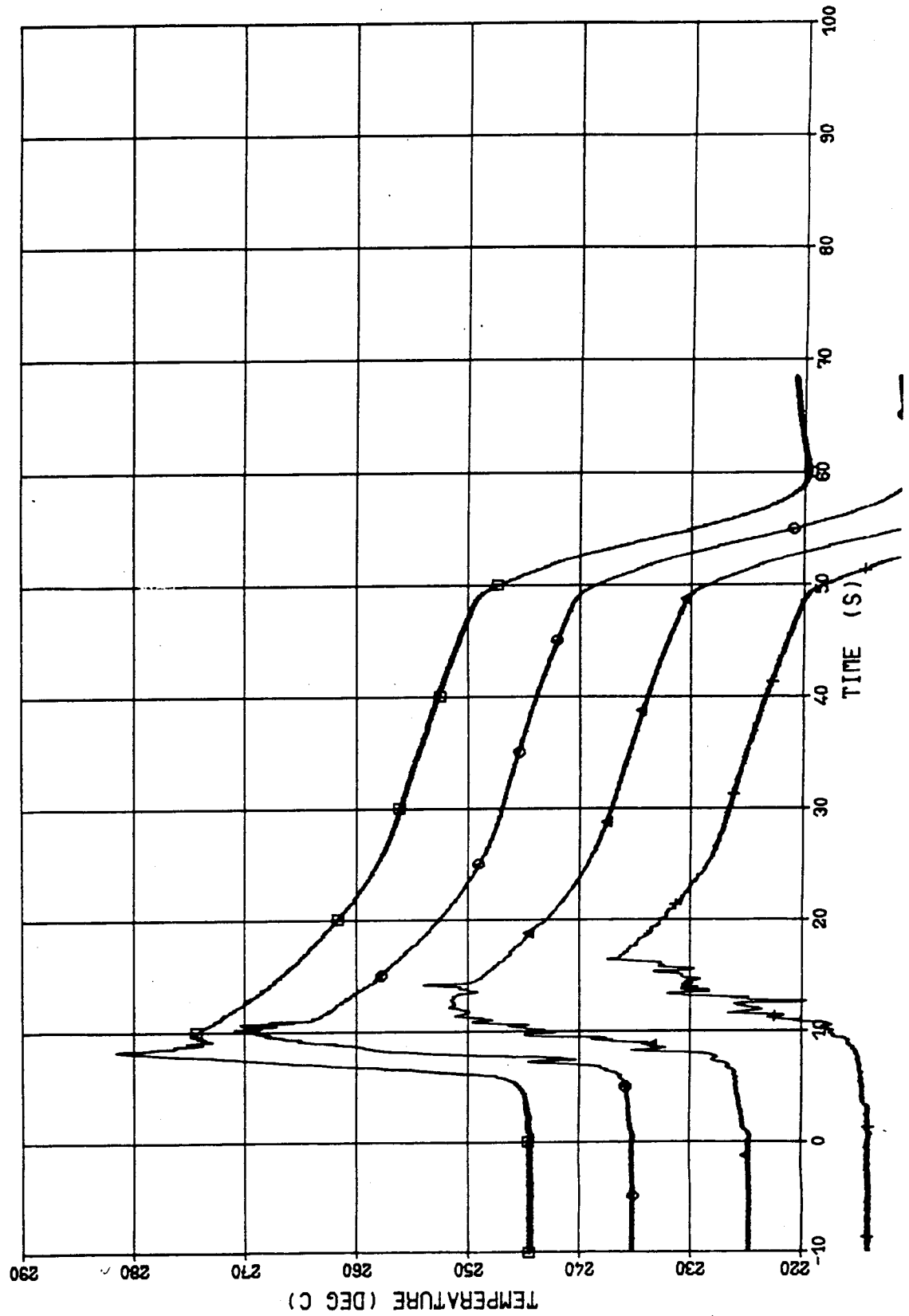
Plot M:7 Vessel temperatures 510 through 512, and 514

TEST 22

□ 00-11510 10.84 N ELEVATION (AVERAGED 50:1)  
 ○ 00-11511 9.86 N ELEVATION (AVERAGED 50:1)  
 ▲ 00-11512 8.88 N ELEVATION (AVERAGED 50:1)  
 + 00-11514 6.94 N ELEVATION (AVERAGED 50:1)

30 DEG C - Low by 1 - 1.5°C.  
 20 DEG C - Low by 0.5°C.  
 10 DEG C - Low by 0.5°C.

DISPLACED  
 DISPLACED  
 DISPLACED



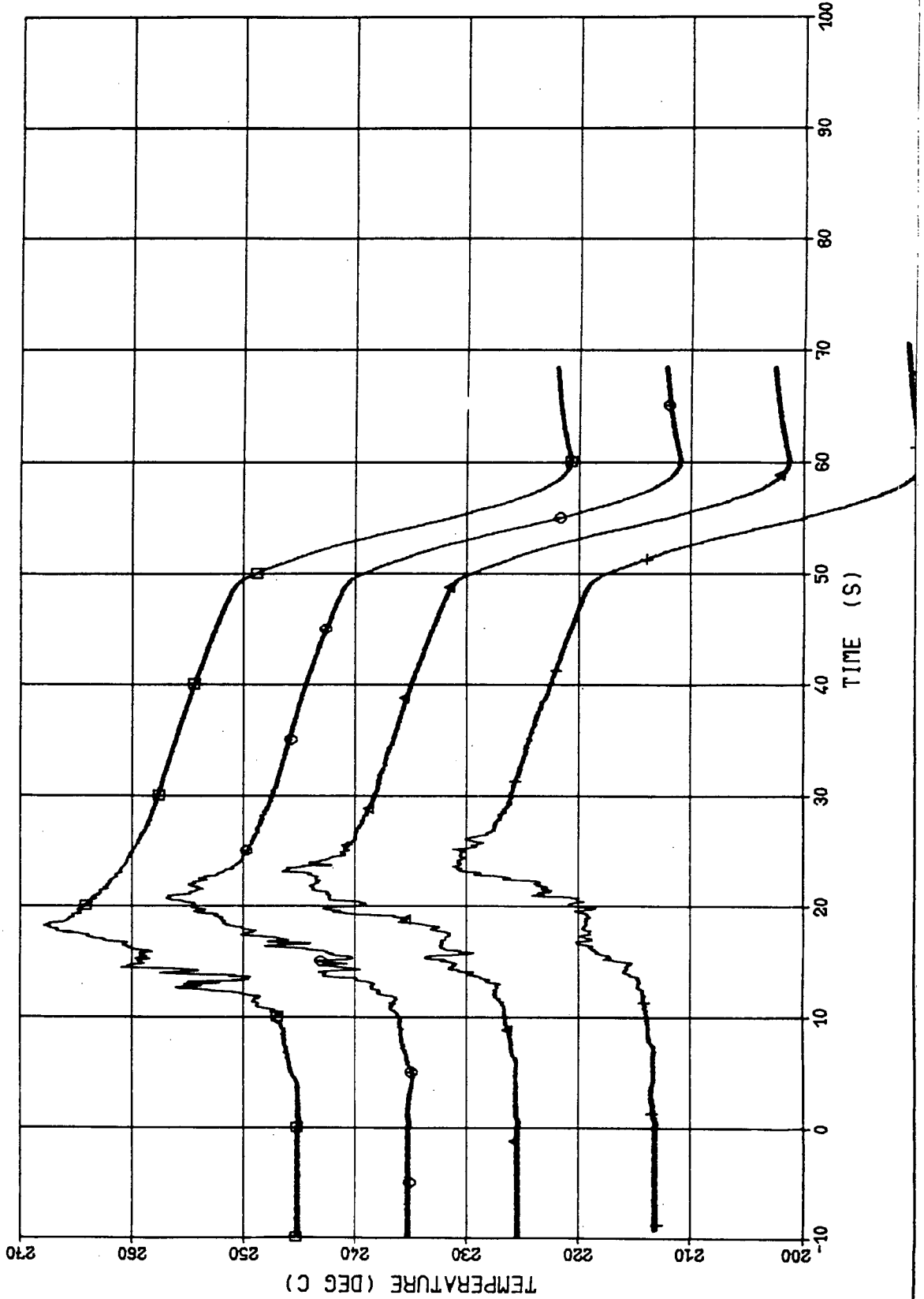
Plot M:8 Vessel temperatures 515 through 518

TEST 22

- 0017515 5.97 M ELEVATION (AVERAGED 50:1)
- 0017516 5.00 M ELEVATION (AVERAGED 50:1)
- △ 0017517 4.03 M ELEVATION (AVERAGED 50:1)
- + 0017518 3.04 M ELEVATION (AVERAGED 50:1)

- High by 0.5°C. 0.5°C.
- High by 0 - 0.5°C.
- High by 1°C.
- Low by 1.5°C.

- DISPLACED 30 DEG C
- DISPLACED 20 DEG C
- DISPLACED 10 DEG C

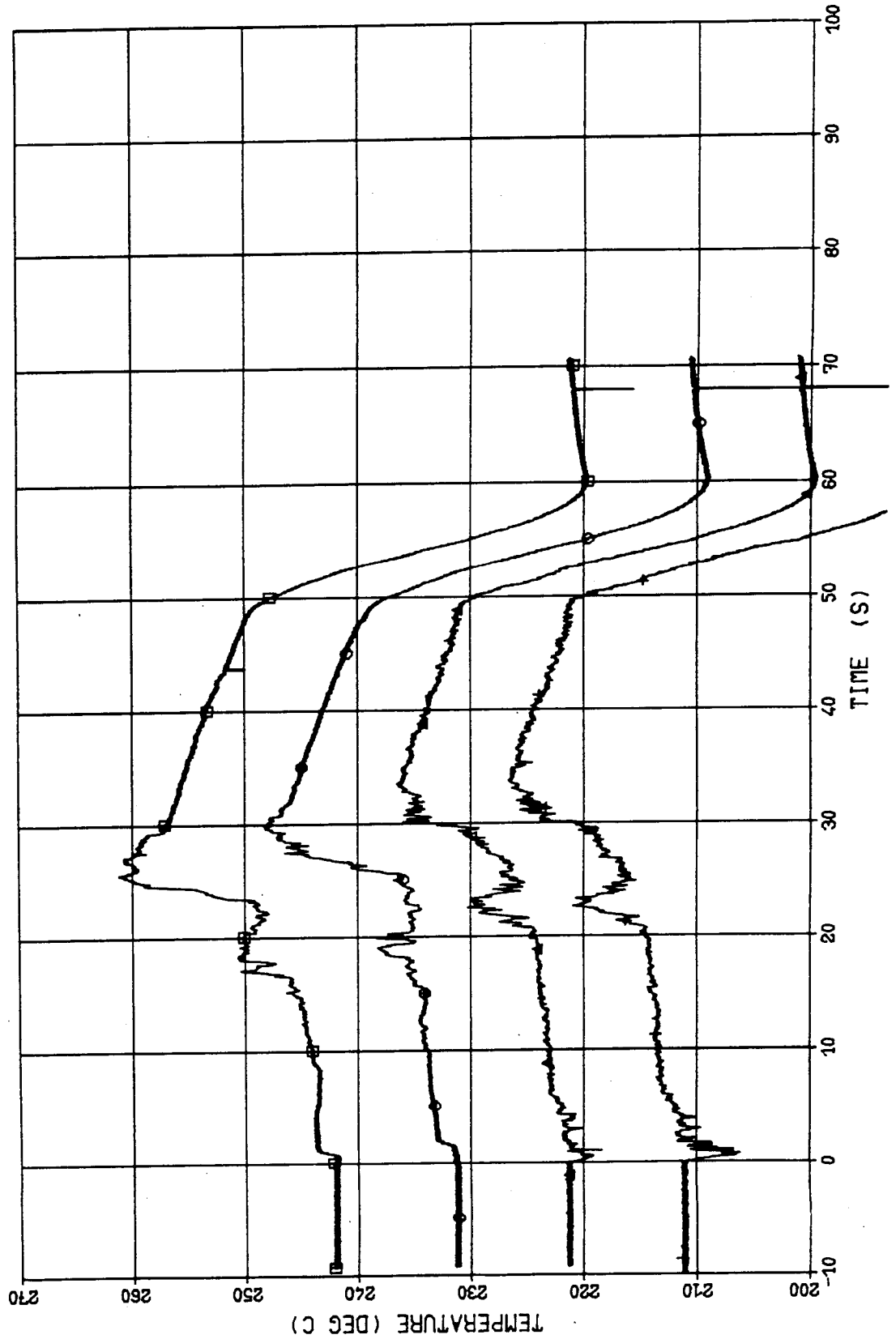


Plot M:9 Vessel temperatures 519 through 521, and 402

TEST 22

- 0017519 2.08 n ELEVATION (AVERAGED 50:1)
- 0017520 1.11 n ELEVATION (AVERAGED 50:1)
- △ 0017521 0.74 n ELEVATION (AVERAGED 50:1)
- + 0017402 0.74 n ELEVATION (AVERAGED 50:1)

DISPLACED 30 DEG C - Low by 1°C.  
DISPLACED 20 DEG C - Low by 1 - 1.5°C.  
DISPLACED 10 DEG C



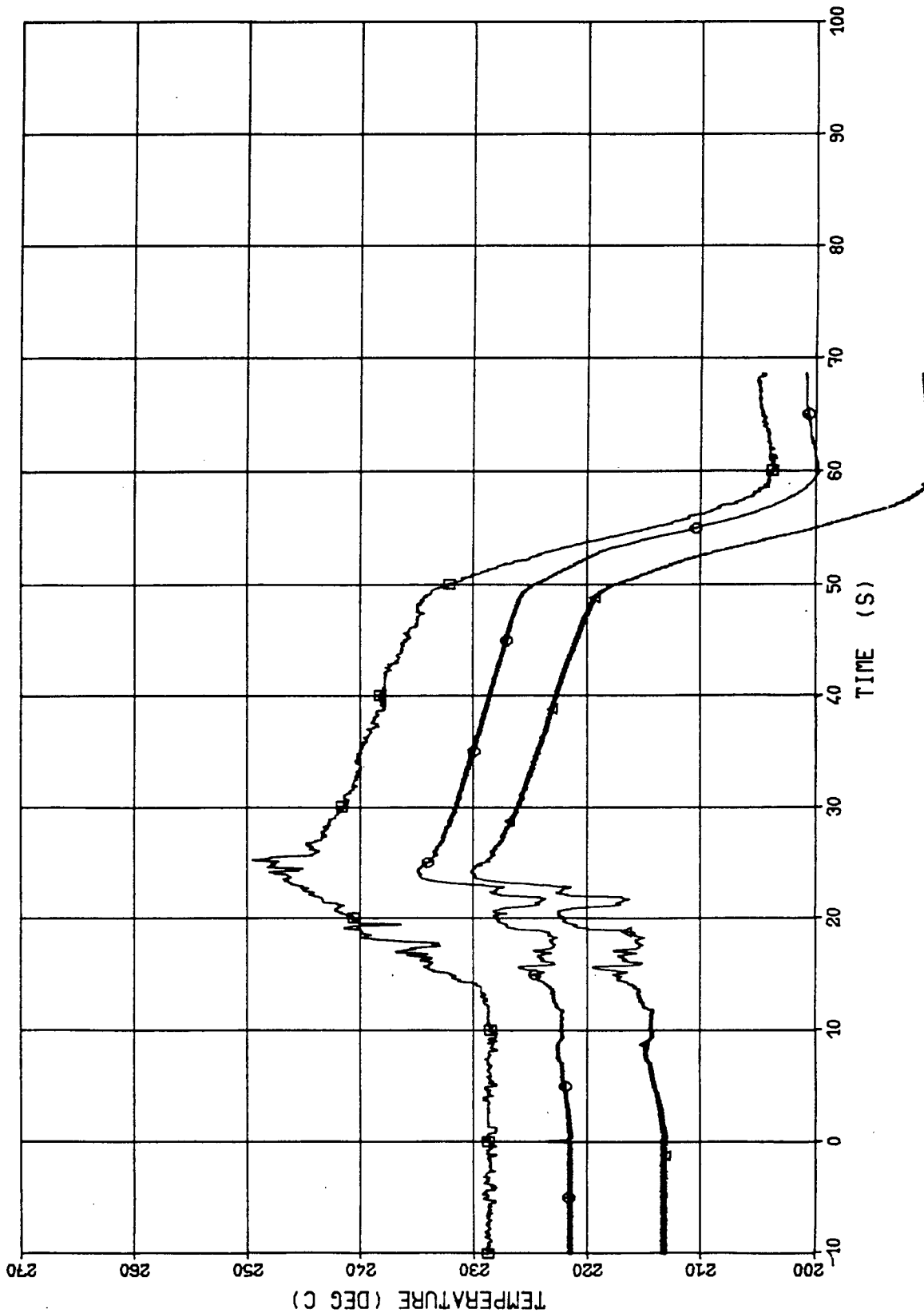


Plot M:10 Vessel temperatures 419 through 421

- a) Low by 6°C.
- b) Pre-test value low by 3°C, low by 4.5 - 6.5°C after 26 s.
- c) Low by 1.5°C.

□ 0011419 3.49 m ELEVATION, 0.00 m RADIUS (AVERAGED 50:1) DISPLACED 20 DEG C a)  
 ○ 0011420 3.49 m ELEVATION, 1.23 m RADIUS (AVERAGED 50:1) DISPLACED 10 DEG C b)  
 ▲ 0011421 3.49 m ELEVATION, 1.84 m RADIUS (AVERAGED 50:1) c)

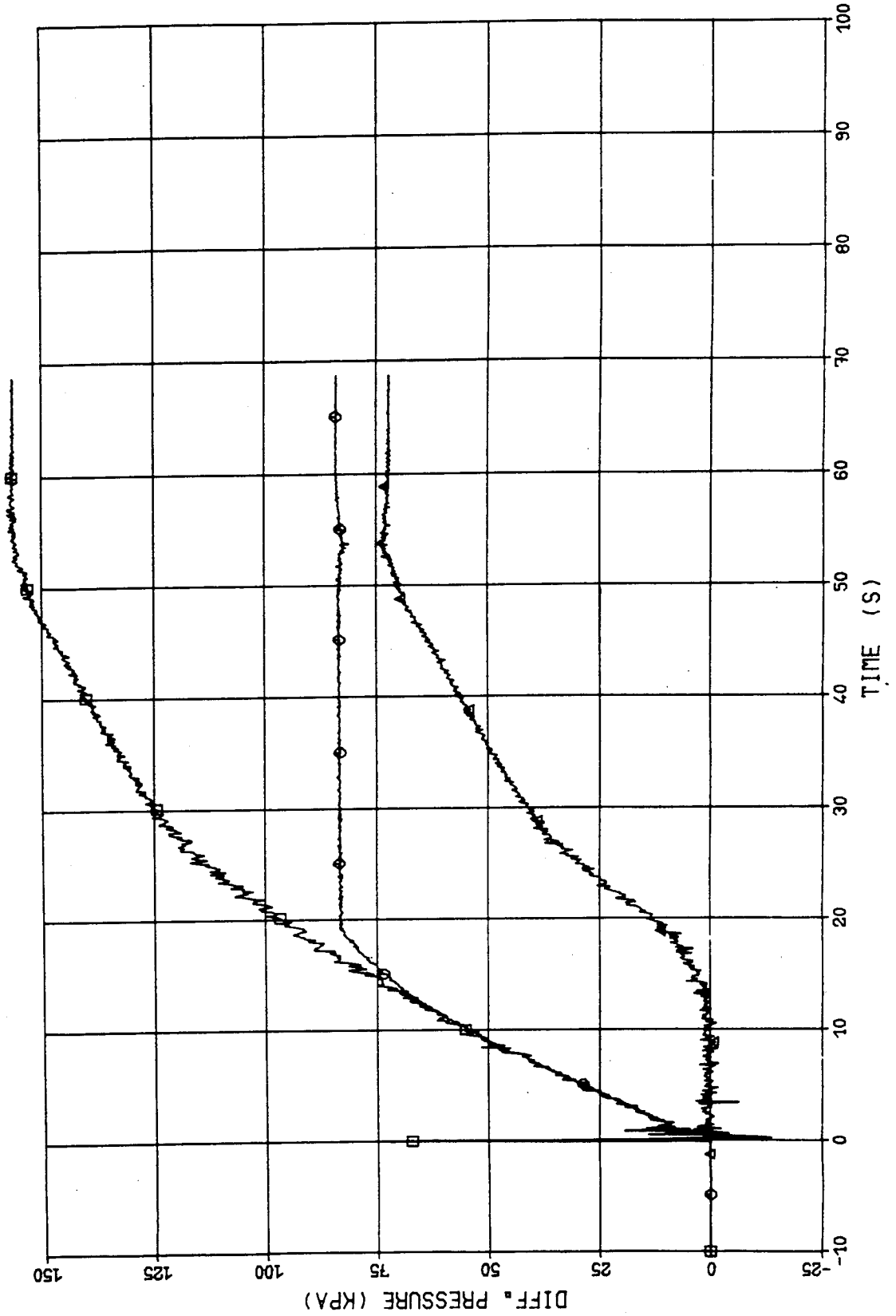
TEST 22



Plot M:11 Vessel differential pressures 201 through 203

TEST 22

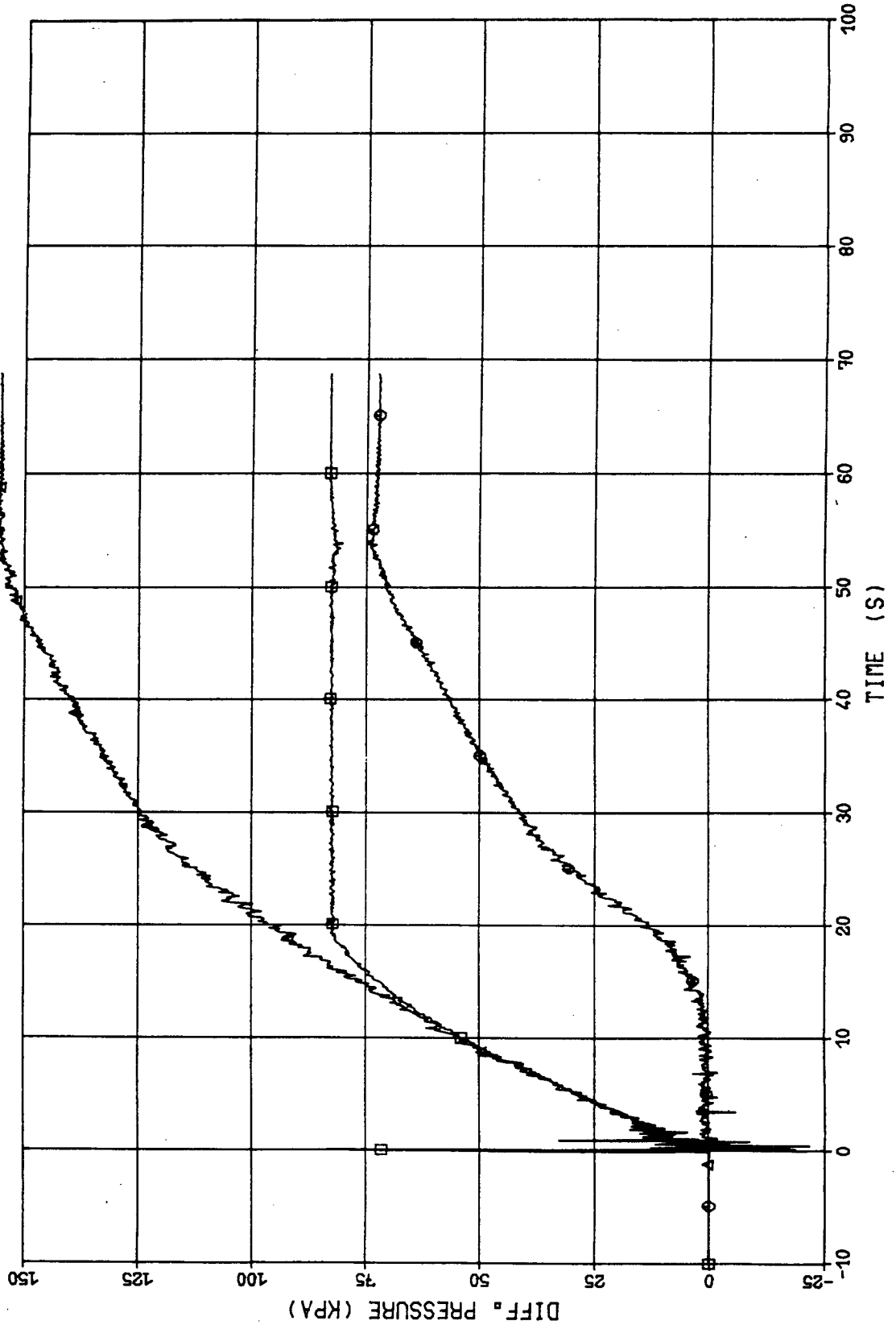
- 001P201 23.13 m - BOTTOM ELEVATION (AVERAGED:100::1)
- 001P202 23.13 m - 9.28 m ELEVATION (AVERAGED:100::1)
- △ 001P203 9.28 m - BOTTOM ELEVATION (AVERAGED:100::1)



Plot M:12 Vessel differential pressures 247 through 249

TEST 22

- 001P247 23.13 M - 9.28 M ELEVATION (AVERAGED100:1) - Low by 0.8 kPa compared to 001M202.
- 001P248 9.28 M - BOTTOM ELEVATION (AVERAGED100:1)
- △ 001P249 23.13 M - BOTTOM ELEVATION (AVERAGED100:1)



Plot M:13 Vessel differential pressures 244 through 246, and 253

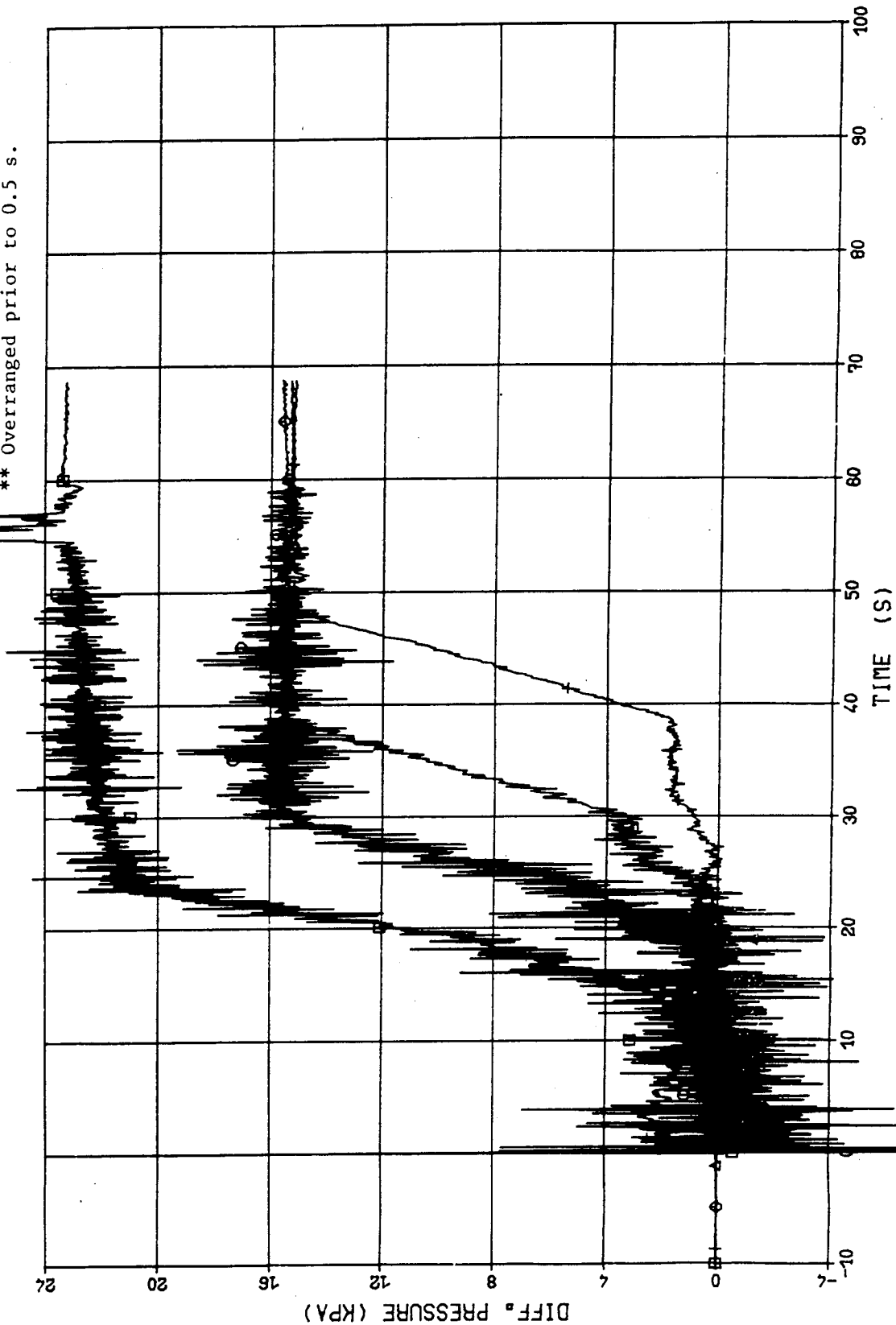
a) Post-test value\* 23.3 kPa instead of 22.5 given by (pgh)\*\*  
 b) Overranged prior to 4 s and periodically at 21 s < t < 23.5 s.  
 c) Overranged prior to 0.5 s.  
 d) Overranged prior to 0.5 s.

\* Mean value from 60 s to 68 s.

\*\* Overranged prior to 0.5 s.

TEST 22

- 0077253 9.23 m - 6.91 m ELEVATION (AVERAGED100:1) a)
- 0077244 6.91 m - 4.97 m ELEVATION (AVERAGED100:1) b)
- △ 0077245 4.97 m - 3.03 m ELEVATION (AVERAGED100:1) c)
- + 0077246 3.03 m - 1.08 m ELEVATION (AVERAGED100:1) d)



Plot M:14 Vessel differential pressures 204, and 250 through 252

- a) Overranged prior to 3 s.
- b) Post-test value\* 16.7 kPa instead of 16.0 given by (pgh)\*\*
- c) Post-test value\* 15.3 kPa instead of 16.1 given by (pgh)\*\*\*
- d) Post-test value\* 17.3 kPa instead of 18.4 given by (pgh). Overranged periodically prior to 30 s.

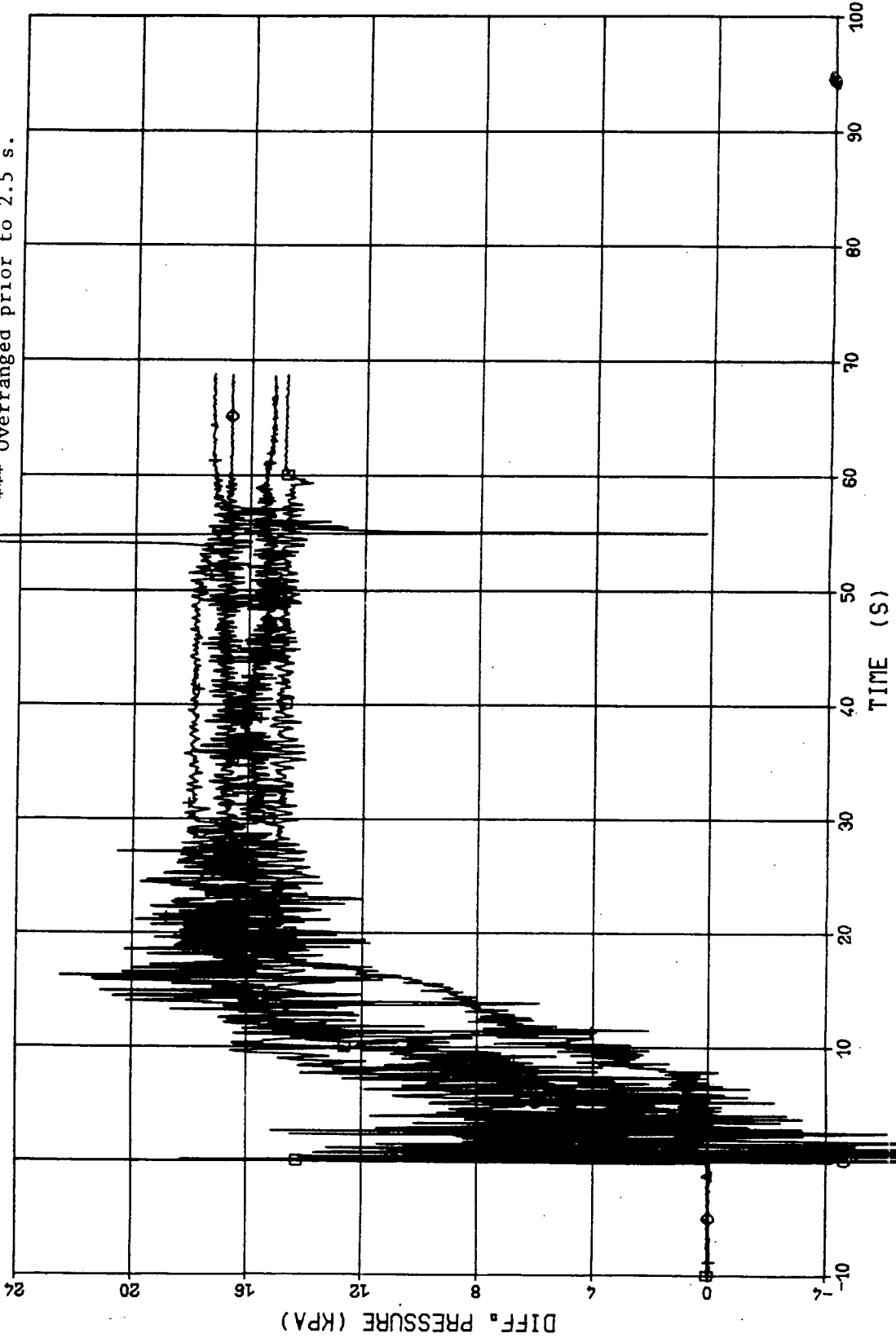
\* Mean value from 60 s to 68 s.

\*\* Overranged prior to 2 s.

\*\*\* Overranged prior to 2.5 s.

TEST 22

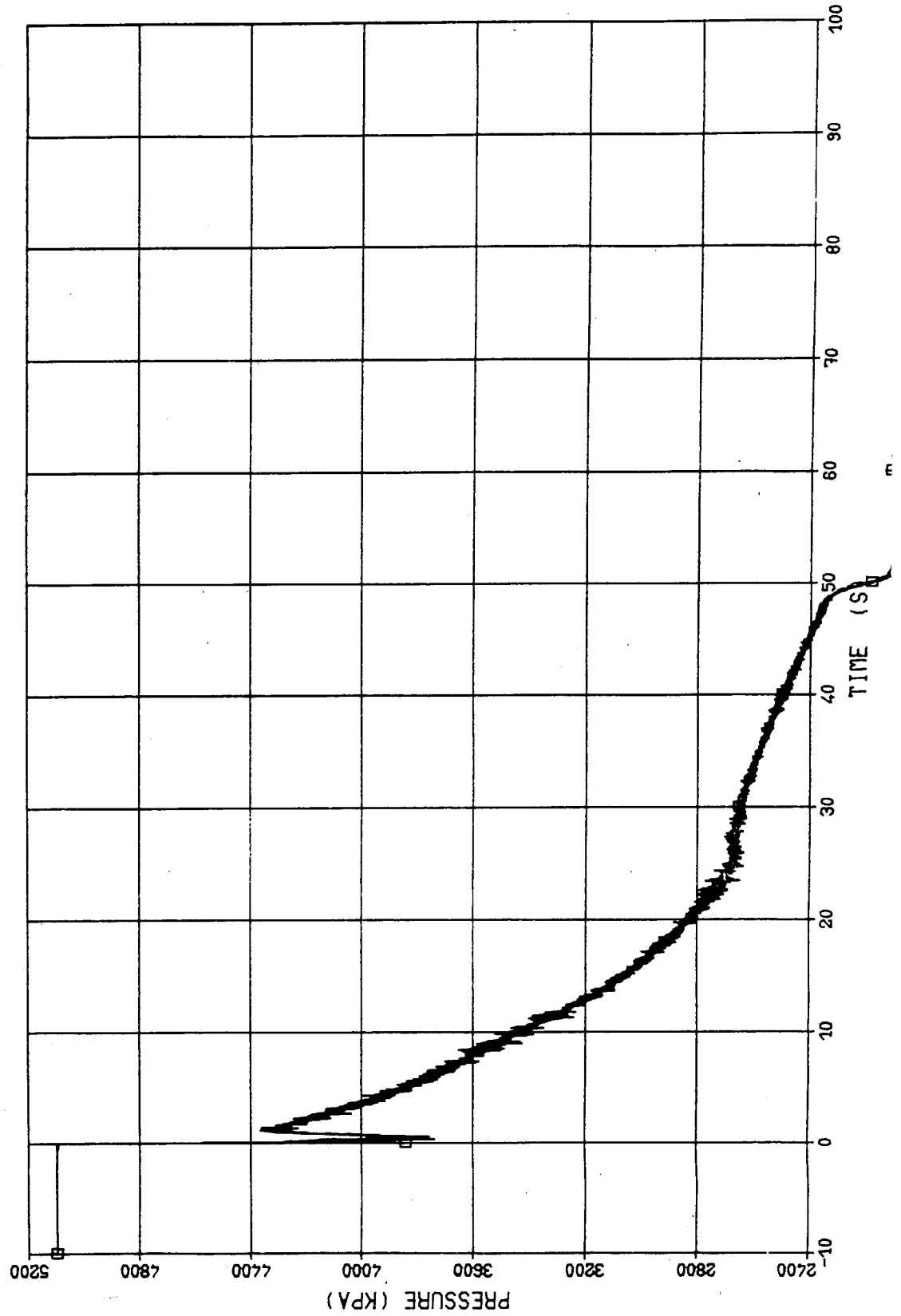
- 007M250 17.45 M - 15.45 M ELEVATION (AVERAGED100:1) a)
- 007M251 15.45 M - 13.46 M ELEVATION (AVERAGED100:1) b)
- △ 007M252 13.46 M - 11.47 M ELEVATION (AVERAGED100:1) c)
- + 007M204 11.47 M - 9.23 M ELEVATION (AVERAGED100:1) d)



Plot M:15 Pressure 107 at instrumentation ring I

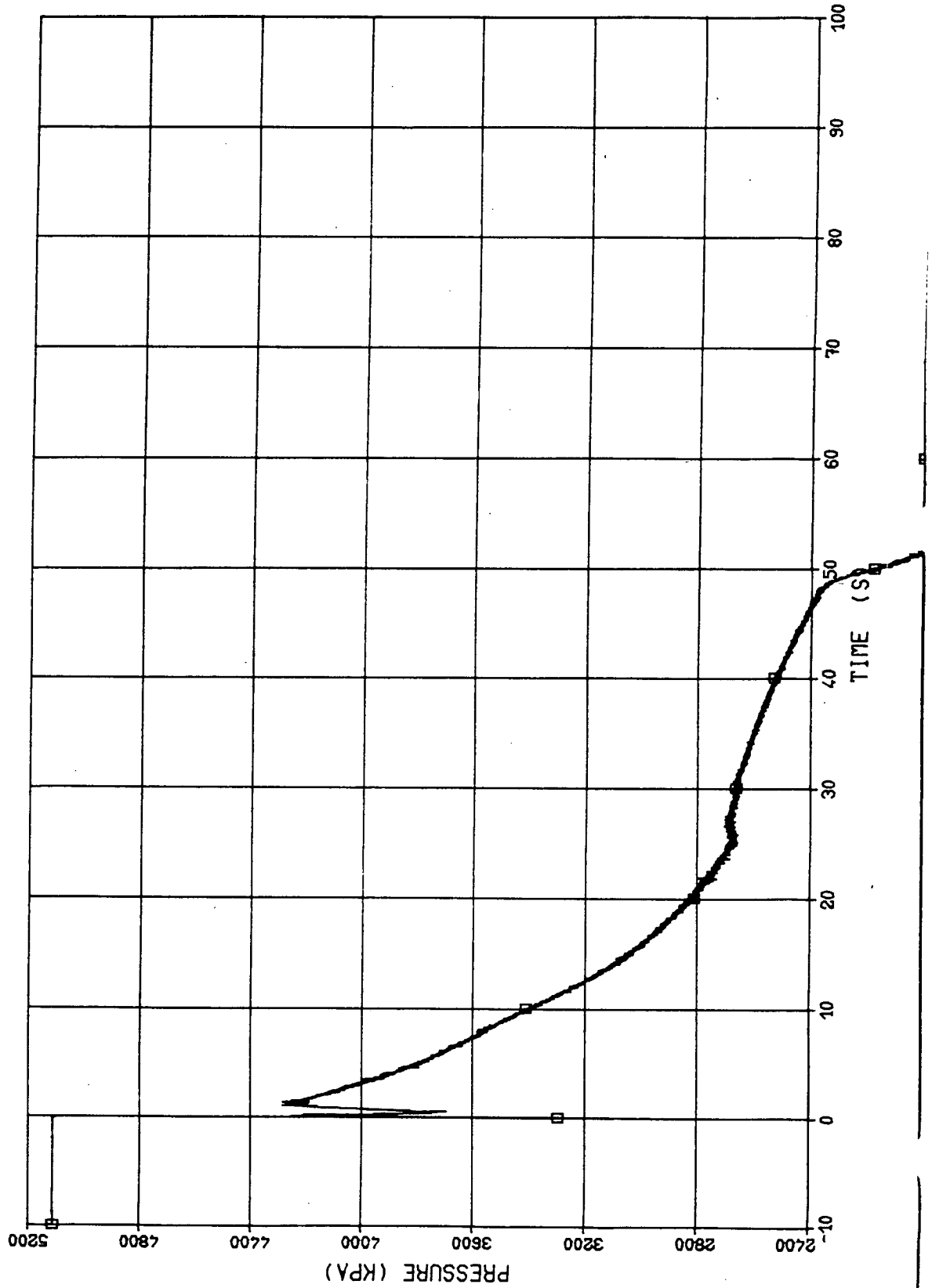
TEST 22

□ 0021107 INSTRUMENTATION RING 1 (AVERAGED 20:1)



Plot M:16 Pressure 108 at instrumentation ring II

TEST 22  
□ 003F108 INSTRUMENTATION RING 2 (AVERAGED 20:1)



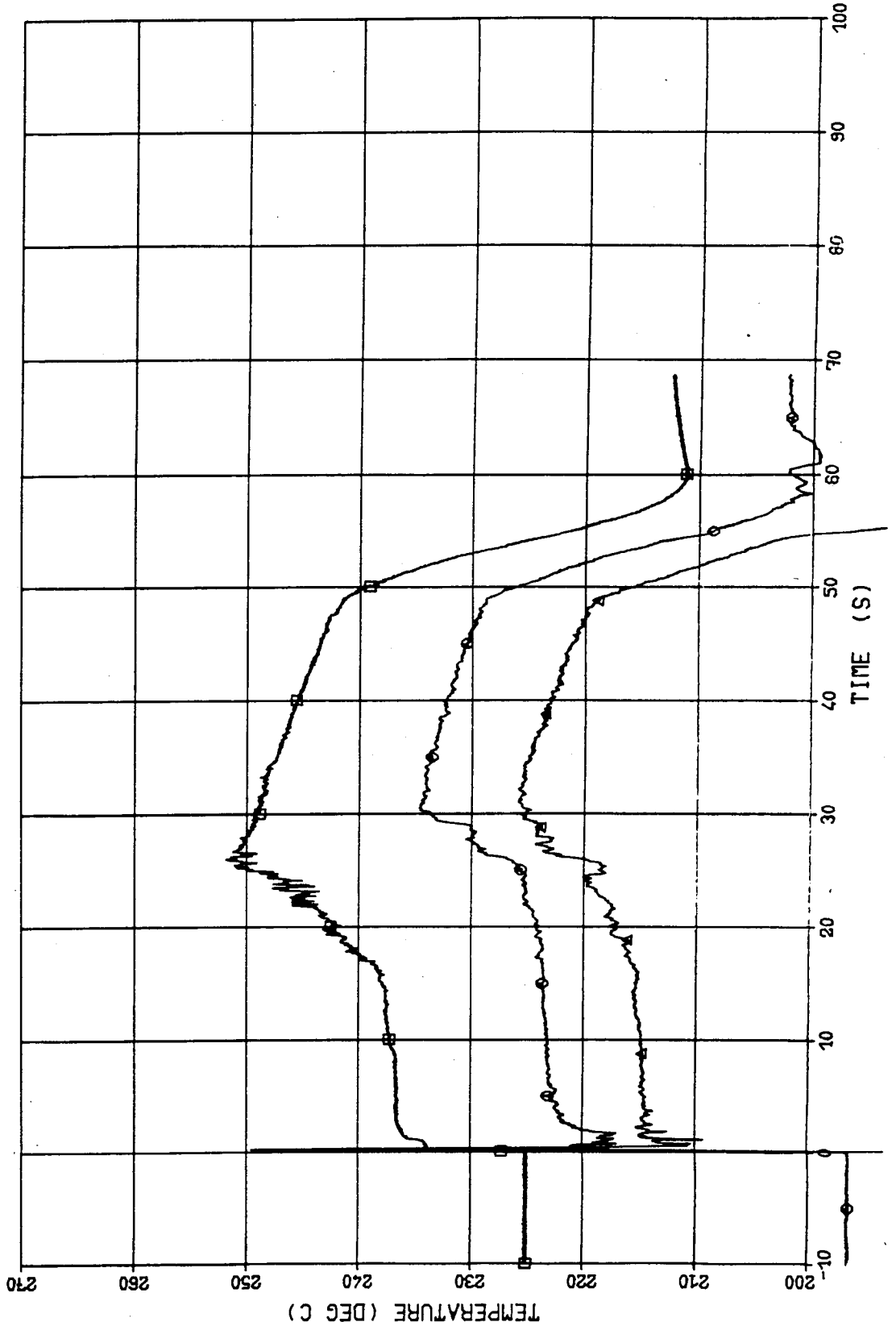
Plot M:17 Temperatures 403 through 405 at instrumentation rings I and II and near the nozzle entrance

- a) High by 2°C.
- b) Pre-test value low by 6°C, low by 1.5 - 2.5°C after 30 s.
- c) Low by 1°C.

TEST 22

- 0027403 INSTRUMENTATION RING 1 (AVERAGED 50:1)
- 0037404 INSTRUMENTATION RING 2 (AVERAGED 50:1)
- △ 0047405 0.7 m UPSTREAM OF NOZZLE ENTRANCE (AVERAGE 50:1) c)

DISPLACED 20 DEG C a)  
DISPLACED 10 DEG C b)



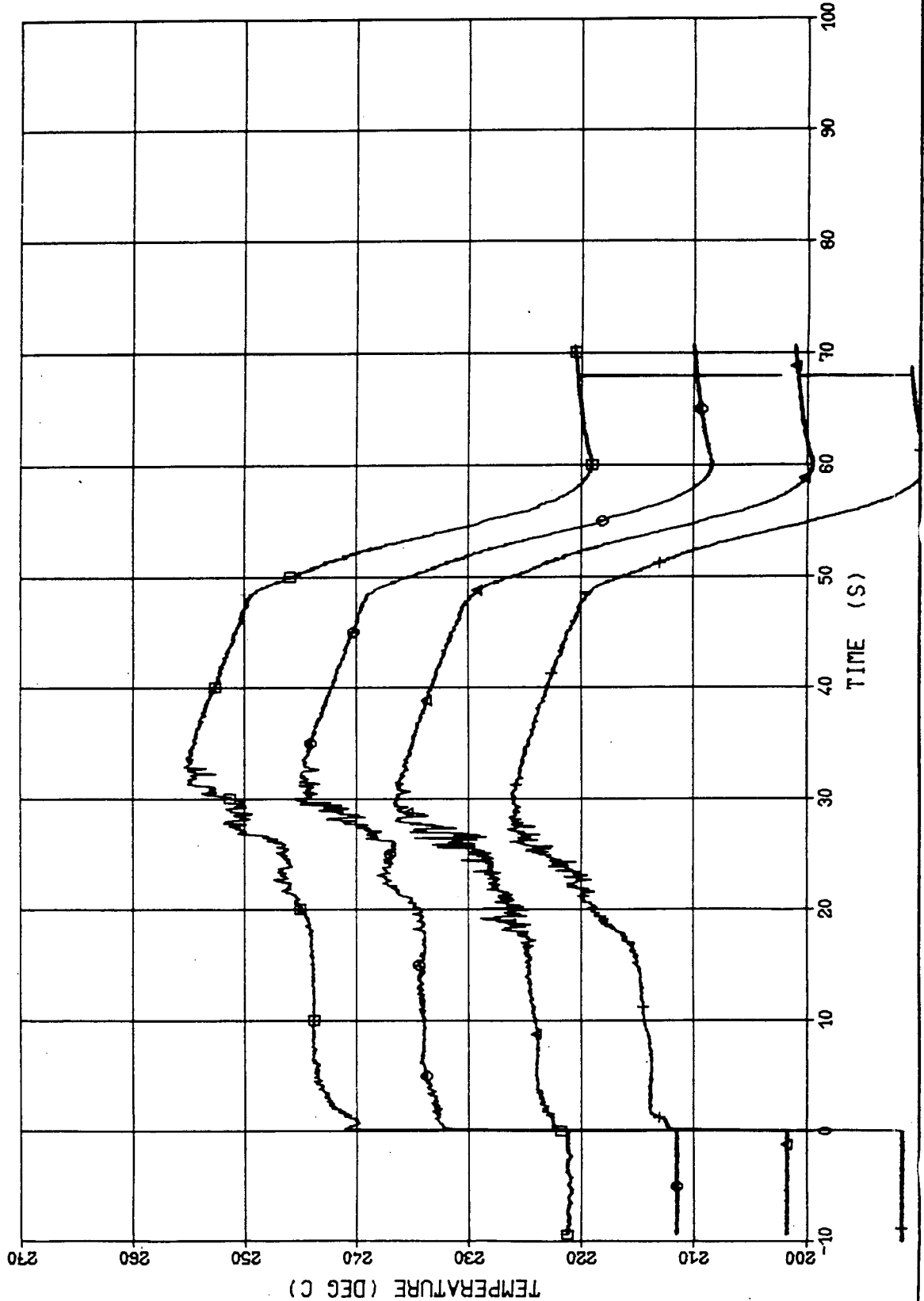


Plot M:18 Temperatures 556 through 559 at instrumentation ring II

TEST 22

□ 0037556 INSTR. RING 2, 25 MM FROM WALL (AVERAGED 50:1)  
 ○ 0037557 INSTR. RING 2, 190 MM FROM WALL (AVERAGED 50:1)  
 △ 0037558 INSTR. RING 2, 285 MM FROM WALL (AVERAGED 50:1)  
 + 0037559 INSTR. RING 2, 360 MM FROM WALL (AVERAGED 50:1)

DISPLACED 30 DEG C - Low by 1.5°C.  
 DISPLACED 20 DEG C - Low by 2°C.  
 DISPLACED 10 DEG C - Low by 1°C.  
 DISPLACED 0 DEG C - Low by 1.5°C.

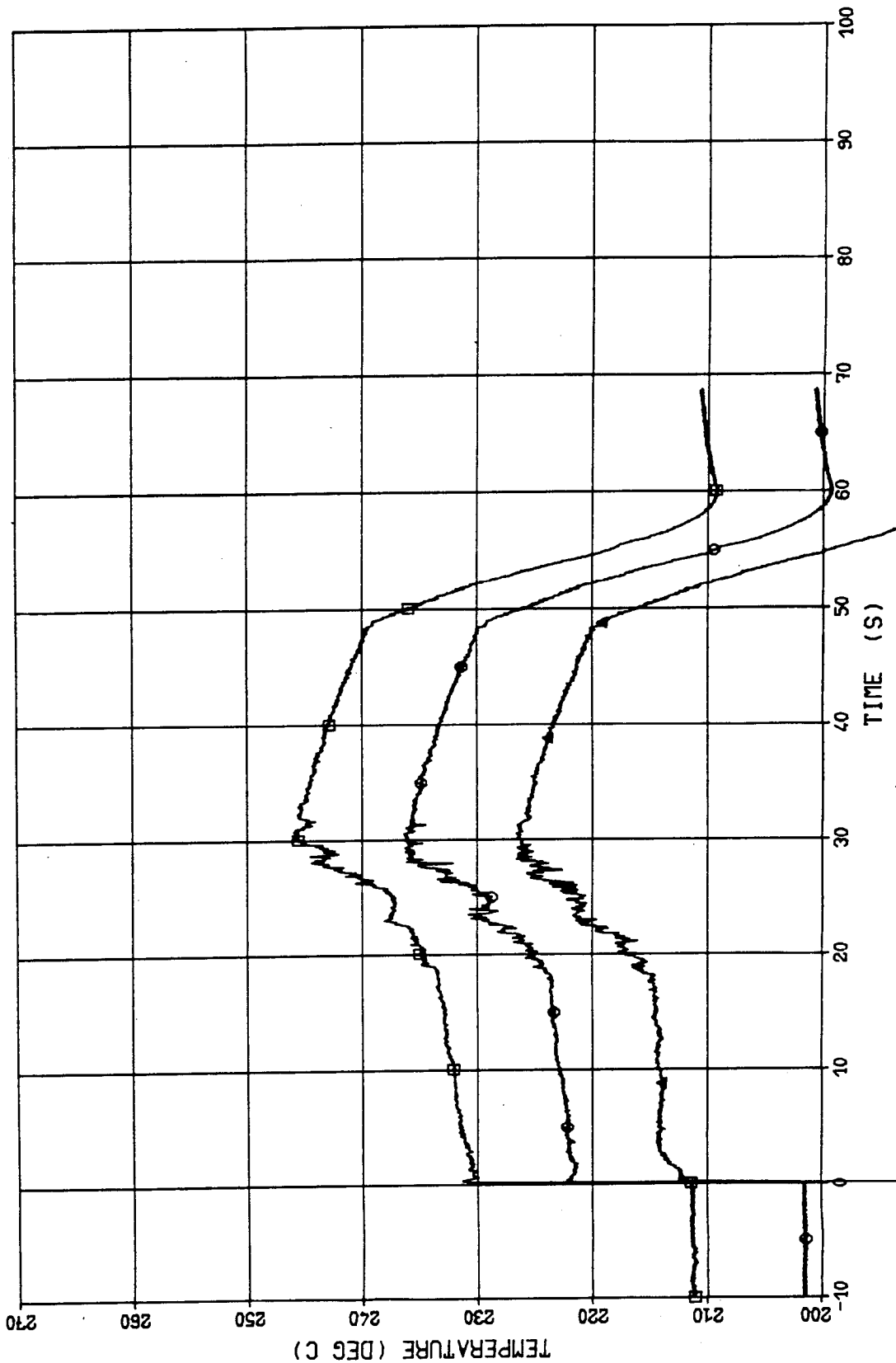


Plot M:19 Temperatures 560 through 562 at instrumentation ring II

TEST 22

□ 0031560 INSTR. RING 2, 25 MM FROM WALL (AVERAGED 50:1)  
 ○ 0031561 INSTR. RING 2, 110 MM FROM WALL (AVERAGED 50:1)  
 ▲ 0031562 INSTR. RING 2, 190 MM FROM WALL (AVERAGED 50:1)

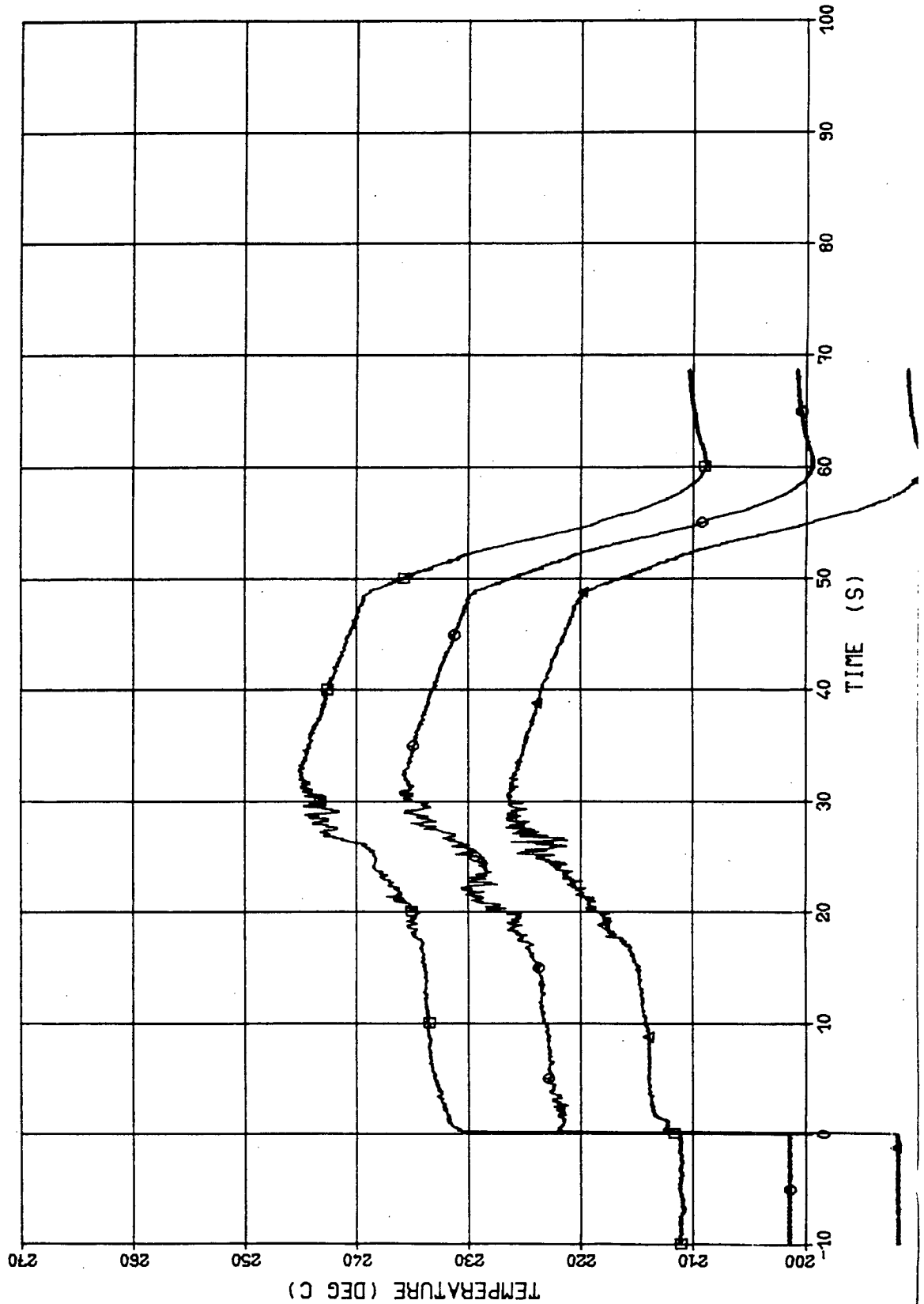
DISPLACED 20 DEG C - Low by 1.5°C.  
 DISPLACED 10 DEG C - Low by 1.0°C.  
 - Low by 1°C.



Plot M:20 Temperatures 563 through 565 at instrumentation ring II

TEST 22

□ 0037563 INSTR. RING 2, 25 FT FROM WALL (AVERAGED 50:1) DISPLACED 20 DEG C - Low by 2°C.  
○ 0037564 INSTR. RING 2, 110 FT FROM WALL (AVERAGED 50:1) DISPLACED 40 DEG C - Low by 1°C.  
△ 0037565 INSTR. RING 2, 190 FT FROM WALL (AVERAGED 50:1) DISPLACED 10 DEG C - Low by 1°C.

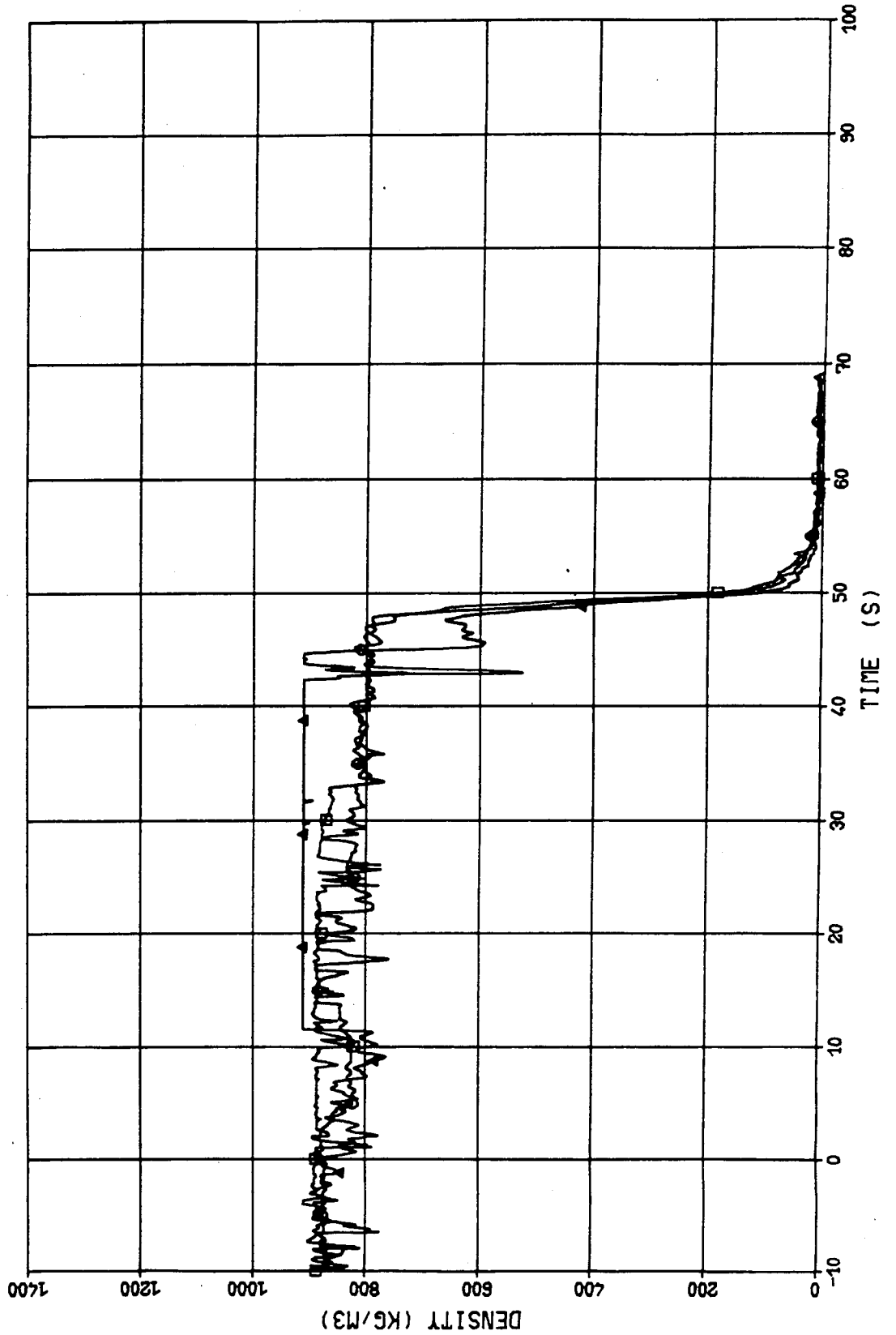


Plot M:21 Densities 601 through 603 at the gamma densitometer location

TEST 22

- 0037601 GAMMA BEAM CHORDAL (AVERAGED 30:1)
- 0037602 GAMMA BEAM DIAPHRAGM (AVERAGED 30:1)
- △ 0037603 GAMMA BEAM PERIPHERAL (AVERAGED 30:1)

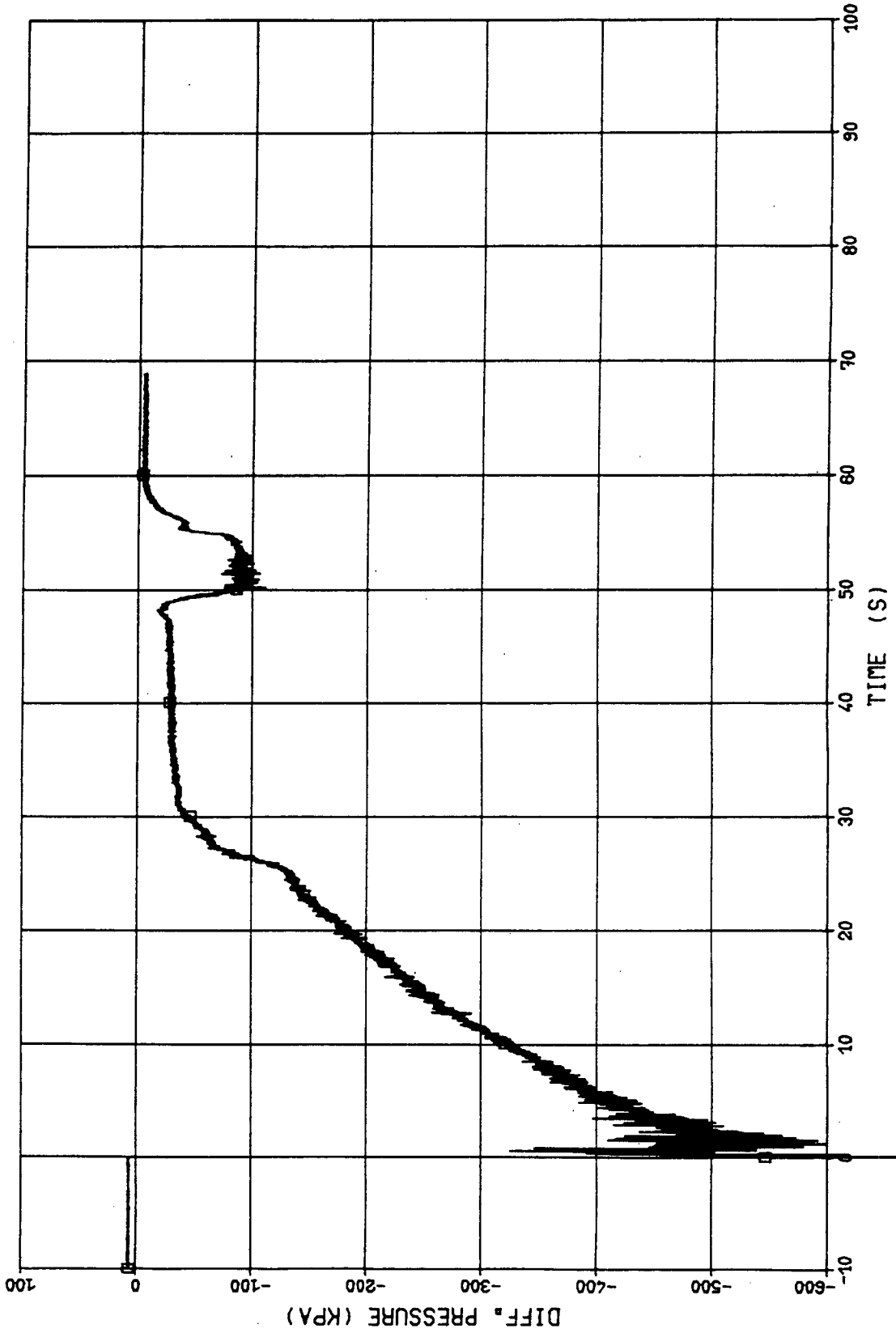
- Overranged periodically between 13.5 s < t < 33.5 s.  
- Overranged between 11 s < t < 45.5 s.



Plot M:22 Differential pressure 205 across the discharge pipe inlet

TEST 22

001T205 P(INSTR. RING 1) MINUS P(0.15 M ELEU.) (AVG 30:1) - Post-test value low by 5 kPa.



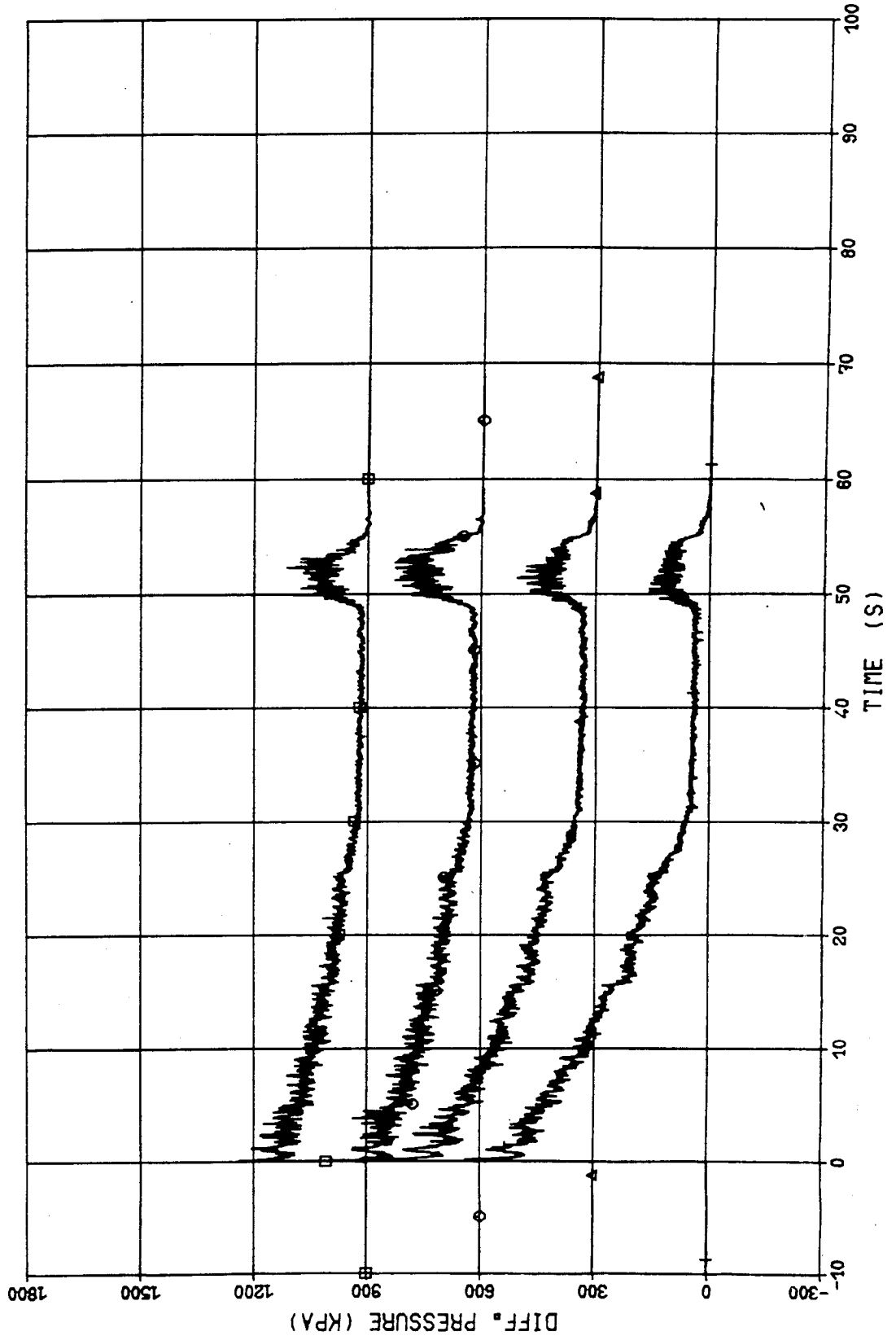
Plot M:23 Differential pressures 256 through 259 at instrumentation ring II

TEST 22

- 0037256 INSTR. RING 2, 3 FT FROM WALL (AVERAGED 30:1)
- 0037257 INSTR. RING 2, 9 FT FROM WALL (AVERAGED 30:1)
- △ 0037258 INSTR. RING 2, 50 FT FROM WALL (AVERAGED 30:1)
- + 0037259 INSTR. RING 2, 119 FT FROM WALL (AVERAGED 30:1)

- DISPLACED 900 KPA
- DISPLACED 600 KPA
- DISPLACED 300 KPA

- Overranged prior to 0.3 s.
- Overranged prior to 2.5 s. Post-test value high by 3.5 kpa.



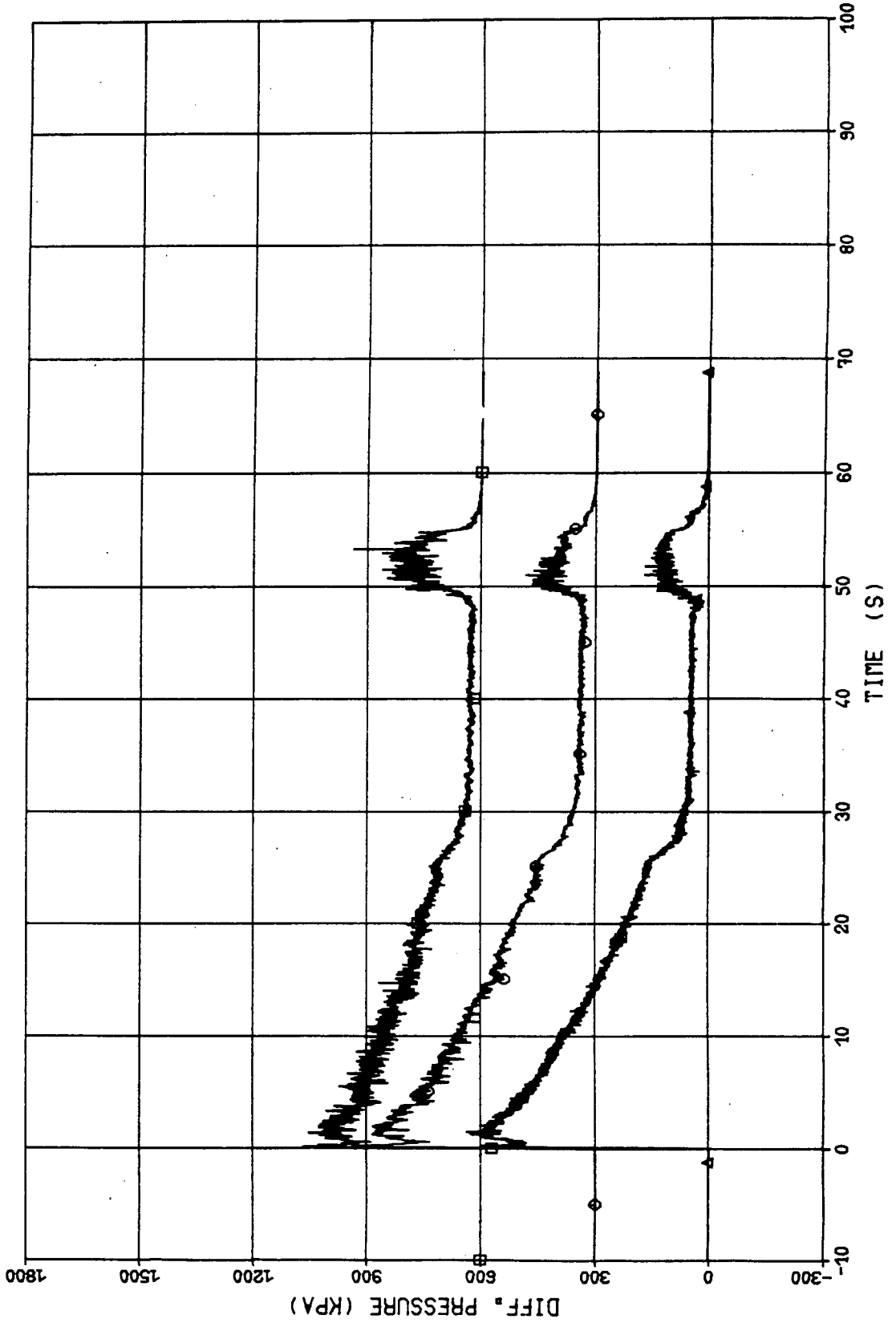
Plot M:24 Differential pressures 260 through 262 at instrumentation ring II

TEST 22

□ 0032260 INSTR. RING 2, 9 MM FROM WALL (AVERAGED 30:1)  
 ○ 0032261 INSTR. RING 2, 50 MM FROM WALL (AVERAGED 30:1)  
 ▲ 0032262 INSTR. RING 2, 350 MM FROM WALL (AVERAGED 30:1) b)

a) Overranged prior to 3.5 s. Post-test value low by 2.5 kPa.  
 b) Overranged prior to 3.6 s. Post-test value high by 4 kPa.

DISPLACED 600 KPA a)  
 DISPLACED 300 KPA a)



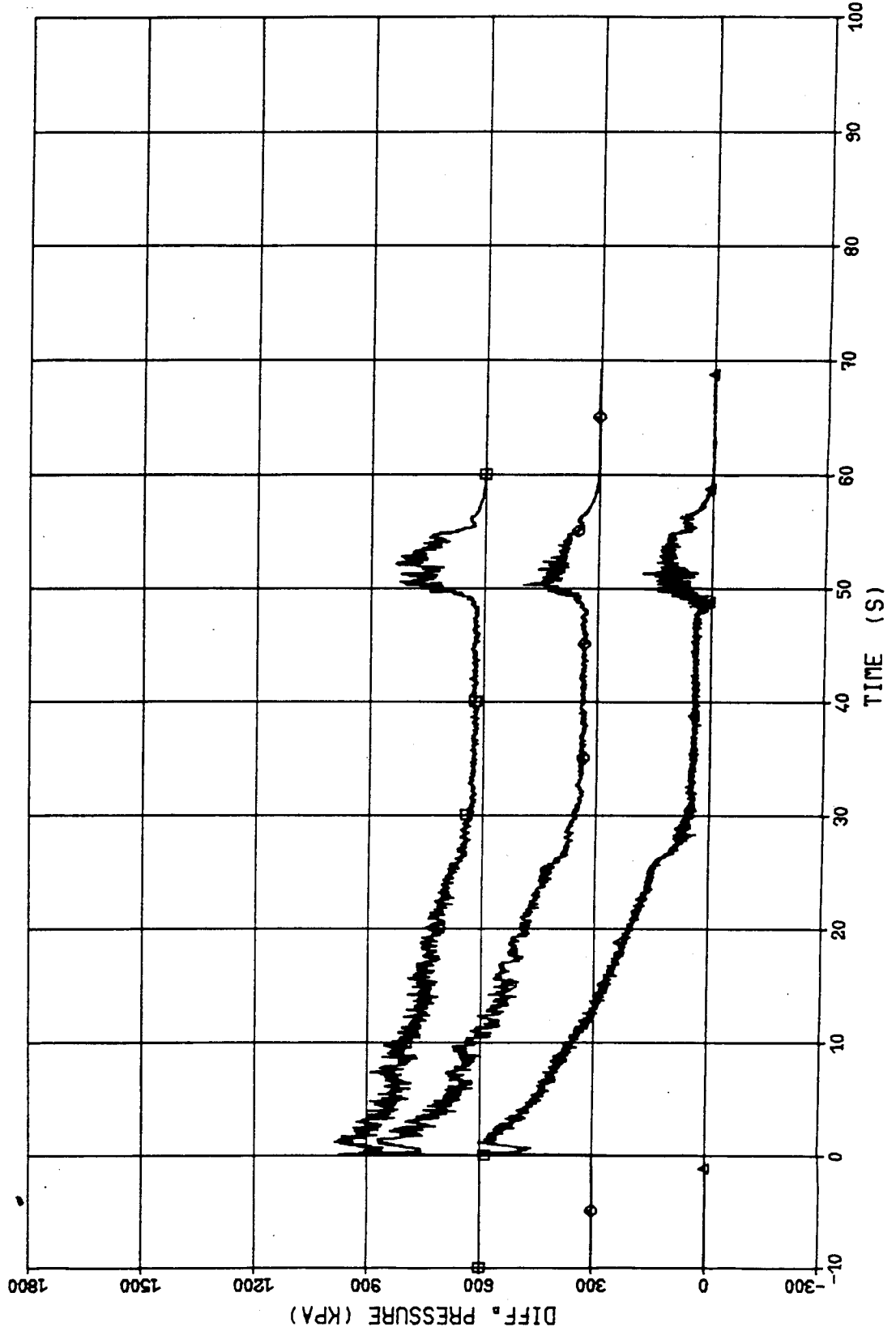
Plot M:25 Differential pressures 263 through 265 at instrumentation ring II

TEST 22

□ 003F263 INSTR. RING 2, 9 FT FROM WALL (AVERAGED 30:1)  
○ 003F264 INSTR. RING 2, 50 FT FROM WALL (AVERAGED 30:1)  
△ 003F265 INSTR. RING 2, 265 FT FROM WALL (AVERAGED 30:1)

DISPLACED 600 KPA  
DISPLACED 300 KPA

- Overranged prior to 2.5 s.  
- Overranged prior to 4.2 s.

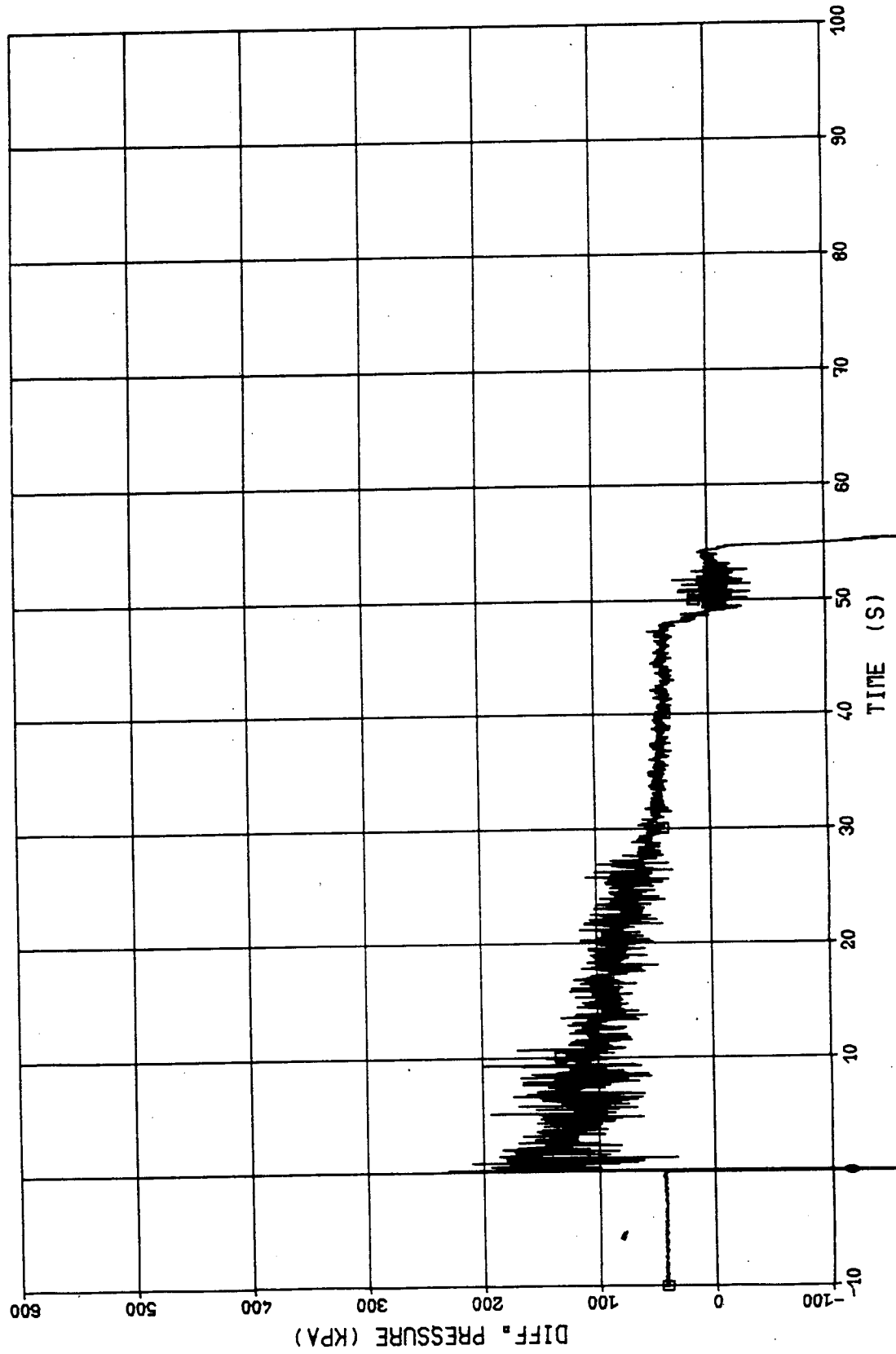




Plot M:26 Differential pressure 216 from instrumentation ring I to the nozzle entrance

TEST 22

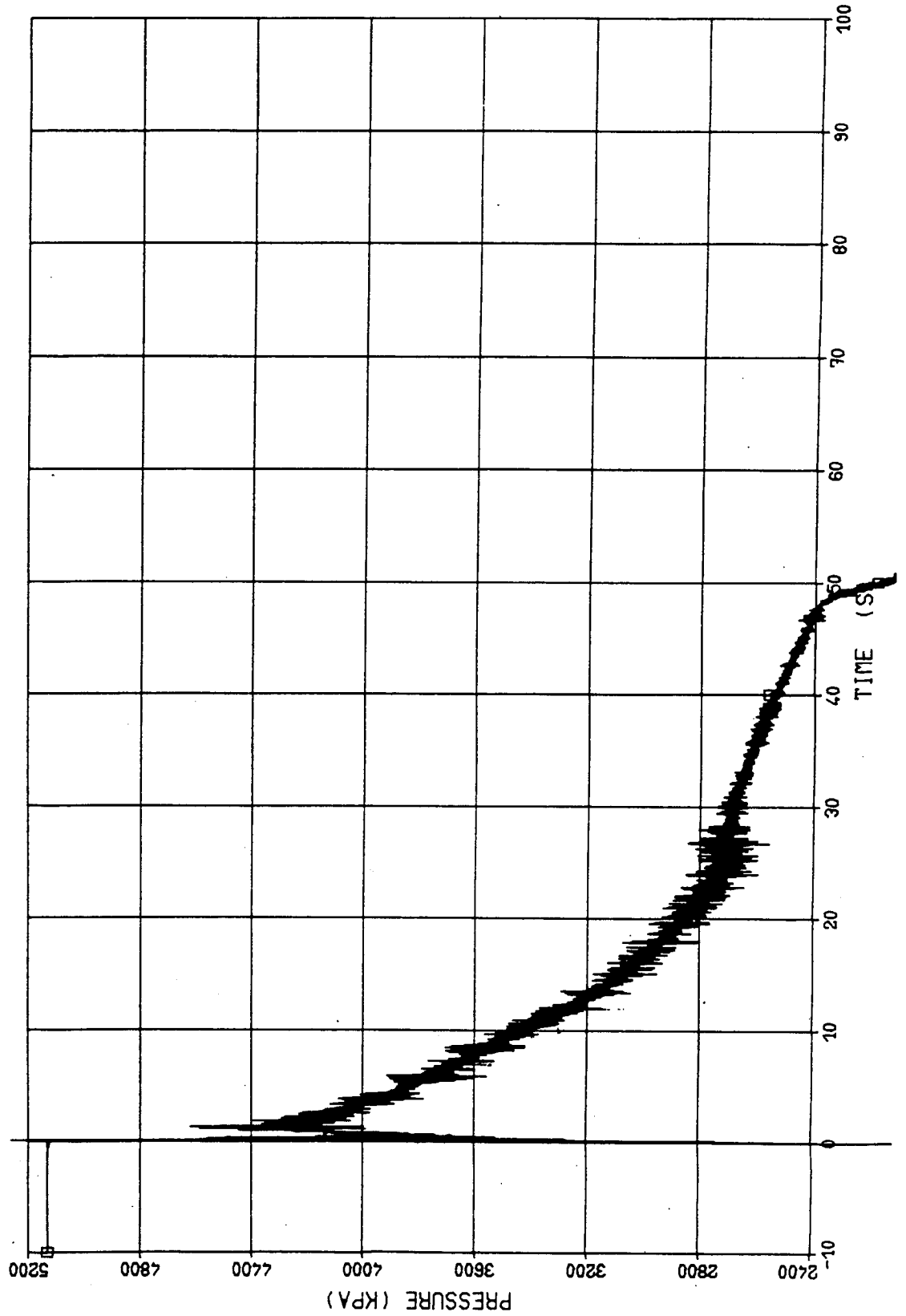
□ 00221216 P(INZL ENTR.) MINUS P(INSTR. RING 1) (AVERAGED 40:1)



Plot M:27 Pressure 109 near the nozzle entrance

TEST 22

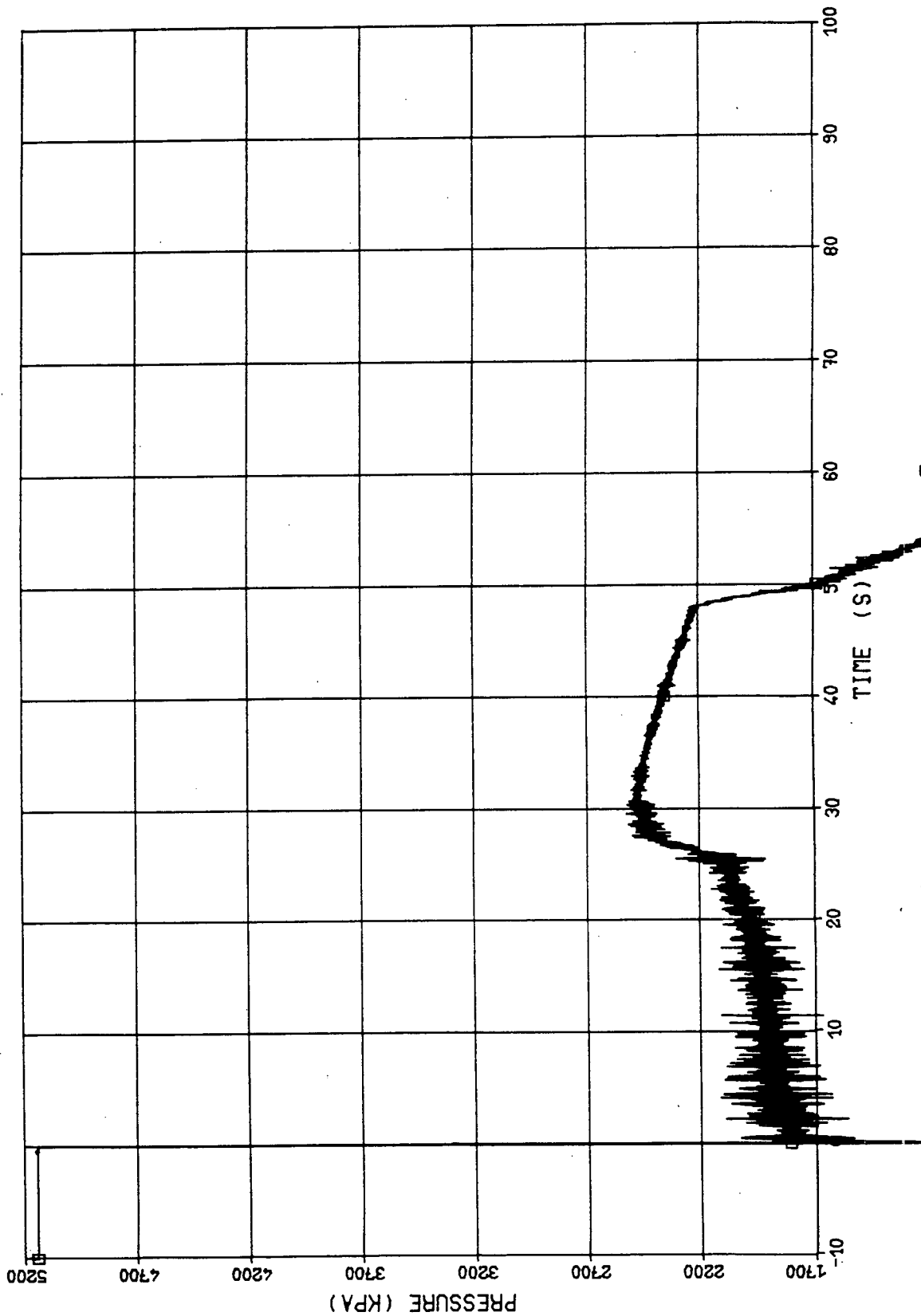
□ 004M109 0.1 M UPSTREAM OF NOZZLE ENTRANCE (AVERAGED 20:1)



Plot M:28 Pressure 118 at the nozzle reference level

TEST 22

004M118 NOZZLE REFERENCE LEVEL (AVERAGED 20:1) - Post-test value 20 kPa above atmospheric pressure.

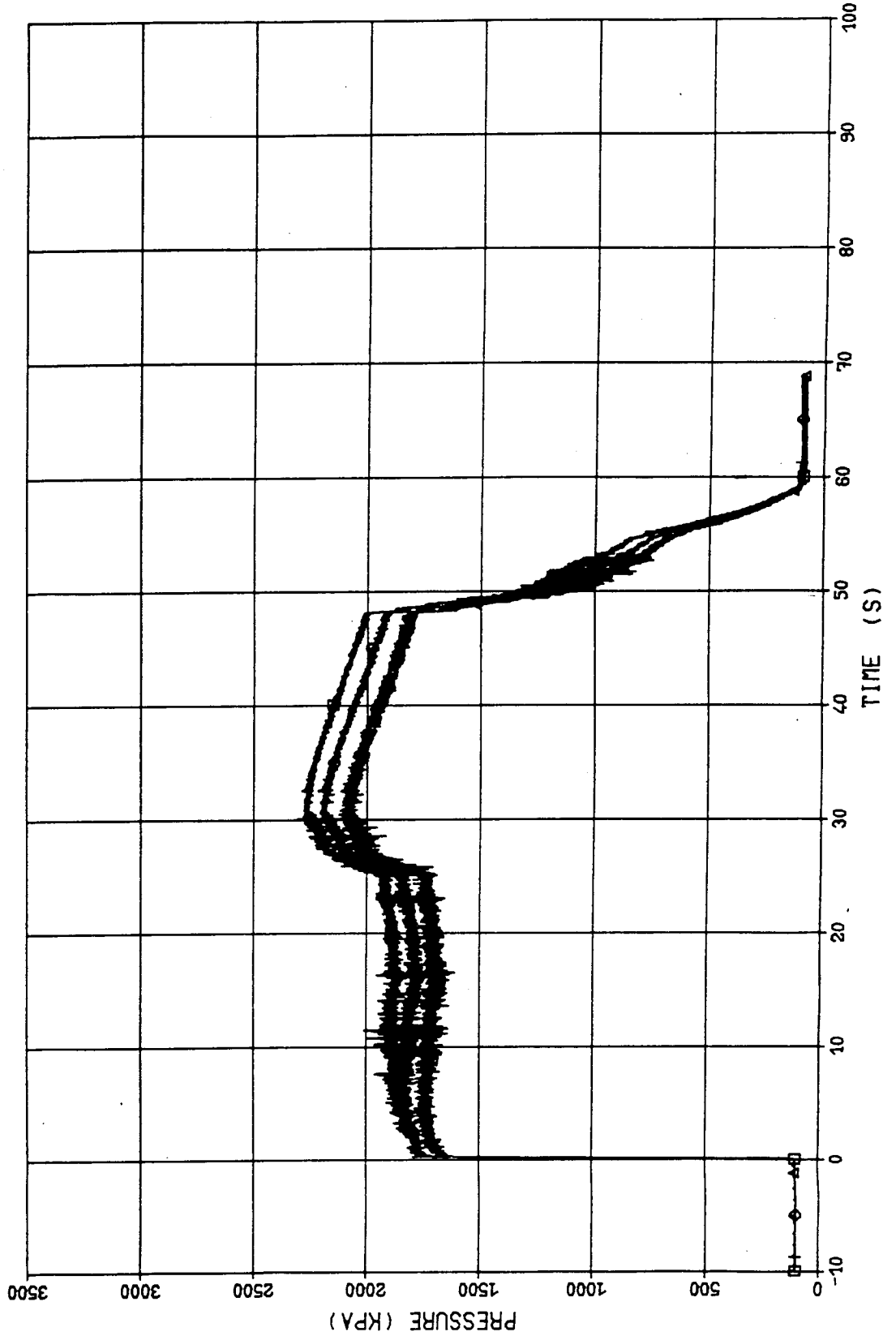


Plot M:29 Pressures 121, and 123 through 125 near the nozzle exit

TEST 22

- 0047121 16 MM ABOVE NOZZLE EXIT (AVERAGED 20:1)
- 0047123 30 MM ABOVE NOZZLE EXIT (AVERAGED 20:1)
- △ 0047124 15 MM ABOVE NOZZLE EXIT (AVERAGED 20:1)
- + 0047125 8 MM ABOVE NOZZLE EXIT (AVERAGED 20:1)

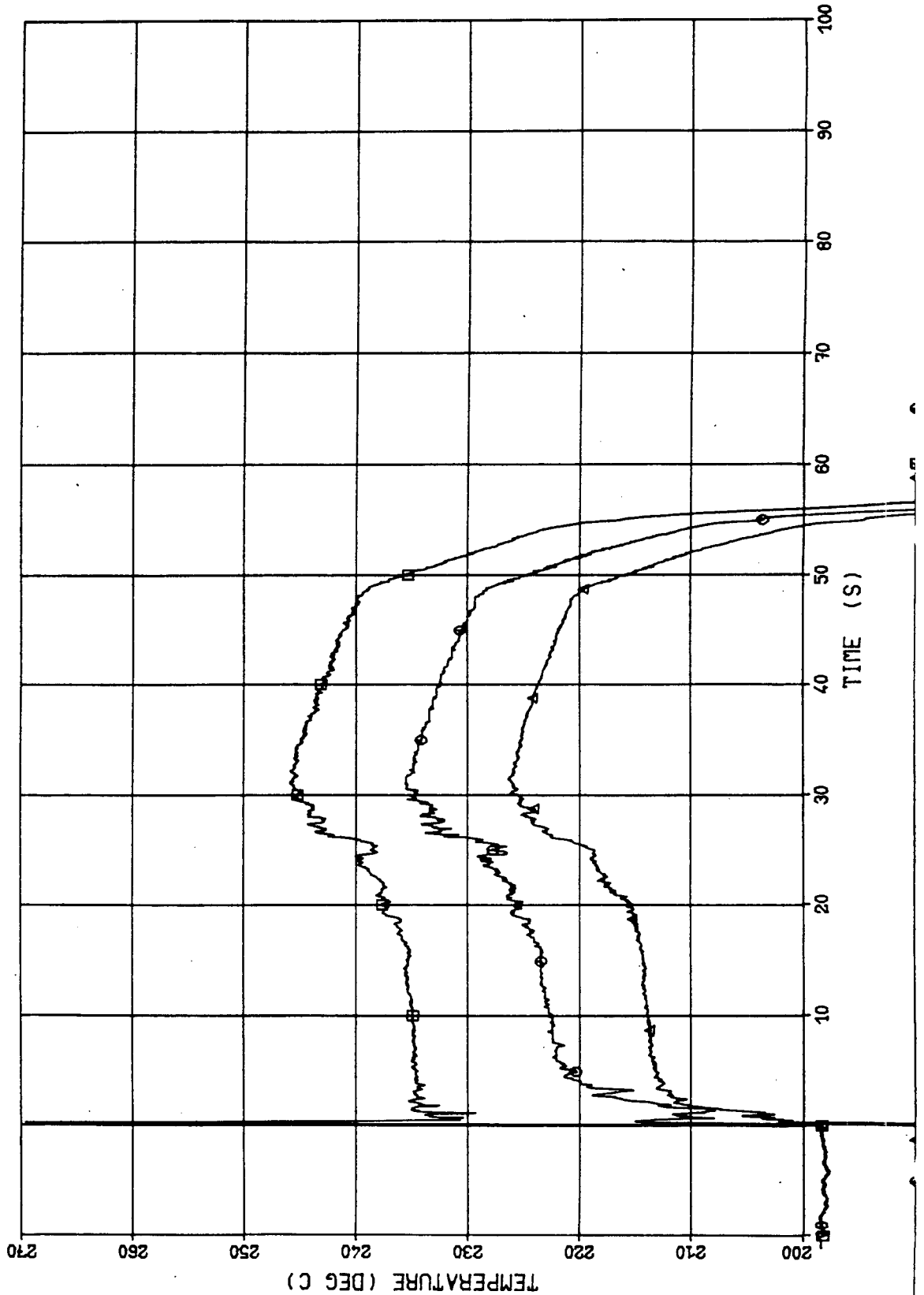
Post-test value 20 kPa below atmospheric pressure.



Plot M:30 Temperatures 405, 532, and 534 near the nozzle entrance

TEST 22

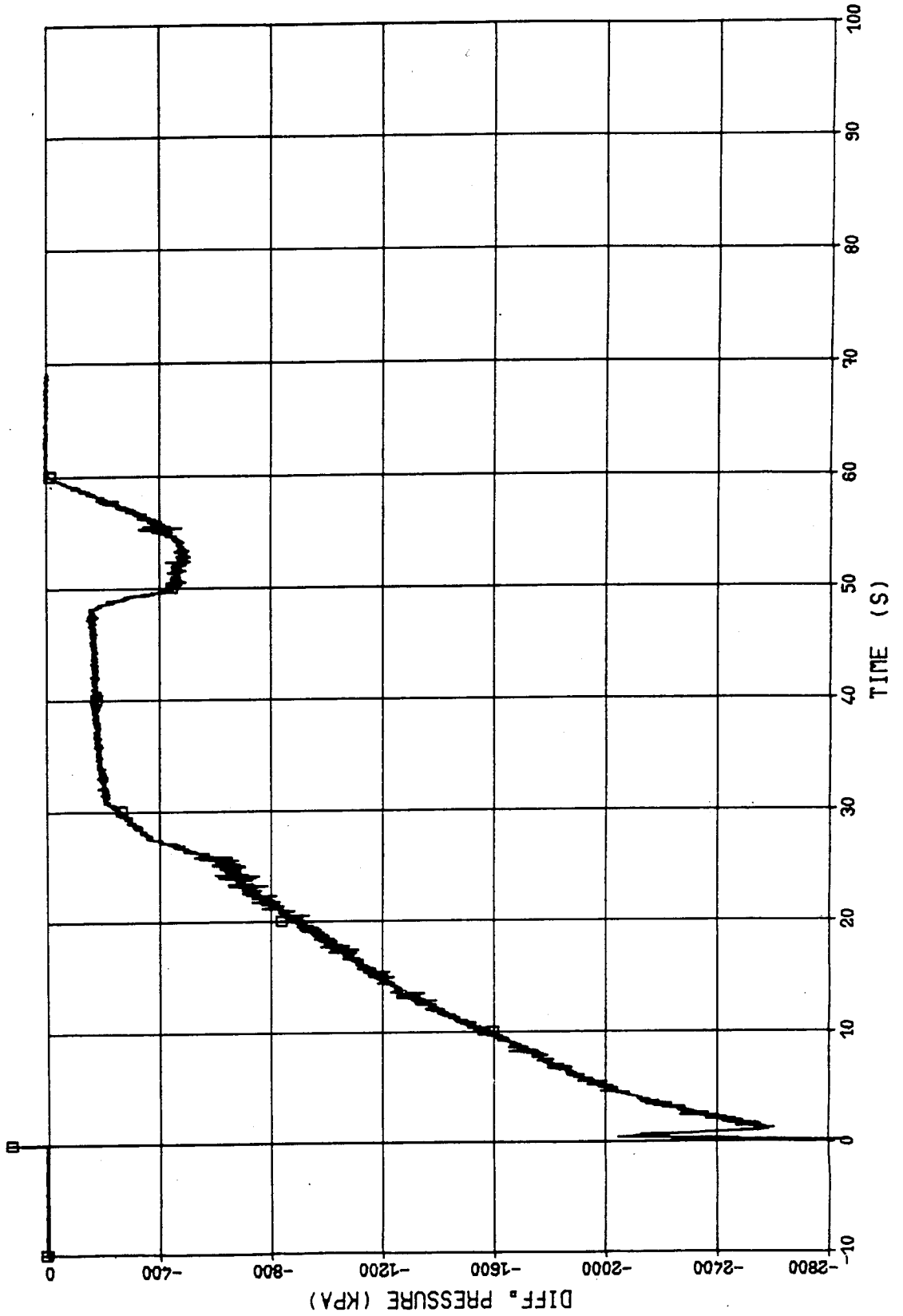
□ 0047405 0.7 IN UPSTREAM OF NOZZLE ENTRANCE (AVERAGED 50:1) DISPLACED 20 DEG C - Low by 1°C.  
○ 0047532 NOZZLE ENTRANCE (AVERAGED 50:1) DISPLACED 10 DEG C - Low by 1.5°C.  
△ 0047534 NOZZLE ENTRANCE (AVERAGED 50:1)



Plot M:31 Differential pressure 217 across the nozzle inlet

TEST 22

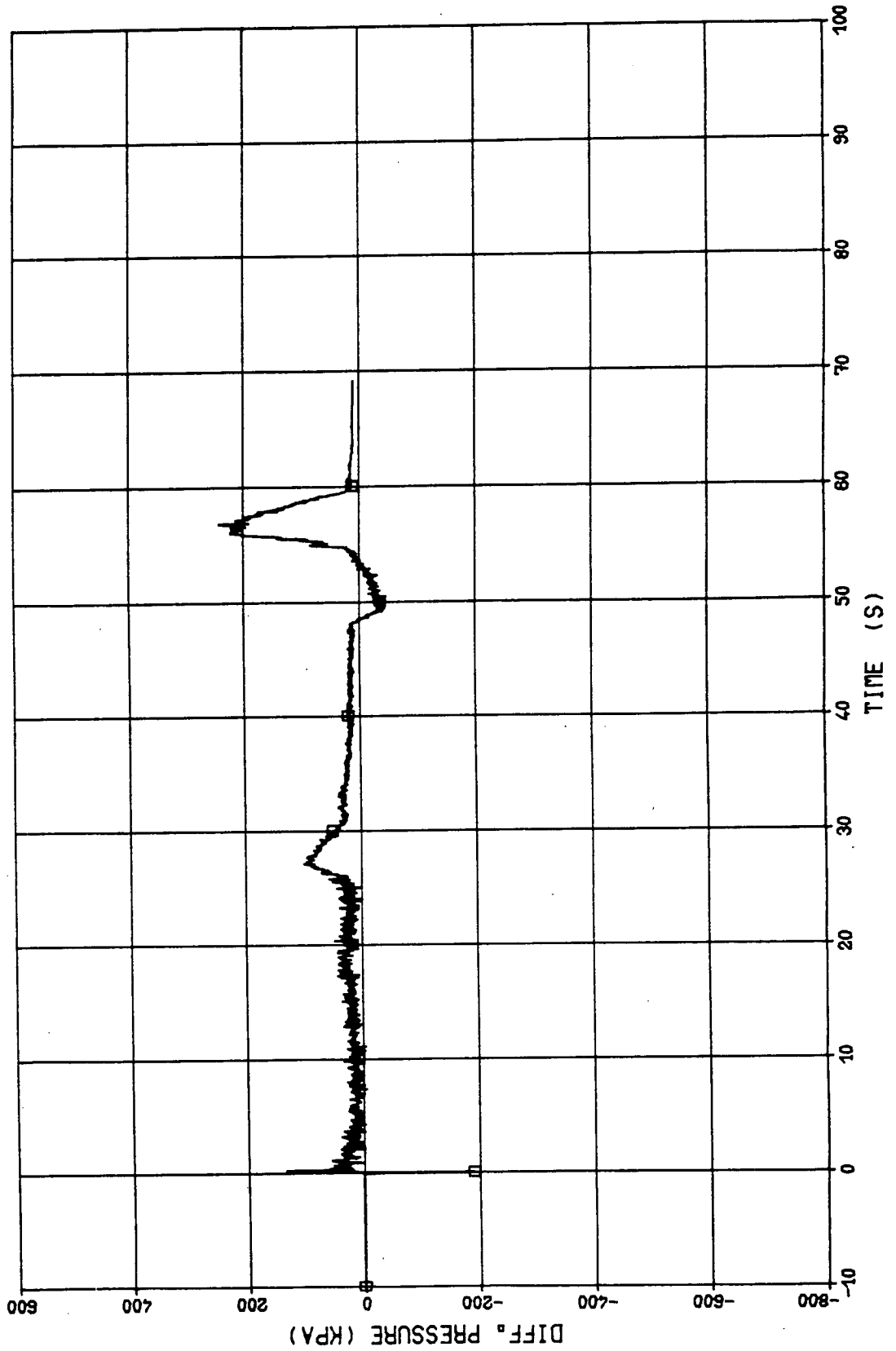
□ 004/217 P( TEST SECT ENTR) MINUS P( NEAR NZL ENTR) (AVG 40:1)



Plot M:32 Differential pressure 218 in the nozzle test section

TEST 22

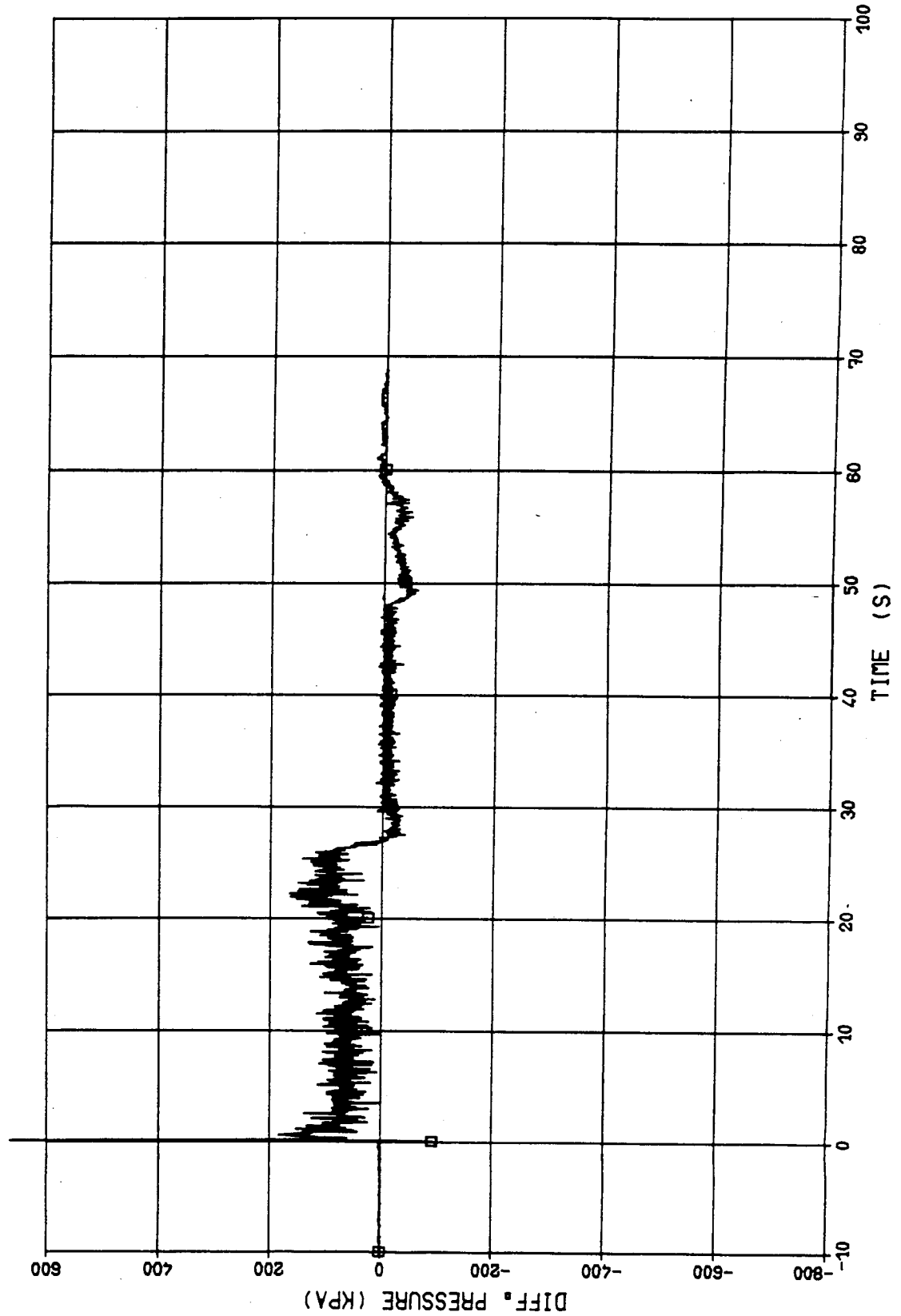
□ 0047218 P(INZL REF LUL) MINUS P( TEST SECT. ENTR.) (AUG 40:1) - Post-test value high by 10 kPa.



Plot M:33 Differential pressure 227 in the nozzle test section

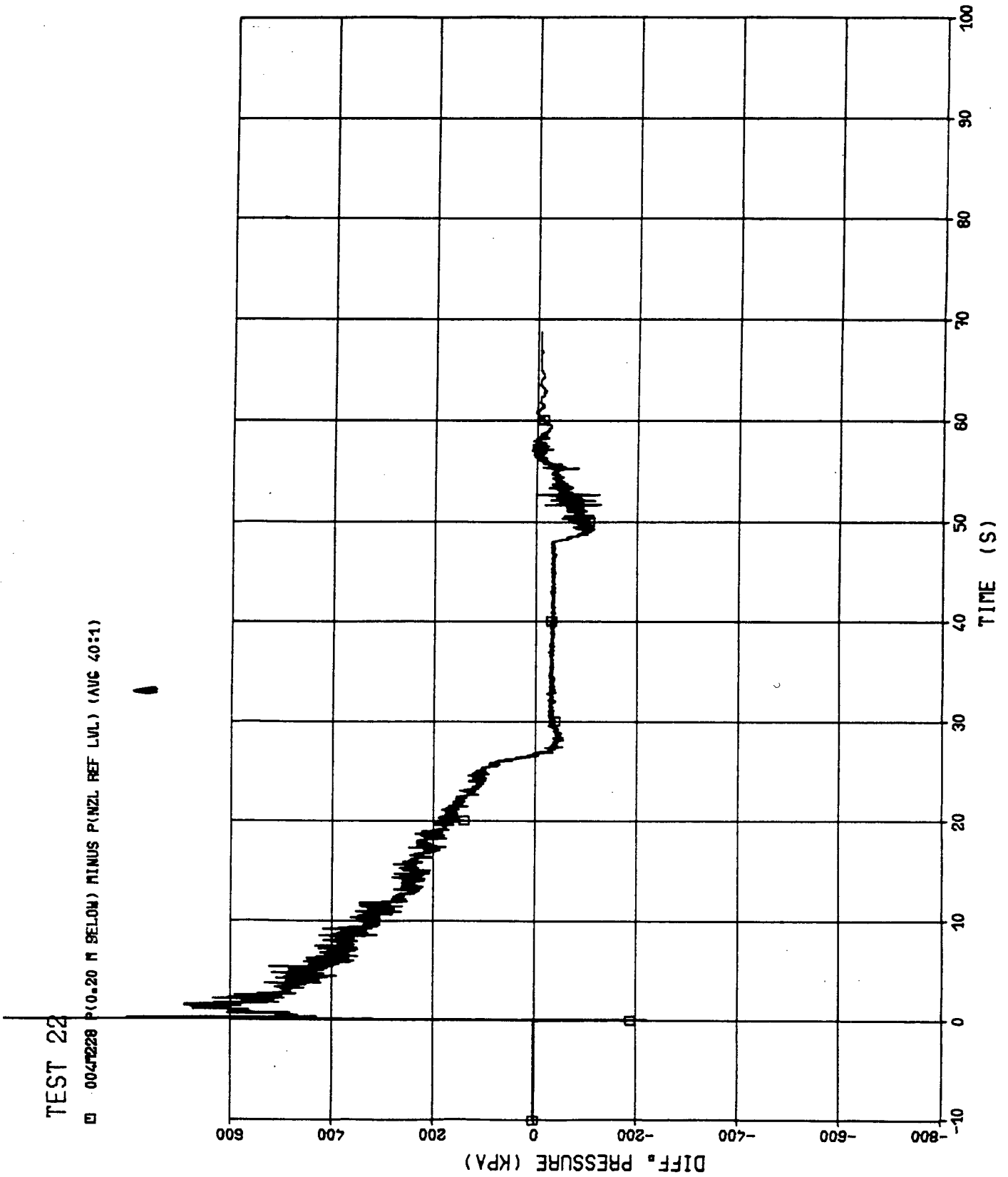
TEST 22

□ 004/227 P(0.10 m BELOW) MINUS P(NZL REF LVL) (AVG 40:1)





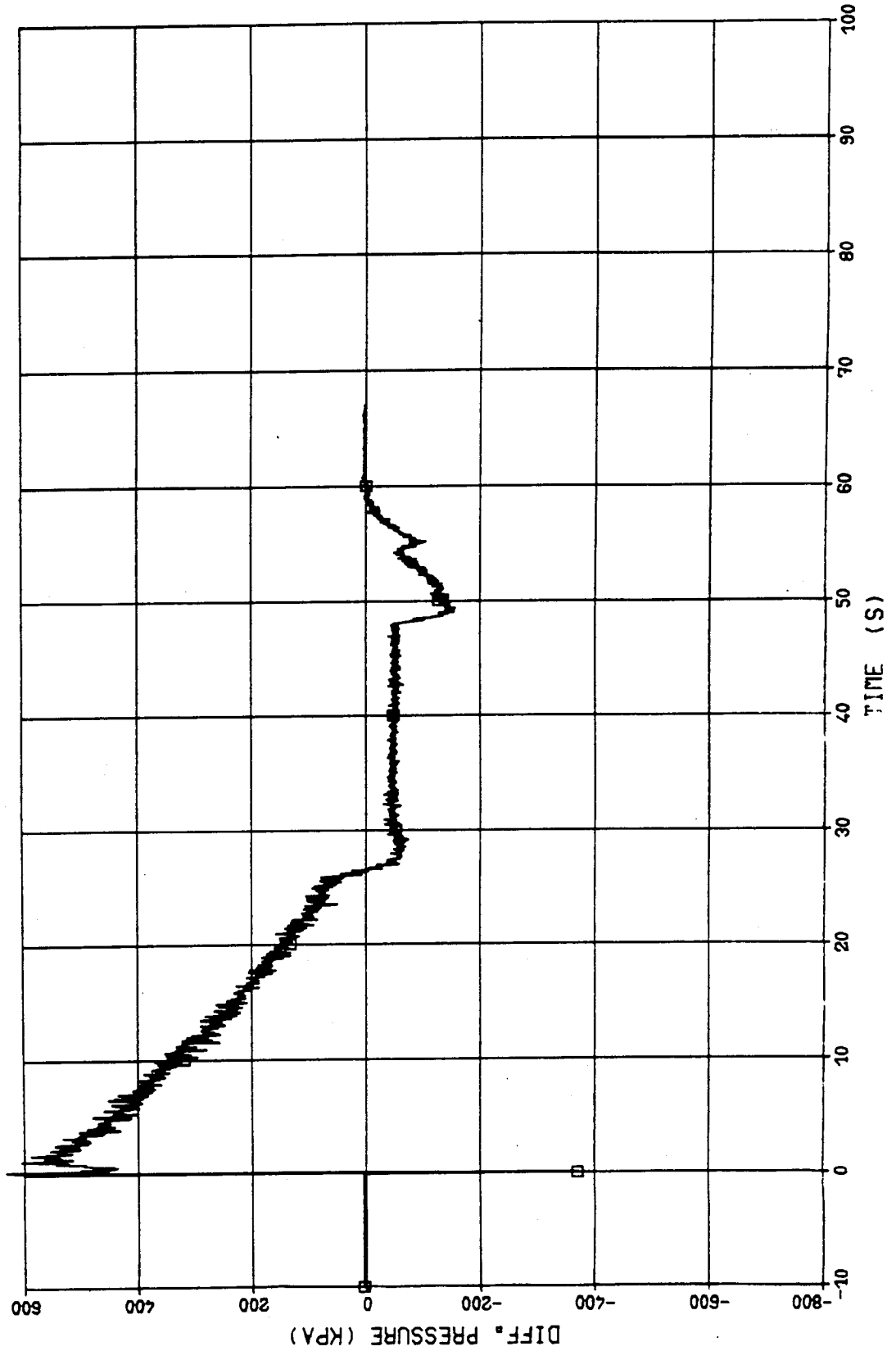
Plot M:34 Differential pressure 228 in the nozzle test section



Plot M:35 Differential pressure 229 in the nozzle test section

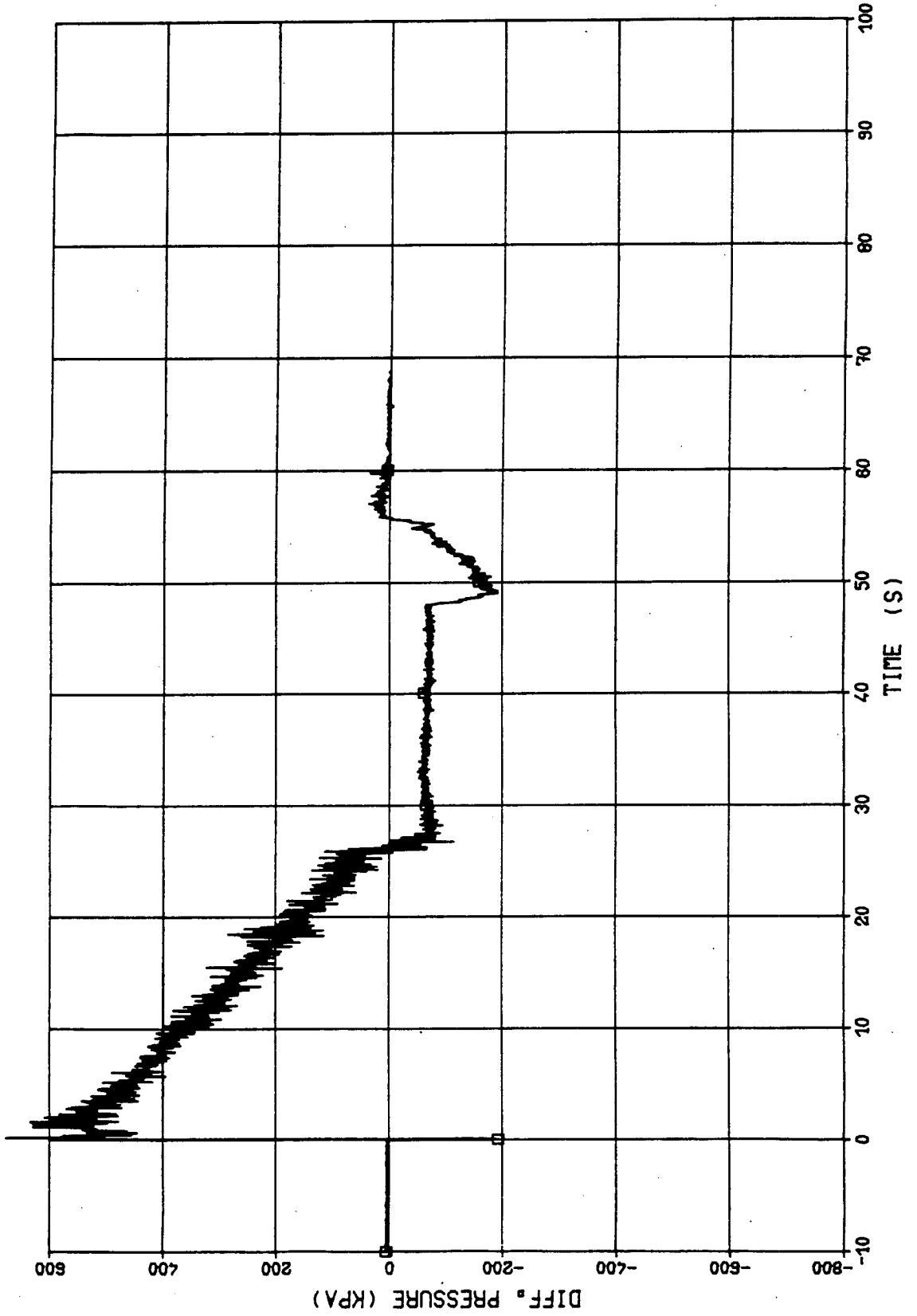
TEST 22

□ 0047229 P(0.30 IN BELOW) MINUS P(NZL REF LVL) (AVG 40:1)



Plot M:36 Differential pressure 230 in the nozzle test section

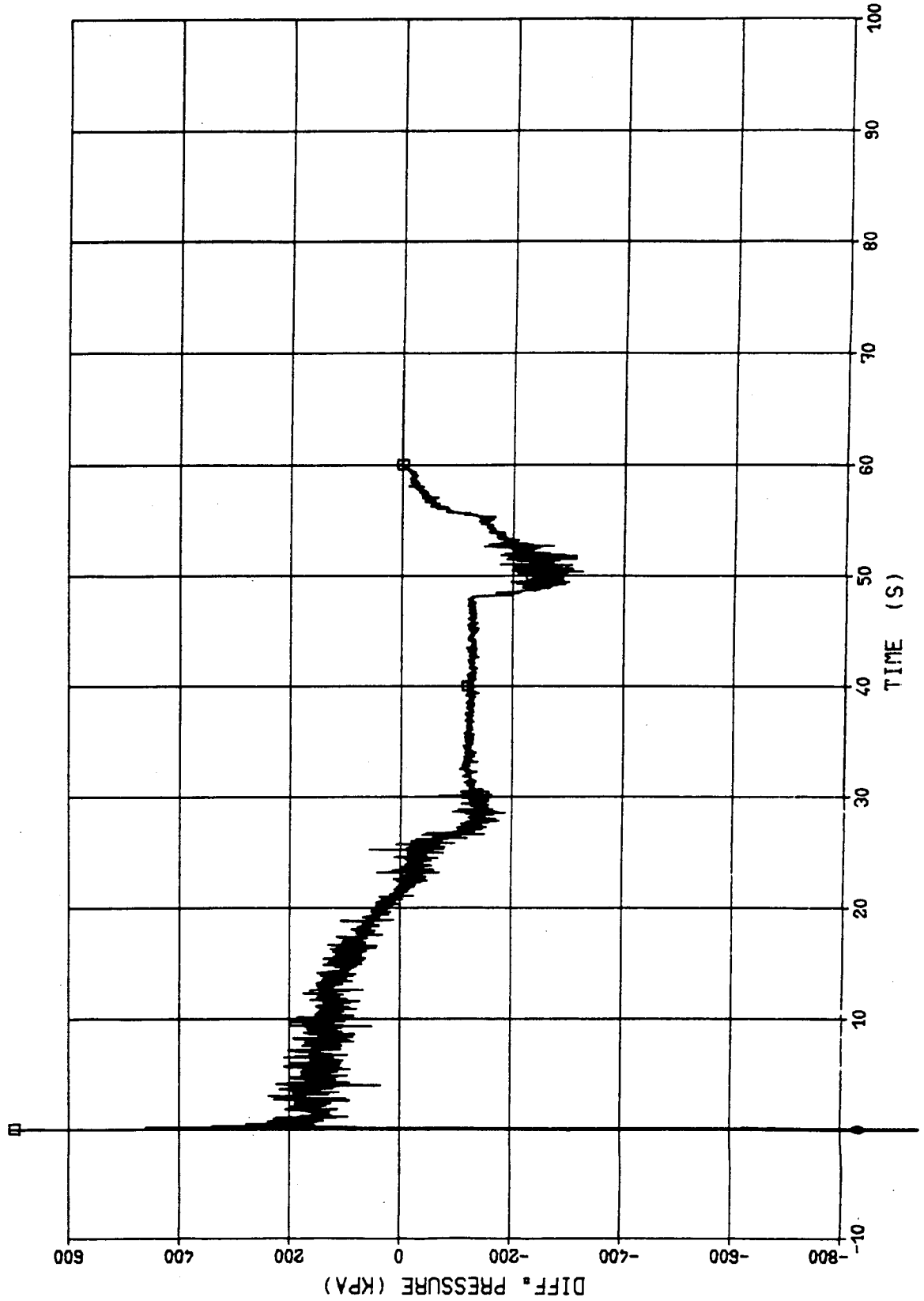
TEST 22  
□ 0047230 P10.40 IN BELOW) MINUS P(INZL REF LVL) (AVG 40:1)



Plot M:37 Differential pressure 281 in the nozzle test section

TEST 22

□ 004281 P(0.50 M BELOW) MINUS P(MZL REF LVL) (AVG 40:1)

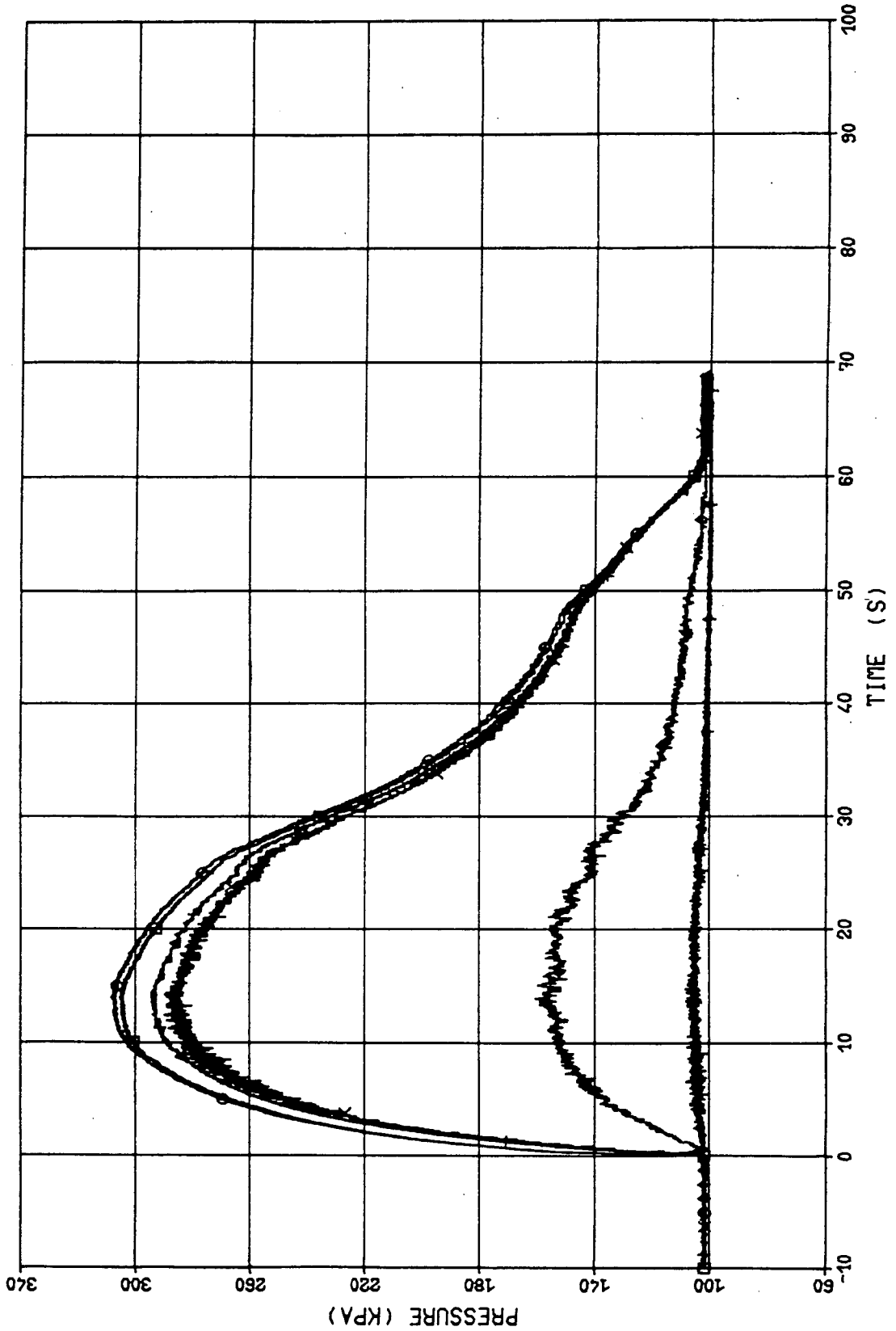


Plot M:38 Pressures 112 through 116, 119, and 120 in the containment and the exhaust tube

TEST 22

- Post-test value 1 kPa above atmospheric pressure.
- Post-test value 1 kPa above atmospheric pressure.
- Post-test value 2 kPa below atmospheric pressure.

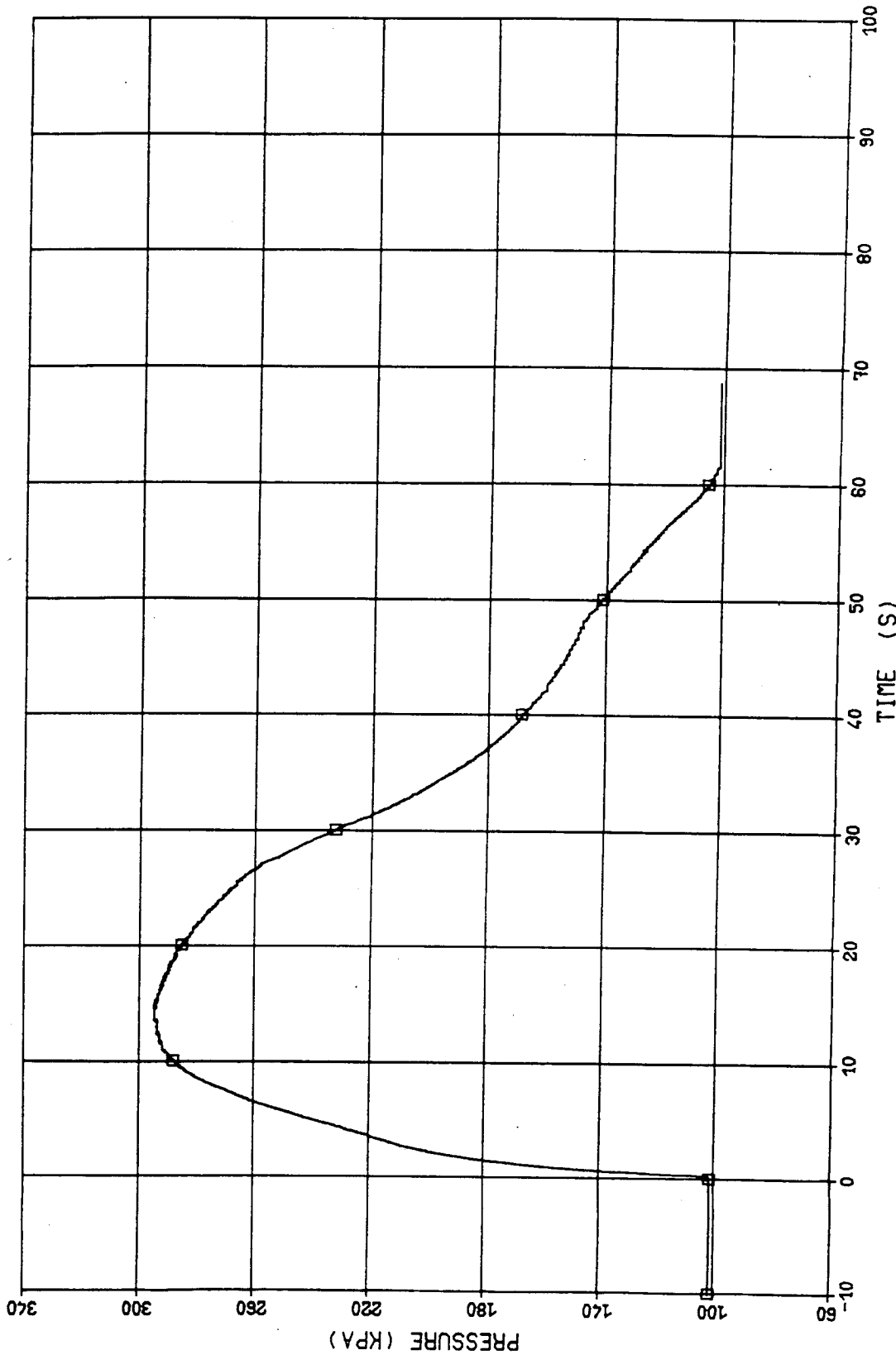
- 122M112 CONTAINMENT, ROOM 122 (AVERAGED 20:1)
- 110M113 CONTAINMENT, ROOM 110 (AVERAGED 20:1)
- △ 105M114 CONTAINMENT, ROOM 105 (AVERAGED 20:1)
- + 105M115 CONTAINMENT, ROOM 105 (AVERAGED 20:1)
- x 102M116 CONTAINMENT, ROOM 102 (AVERAGED 20:1)
- ◇ 006M119 EXHAUST TUBE ENTRANCE (AVERAGED 20:1)
- ↑ 006M120 EXHAUST TUBE EXIT (AVERAGED 20:1)



Plot M:39 Pressure 126 in the containment room 124

TEST 22

□ 124M126 CONTAINMENT ROOM 124 (AVERAGED 20:1)

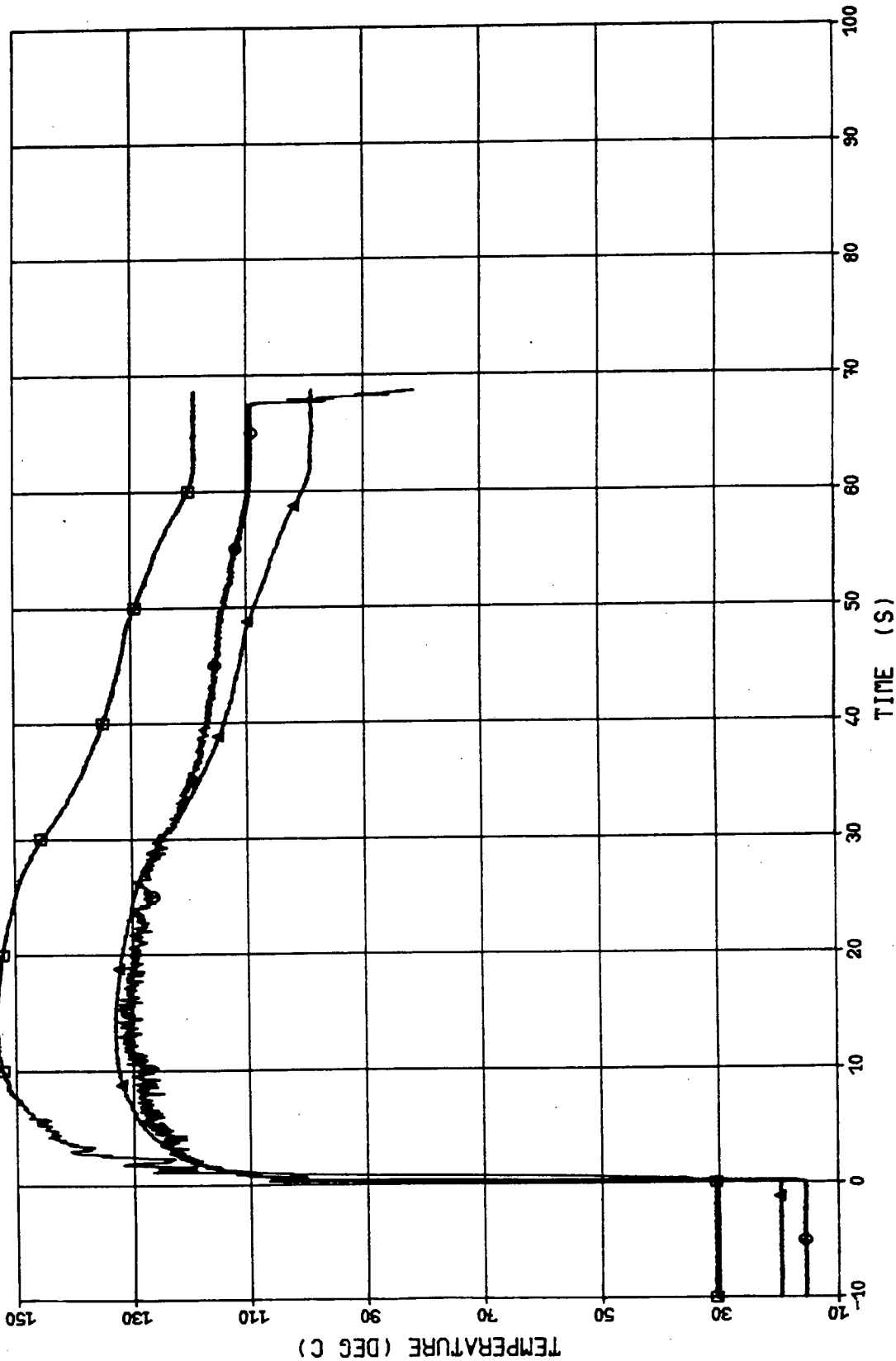


Plot M:40 Temperatures 406, 412, and 533 in containment room 112, fuel transport channel, and containment room 111, respectively

TEST 22

- 112/406 CONTAINMENT, ROOM 112 (AVERAGED 50:1)
- 102/412 TRANSPORT FUEL CHANNEL (AVERAGED 50:1)
- △ 111/533 CONTAINMENT, ROOM 111 (AVERAGED 50:1)

DISPLACED 20 DEC C  
DISPLACED 10 DEC C

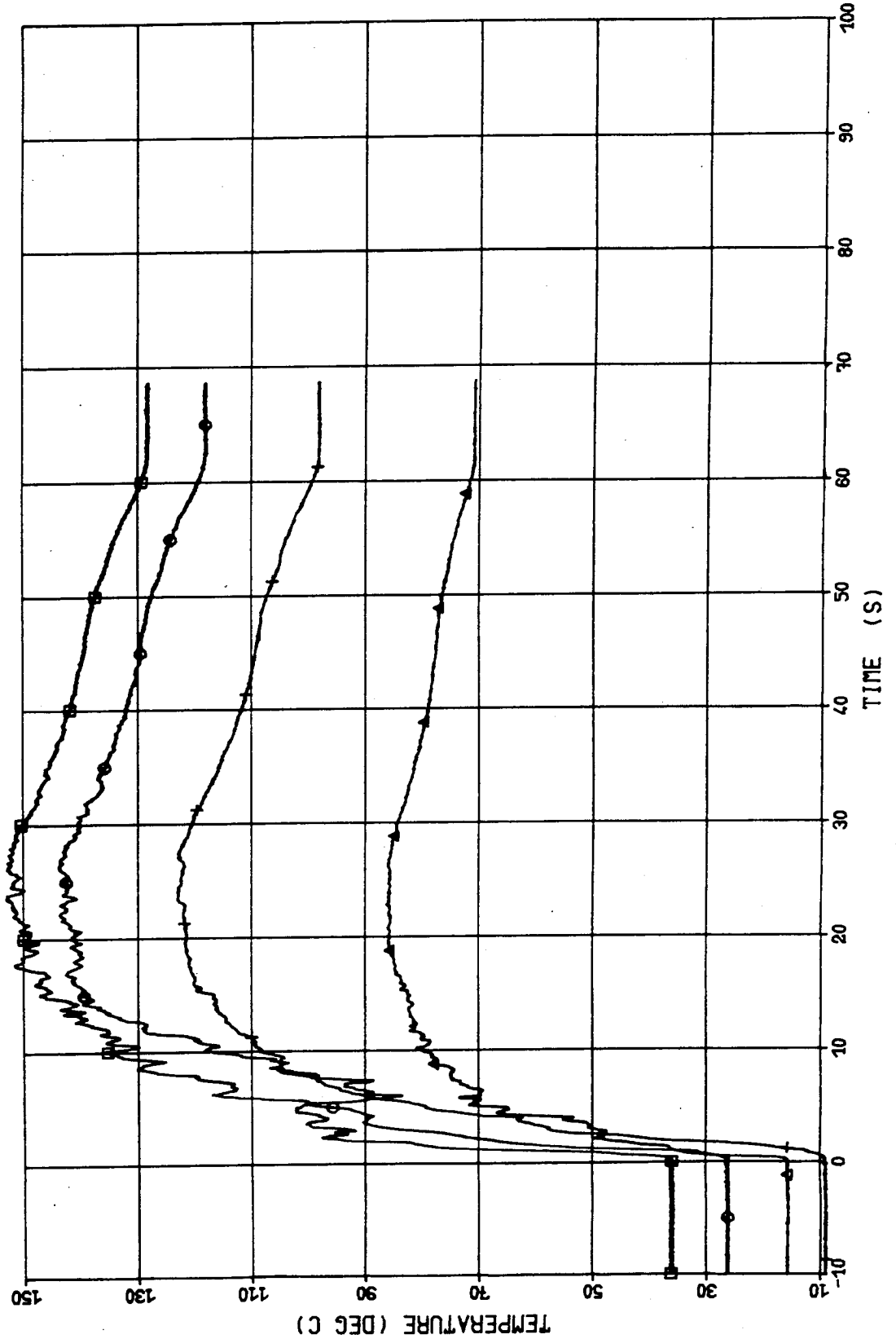


Plot M:41 Temperatures 415 through 418 in the wetwell

TEST 22

- 105% 415 WETWELL, 1.90 M ABOVE FLOOR (AVERAGED 50:1)
- 105% 416 WETWELL, 4.88 M ABOVE FLOOR (AVERAGED 50:1)
- △ 105% 417 WETWELL, 11.00 M ABOVE FLOOR (AVERAGED 50:1)
- + 105% 418 WETWELL, 19.00 M ABOVE FLOOR (AVERAGED 50:1)

- DISPLACED 30 DEG C
- DISPLACED 20 DEG C
- DISPLACED 10 DEG C

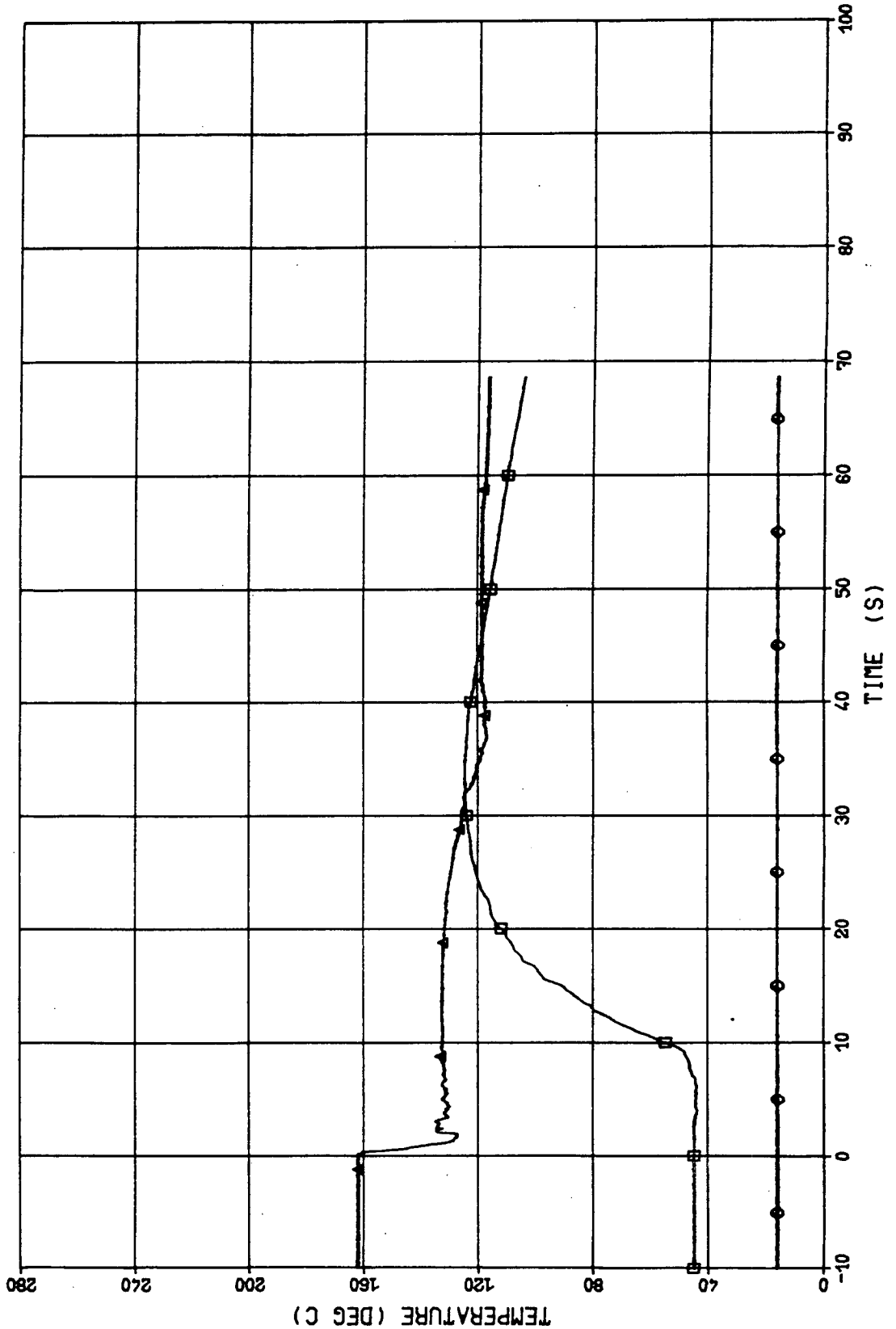




Plot M:42 Temperatures 422, 423, and 425 on sense lines outside the vessel

TEST 22

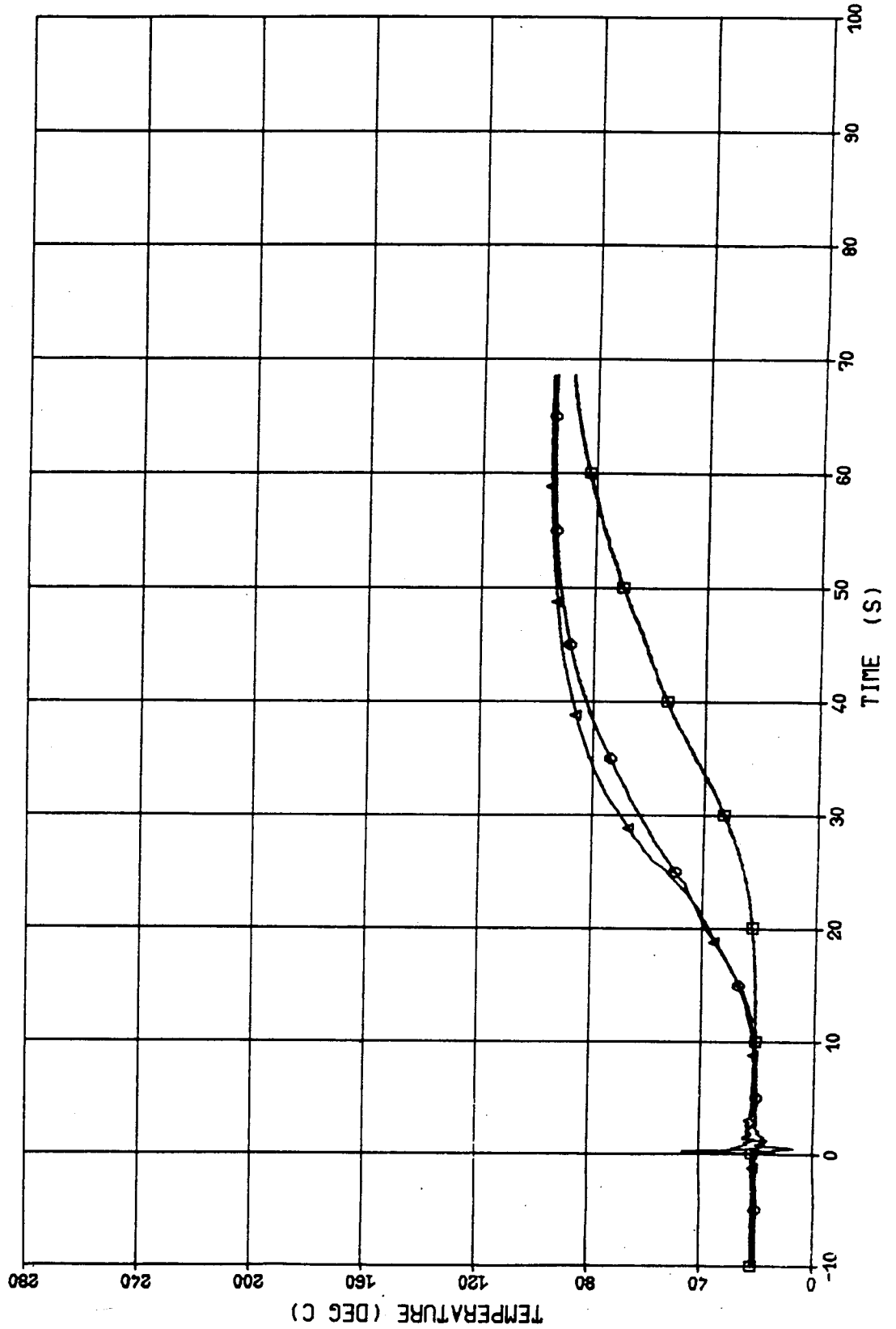
- 00717422 DP LEAD TUBE, ROOM 124 (AVERAGED 50:1)
- 00717423 DP LEAD TUBE, OUTSIDE CONTAINMENT (AVERAGED 50:1)
- △ 00717425 DP LEAD TUBE, ROOM 123 (AVERAGED 50:1)



Plot M:43 Temperatures 444, 445, and 446 in vessel DP probe II

TEST 22

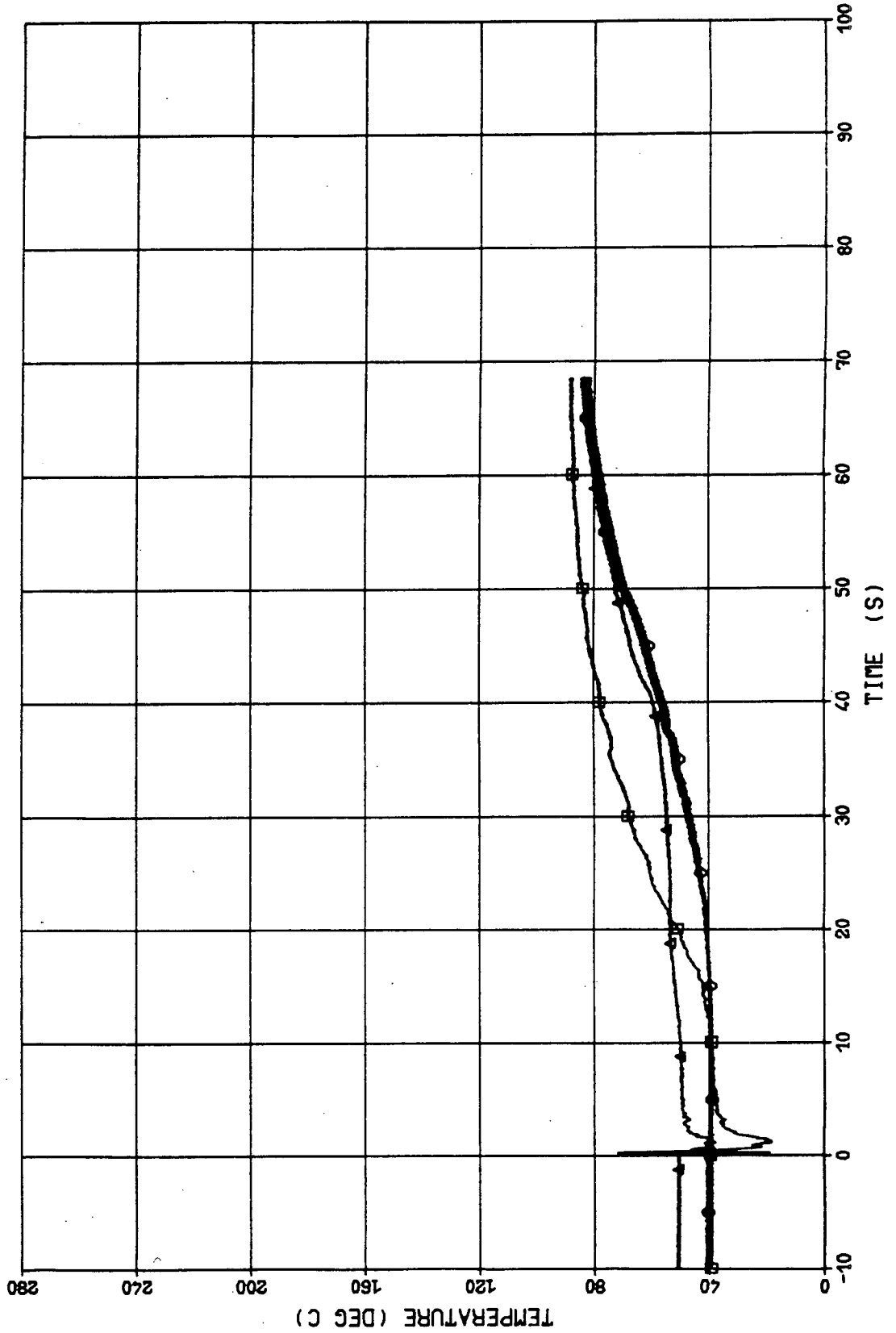
- 0077444 INSIDE DP PROBE LEVEL 5.94 IN (AVERAGED 50:1)
- 0077445 INSIDE DP PROBE LEVEL 4.00 IN (AVERAGED 50:1)
- △ 0077446 INSIDE DP PROBE LEVEL 2.05 IN (AVERAGED 50:1)



Plot M:44 Temperatures 450, 451, and 452 in vessel DP probe III

TEST 22

- 0077450 INSIDE DP PROBE LEVEL 16.45 H (AVERAGED 50:1)
- 0077451 INSIDE DP PROBE LEVEL 16.46 H (AVERAGED 50:1)
- △ 0077452 INSIDE DP PROBE LEVEL 12.46 H (AVERAGED 50:1)



## LIST OF E-DATA PLOTS

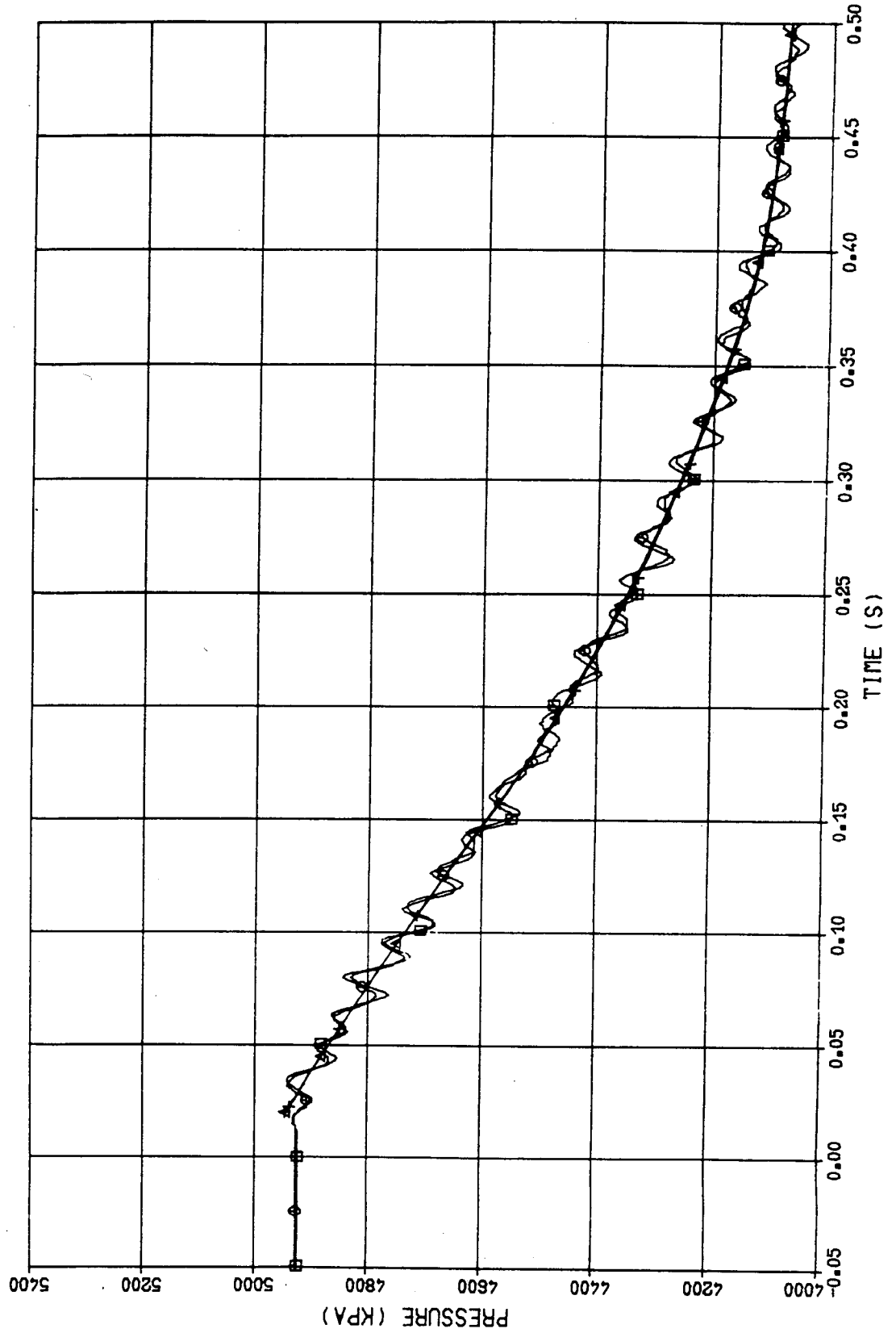
- Plot E:1 Comparison of measured and curve-fitted histories of vessel pressures 101 and 103
- E:2 Depressurization rates from vessel pressures 101 and 103
- E:3 Mass flow rates calculated from rates of depressurization of vessel pressures 101 and 103
- E:4 Nozzle mass fluxes calculated from rates of depressurization of vessel pressures 101 and 103
- E:5 Collapsed liquid level in the vessel from vessel differential pressures 201 and 202 + 203
- E:6 Mass between various elevations in the vessel from vessel differential pressures 201 through 204
- E:7 Mass flow rates from vessel differential pressures 201 and 202 + 203
- E:8 Nozzle mass fluxes from vessel differential pressures 201 and 202 + 203
- E:9 Densities in the vessel evaluated from differential pressures 250 through 253, and 204
- E:10 Densities at the vessel bottom and in the discharge pipe evaluated from differential pressures 244 through 246 and stagnation densities derived from the gamma densitometer
- E:11 Density from the gamma densitometer in the discharge pipe
- E:12 Comparison between densities in the discharge pipe from a combination of differential pressures 246 and 205 assuming adiabatic expansion, and the gamma densitometer
- E:13 Velocities from pitot-static measurements 256 through 259
- E:14 Velocities from pitot-static measurements 260 through 262
- E:15 Velocities from pitot-static measurements 263 through 265
- E:16 Mean velocity at instrumentation ring II
- E:17 Mass flow rate from pitot-static measurements (t = -10 to 100 s)
- E:18 Nozzle mass flux from pitot-static measurements (t = -10 to 100 s)
- E:19 Mass flow rate from pitot-static measurements (t = -0.1 to 1 s)
- E:20 Nozzle mass flux from pitot-static measurements (t = -0.1 to 1 s)
- E:21 Escaped mass evaluated using flow rates from the pitot-static measurements

- E:22 Pressures 106 at the vessel bottom and pressures along the nozzle evaluated from differential pressures 217 and 218
- E:23 Pressures along the nozzle evaluated from differential pressures 227 through 230, and 281
- E:24 Pressures 121, and 123 through 125 along the nozzle

Plot E:1 Comparison of measured and curve-fitted histories of vessel pressures 101 and 103

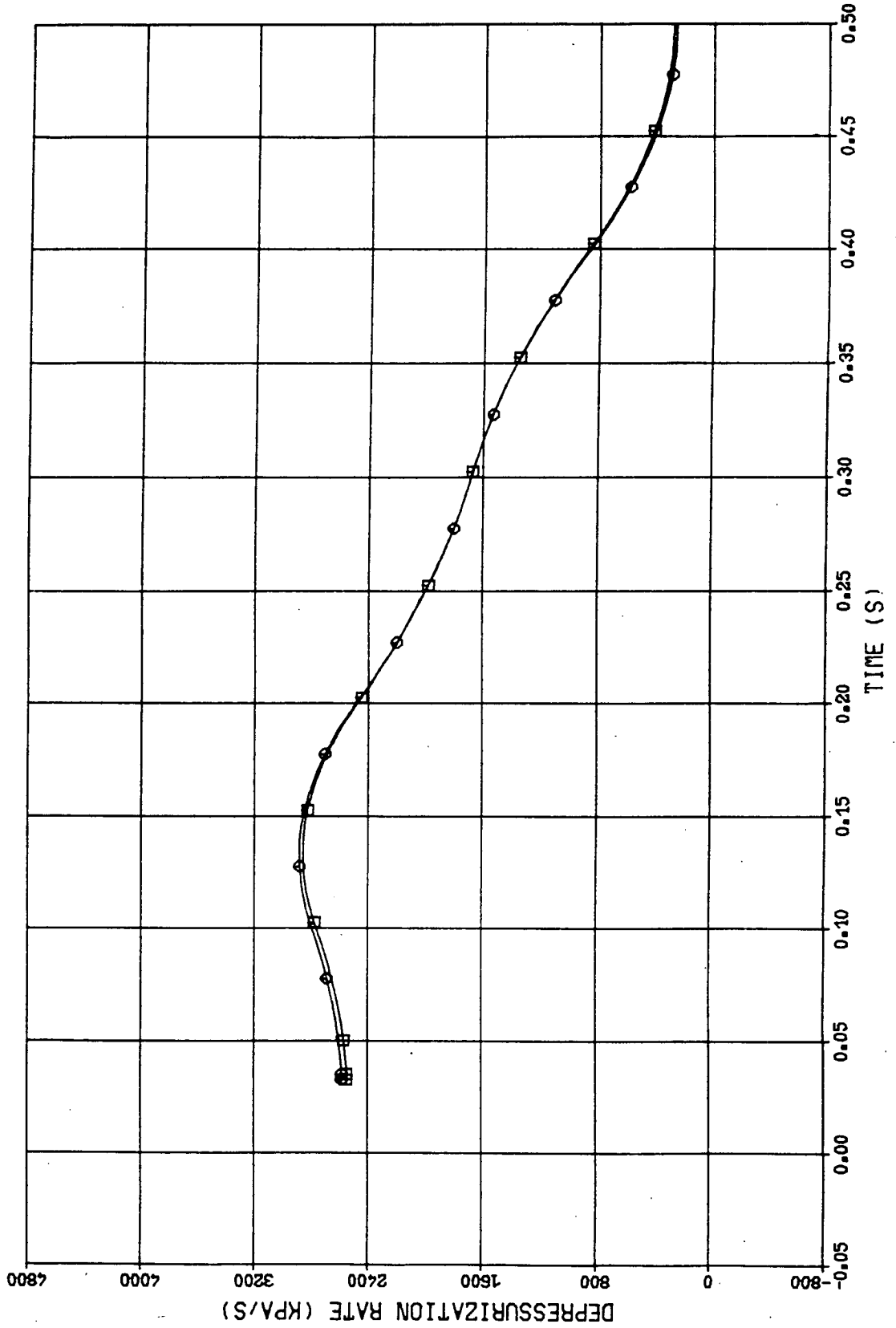
TEST 22

- 001M101 23.13 m ELEVATION
- 001M103 23.13 m ELEVATION
- △ 001M101 VESSEL PRESSURE (SPLINED 4)
- + 001M103 VESSEL PRESSURE (SPLINED 4)



Plot E:2 Depressurization rates from vessel pressures 101 and 103

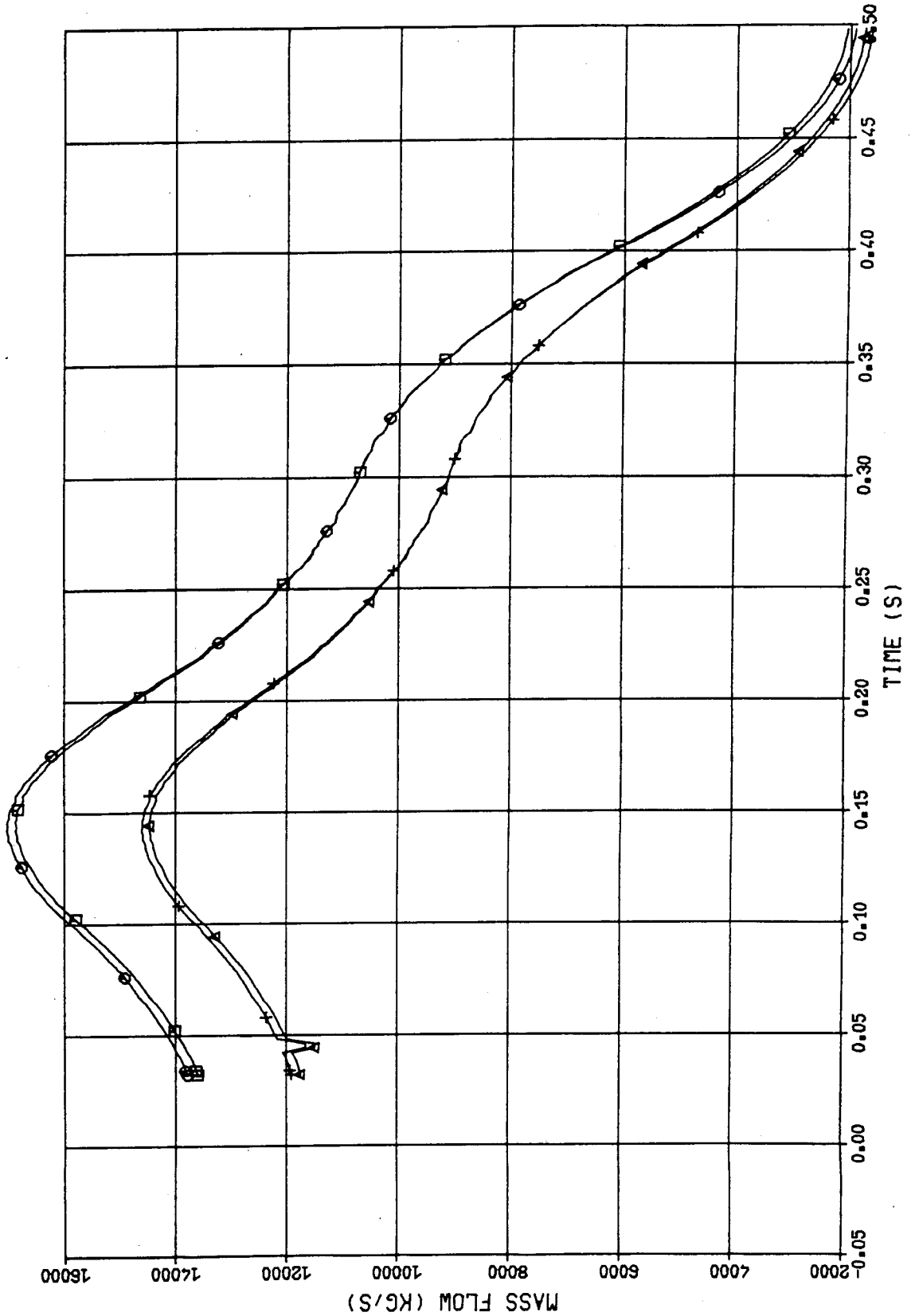
TEST 22  
□ 001T101 VESSEL DEPRESSURIZATION RATE  
○ 001T103 VESSEL DEPRESSURIZATION RATE



Plot E:3 Mass flow rates calculated from rates of depressurization of vessel pressures 101 and 103

TEST 22

- MASS FLOW RATE FROM CHANNEL 101 (EQUILIBRIUM)
- MASS FLOW RATE FROM CHANNEL 103 (EQUILIBRIUM)
- △ MASS FLOW RATE FROM CHANNEL 101 (NO CONDENSATION)
- + MASS FLOW RATE FROM CHANNEL 103 (NO CONDENSATION)

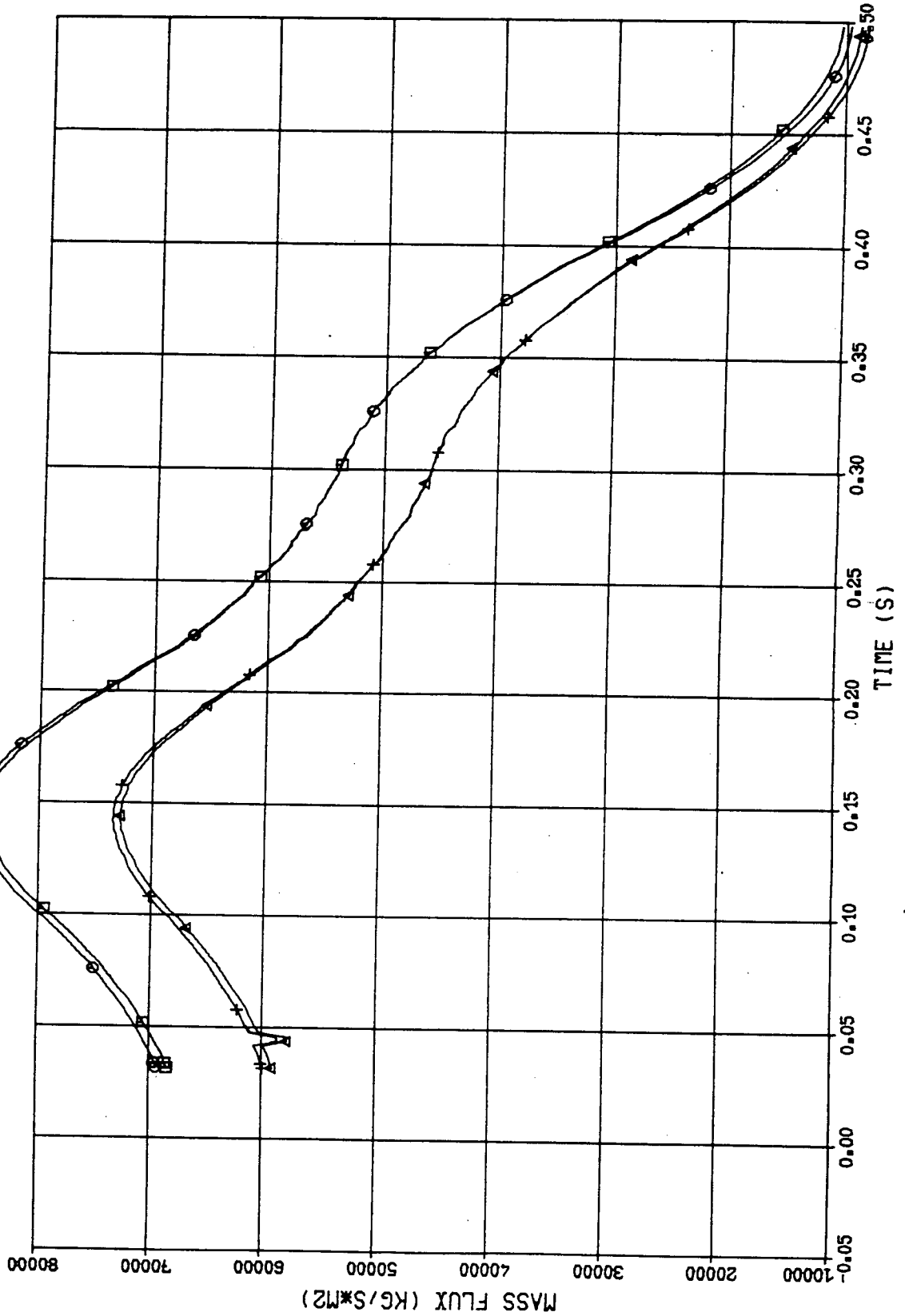




Plot E:4 Nozzle mass fluxes calculated from rates of depressurization of vessel pressures 101 and 103

TEST 22

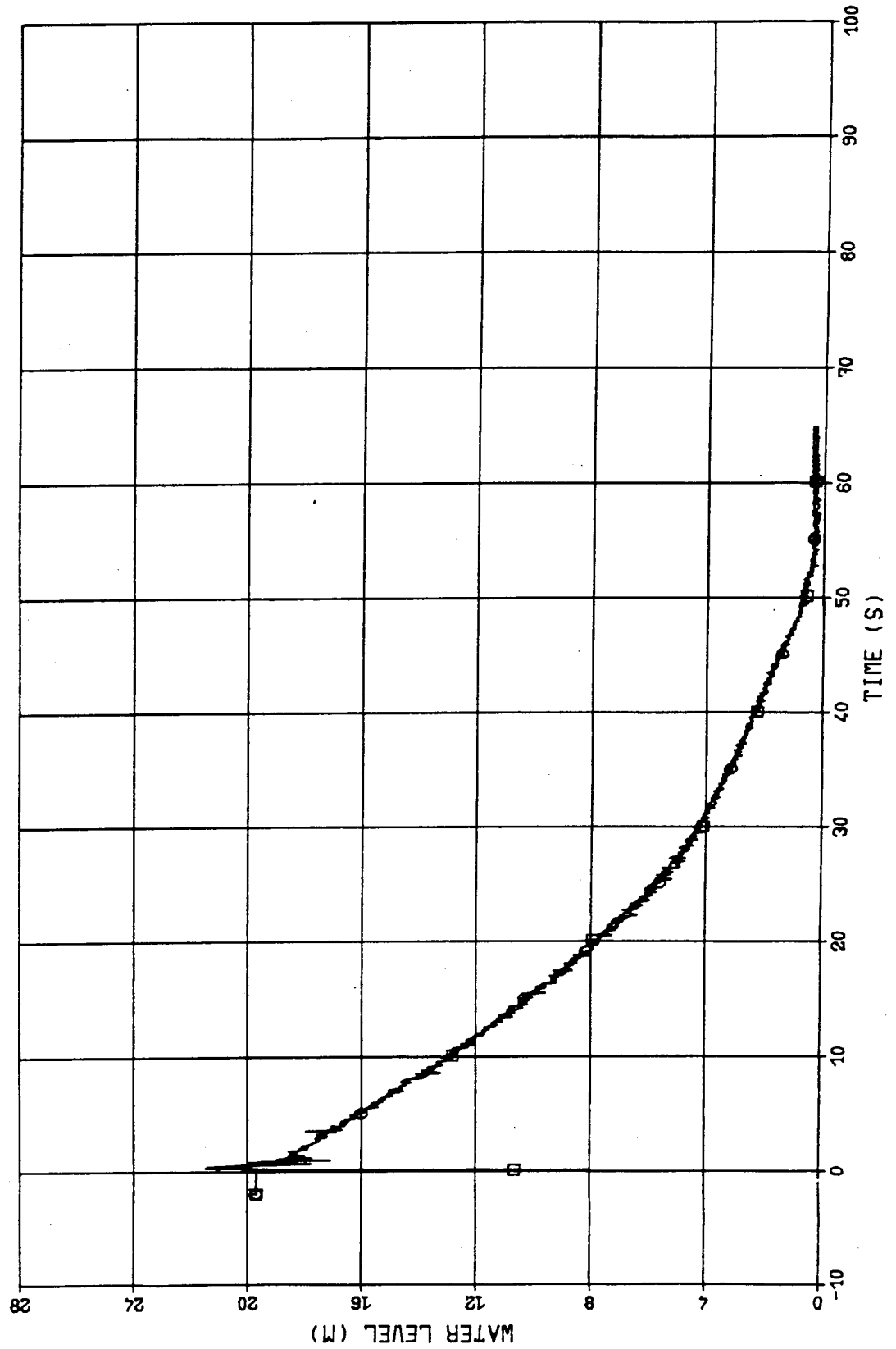
- NOZZLE MASS FLUX FROM CHANNEL 101 (EQUILIBRIUM)
- NOZZLE MASS FLUX FROM CHANNEL 103 (EQUILIBRIUM)
- △ NOZZLE MASS FLUX FROM CHANNEL 101 (NO CONDENSATION)
- + NOZZLE MASS FLUX FROM CHANNEL 103 (NO CONDENSATION)



Plot E:5 Collapsed liquid level in the vessel from vessel differential pressures 201 and 202 + 203

TEST 22

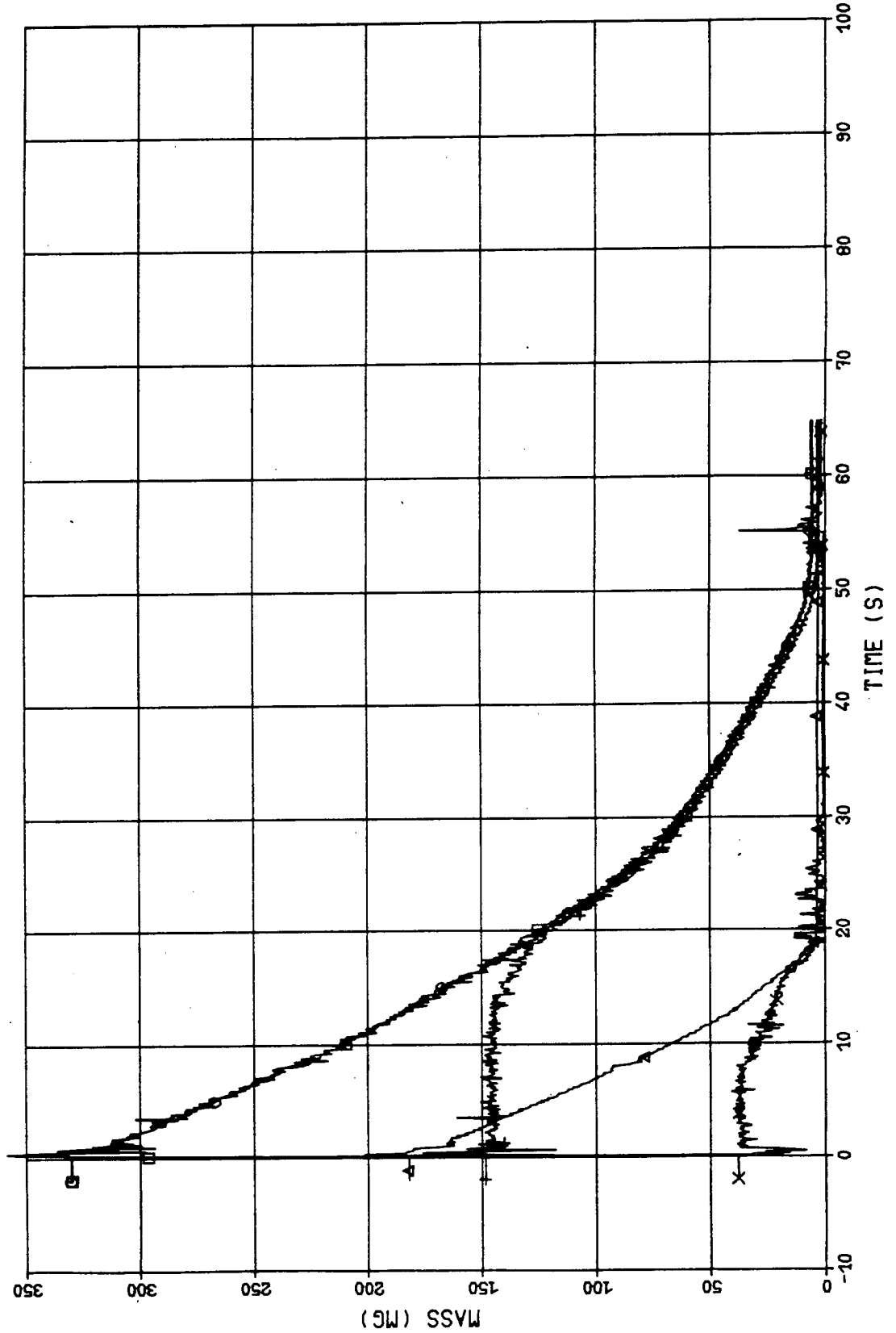
□ WATER LEVEL 23.13 - 0.00 M ELEVATION (P201)  
 ○ WATER LEVEL 23.13 - 0.00 M ELEVATION (P202+P203)



Plot E:6 Mass between various elevations in the vessel from vessel differential pressures 201 through 204

TEST 22

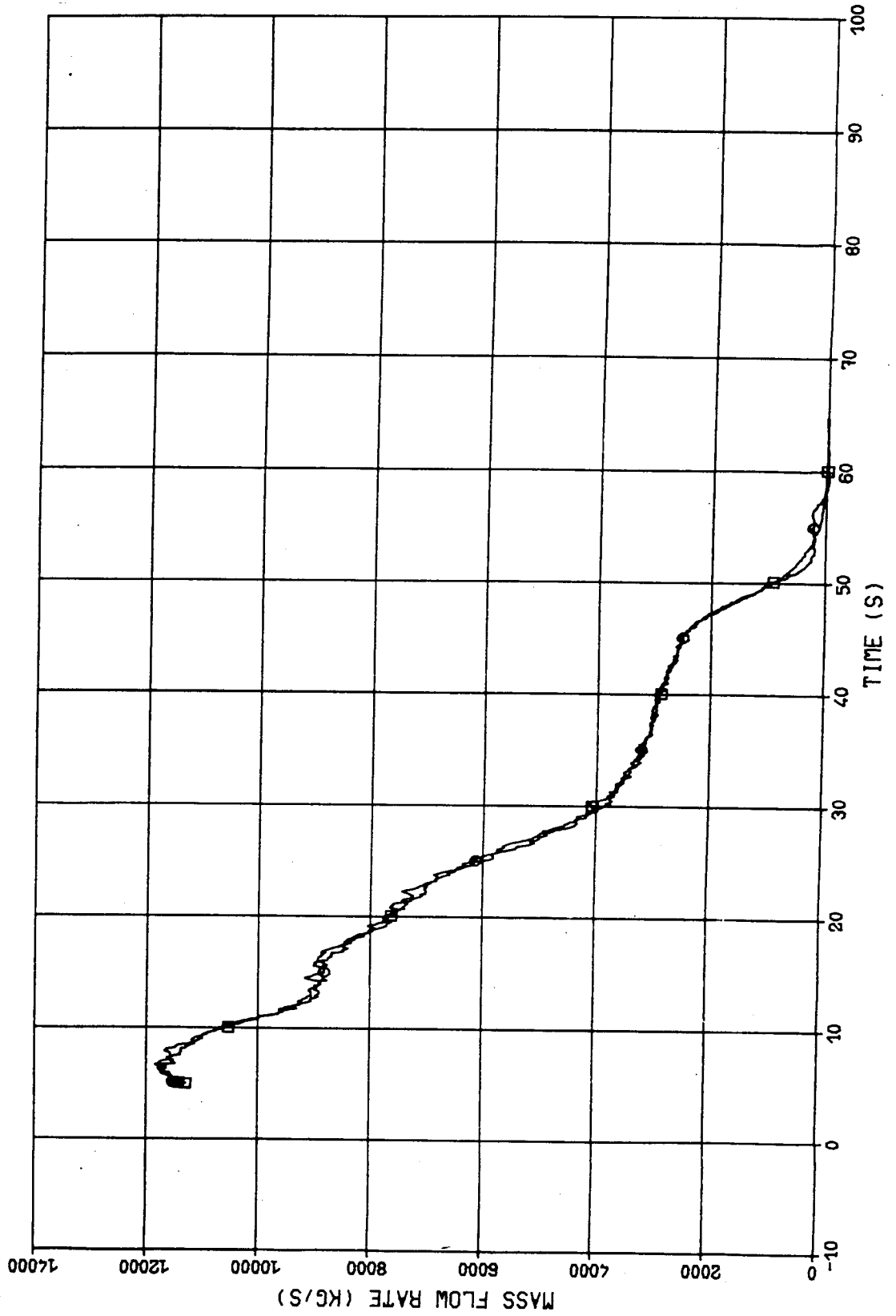
- VESSEL MASS 23.13 - 0.00 M ELEVATION (M201)
- VESSEL MASS 23.13 - 0.00 M ELEVATION (M202+M203)
- △ VESSEL MASS 23.13 - 9.28 M ELEVATION (M202)
- + VESSEL MASS 9.28 - 0.00 M ELEVATION (M203)
- x VESSEL MASS 11.63 - 9.23 M ELEVATION (M204)



Plot E:7 Mass flow rates from vessel differential pressures 201 and 202 + 203

TEST 22

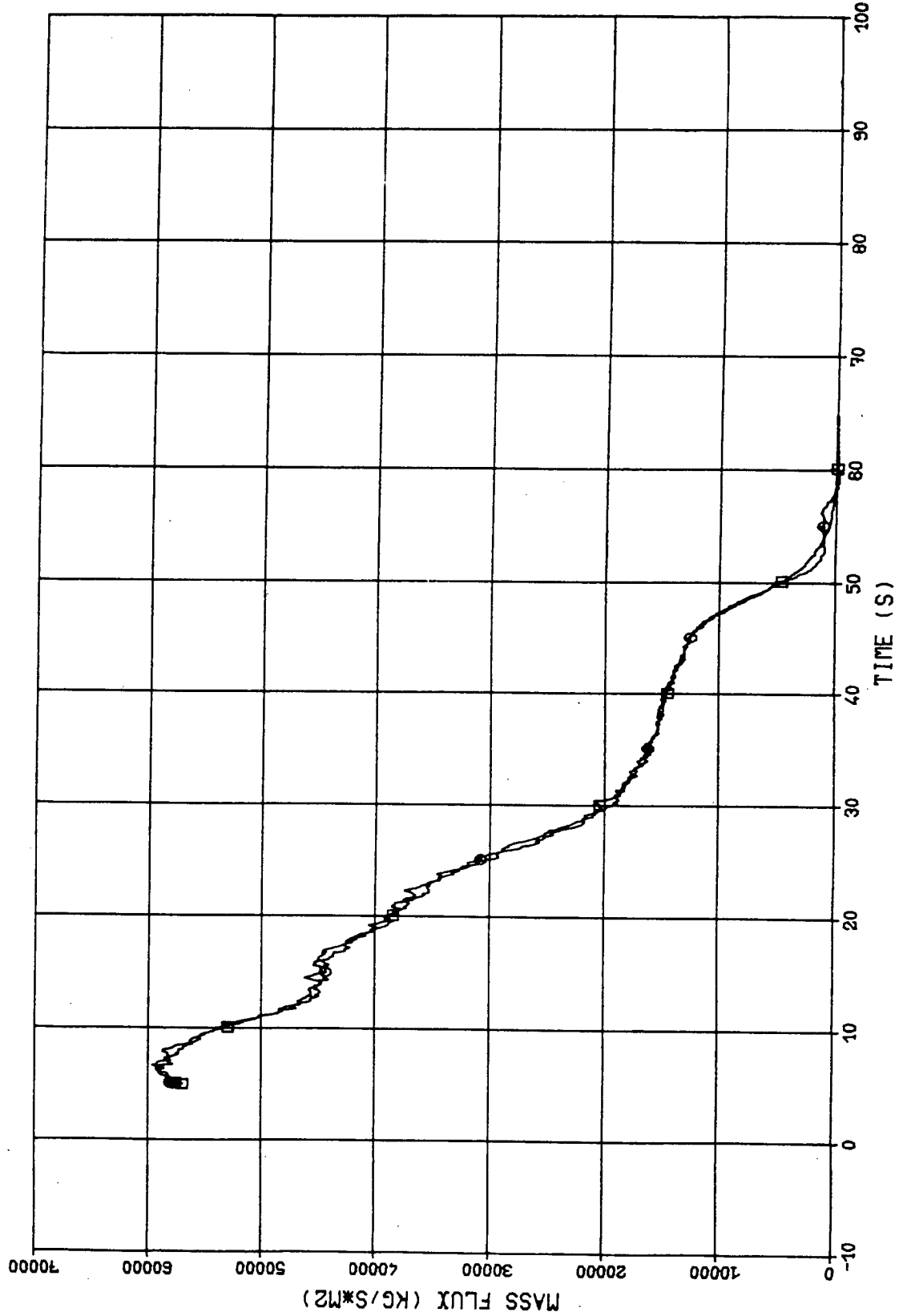
□ MASS FLOW (P201)  
○ MASS FLOW (P202+P203)



Plot E:8 Nozzle mass fluxes from vessel differential pressures 201 and 202 + 203

TEST 22

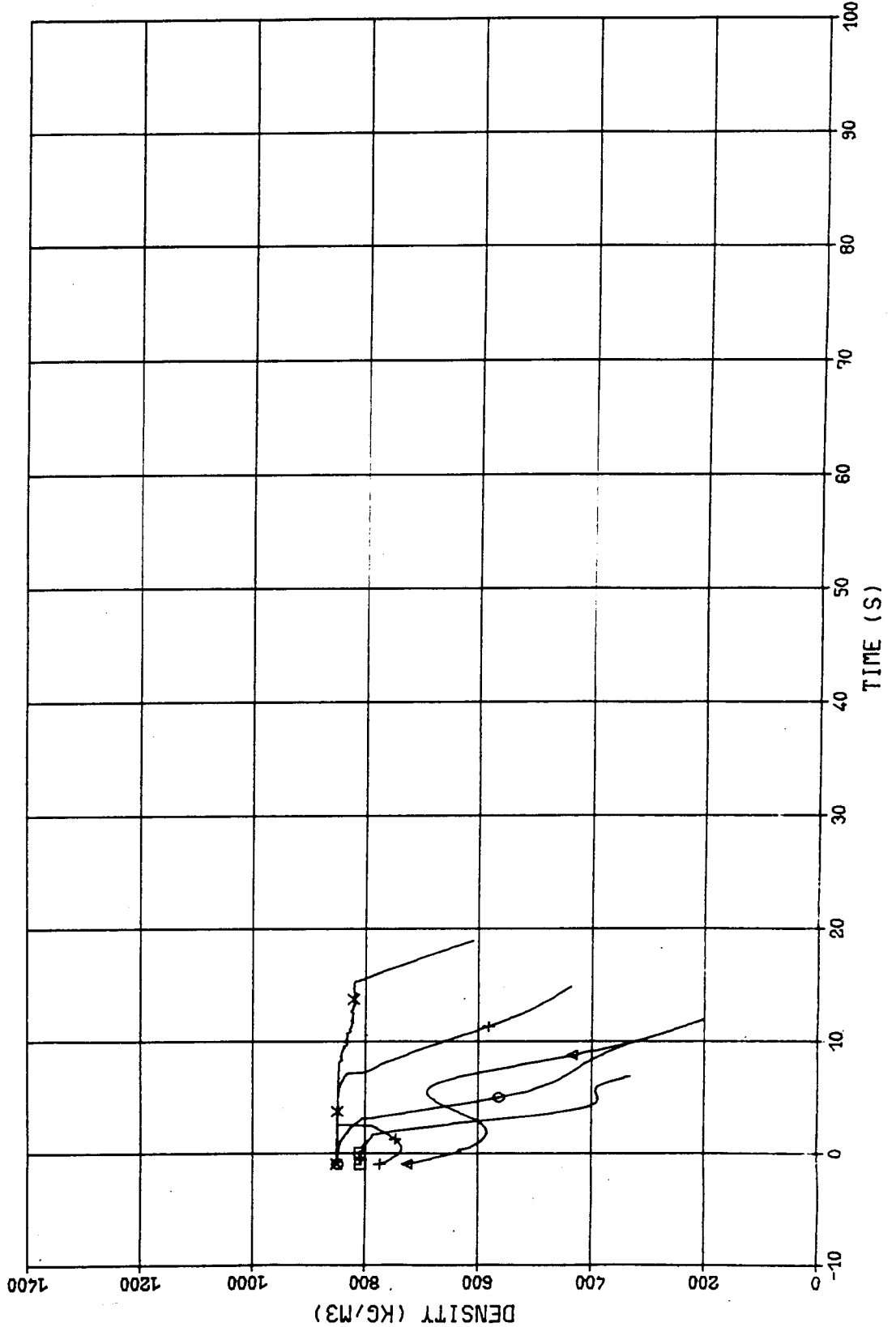
□ NOZZLE MASS FLUX (P201)  
◇ NOZZLE MASS FLUX (P202+P203)



Plot E:9 Densities in the vessel evaluated from differential pressures 250 through 253, and 204

TEST 22

- DENSITY BASED ON SPLINED DATA FROM DP 0071250
- DENSITY BASED ON SPLINED DATA FROM DP 0071251
- △ DENSITY BASED ON SPLINED DATA FROM DP 0071252
- + DENSITY BASED ON SPLINED DATA FROM DP 0011204
- x DENSITY BASED ON SPLINED DATA FROM DP 0071253

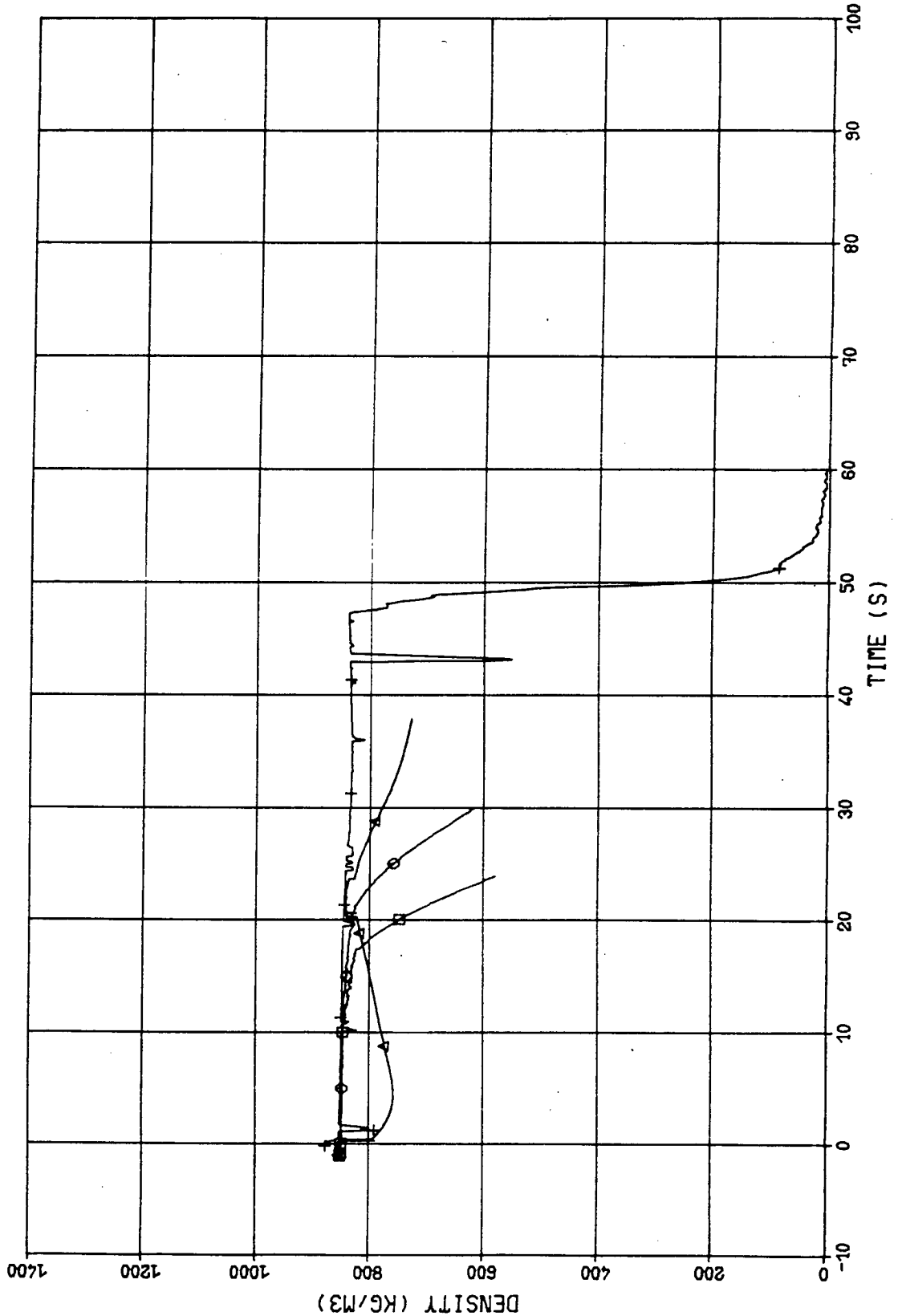


Plot E:10 Densities at the vessel bottom and in the discharge pipe evaluated from differential pressures 244 through 246 and stagnation densities derived from the gamma densitometer

TEST 22

- DENSITY BASED ON SPLINED DATA FROM DP 007M244
- DENSITY BASED ON SPLINED DATA FROM DP 007M245
- △ DENSITY BASED ON SPLINED DATA FROM DP 007M246
- + DENSITY AT VESSEL BOTTOM FROM GAMMA-D

NOTE: The evaluated densities from gamma densitometer higher than liquid densities were set equal to liquid densities. Only 003M601 used for density.

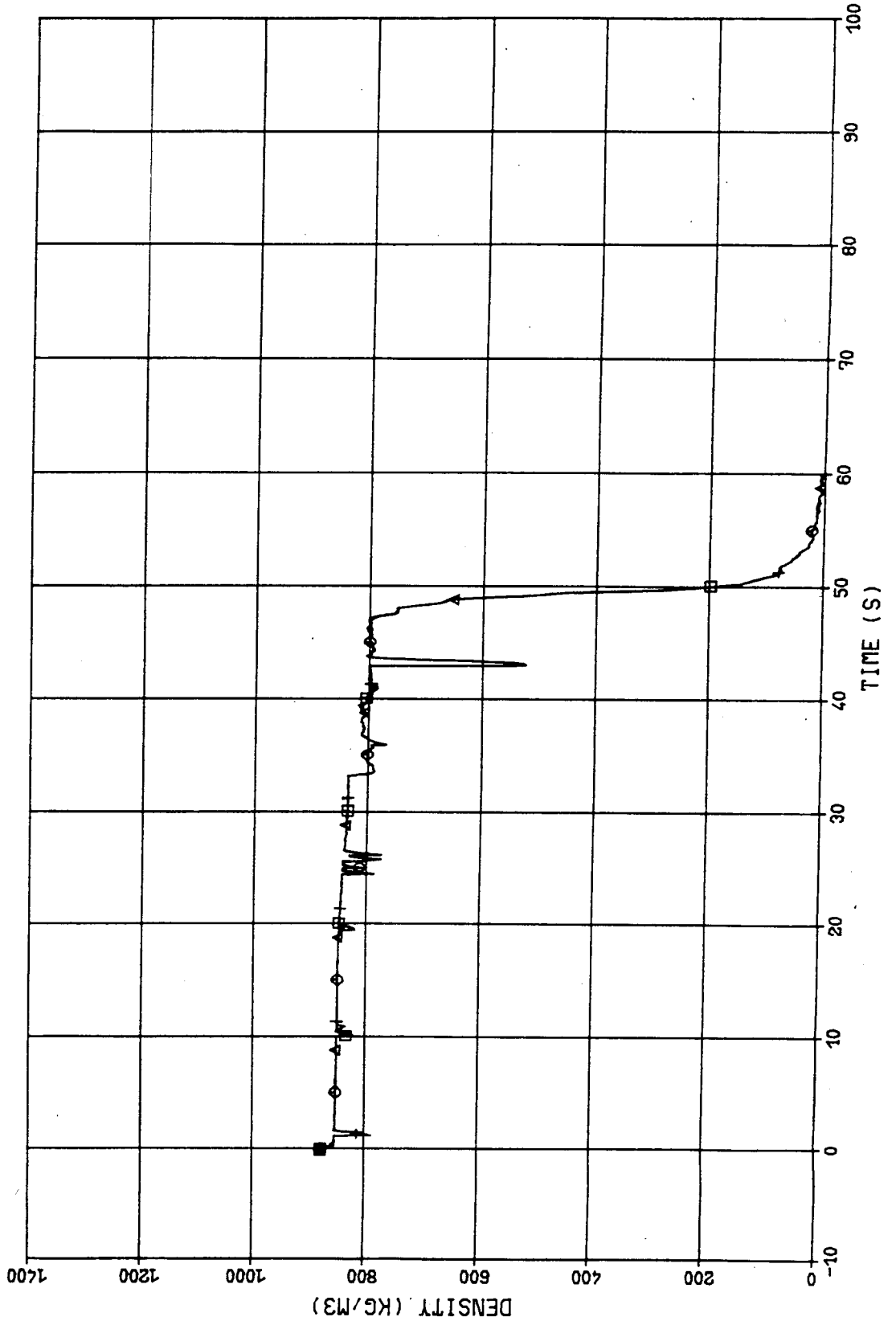


Plot E:11 Density from the gamma densitometer in the discharge pipe

TEST 22

- DENSITY BETWEEN RADII 0 AND 170MM
- DENSITY BETWEEN RADII 170 AND 308MM
- △ DENSITY BETWEEN RADII 308 AND 376MM
- + AVERAGE DENSITY FROM GAMMA DENSITOMETER

NOTE: The evaluated densities higher than liquid densities were set equal to liquid densities.  
 Only 601 was used in the evaluation.





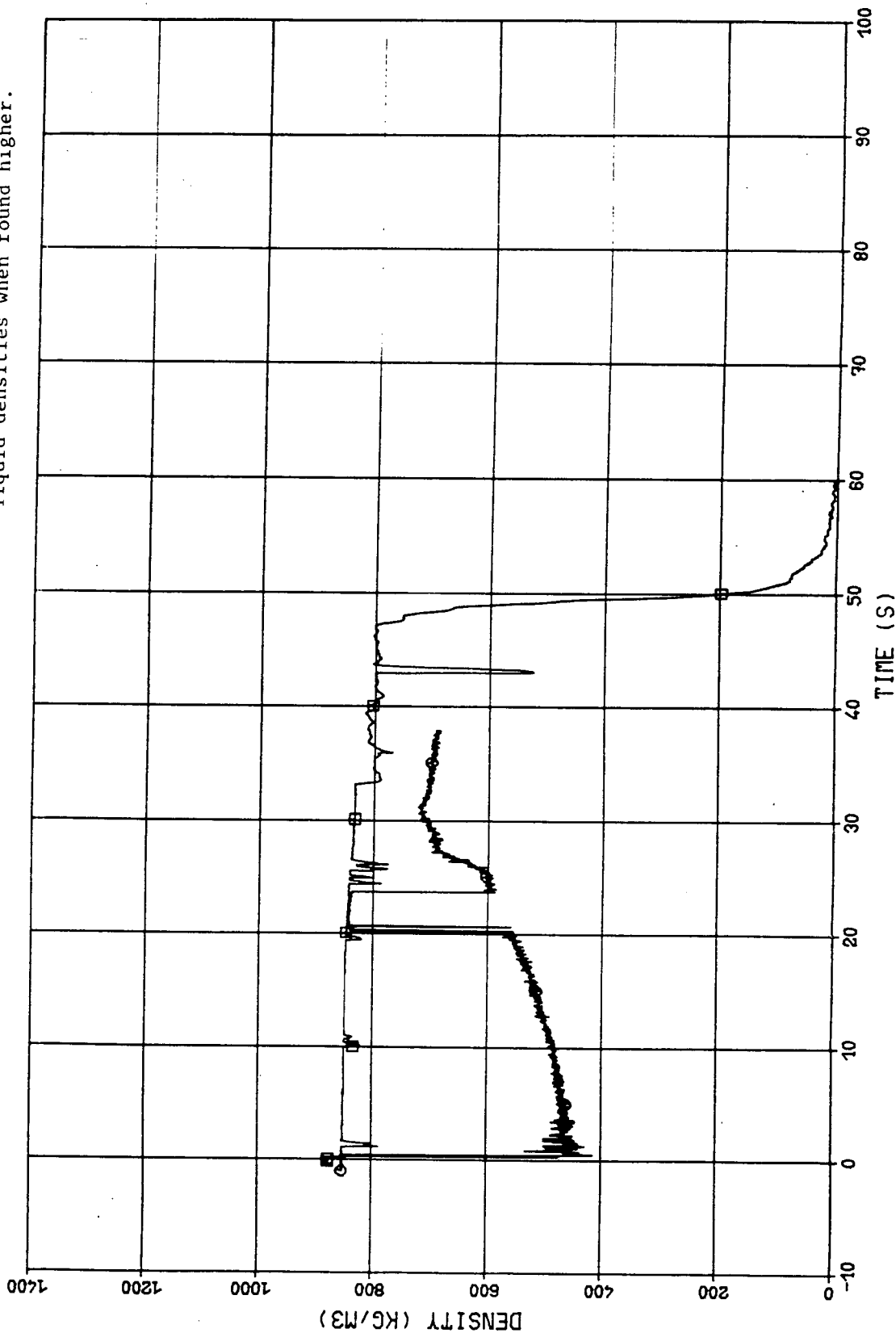
Plot E:12 Comparison between densitites in the discharge pipe from a combination of differential pressures 246 and 205 assuming adiabatic expansion, and the gamma densitometer

TEST 22

□ AVERAGE DENSITTY FROM GAMMA DENSITOMETER  
 ○ DENSITTY AT INST. RING 2 (M246+M205)

NOTE: Step in the density history from DP 246 due to evaluation procedure ( 20 to 23.5 s).

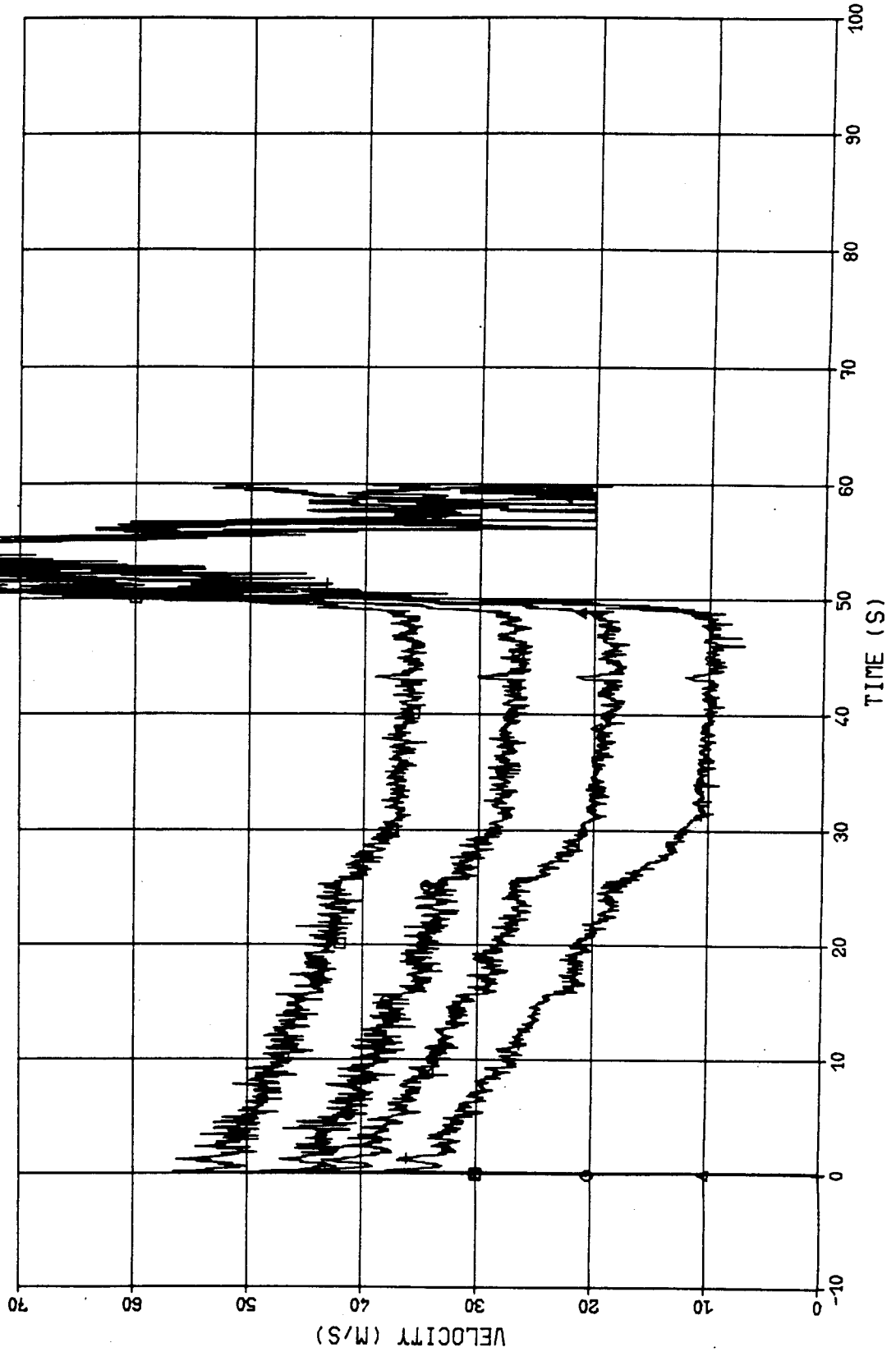
Evaluated densitites from gamma densitometer are derived from channel 601 and are set equal to liquid densitites when found higher.



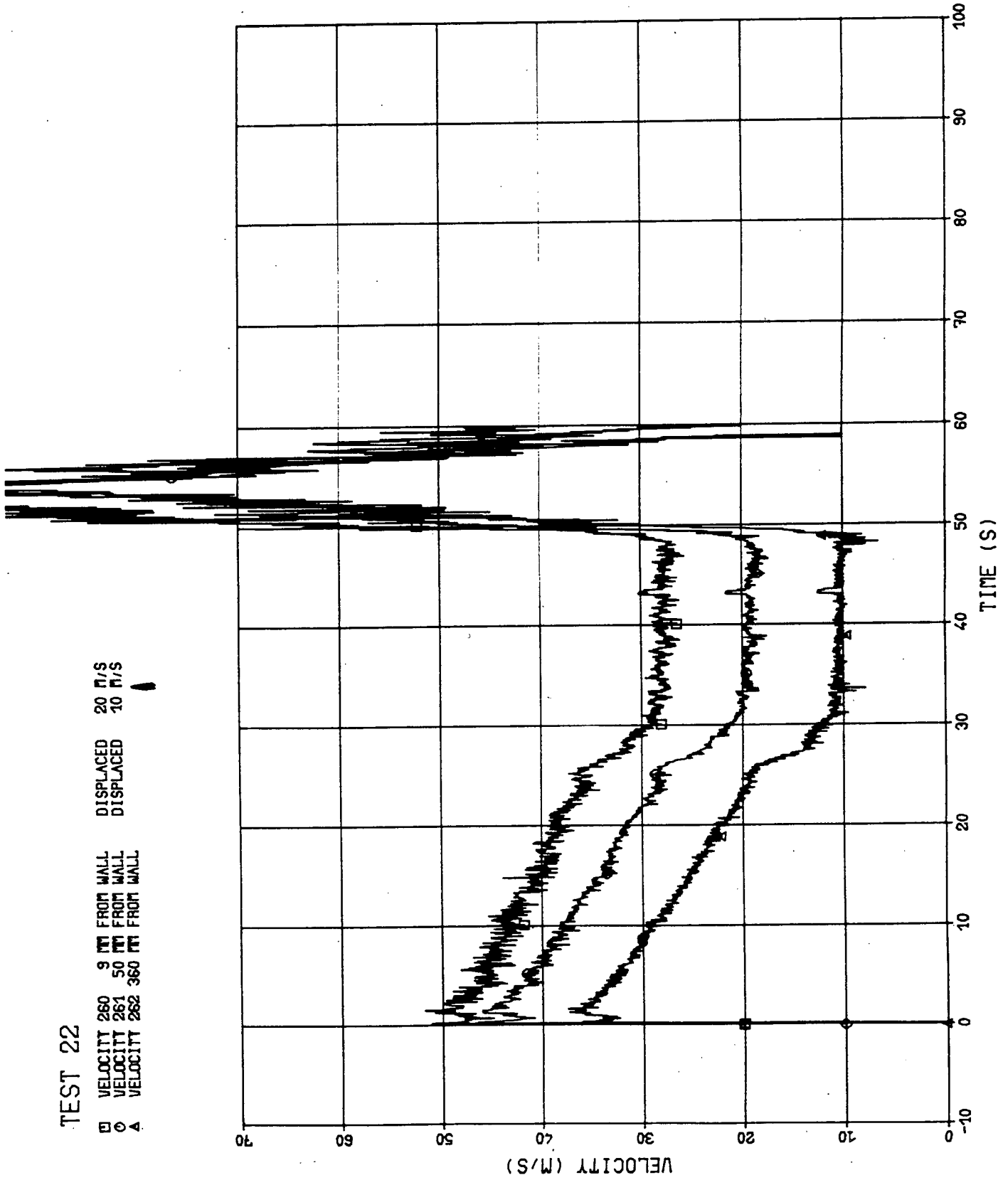
Plot E:13 Velocities from pitot-static measurements 256 through 259

TEST 22

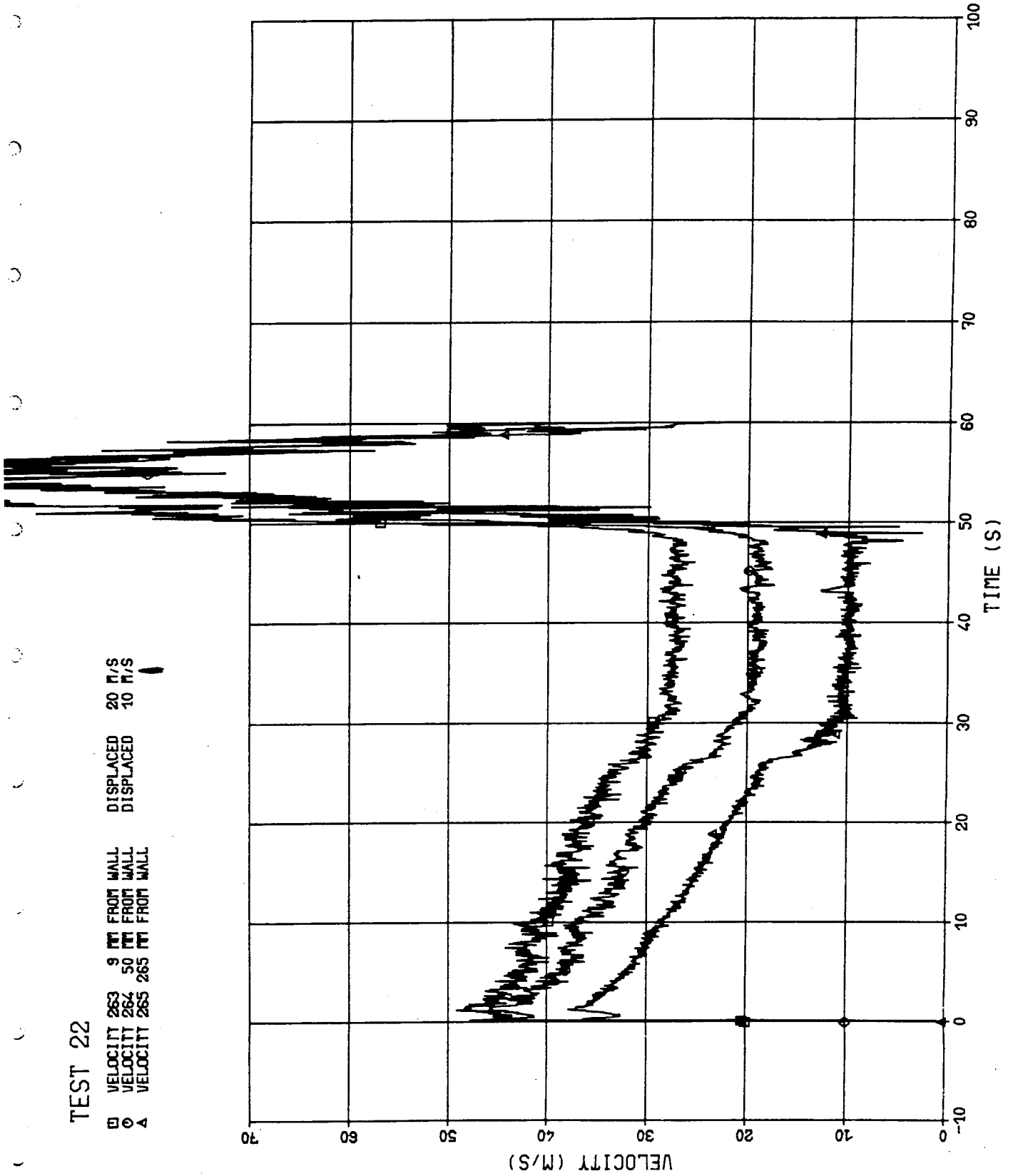
□	VELOCITY 256	3 FT FROM WALL	DISPLACED	30 M/S
○	VELOCITY 257	9 FT FROM WALL	DISPLACED	20 M/S
△	VELOCITY 258	50 FT FROM WALL	DISPLACED	10 M/S
+	VELOCITY 259	110 FT FROM WALL		



Plot E:14 Velocities from pitot-static measurements 260 through 262



Plot E:15 Velocities from pitot-static measurements 263 through 265



TEST 22

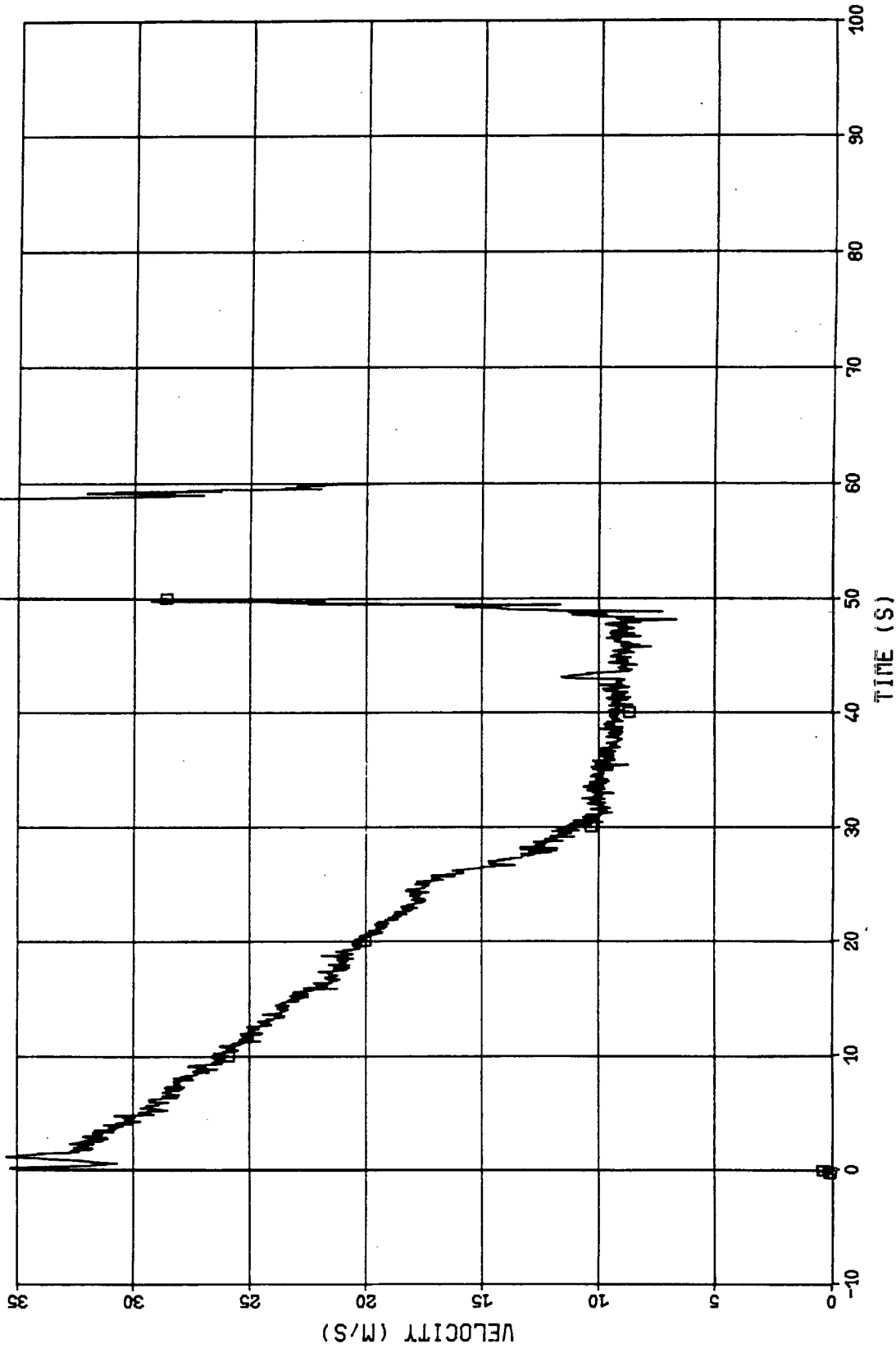
□ VELOCITY 263 9 FT FROM WALL  
○ VELOCITY 264 50 FT FROM WALL  
△ VELOCITY 265 265 FT FROM WALL

DISPLACED 20 FT/S  
DISPLACED 10 FT/S

Plot E:16 Mean velocity at instrumentation ring II

TEST 22

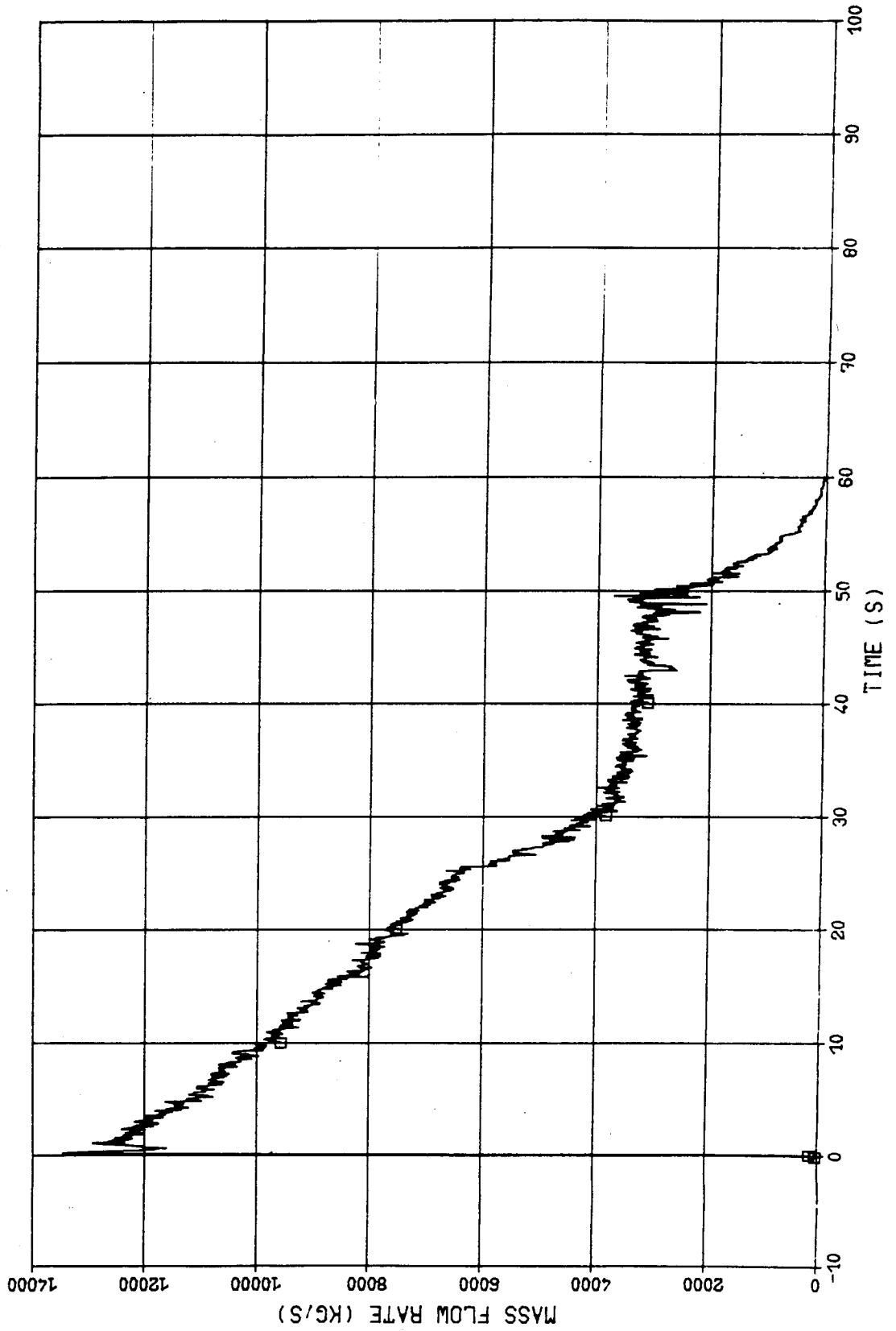
□ AVERAGE VELOCITY AT INSTRUMENT RING 2



Plot E:17 Mass flow rate from pitot-static measurements  
(t = -10 to 100 s)

TEST 22

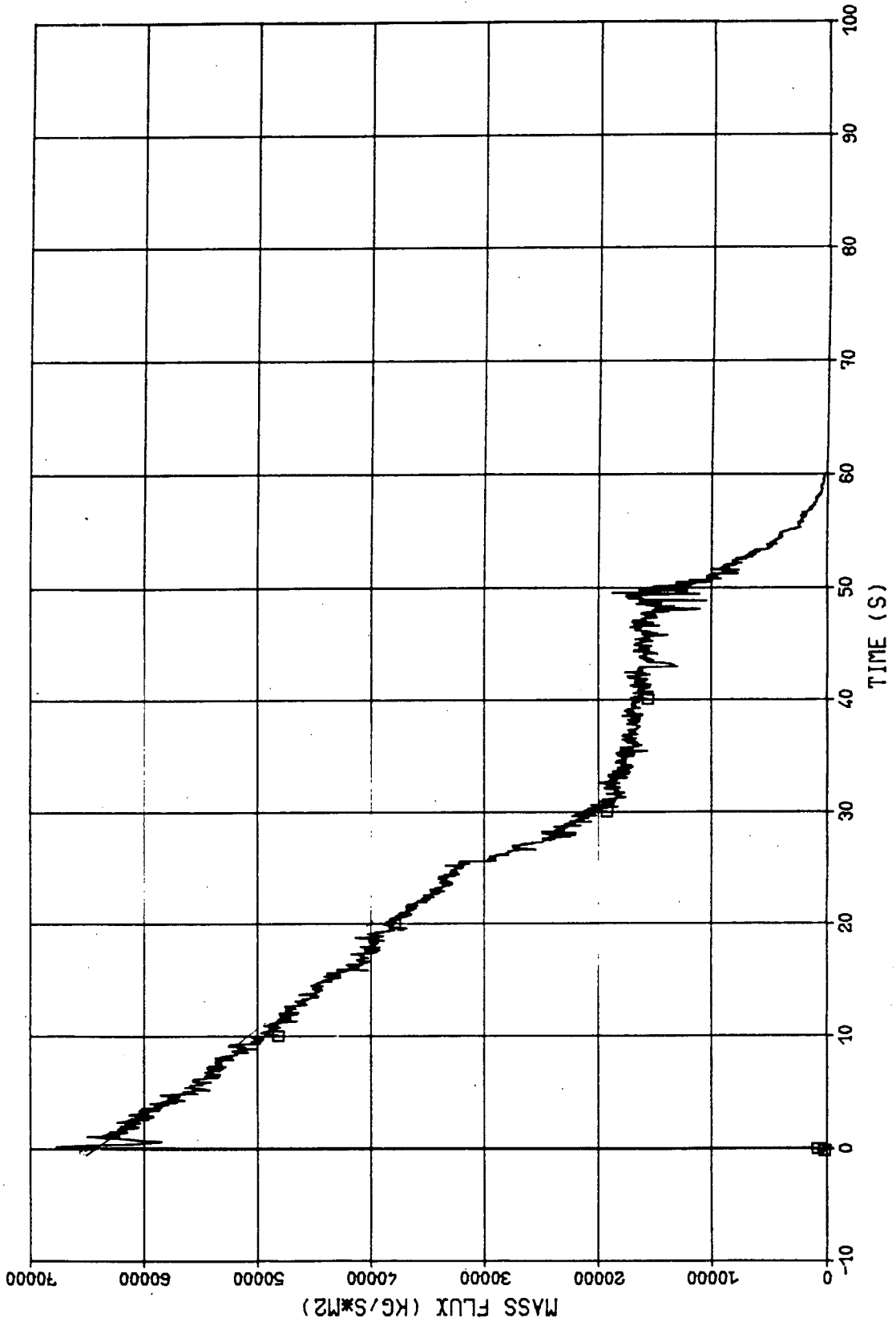
□ MASS FLOW RATE FROM PITOT-STATIC



Plot E:18 Nozzle mass flux from pitot-static measurements  
(t = -10 to 100 s)

TEST 22

□ NOZZLE MASS FLUX FROM PITOT-STATIC

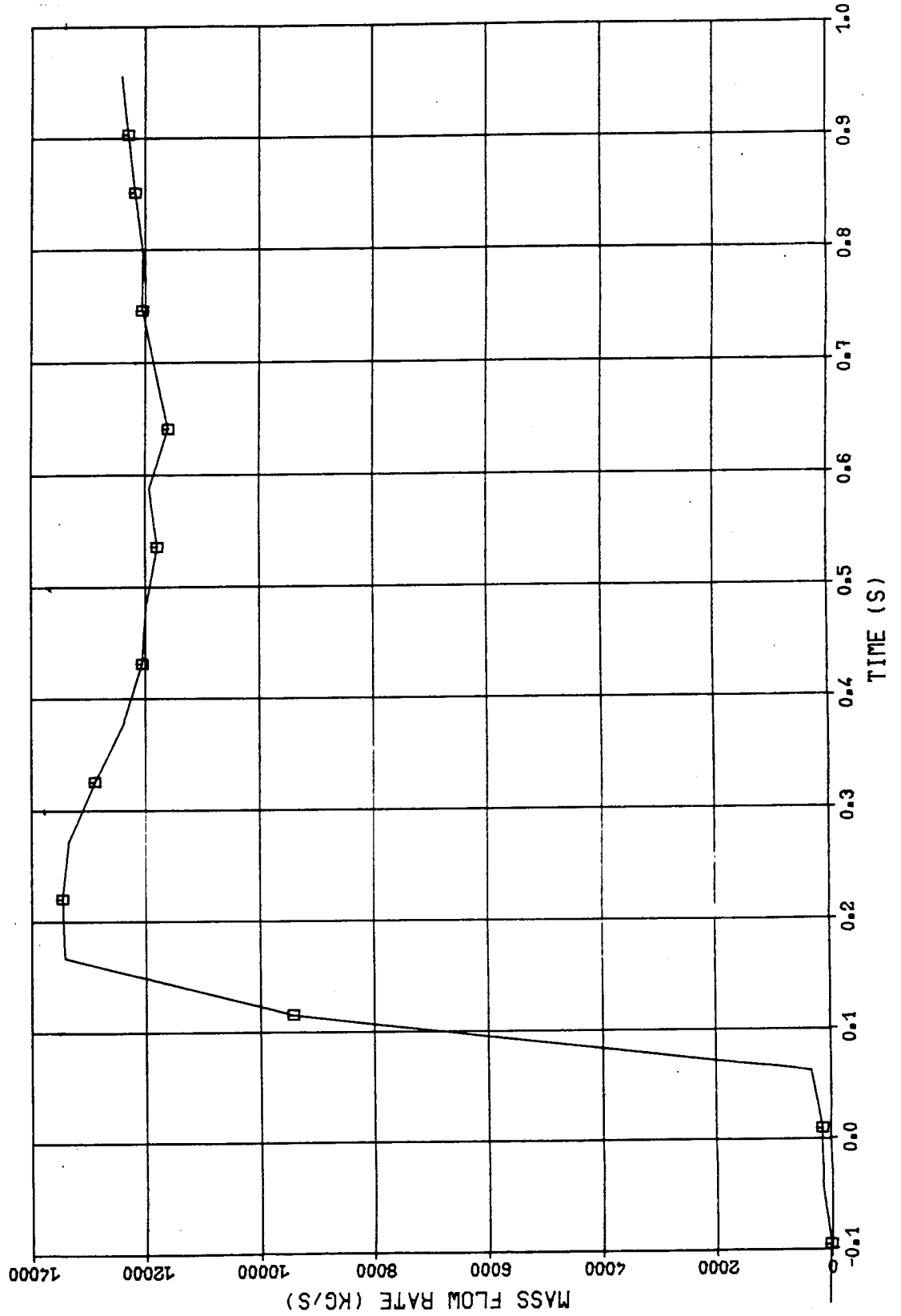


Plot E:19 Mass flow rate from pitot-static measurements  
(t = -0.1 to 1 s)

TEST 22

□ MASS FLOW RATE FROM PITOT-STATIC

NOTE: Some of the pitot-static measurements overranged the first records yielded too low values,



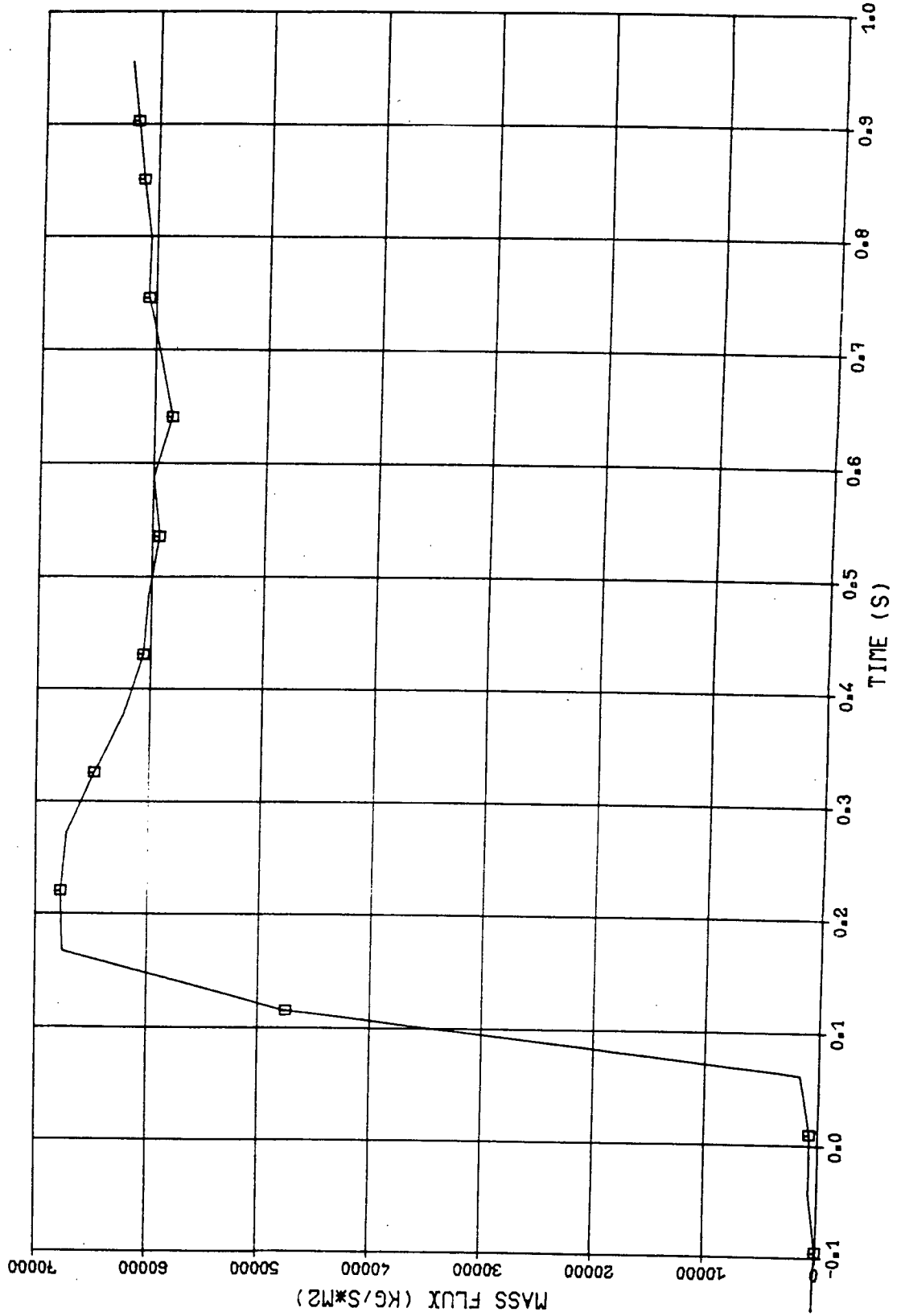


Plot E:20 Nozzle mass flux from pitot-static measurements  
(t = -0.1 to 1 s)

TEST 22

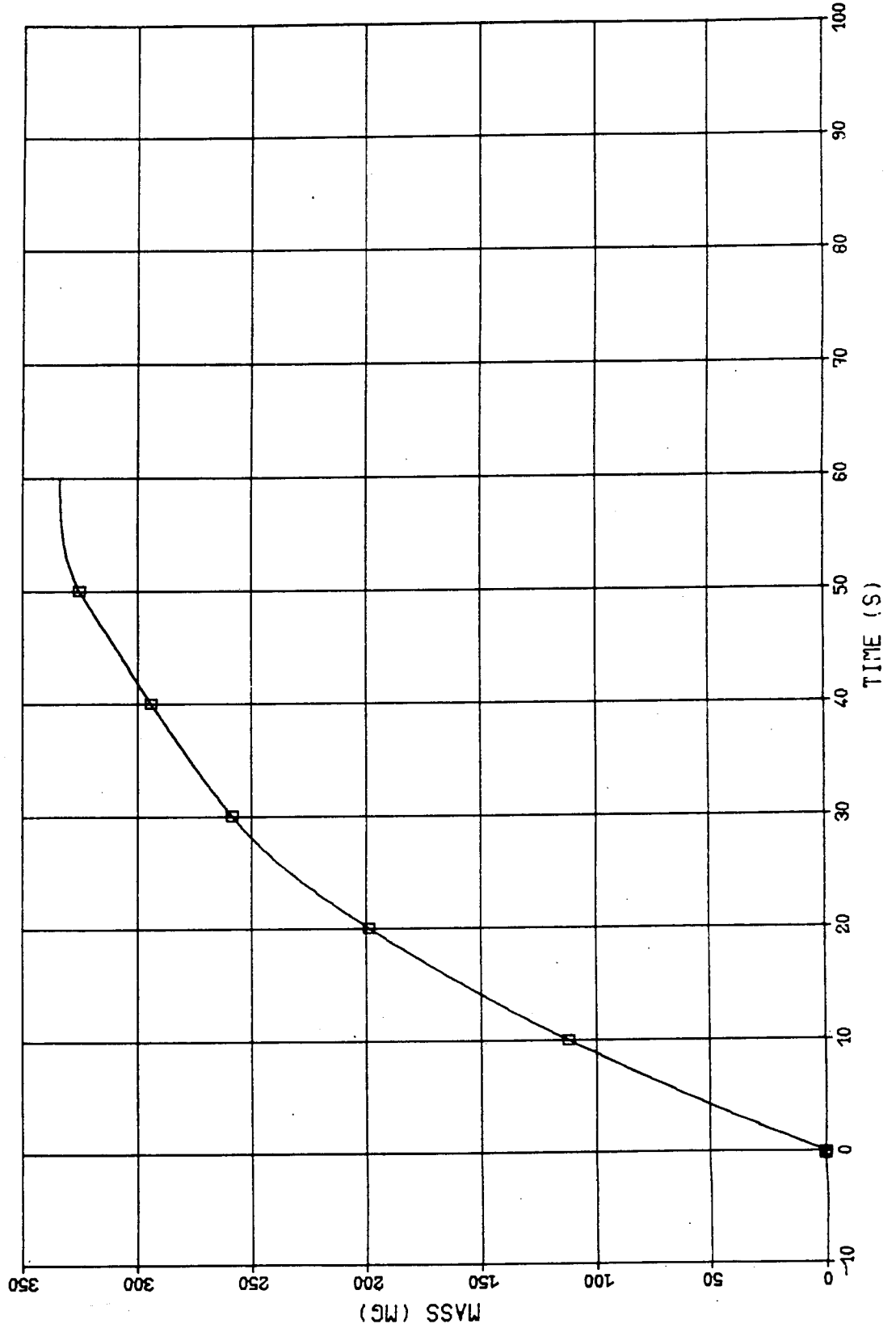
□ NOZZLE MASS FLUX FROM PITOT-STATIC

NOTE: Some of the pitot-static measurements overranged first records yielded too low values.



Plot E:21 Escaped mass evaluated using flow rates from the pitot-static measurements

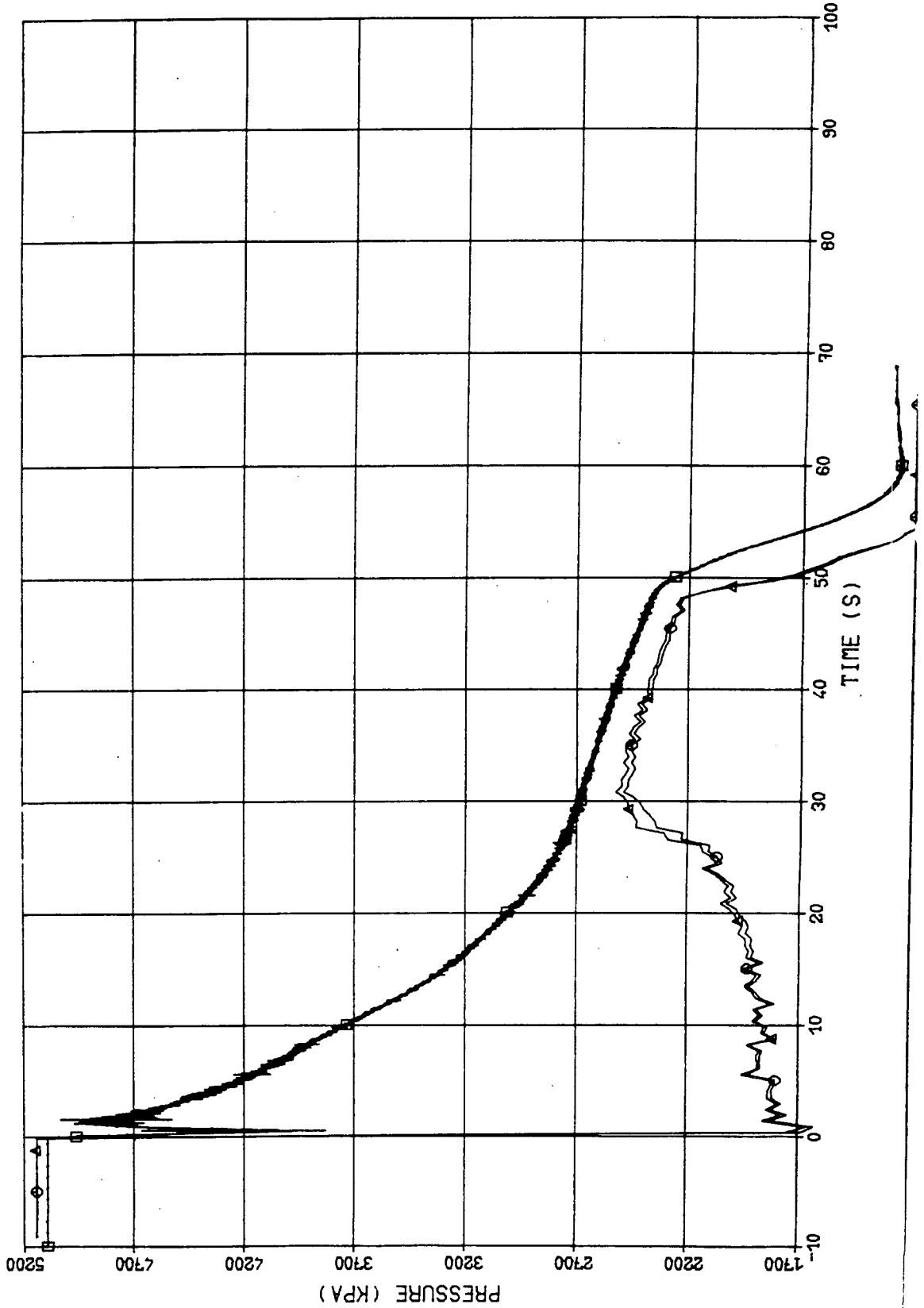
TEST 22  
□ INTEGRATED MASS FLOW RATE FROM PITOT-STATIC



Plot E:22 Pressures 106 at the vessel bottom and pressures along the nozzle evaluated from differential pressures 217 and 218

TEST 22

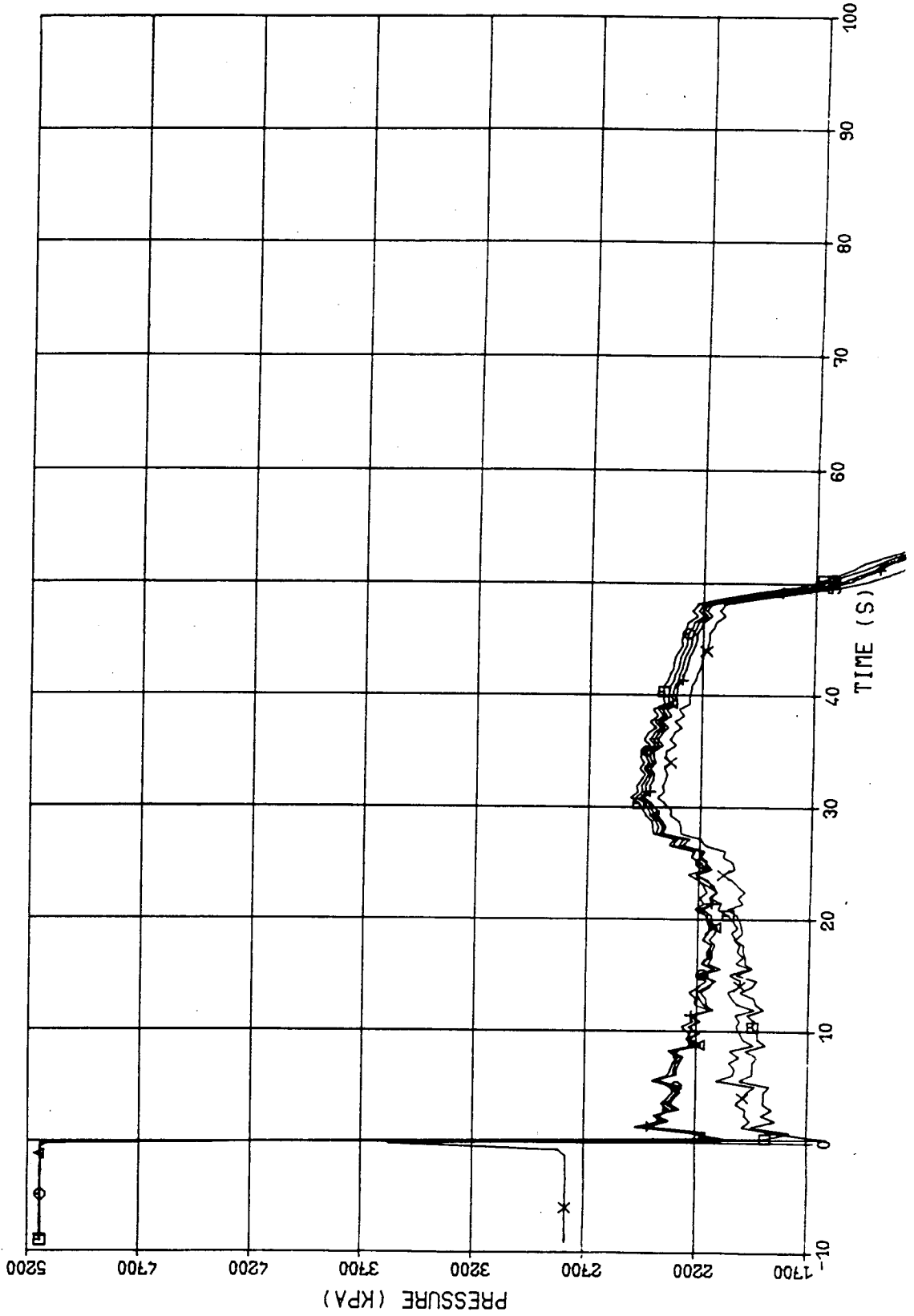
- 001M06 0.53 M ELEVATION (AVERAGED 20:1)
- P(217) 727 MM ABOVE NOZZLE EXIT (AVERAGED 20:1)
- △ P(218) 632 MM ABOVE NOZZLE EXIT (AVERAGED 20:1)



Plot E:23 Pressures along the nozzle evaluated from differential pressures 227 through 230, and 281

TEST 22

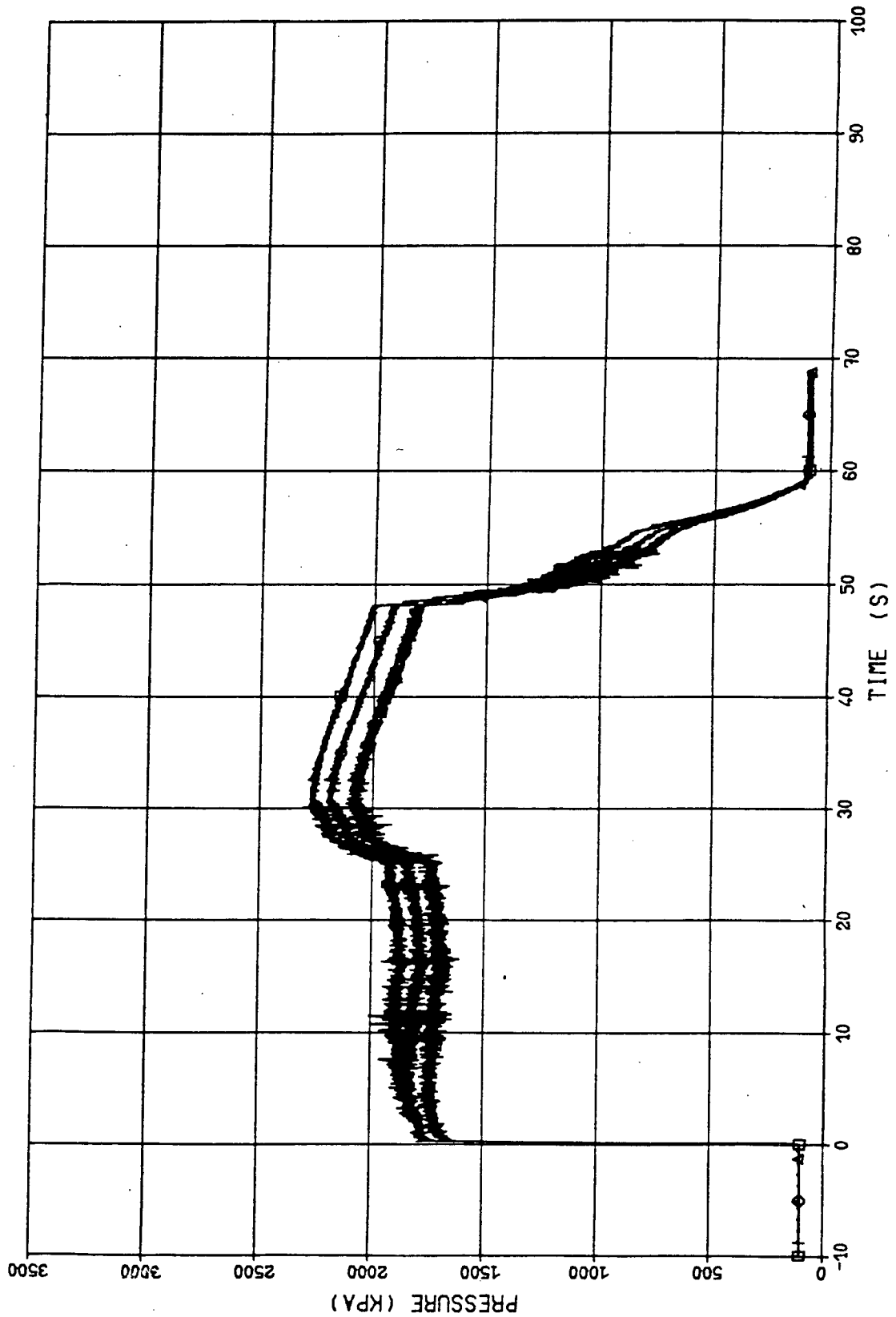
- P(227) 532 MM ABOVE NOZZLE EXIT (AVERAGED 20011)
- P(228) 432 MM ABOVE NOZZLE EXIT (AVERAGED 20011)
- △ P(229) 332 MM ABOVE NOZZLE EXIT (AVERAGED 20011)
- + P(230) 232 MM ABOVE NOZZLE EXIT (AVERAGED 20011)
- x P(281) 136 MM ABOVE NOZZLE EXIT (AVERAGED 20011)



Plot E:24 Pressures 121, and 123 through 125 along the nozzle

TEST 22

- 00471121 76 MM ABOVE NOZZLE E11T (AVERAGED 20:1)
- 00471123 30 MM ABOVE NOZZLE E11T (AVERAGED 20:1)
- △ 00471124 15 MM ABOVE NOZZLE E11T (AVERAGED 20:1)
- + 00471125 8 MM ABOVE NOZZLE E11T (AVERAGED 20:1)



**RENEWAL  
OF THE NELLIS AIR FORCE RANGE  
LAND WITHDRAWAL**

**LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT**

**VOLUME 2  
COMMENTS, RESPONSES, AND APPENDICES**

**MARCH 1999**

## VOLUME 2

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**Introduction to Comments and Response on the Draft  
Legislative Environmental Impact Statement**

# INTRODUCTION

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This section contains comments and responses to comments on the Draft LEIS.

Comments were received from federal, state, and local agencies; American Indian governments; private organizations; and the general public during seven public hearings on the Draft LEIS and in written comments mailed to the Air Force. The comment period began on October 2, 1998 and closed on December 31, 1998. In accordance with the National Environmental Policy Act (NEPA), public and agency comments were reviewed and incorporated into the LEIS. The LEIS, including these comments and responses, supports legislation for renewal of the Nellis Air Force Range (NAFR) land withdrawal to be proposed to Congress.

## Comment and Response Process

Comments on the Draft LEIS were generated through both written correspondence and testimony during the public comment period. The following process was used for reviewing and responding to these comments:

- All comment letters and testimony were reviewed and assigned a unique number.
- Within each comment letter or testimony, substantive comments were identified and bracketed. These bracketed comments were then reviewed by appropriate staff or resource specialists and provided an individual response. Three guidelines were used for determining substantive comments.
  1. The proposed action, alternatives, or other components of the proposal were questioned.
  2. The methodology of the analysis or results were questioned.
  3. The use, adequacy, and/or accuracy of data were questioned.
- The individual bracketed comments were assigned a response code corresponding to a specific response. These responses (and codes) were organized according to resource. For example, all responses to comments regarding biological resources were grouped together, and likewise for each resource covered in the LEIS. The responses to comments appear in the Response Section of this volume.

Due to the similarity of many comments, some comments were assigned the same response.

An alphabetical directory of commentor's names, with their associated comment, was also generated and is provided following the introduction in this volume.

## Locating Your Comment Letter or Public Testimony

Locate your name in the directory of commentors alphabetized by last name. After locating your name, note the number in the third column. This number was assigned to your comment letter and is typed on the upper right-hand corner of the letter. Oral testimony is grouped by the location of the public hearing.

The comment letters are organized into six sections: written comments from the public; Native American Interaction Program comments; written comments submitted at Public Hearings; oral comments made at public hearings; and federal, state, and local agency comments. Written public comment letters begin with 0001; Native American Interaction Program comments made at public hearings begin with 6000; written comments submitted at public hearings begin with 7000; verbal comments begin with 8100; and agency comments begin with 9000.

## Locating Responses to Comments

All comment letters were given a response code. Response codes are printed next to one or more bracketed areas in the left margin of the comment letters. The response codes are listed below. Responses are found in the Response Section of this volume.

<u>Resource</u>	<u>Response Code</u>
General	GE
Editorial	ED
Purpose and Need	PN
Air Force	AF
Operations	OP
Department of Energy	DOE
Bureau of Land Management	BLM
Biodiversity	BD
Airspace	AU
Noise	NS
Safety	SF
Hazardous Material and Solid Waste	HZ
Earth Resources	ER
Water Resources	WR
Air Quality	AQ
Biological Resources	BI
Cultural Resources	CR
Land Use and Transportation	LU
Wilderness and Wilderness Study Areas	WI
Recreation and Visual Resources	RV
Socioeconomics	SE
Environmental Justice	EJ
Irreversible and Irretrievable Commitment of Resources and Cumulative Impacts	CM

## Directory of Commentors

<i>Last Name</i>	<i>First Name</i>	<i>Comment Letter</i>
Agee	Marta S.	0005
Alexander	George	7000
Anonymous		0009
Arnold	Richard W.	6000/6001
Benezet	Louis	8300
Bingham	Michael	0020/8100
Black	Randy	8200
Bobo	Dorothy	0016
Bradley	Carmen	6000
Bradshaw	Les	9014/9017
Branch	Michael	0001
Brauer	Jim and Ann	0018
Brechin	Vernon	8700
Burkhart	Dale	8200
Burkhart	Sally	7001/8200
Cameron	Wayne	9006
Campbell	Glenn	0013
Carter	Lila	6000
Carver	Dick	8700
Cervantes	Eldene	6000
Charles	Jerry	6000
Chase	Rocky	0021
Chavez	David	6000
Chavez	Lee	6000
Cloquet	Don	6000
Cornelius	Betty	6000
Cortez	Manuel	0003
Cosgrove	Mike	8400
Coyner	Alan	8700
Cozby	James R.	8100
Davis	Richard C.	0011
Dazey	Lee	8700
DeFloria	Michael F.	8200
Dempsey	Kami	8200
Detratz et al.		0019
Detraz	Marjorie	8300
Domingo	Charlotte	6000
Dudley	Julie	0012
Dudley et al.	Susan	9011
Dunlap	Gjrle	6000
Dwyer	Michael	9016
Elliott	Heather K.	9018
Finch	Lori	7002

*Nellis Air Force Range Renewal LEIS*

<i>Last Name</i>	<i>First Name</i>	<i>Comment Letter</i>
Fite	Katie	0015
Flake	Rey	8300
Frank-Churchill	Maurice	6000
Freeman	W. Richard	0008
Fyke	Dianna	8200
Gerdes	Gene	8700
Goad	Grace	6000
Hadden et al.	John	7004
Hall	Ashley	8100
Harmon	Sandy	8500/9003
Hauser	Steve	0002
Hayakawa	Norio	8200
Haye	Stan	0023
Hilder	Anthony	8200
Hollis	Charles	8400
Hollingsworth	Somer	8200
Hoover	Victoria N.	0014
Houpt	Terrie	8100
Jake	Vivian-Caron	6000
Johnson	Aaron	8200
Johnson	Lynn	8600
Johnson	G.W.	9019
Jones	Jan Laverty	9004
Keenan	Kelly	8400
Laffoon	Lawanda	6000
Landreth	John O.	0017
Lewis	Frank W.	0007
Linder	Steve	8200
Lynch	Charles	6000
Marble	Dr. James	8600/9001
Martz	Alice	9000
Mikita	Tim	8700
Miller	Lalovi	6000
Miller	Vernon	6000
Mongrain	Steve	8200
Moose	Gaylene	6000
Moose	Roseanne	6000
Morgan	Marvin D.	9015
Myers	Tom	0010/8700
Neuhauser	Geneva	8400
Olds	Jim	8300
Pearson	Dirk	8600
Phillips	Kevin	8300
Potorti	Grace	8700
Revell	William	8300

*Nellis Air Force Range Renewal LEIS*

<i>Last Name</i>	<i>First Name</i>	<i>Comment Letter</i>
Rippie	Trish	8600
Satterlee	Michelle	0022
Savala	Gevene	6000
Searcy	Marti	8700
Sill	Marjorie	8700
Simkins	Connie	8300
Sproul	John	8100
Sproul	Josephine	8100
Taylor	Willie R.	9020
Thomas	Kristin	8300
Uehling	Ed	8300
VanderVeen	Carl	0004
Webb	Stewart	0006/8200
Wieman	Deanna	9013
Winters	J.J.	8700
Wissbeck	Larry L.	7003/8300
Wright	Edward	9012

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**Comments on the Draft Legislative  
Environmental Impact Statement**



0002

November 11, 1998  
Steve Hauser  
2299 N Silverbell RD  
Tucson, AZ 85745  
steve@nettorney.com

CERTIFIED MAIL-RETURN RECEIPT

Mike Estrada  
HQ AWFC/PA  
4370 N Washington BLVD  
Suite 223  
Nellis AFB, NV 89191-7078

GE-2 Dear Mr. Estrada,

Thank you for providing me a copy of the Draft Legislative Environmental Impact Statement (DLEIS) for the Nellis Air Force Range/Nellis Range Complex renewal.

I have written several comments on the DLEIS. My comments follow this cover letter.

NAFR/NRC is clearly an asset which is critical to our nation's defense; however, excessive government secrecy and deception are filth in the light of democracy.

Please provide me a copy of the Final LEIS at the above address.

Thank you.

Respectfully submitted,

Steve Hauser

0001

25 November 1998

Nellis Air Force Range Renewal Office  
PO Box 9919  
Las Vegas, NV 89191-0919

GE-2 Dear Nellis Air Force Range Renewal Personnel,

I'm writing to comment on the draft legislative EIS regarding the withdrawal of BLM land for use in the Nellis Air Range. Since so little of the area being considered is actively used for bombing, and since so much of it is roadless, I want to strongly encourage you to adopt a final EIS and plan that will do everything possible to protect the biodiversity and environmental health of these lands.

In particular, I urge you to inventory the roadless areas within the considered area, thereby gathering information that can help us all to make good decisions about which parts of the range might best be used for which purposes. In order to ensure maximum protection of biodiversity in this area, I believe that the findings of the "Keystone" report be incorporated into the revised EIS.

I also feel strongly that a permanent withdrawal of the area is a most undesirable approach. While the 25-year renewal option is preferable to permanent withdrawal, I hope very much that the public will be given the opportunity to re-consider this important decision every fifteen years.

Finally, I strongly support the subalternative that would release land on the west side and open to public access several of the northern areas.

My thanks to you for carefully considering public input when making a decision that is so important to so many Nevadans. I hope very much that the revised EIS and subsequent plan will do everything possible to protect the biodiversity of the range.

Sincerely,

Michael P. Branch  
Associate Professor  
Department of English/098  
University of Nevada, Reno  
Reno, NV 89557

Comment 1

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USAF proposes in the Draft LEIS (DLEIS) for the Nellis Air Force Range/Nellis Range Complex (NAFR/NRC), under alternatives 1B and 2B, at pages ES-8 and 2-8 respectively, to "administratively realig[n]" and "transfer responsibility for" the land withdrawn by PLO 1662 from the Department of Energy (DOE) to USAF as part of NAFR/NRC. According to PLO 1662, page 1-11 of the DLEIS, and Volume 1, page 4-9 of DOE's 1996 Final EIS (DOE/EIS 0243) for the Nevada Test Site (NTS), the PLO 1662 land is part of DOE's NTS.

In DOE/EIS 0243, DOE implies that DOE is not now active at the PLO 1662 land. DOE states in Volume 3, Part B, page 3FA-3 of DOE/EIS 0243 that the PLO 1662 land is "used by the Department of Defense [specifically USAF] for ongoing operations." The DLEIS confirms this statement. USAF states at page ES-3 that the PLO 1662 land is "used [by USAF] through a Memorandum of Agreement [between] the Air Force [and DOE]" and at page ES-7 that the PLO 1662 land is "withdrawn by [DOE] but used by [USAF]."

Ostensibly for these reasons DOE did not analyze and discuss the environmental impacts of USAF activities at the PLO 1662 land in DOE/EIS 0243, even though DOE sought renewal of its withdrawal of the PLO 1662 land. Instead DOE left the analysis and discussion of the environmental impacts of USAF activities at the PLO 1662 land to USAF for inclusion in USAF's National Environmental Policy Act (NEPA) compliance undertakings.

AF-2  
DOE-1

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The USAF "operating location near Groom Lake, Nevada," as it is referred to in Presidential Determination No. 98-36 at 63 FR 56921, is almost entirely at land withdrawn by PLO 1662. Publicly available commercial satellite imagery, USGS satellite imagery, satellite imagery currently available through an official United States Army URL: "http://mojave.army.mil/cgi-bin/show\_image/mojave\_p40r3474330,3992,468,77,6925,7716,08/19/93,040,034,37115-B7,11", the 1978 Bureau of Land Management (BLM) surface management map for the Pahrangat Range, Nevada quadrangle (available through USGS as File No.: "00946," Map Name: "Pahrangat Range," Date: "78," Reference Code: "37115-A1-SM-100-00"), and the 1990 Defense Mapping Agency Joint Operations Graphic (AIR) NJ 11-9 (available through the National Oceanic and Atmospheric Administration (NOAA)) confirm this. If the truth were otherwise, and the USAF "operating location near Groom Lake, Nevada" were located "near Groom Lake, Nevada" at land other than the PLO 1662 land, necessarily at NAFR/NRC land because Groom Lake, Nevada is completely surrounded by PLO 1662 and NAFR/NRC land, then USAF surely would have addressed its "operating location near Groom Lake, Nevada" in the DLEIS.

The USAF "operating location near Groom Lake, Nevada" was the subject of environmental and occupational health and safety litigation recently denied certiorari by the United States Supreme Court. Richard Leiby's July 20, 1997 article in The Washington Post, "Secrets Under the Sun," at page F1, alleges that the incineration of toxic industrial chemicals including paints,

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solvents, and radar absorbent materials in hundred-yard-long open trenches in such manner as to cause civilian workers at the "operating location near Groom Lake, Nevada" to become gravely, and in two cases fatally, ill was standard operating procedure. Tissue samples obtained from one deceased worker contained high levels of chemicals commonly created only by the combustion of industrial chemicals. Smoke can be seen rising from these "incineration trenches" in a publicly available 1968 USGS aerial photograph of a large portion of the PLO 1662 land. The photo index containing this photograph is available through USGS, Ordering ID: "DC1VBSLX0701401," Film Type: "B&W-PI/A," Date Taken: "08/28/68," Microform: "00701401". A cropped version of this photograph is attached as page 11 of these comments.

USAF's vague incantations of "national security" effectively denied the ailing workers and the families of the deceased workers of the USAF "operating location near Groom Lake, Nevada" their day in court. It certainly appears that USAF would prefer these workers buried, forgotten, and deep black like the wastes allegedly incinerated at its "operating location near Groom Lake, Nevada." Those who have made such sacrifices for our country deserve better.

USAF activities at the PLO 1662 land have had, and will likely continue to have, a significant environmental impact. NAFR/NRC will assume liability for this impact if "responsibility for" the PLO 1662 land is "transfer[red]" from DOE to USAF, as it would be under alternatives 1B and 2B. According to the DLEIS at page ES-7, the PLO 1662 land is the only land not now withdrawn by

page 3 of 11

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USAF which USAF proposes to include in the NAFR/NRC renewal under alternatives 1B and 2B. For these reasons, in order to allow complete and thorough consideration of alternatives 1B and 2B, in the Final LEIS for NAFR/NRC (FLEIS) USAF must analyze and discuss the various environmental impacts of USAF activities at the PLO 1662 land. The DLEIS lacks such an analysis and discussion.

Furthermore, there is no means to completely and thoroughly analyze alternatives 1B and 2B, which involve changes concerning the "administrativ[e] [align[ment]]" of and "responsibility for" the PLO 1662 land as between DOE and USAF, unless USAF provides for review the operative documents and agreements delegating "responsibility for" and defining the "administrativ[e] [align[ment]]" of the PLO 1662 land as between DOE and USAF, which USAF proposes to change, append, or replace. Therefore, USAF must include these operative documents and agreements in the FLEIS, or otherwise provide a means for public review of these. The DLEIS lacks these operative documents and agreements.

USAF's failure in the FLEIS to analyze and discuss the various environmental impacts of USAF activities at the PLO 1662 land, in spite of the evidence of those environmental impacts, or USAF's failure to provide these operative documents and agreements for public review would impeach the honor, integrity, and environmental stewardship of USAF and raise serious questions of a bad-faith effort on the part of DOE and USAF to collude in such

DOE-2

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<p>DOE-2</p> <p>0002</p> <p>manner as to eviscerate NEPA by avoiding compliance as regards the PLO 1662 land.</p> <p><u>Comment 2</u></p> <p>At page B-1, the DLEIS states that, "public comments [are] most useful during the early stage of the [environmental impact analysis process (EIAP)] . . . ." However, at the early stage of the EIAP USAF did not propose to include any lands not then withdrawn by USAF for inclusion in the NAFR/NRC renewal. USAF's May 31, 1996 Notice of Intent (NOI) to Prepare a LEIS for NAFR/NRC Renewal, originally printed in the Federal Register and reprinted at pages D-2 and D-3 of the DLEIS, proposes no alternative whereby lands would be added to the existing NAFR/NRC. Major General Marvin R. Esmond states in a letter reprinted at page D-1 of the DLEIS that the NOI "outlines [USAF's] proposed action and alternatives," yet it is now clear that the NOI did not outline USAF's proposed alternatives.</p> <p>The NOI omits the most significant component of alternatives 1B and 2B, which is the "transfer [of] responsibility for" and "administrativ[e] realign[ment]" of the PLO 1662 land from DOE to USAF and inclusion of the PLO 1662 land in the NAFR/NRC renewal. At what date and in what manner specifically did USAF first notify the public of its proposals concerning the PLO 1662 land as regards the EIAP?</p>	<p>0002</p> <p><u>Comment 3</u></p> <p>The DLEIS fails to provide the name for the group of USAF facilities at the PLO 1662 land in such manner as the DLEIS provides names for the groups of USAF facilities at Tonapah (Tonapah Test Range (TTR)) and Indian Springs (Indian Springs Air Force Auxiliary Field (ISAFAF)). The FLEIS must provide the name for the group of USAF facilities at the PLO 1662 land.</p> <p><u>Comment 4</u></p> <p>Table A.1-2, "ISAFAF Flight Activity," and Table A.1-3, "Tonapah Test Range Activities," at pages A.1-15 and A.1-16 of the DLEIS respectively, indicate USAF flight activities at these two operating locations, but the DLEIS fails to indicate USAF flight activity at the USAF facilities at the PLO 1662 land. The FLEIS must provide an indication of flight activity at the facilities at the PLO 1662 land comparable to that provided for TTR and ISAFAF.</p>
<p>AF-2</p>	<p><u>Comment 5</u></p> <p>Table A.1-3, "Tonapah Test Range Activities," at page A.1-16 of the DLEIS, must include projected future activities at TTR. After USAF moved the F-117s to Holloman AFB, New Mexico in 1993, the "Aircraft Sorties" figures dropped precipitously. An extensive, costly, secure, modern hangar complex and associated facilities were constructed at TTR for the F-117s. The post-F-117 sortie figures would seem to indicate that the extensive, costly, secure, modern</p>
<p>AF-2</p>	<p>OP-8</p> <p>OP-9</p> <p>page 5 of 11</p>

0002

Groom Range. The FLEIS must indicate the radar or communication site on Bald Mountain in the Groom Range.

Comment 2

How would the operation of USAF's group of facilities at the PLO 1662 land be affected if mining were to resume in the Groom Range on a regular basis?

Comment 10

Figure 1-5, "North Range and Sub-Areas," at page 1-18 of the DLEIS appears to incorrectly indicate that the Groom Mountain Land Withdrawal extends into the PLO 1662 land. The FLEIS must correct this error.

Comment 11

At page 3.1-3 the DLEIS states that, "[r]estricted areas R-4806E/W and R-4807A/B . . . are designated joint use" and that "[a]ll of these restricted areas extend from the surface up . . ." The Las Vegas Sectional Aeronautical Chart, distributed by NOAA and approved by the Department of Defense, states that R-4806E extends from 100 feet above ground level up, that R-4806W and R-4807B are in use continuously, and that R-4806E and R-4807A are in use from 0500-0200 hours Monday through Saturday and from 0600-1900 hours Monday through Friday respectively, local time. The FLEIS must resolve these

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hangar complex and associated facilities are currently not being used. It seems unlikely that such an extensive, costly, secure, modern hangar complex and associated facilities would remain unused, wasted one might say, for any extended period of time.

Comment 6

The FLEIS must include larger, more detailed maps of TTR, ISAFAF, and the USAF facilities at the PLO 1662 land than those provided in Figure 1-2 of the DLEIS at page 1-15. It defies logic that Volume 1 of DOE/EIS 0243, at pages 4-184 and 4-185, would contain larger, more detailed maps of TTR than the NEPA compliance undertakings of USAF for NAFRR/NRC.

Comment 7

Figure 1-3, "Roads on the Nellis Air Force Range," at page 1-16 of the DLEIS, which includes roads on the NTS, fails to indicate the major roads in the Groom Lake area which are clearly visible on BLM's 1978 surface management map for the Pahrangat Range, Nevada quadrangle. The FLEIS must indicate these roads.

Comment 8

Figure 1-4, "Radar and Communication Sites," at page 1-17 of the DLEIS, fails to indicate the radar or communication site on Bald Mountain in the

page 7 of 11

<p>AU-2</p> <p>0002</p> <p>discrepancies as to the claimed "joint use status" of R-4806W and R-4807B and the discrepancy as to the flight altitude restrictions for R-4806E.</p>	<p><u>Comment 12</u></p> <p>At page A.3-15, the DLEIS describes the Defense Special Weapons Agency's mission to test simulated biological/chemical agents on a 25 foot high subterranean building on Range 64 of NAFR/NRC.</p>	<p>0002</p> <p>weapons," for what length of time will the simulated biological/chemical agents remain airborne, and what distance will the airborne simulated biological/chemical agents travel?</p> <p><u>Comment 13</u></p> <p>At page A-2, the DLEIS states that the Defense Nuclear Agency will perform "a new test mission" at NAFR/NRC. The FLEIS must either indicate that this statement is inaccurate or describe this "new test mission."</p>
<p>AF-2</p> <p>0002</p> <p>1. What effects will the subterranean building on Range 64 have on the structural integrity and operation of the national security assets allegedly located at Papoose Lake, Nevada and the national security assets allegedly built into the Papoose Mountain Range, immediately north of Range 64?</p>	<p><u>Comment 12</u></p> <p>At page A.3-15, the DLEIS describes the Defense Special Weapons Agency's mission to test simulated biological/chemical agents on a 25 foot high subterranean building on Range 64 of NAFR/NRC.</p>	<p>OP-2</p> <p><u>Comment 14</u></p> <p>At page A-2, the DLEIS refers to UAVs at ISAFAF as "Unmanned Aerospace Vehicle[s]," while at page 1-45, the DLEIS refers to UAVs as "UNMANNED AERIAL VEHICLES." Will any of the UAVs at NAFR/NRC leave the earth's atmosphere in the course of their operation?</p>
<p>OP-1</p> <p>2. Where on Range 64 will the subterranean building be located?</p> <p>3. How can a subterranean building be 25 feet high?</p> <p>4. How many feet below ground level will the subterranean building be?</p> <p>5. What effects will the simulated biological/chemical agents have on groundwater and local biotic communities?</p>	<p>OP-1</p> <p>2. Where on Range 64 will the subterranean building be located?</p> <p>3. How can a subterranean building be 25 feet high?</p> <p>4. How many feet below ground level will the subterranean building be?</p> <p>5. What effects will the simulated biological/chemical agents have on groundwater and local biotic communities?</p>	<p>AF-4</p> <p><u>Comment 15</u></p> <p>At page 1-46 of the DLEIS, under the heading "UNINHABITED COMBAT AERIAL VEHICLES," the word "Uninhabited" should be changed to "Uninhabited." What effects will the flight of vehicles with "radical new aerodynamic designs," also mentioned at page 1-46, have on the level of use of public land and roads in the vicinity of NAFR/NRC by aviation enthusiasts and those who believe that the flying saucers are real?</p>
<p>OP-2</p> <p>6. Are the simulated biological agents capable of functioning to any degree as living organisms? If so, are the simulated biological agents capable of genetic mutation?</p> <p>7. When "air dropped weapons" are "used to deliver the simulated bio/chem</p>	<p>OP-2</p> <p>6. Are the simulated biological agents capable of functioning to any degree as living organisms? If so, are the simulated biological agents capable of genetic mutation?</p> <p>7. When "air dropped weapons" are "used to deliver the simulated bio/chem</p>	<p>ED-1</p> <p><u>Comment 15</u></p> <p>At page 1-46 of the DLEIS, under the heading "UNINHABITED COMBAT AERIAL VEHICLES," the word "Uninhabited" should be changed to "Uninhabited." What effects will the flight of vehicles with "radical new aerodynamic designs," also mentioned at page 1-46, have on the level of use of public land and roads in the vicinity of NAFR/NRC by aviation enthusiasts and those who believe that the flying saucers are real?</p>

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TO: Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

Nov 17, 1998

Nevada State Director - BLM  
1340 Financial Blvd.  
Reno, NV 89520

REFERENCE: Draft LEIS and Withdrawal Renewal Application

GE-1 Dear Sir/Madame:

Last evening it was my pleasure to attend a public hearing on subject matters at Tonopah's Convention Center. The Air Force presentation was very good, and the public comments were very interesting. It seems that no matter what decisions are made about the future of the ranges, some will be happy, and some will not. I wish you Solomon's wisdom in sorting it all out!

I went to the hearing to listen. The moderator said written comments will have the same weight as the verbal ones. Here is my input.

I am a civilian contractor for the Air Force at the Tonopah Test Range. I'm also a citizen, Air Force Viet Nam-era veteran, husband, father, grandfather, pilot and patriot.

1. I am in favor of the ongoing, indefinite-length withdrawal of the land for military purposes. The Air Force must have the benefit of the ranges to test and train. This pays dividends in terms of our national interests, and in terms of our nation's families of men and women in arms.
2. Some of the public commenters want less federal ownership of Nye County, and more private development for mining and other money-making pursuits. While the area is not booming economically, it is my view that the value of the ranges for military use is also worth considering. It occurs to me that public calls for more roads and mines and grazing land can only be made and heard when the nation enjoys peace. Testing and training is what prevents war, maintains the peace.
3. From an environmental standpoint, it is my view from experience on the ranges that the Air Force and other agencies treat the natural and cultural resources on the ranges with the utmost respect and consideration. As a taxpayer, I am concerned that the Air Force goes too far with frequent inspections, painstaking reporting, constant monitoring of water, waste, storm run-off, use of chemicals/pesticides, detailed attention to permit processes for water/waste/air pollution, etc. The residents of Nye County would be proud and satisfied if they knew the great lengths to which the Air Force goes to be kind to the environment and cultural resources on the ranges.
4. There should be more structured dialog between the DOD/DOE users of the ranges and the local governmental and developmental agencies of Nye and Esmeralda counties. For example, there could be Air Force scheduled visits to town board meetings. A wide range of issues could be discussed, from noise and hunting, to temporary mining explorations and jobs. Maybe more locals could be hired to do civil engineering work, and unskilled work like maids, janitors, cooks, and similar, rather than importing this labor from other markets.

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MANUEL J. CORTEZ  
PRESIDENT

November 17, 1998

Chairman  
Nellis Air Force Range Renewal Committee  
P.O. Box 9919  
Las Vegas, NV 89191

GE-1 Dear Committee Chairman:

The purpose of this letter is to urge you to consider supporting the Test Range Renewal for Nellis Air Force Base Range beyond the year 2001.

As President and CEO of the Las Vegas Convention and Visitors Authority (LVCVA), a former four-term member of the Clark County Board of Commissioners and a long-time resident of Southern Nevada, I know first-hand, personally and professionally, what this facility has meant to our country and our community throughout many decades.

The range plays an integral role in the vital security interests of the United States, providing crucial training to thousands of military personnel over the years.

Nellis Air Force Base and its test ranges have been woven into the fabric of the lives of Southern Nevadans for a very long time. We are proud of the national security interests that the Base and Ranges represent, and are keenly aware of the economic benefits that the entire facility provides to citizens of Southern Nevada.

What's more, the LVCVA, as the marketing arm for Southern Nevada's resort industry, believes that the worldwide, positive exposure provided to our destination by the Thunderbirds aerial demonstration team, as well as by the annual Red Flag Exercises, is invaluable and cannot be overstated.

I am convinced that community support for Test Range Renewal runs deep throughout this area, and respectfully ask that you consider this when making your decision. Thank you for your consideration.

Sincerely,  
  
Manuel J. Cortez  
President/CEO

Las Vegas Convention and Visitors Authority • 3150 Paradise Rd., Las Vegas, NV 89109-9096 • (702) 892-0711 • FAX (702) 892-7515

0005

**Sand Springs Ranch  
Rachel Box 50  
Alamo, Nevada 89001  
Phone/fax: 702-7292656**

**November 27, 1998**

**Nellis Air Force Range Renewal Office  
PO Box 9919  
Las Vegas, Nevada 89191-0919**

**Dear Sir:**

**RE: Comments on Proposed Renewal of Nellis Range**

I was unable to attend the public hearings on the Nellis renewal but would like to have a few comments entered into the record.

As a Lincoln County resident I would like to support the renewal in general with a few reservations and adjustments. I do not support permanent withdrawal but prefer a reasonable time frame and review again for renewal. While supporting the range, it needs to be recognized that significant portions of the natural resources are closed to the citizens of Nye and Lincoln counties. Therefore I would like the range to show some flexibility wherever possible and allow some multiple use activities.

It is my understanding that some adjustments of the boundary along the saw toothed southwestern boundary generally in the Beatty area are to be allowed for exploration of the mineralized areas. I consider this to be a positive consideration.

I would also like to have other mountain ranges with mineral potential opened to mining exploration when or if security requirements may change.

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As a student of history, I call on the public and the legislators to remember that we are at the end of a century which experienced unparalleled devastation from war. Upwards of 150,000,000 people died in the 'great' conflicts of the twentieth century. Less important, there were untold billions of dollars lost from injury and destruction, disease and environmental devastation in these wars.

If the nation maintains and improves the world's most powerful air force, then maybe it will be possible to see the next century with warfare much more under control. Maybe my grandson, and the grandsons of the public commentators, will never have to be casualties of war. What price tag would we put on saving their lives, and on preserving the blessings of peace?

Preserve the ranges for their highest use and benefit to all the people of the nation - not just the local residents - keep it as a military test and training resource.

Thank you for considering my comments in this matter.

Sincerely,



Carl VanderVeen  
P.O. Box 708  
Tonopah, NV 89049

GE-1



0005

Where ever a compatible use can be achieved, to allow it would be an advantage to the rural counties' economic base.

In the Sand Springs Valley in the southwestern corner of the valley I recommend grazing be reinstated. My family has the Sand Spring Grazing allotment and the division fence appears to have been put on the valley floor to the follow the Nye/Lincoln county line and not with the topography or the resource or even military security in mind. The area I am referring to has a northern boundary on the T2S line with the eastern boundary approximately on R54E and the Nye/Lincoln County line. The corner of Nellis at T2S and R54 almost touches Highway 375 between Queen City summit and the town of Rachel. I can not give a western or southern line for this proposal until we could drive the area and find the suitable southern and westem boundary. There may already be a portion on the West Side fenced. The area, if returned to this allotment, would allow this ranch to become more economically viable and allow for even better management of the forage resource of the entire valley. In consideration of base security, the grazing management within Nellis could be handled sensitively as has been achieved on another allotment.

There maybe other opportunities for uses on Nellis that I am not aware of but I would encourage that type of concern for the local economy by the Air force.

Thank you for your consideration of these suggestions.

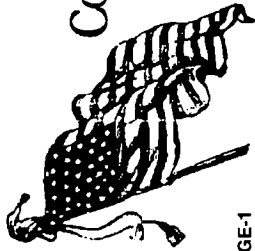
Marta S. Agee  
for the R. Dirk Agee Family

- cc: Lincoln County Public Lands Commission
- Lincoln County Commisstoners
- Jim Marble, Natural Resource Director, Nye County
- Gene Kolkman, Area Manager, BLM, Ely Office

69006

# DISCOVER THE TRUTH ABOUT CORRUPTION IN OUR GOVERNMENT

HEAR THE DOCUMENTED FACTS FROM  
STEWART WEBB  
FEDERAL INFORMANT/WHISTLEBLOWER



GE-1

Stewart Webb is an investigator and Federal Informant. You will learn the truth about "CIA Operation Black Eagle", George Bush and Company, Hillary and Bill Clinton, Vince Foster, Leonard Millman, Larry Mizel, Paul Win, Charles Keating, Carl Lindner, MDC Holdings, Inc., National Acceptance Company of Denver & the Savings and Loan Scandals (Silverado, Lincoln, Imperial, San Juinito, Contrast, Redhill) \$1 Trillion, HUD \$50 Billion, the Denver International Airport Scandal \$16 Billion Illegal Political Campaign Money Laundering - Keating 5 & MDC 200 \$200 Million, Inslaw, DeLoach & Gun Running by Government Agencies, Whitewater, Iran Contra by Bush & Company - the largest theft of any governments' treasury in history; Blackmail of U.S. Congress and Senators (Control Files; Brownstone, Boulder Properties, Gulf War, Somalia, Panama, etc.) and many other corruption plus that took place in the '70s, '80s, and through today. 1% of the people (Bush & Company) now control 42% of the Gross National Product, whereas in 1981 that same 1% controlled 20% of the Gross National Product (the economy of the U.S.).

Stewart has been investigating government corruption since 1986. He provided documented facts to Roddy Stich on government corruption for the \$80 page book titled *DEKAUING AMERICA (1-800-247-7389)*, and sources to *Pete Brewton Author "The Mafia CIA and George Bush"*. He has submitted evidence to members of Congress, the Senate, the FBI, IRS, FDIC, KTC, FSLIC, United States Attorneys, Colorado Bureau of Investigation and to the news media. His documented stories have been featured in numerous magazine articles and on television, including in *Time Magazine* and on *Now It Can Be Told*. In April of 1995, Webb gave 5 hours of testimony before a Federal Judge in a Federal Grand Jury Room.

Since 1986 Stewart has been investigating what is known as the Denver Connection, money laundering, Bush & Company and The Octopus. In September of 1991, he began exposing the facts to the public. He has appeared on over 700 radio and TV talk shows and has made over 300 personal appearances. He continues to expose the corruption in our government through guest appearances on television and radio, as well as at seminars and conventions.

The informant Stewart Webb has gathered spans corruption in the Court System, Bureau of Prisons, Bush and Clinton Administrations and both the Congress and Senate. Stewart has the facts showing that approximately 30% of our top government officials are corrupt. Hear how he has suffered the injustices of a corrupt system. Stewart Webb was imprisoned for over 10 months without a trial because his ex-father-in-law, Leonard Millman - a money launderer for former President George Bush, wanted him silenced. He has been falsely arrested 20 other times. This is the tactic used to silence, detain, discredit and impoverish him AS ONE DENVER REPORTER WHO HAS DEALT WITH WEBB SAID, "OH, HE'S CONNECTED ALL RIGHT. THERE'S NO DOUBT ABOUT THAT. APRIL 7 1995 COLORADO DAILY NEWSPAPER, BOULDER, COLORADO.

LEARN THE DOCUMENTED FACTS FROM STEWART WEBB'S VIDEO TAPES:

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TO CONTACT STEWART FOR APPEARANCES CALL 1-818-907-3196

Stewart Webb continues to fight for a grand jury to hear all the facts. See Stewart's Second Grand Jury Demand Filed Feb 27, 1995 in Denver, CO. Federal Court Case# 95-Y-107 Criminal Division.

Stew has had 6 attempts upon his life since 1990, including being gassed with "GULF WAR SYNDROM" while under false arrest Sept 1995, in the Adams County, Colorado jail. Stew was gassed for his exposure of "GULF WAR SYNDROM" and its manufacturer "KICOR" of Dallas, Texas. The CIA/RUSH/MILLMAN company that developed and sold the Biological/chemical agent to SADHAM HUSSEIN. Also known as the IRAQ/GATE Scandal. As of Dec 1996, "TRICOR" is a manufacturing plant "GULF WAR SYNDROM" at the SAM GERY refinery at Fruta, Colorado. Stew's suspicions are that these Biological/Chemicals are contaminating the Colorado river as far downstream as Lake Mead in Las Vegas, Nevada. Recent U.S. Government reports show deformed fish, similar to the Children born to the Parents who have (GWS). STEWART WEBB KNOWS THE CHEMICAL AGENTS AND THE POSSIBLE CURE FOR GULF WAR SYNDROM.

FRANK W. LEWIS  
120 GREENWOOD DR. 0007  
RENO NEVADA 89508  
NELLS AIR FORCE RANGE RENEWAL LEIS  
PO BOX 9919  
LAS VEGAS NV 89119

GE-1 DEAR SIR:

I BELIEVE THE AIR FORCE  
AND NAVY ARE FENCE DOWN  
NEW MEXICO AS MUCH LAND  
IN ANY EVENT THE MINERALIZED AREA  
WEST OF GOLD FIELL AY. A LINE  
SOUTH IS THE ONE WHICH THE  
AIR FORCE DOES NOT USE ANYHOW.

I AM AGAINST THE BENTLEY  
RAILROADS THIS THROUGH.

Frank W. Lewis  
Las Vegas, NV

RECEIVED  
Bar-of-land Management

8:00 NOV 5 1998

NEVADA STATE OFFICE  
RENO, NEVADA

0008

W. Richard Freeman  
308 Paddington  
Willernie, Minnesota 55090  
November 2, 1998

Nevada State Director, BLM  
1340 Financial Blvd.  
P.O. Box 120000  
Reno, Nevada 89520

GE-1 Sir:

It has been brought to my attention that the U.S. Air Force is attempting to make permanent its questionable previous acquisition of public lands adjacent to the portion of Nellis Air Force Base, generally known as Area 51, or the Groom Lake Site.

The U.S. Air Force has not acknowledged the existence of a facility or operations in the Groom Lake area over a period of many years, until members of the public began observations of the area and began questioning the activities there.

Also, the public land in question is well removed from the operations area ( runways and hangars ), of the Groom Lake Base. The area which has been used as a weapons test range has been in operation for several decades without a single member of the public being harmed. The present attempt is an obvious ploy by the Air Force to acquire public land without proper justification.

In an era of base closings and military cutbacks ( and peacetime, it hardly needs to be pointed out ), the virtual stealing of public lands to protect the public from activities on a base which officially does not exist, seems questionable from the standpoint of safety for the public. Rather, it seems more likely it is the desire by the Air Force for safety from public oversight which drives this latest request.

The more important question to be considered is the safety of the employees who work at the facility, and the long - term health of the public from alleged illegal disposal of toxic materials at the site, with resulting permanent adverse health problems occurring among some of the civilian workers. Various allegations by workers and former workers about illegal waste disposal activity and injury to workers as a result, plus the denial by the Air Force and refusal by them to assist injured workers ( because that would constitute admission of guilt ), have been coming from the Groom Lake Facility for the past several years, to my knowledge.

Because of possible pollution of the environment and injury to civilian employees, both of which are denied by the Air Force, any request for acquisition of public land should be denied until there is effective public oversight of activities at this facility. Until the Air Force is proved to be acting responsibly toward its civilian employees and the environment, any request to further enlarge the Groom Lake Facility should not be allowed without extensive review by the public.

Illegal fouling of the environment and permanent injury to workers in the name of military secrecy have no place in this enlightened age of environmental and social awareness, especially in peacetime. The possible attempt to acquire public land which would effectively isolate the Groom Lake Facility from public scrutiny makes it more imperative to deny the request.

Thank you for your attention in this matter.

W. R. Freeman  
W. Richard Freeman

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DEC 30 2010

Friends of Nevada Wilderness

Keep it Wild!

0010

December 24, 1998  
Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

Re: Range Renewal EIS

GE-2 Dear Renewal Officer:

Thank you for this opportunity to comment on the Draft Legislative Environmental Impact Statement (DLEIS) for the renewal of the Nellis Air Force Range (NAFR). This DLEIS considers the continuing renewal of the NAFR and compares these scenarios with a No Action alternative of returning the land to Bureau of Land Management (BLM) multiple use management. This is perhaps the first EIS I have ever reviewed in which the impacts of the No Action alternative exceed the impacts of the action alternative.

*Friends of Nevada Wilderness* is a statewide public lands conservation organization whose primary objective is the protection and preservation of public land as wilderness. The NAFR contains many areas which, with the exception of overflight noise and some unexploded ordnance, are protected as defacto wilderness. Only about 3% of the range is actively impacted by bombing activities.

Our comments are broken into several subject headings. We did not have time to fully review all subjects.

Alternatives

Neither alternative has an appropriate renewal length. We support a 15-year renewal. A fifteen year renewal is superior because it requires Congress to revisit the issue every 15 years rather than just reviewing the issue (as called for with the indefinite renewal). With a review, Congress would be able to essentially ignore the report; with a renewal required, Congress would be required to review the pertinent issues and vote on a renewal.

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Page 2

Nellis Air Range Renewal DLEIS

Congressional review and voting is essential because they would be able to review the geopolitical situation and assess the need for continued withdrawal. We do not argue with the need for the range in the current geopolitical environment, but no one can forecast the future.

Twenty-five years is objectionable because it is too long. The Air Force loses institutional memory in that time frame because it is longer than the career of many officers. If there is a problem with land management, twenty-five years is too long to wait to correct them if an EIS is required. The fifteen year renewal period is analogous to the time period the Forest Service uses on forest planning and the BLM uses on resource management plan revisions. This will help to provide accountability of the Air Force to the public.

We also support the b alternative. Allowing public access when possible to several areas is desirable. However, please remember that the Kawich region you have included in the co-use zones adjoins a wilderness study area. Please do not make motorized access to this area easier. In fact, the proposed co-use recreational zones should be limited to non-motorized recreation. If the region shown on Figure 2-2 is not necessary to NAFR, it should be returned to the public. The BLM should immediately perform a wilderness review and a grazing suitability analysis.

**Wilderness**

Wilderness is a place that remains in almost pristine condition little affected by the activities of man. That is the basic legal definition of wilderness. More importantly, wilderness is a natural self-organizing ecosystem. It is a place where natural processes, including evolution is allowed to continue. It is in wilderness that the primary nonmilitary value of this area exists.

We believe that the BLM and the Air Force have been negligent in surveying for wilderness study areas on the NAFR outside of the Desert Wildlife Refuge (DWR). There is nothing in public law 99-606 that exempts the range from wilderness surveys that were mandated by the Federal Lands Policy and Management Act (FLPMA). In fact, 99-606 requires that the land be managed and inventoried consistent with FLPMA.

It is possible that an inventory would conclude that none of the lands in the NAFR qualify for wilderness based on the overflights decreasing the solitude values required in wilderness. Based on the fact that the Fish and Wildlife Service (FWS) recommended that 88% of the land under joint withdrawal in the DWR be designated wilderness, the overflight issue would seem to be moot. One BLM wilderness study area, the Kawich Range, bounds the NAFR; it is hard to believe that wilderness qualities on the ground end at the range boundary. It is likely that similar amounts of NAFR land would be found to qualify for wilderness.

*Friends of Nevada Wilderness* requests that the Air Force inventory its roadless areas and assess the impacts of range renewal and the No Action alternative on these roadless areas. (Note

*Keep It Wild!*

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Page 3

Nellis Air Range Renewal DLEIS

that we are not requesting formal WSA status.) A potential impact of the renewal is that the AF will build facilities in roadless areas. A potential impact of No Action is that the BLM will allow activities to occur within these roadless areas without inventorying them for wilderness attributes. A preliminary map based on vectorized roads from a 1:100,000 scale map of the range shows 19 areas totaling 2107.48 square miles or 1,348,787 acres (this map is enclosed). This and the road map in Figure 1-3 could be a starting point for a roadless area survey.

AF-1

Then, we ask that the Air Force limit new facility construction to areas outside of these identified roadless areas. This will protect the existing wilderness and biodiversity values of the area. Then, if the range is ever returned to public use, this survey and the protection will provide a start for the BLM in its required role of assessing the wilderness values the area.

When this range is returned to the public for multiple use, FLPMA requires the BLM to perform a wilderness survey. Also, the land returned to the public shown in Figure 2-2 must be surveyed for wilderness qualities. These surveys should consider that land remaining within NAFR are roadless. Referring to our enclosed map, the returned land will include portions of our recommended Stonewall Mountain and Tolicha Peak wilderness units.

**Biological Resources**

BI-8

The DLEIS does a good job of listing plants and animals found in the NAFR. It also discusses how the roadless nature of the area maintains connectivity between areas. But it misses the opportunity to explain why that is important.

BI-9

The NAFR lies at the transition from the Mojave and Great Basin ecoregions. The north-south trending ranges and valleys provide migratory routes for plants and animals moving either seasonally or due to changing climates. Because of degraded habitat to the west and southeast, Nellis plays an important role in the regional ecosystem. The final LEIS should emphasize this.

**Mineral Resources**

ER-1

The DLEIS does a good job of inventorying the potential mineral resources of NAFR. But you should change the gold/silver and copper/molybdenum potential maps (Figures 3.5-8 and 3.5-9) so that moderate and high potential are not grouped in the same shading. It is very misleading. Much of Nevada has moderate potential and mining companies do not clamor to get to it. But high potential attracts much interest. Thus, these maps send a confusing message.

It is with respect to mineral resources that the No Action alternative would potentially lead to major environmental impacts. Currently, there is no mineral development. Without the renewal, much of the land would become subject to the antiquated General Mining Law of 1872.

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Nellis Air Range Renewal DLEIS

Grazing Resources

Although not directly discussed in the document, the withdrawal has also created the largest livestock free zone in the Great Basin and Mojave Desert. It would be a disaster to allow livestock grazing to begin with the end of the withdrawal. You should better emphasize the positive impacts of NAFR as a remnant of livestock free management.

With respect to grazing, we encourage the Air Force to allow access to range researchers to compare livestock free areas with lands heavily grazed by livestock for years. In the region propose to be returned to the public in alternative b, shown in Figure 2-2, the BLM should perform a grazing suitability analysis. Do the values associated with it being livestock free exceed the marginal values of grazing it? Because there are so few areas without livestock, this could become a baseline the BLM could use to compare with grazed areas. That would increase its values. Also, there may be potential for bighorn sheep introductions around Tolicha Peak.

General Land Management

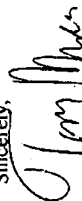
Friends of Nevada Wilderness served on the Keystone run Nellis Stewardship Committee during 1997 and 98. The AF should include that report as an appendix to the LEIS. They should also summarize the recommendations and indicate how they will be implemented should the renewal be granted.

A major topic of the Keystone committee was accountability. How does the public oversee the activities of the Air Force on the range? That is the reason the fifteen year renewal, rather than a longer renewal is necessary.

In summary, we support a 15-year renewal with the b alternative. The AF should express better the value of the range to biodiversity and ecosystem function in the transition between the Mojave and Great Basin ecoregions. The AF should also commit to inventorying and protecting it roadless areas to help maintain the ecosystem process.

Thank you for considering our comments.

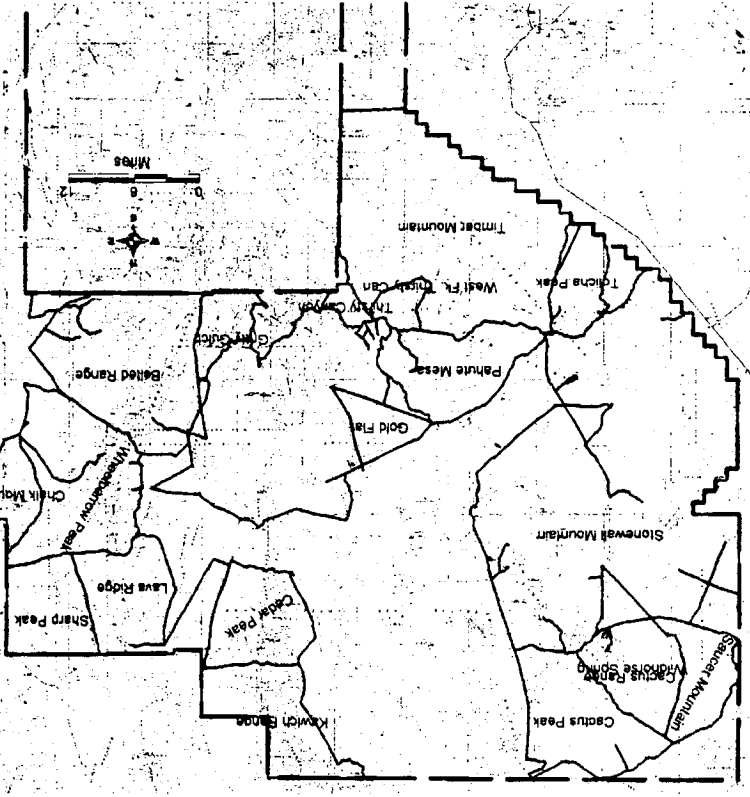
Sincerely,



Tom Myers, Ph.D.  
Conservation Director

Keep It Wild!

Area	Acres
Gold Peak	93,959
Cactus Peak	60,132.38
Stonewall Mountain	529,454
Parlite Mesa	53,553.13
Parlite Peak	37,869.4
Timber Mountain	297.6
West Fk. Thirty Can	15,688
Thirty Canyon	6,428.4
Cedar Peak	68,695.2
Sharp Peak	61,196.6
Lava Ridge	92,965.5
Whorlarrow Peak	83,294.73
Chick Mountain	30,910.2
Balded Range	172,175
Grny Gulch	28,379.6
Gold Flat	28,518.1
Cactus Range	60,861.1
Widow's Spring	45,963.3
<b>Total</b>	<b>284,163</b>



Potential wilderness units for the Nellis Air Range, the areas are in square miles and acres

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**Mineral and Energy Resource  
Assessment of the  
Nellis Air Force Range  
U.S. Air Force Air Combat Command**

Clark, Lincoln, and Nye Counties,  
Nevada

**FINAL REPORT  
VOLUME 1, TEXT**

**NEVADA BUREAU OF MINES AND GEOLOGY  
OPEN-FILE REPORT 98-1  
VOLUME 1**

1998

Joseph V. Tingley  
Stephen B. Castor  
Steven L. Weiss  
Larry J. Garside  
Jonathan G. Price  
Daphne D. LaPointe  
Harold F. Bonham, Jr.  
Thomas P. Lugaski

This information should be considered preliminary.  
It has not been edited or checked for completeness or accuracy.

30 October 1998

0011

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191

**GE-2** Subject: Renewal of the Nellis Air Force Range Land Withdrawal, Volumes 1 and 2  
My comments are confined to the release of the Eastern Goldfield Mining District.  
Requests in this regard were made in the earlier comment period.

**ER-2** The District has moderate to high gold and silver mineral potential as stated on Page 3-5-23; but shown incorrectly as low on Figure 3-5-8, Map of Gold and Silver Potential, Page 3-5-16. For further details, please refer to Mineral and Energy Resource Assessment of the Nellis Air Force Range, U.S. Air Force Air Combat Command, Clark, Lincoln and Nye Counties, Nevada - Final Report, Volume 1, Text Nevada Bureau of Mines and Geology, Open-File Report 98-1, Volume 1, 1998; Page E3-17, Figure E3-9, Precious Metal Potential within Known Mining Districts and Pages 7-9 through 7-21, enclosed for ready reference.

**AF-6** When NAFFR was created at the beginning of WWII, Stonewall Mountain was excluded extending four miles into the range. Can't this exclusion of four miles be extended to the north boundary opening the Eastern Goldfield Mining District for mineral exploration?

The following are additional benefits which would be achieved:

1. The four miles in the northwest corner of Mud Lake would then be available for recreationalists, an idea you have mentioned in your draft.
2. As Eastern Goldfield is in Nye County and should a major mine be developed, Nye County and the State of Nevada would obtain Bullion Tax or Net Proceeds of Mineral Tax.
3. Esmeralda County would gain because of Goldfield's proximity. There would be an increase in the County Motor Vehicle Fuel Tax, Local Transient Lodging Tax, Person Property Tax and County Optional Sales Tax plus population growth.

Exploration for minerals hardly scratches the surface in the Western Goldfield Mining District, most of which was done prior to WWI. Drilling and other exploration tools have vastly improved. An analogy would be the comparison of a WWII Spad to your new A-33JFS.

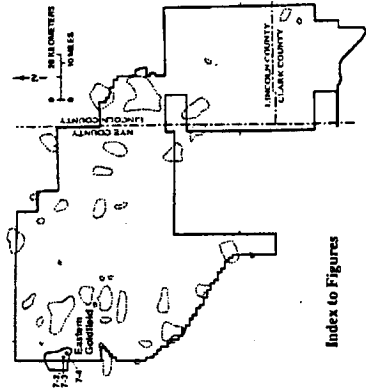
I hope you will be able to correct the errors on your Map 3-5-16 which are significant and consider release of the Eastern Goldfield Mining District. There is an insignificant error in Volume 2, Appendix K21, my middle initial is "C" not "D".

*Richard C. Davis*  
Richard C. Davis  
Box 34  
Goldfield, NV 89013  
4274 Mulligan Drive  
Carson City, NV 89701  
702-883-7624

Enclosure as mentioned above

**ED-3**

0011 7-9



Index to Figures

7.3.1 Goldfield Hills

7.3.1.1 Eastern Goldfield District

Location

The area described as the eastern Goldfield district consists of that portion of the Goldfield mining district that lies east of the boundary of the NAFR on the east flank of the Goldfield Hills. The area is bounded on the east by the alluvial margin of northern Stone-wall Flat. The western boundary is entirely arbitrary, defined for the purposes of this study. The main part of the Goldfield district lies east and northeast of the town.

History of Discovery, Exploration, and Mining

Gold was discovered in the Goldfield district in 1902, the first and most valuable of the new district discoveries which followed the discovery of Tonopah and the beginning of Nevada's second mining boom. The major lodes in the southwestern part of the main district were discovered in 1903, and production began late that year (Ashley, 1990). By 1906, most of the major mining operations were consolidated as the Goldfield Consolidated Mines Co., and rail connections were completed in 1905 and 1907. The peak district production came in 1910; most production was prior to World War I. During the 1930s, production included gold reprocessed from mill tailings (Ashley and Keith, 1976). Following that, the district was mostly inactive until the 1980s, when drilling outlined several areas of low-grade mineralization. Open-pit mining and heap-leaching of these low-grade, disseminated oxidized ores has been carried on for the last 15 years or so. Exploration continues in the district, especially in areas where deposits may be concealed by postmineralization cover.

scheelite, molybdenite, pyrrhotite, sphalerite, chalcopyrite and pyrite with traces of wolframite and fluorite. The geochemical signature of this type of deposit is tungsten, molybdenum, zinc, copper, tin, bismuth, beryllium, and arsenic in some combination. Favorable prospecting indications for these deposits include geochemical anomalies of tungsten along with one or more of the other listed elements and the presence of skarn minerals in carbonate rock near an intrusive contact. Important deposits of this type include the Nevada-Massachusetts, Getchell, and Tern Pit Mines in Nevada, the Pine Creek Mine in California, the Canung Mine in Northwest Territories, Canada, and the Sang Dong deposit in Korea. The Climax Mine on the Nevada Test Site is the closest deposit of this type to the NAFR.

7.3 MINES, PROSPECTS, MINERAL OCCURRENCES, AND MINERALIZED AREAS

Prospecting and mining within the area now included within the Nellis Air Force Range (NAFR) began in the late 1860s and continued unrestricted to 1942 (Section 7.1). Evidence of this activity can be seen throughout the NAFR, but some mining took place in the northern part. All or parts of some 25 major mining districts and areas are within the NAFR, and 13 additional smaller areas of prospecting activity were defined during this investigation (fig. 7-1). Most of the larger areas have had mineral production. The smaller areas may consist of only a few concentrated prospects and have escaped notice in earlier studies.

Each of the areas shown on figure 7-1 is discussed in the following sections of the report and an estimate of mineral resource potential is made. Numerous maps and figures are included in this section but all sample descriptions and analyses have been placed in appendix C. The district and area descriptions are organized into logical geographic groups. Descriptions progress from the Goldfield Hills, on the northwest border of the NAFR, east to the Cactus Range-Cactus Flat area, south to Pahute Mesa and Yucca Mountain, then north to the Kawich, Belled, and Groom Ranges, and finally south through the Pinwater, Popoose, and Halfpint Ranges to end in the Spotted and Desert Ranges on the southeast border of the NAFR. The physiographic areas are shown on figure 3-1.

The discussion in each section generally follows the format of: location; history of discovery, exploration, and mining; geologic setting; mineral deposits; identified mineral resources; and mineral resource potential in some sections; the additional headings of previous investigations, present investigation, and geochemistry are used. In other sections, the headings of geologic setting and mineral deposits are combined.

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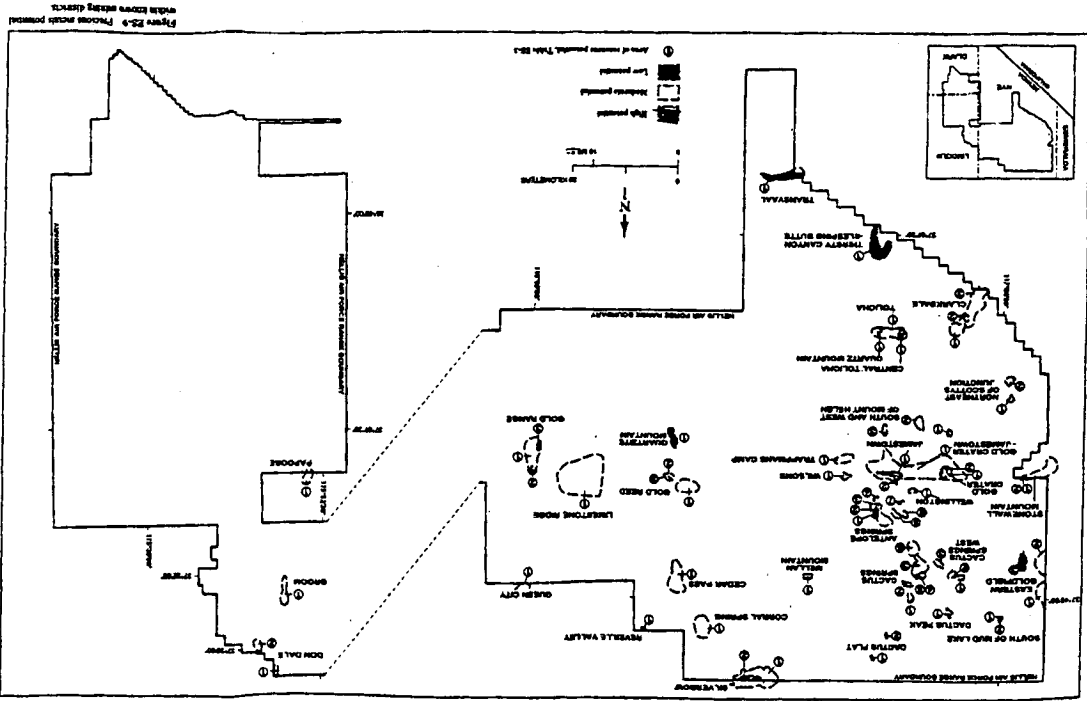


Figure 7-1 - Mining districts within Nellis Air Force Range

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7-11

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from a spring to the northwest) in anticipation of mill construction (photo 7-3). A foundation on the site is an indication that the mill was built, but it is unlikely that any appreciable amount of ore was processed, because no tailings from it were noted during this study. Several historical accounts mention the presence of free-milling gold, and one assay reported in the Goldfield News and Weekly Tribune (July 30, 1926) was 1.72 oz gold per ton and 0.92 oz silver per ton. Kral (1951) briefly mentions the Free Gold and Extension Group of claims in the area, reporting them to be owned at that time by O. J. Brincofield of Goldfield and Emil Perelaz of Reno.

**Geologic Setting**

**Main Goldfield District**

Because Goldfield was a quite significant gold mining camp with locally high grades, there are numerous published descriptions of the geology and major mines in the main district. Most of the significant Goldfield references are cited by Ashley (1974, 1990). However, reference to the easternmost part of the district is limited to brief descriptions of the Free Gold Mine (Kral, 1951; Smith and Tingley, 1983). Detailed unpublished geologic maps of this eastern area were obtained from Roger Ashley of the USGS (written communication, 1994); these were used during the study of the district, and form the basis of the generalized geologic map of the district (fig. 7-3).

The Goldfield district has produced more than 4.2 million oz gold and 1.45 million oz silver, mostly before World War I (Ashley, 1990). Production of a few thousand ounces of gold per year has been reported for the 1990s (see Bonham and Hess, 1994), and continues today. Recent gold production is relatively low-grade (0.05-0.1 oz per ton) from open-pit, bulk-mineable material adjacent to or between high-grade lodes mined in the early part of this century. These ores are processed by heap-leach methods. Remaining reserves of a few hundred thousand ounces have been announced. Additionally, Kennecott Exploration has discovered gold mineralization in an area just north of the town of Goldfield that is covered by postmineral Siebert Tuff and Quaternary alluvium (their Cemifield project). This area, west of Columbia Mountain, was deemed prospectively interesting by Scarts (1948) based on his interpretation of developments in the district in the 1920s as well as exploration in the 1940s. The mineralization is reported to be low-grade gold ores with erratic higher-grade zones in quartz-aluminic altered volcanic rocks (Tingley, 1994).

The Goldfield district is an epithermal precious-metal deposit of the quartz-aluminic type (sometimes referred to as high sulfidation or enargite-gold types (Berger, 1986). It is the largest deposit of this type in North America, and is commonly cited as a representative of the type. Gold-rich

Exploration and mining activity in the eastern Goldfield district was apparently coincident with the activity in the main part of the district as Kral (1951) stated, "Any mining area as important as Goldfield stimulates much interest." The considerable number of minor prospects in the eastern part of the district attests to this exploration interest. A number of mining claims in this area were surveyed for patent during the period 1906-16 (Mineral Survey Plats, BLM). Where appropriate, these claim names are used in the following descriptions and on individual sample sites. According to Mineral Survey Plats, Mineral Patents were actually granted for only two areas within or on the boundary of the eastern Goldfield district. One area, the Nancy Donaldson Group (patent no. 284077), lies across the general boundary of the NAFR (fig. 7-2); these patented claims were apparently excluded from the NAFR, based on the existing fenced boundary; also, taxes are being paid on the property by private owners (Nye County tax records). One other group of patented claims, the Revenue and Eclipse Lodes (patent no. 83152), deserves mention. The plat map of these claims show them to be mainly in the NW and NE of section 12, T2S, R43E. This legal land location is about 2.5 km east of the easternmost bedrock outcrops of the eastern Goldfield Hills and is entirely in alluvium of Stonewall Flat. The physical features displayed on the plat map of these claims do not match the section-township-range location given. It appears that the survey plat ties the claims to a section corner (SW corner, section 36, T2S, R44E) which should have been identified as the same section corner in T2S, R43E, that is, about 10 km to the east. This location is in an area of ridges and valleys similar to that displayed on the plat, and prospects are present as well. Thus, the patent plat for the Revenue and Eclipse claims most likely mislocates them; the actual location of the minerals in place that prompted the application for patent is near the center of section 12, T2S, R43E, west of the NAFR boundary, and thus outside the area of this study.

Although no record of production from the Nancy Donaldson Mine was found during the present investigation, The Goldfield News on Jan. 18, 1908 reported that the mine had produced one "valued at thousands of dollars per ton" two years earlier. The amount of dump material and the probable depth of workings (about 35 m) suggest at least some lateral underground workings. Production was almost certainly minor. The gasoline-powered hoist for the mine (photo 7-1) was removed from the property in the 1960s and is preserved at the Central Nevada Historical Society Museum in Tonopah.

The mines in the vicinity of Quartz Mountain were active in the mid-1920s, being referred to as the Bell Claim group or Sailors' Mine (photo 7-2)(Weed, 1922, 1926). During this time the claims were held by a Los Angeles group of investors headed by A. I. Sailors. After Sailors' death in 1932, a 3-km pipeline was laid to the property (probably

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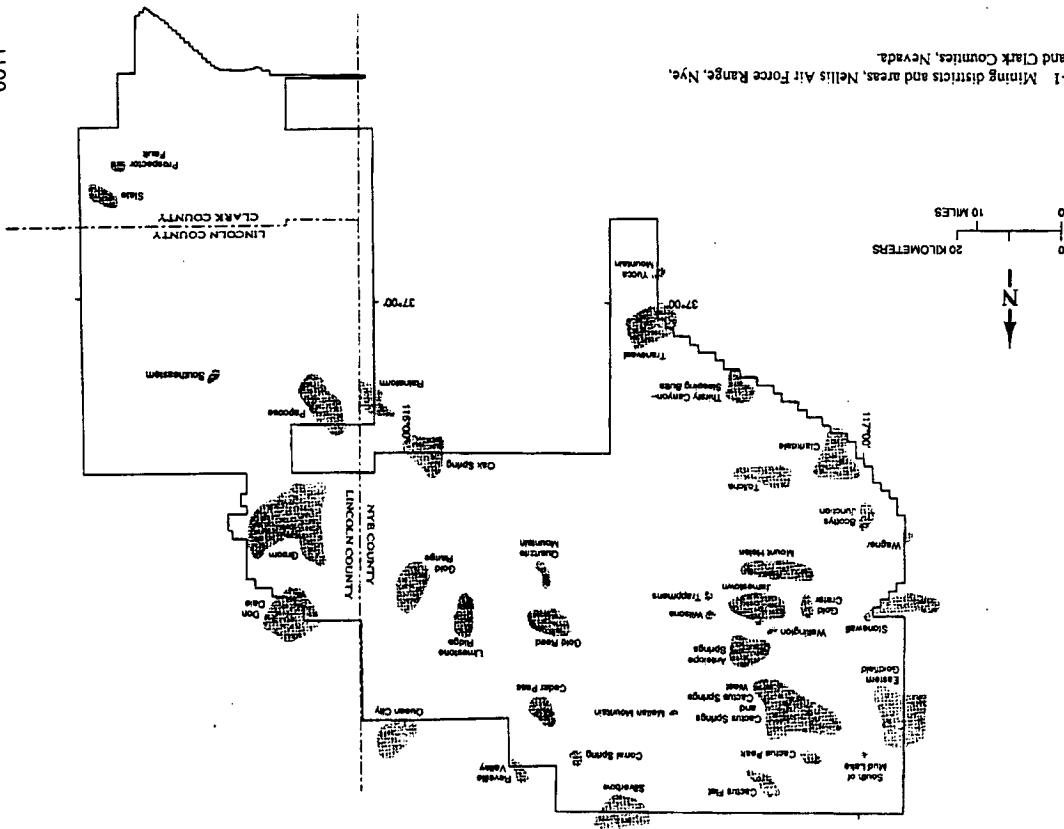


Figure 7-1 Mining districts and areas, Nellis Air Force Range, Nye, Lincoln, and Clark Counties, Nevada.



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bonanza deposits were mined from an area of about 1.3 km<sup>2</sup> in a district having an area of surface exposures of altered rock of over 38 km<sup>2</sup> (Ashley, 1990). The gold orebodies occur in quartz-rich zones, commonly referred to as ledges, that occur within larger areas of advanced argillic alteration (quartz ± alunite ± kaolinite ± pyrophyllite ± sericite ± diaspore ± leucocene ± pyrite). Pyritic, argillic, and propylitic alteration zones of lesser intensity are found around the advanced argillic alteration. The tabular ledges commonly follow faults or fractures (Ashley, 1990). The gold orebodies are associated spatially and temporally with a calc-alkaline volcanic center of early Miocene age. Flows, tuffs, and breccias of this center (commonly rhyodacites and andesites) overlap a small (about 6 km in diameter) caldera of Oligocene age (Ashley, 1990). The main area of gold mineralization is along the west margin of this caldera. Deposits are hosted by both the Oligocene rocks that are cut by the caldera ring fracture, and by Miocene rocks that intrude or overlie it. The lower Miocene volcanic rocks range from about 22 to 20.5 Ma, hydrothermal alteration and mineralization took place at about 20.5 Ma (Ashley, 1990). The ore minerals in the main district are typical of this deposit type, and occur in irregular sheets and pipes in some of the silicified bodies. Many silicified bodies, however, are nonproductive, although they do not differ in appearance from the productive ones. Ore and gangue minerals include quartz, pyrite, farnesite, tetrahedrite-tennantite, bismutinite, native gold, and local gold-silver tellurides. Minor chalcopyrite and sphalerite were reported, as well as sparse galena. Bante is found with gold at a few localities (Vikre, 1989). Gold fineness is high (greater than 980 for two samples examined) and the gold-to-silver ratios for most unoxidized ore mined in the district were about 3:1. Ore containing 100 or more oz gold per ton was not uncommon (Ashley, 1990). Thus, in contrast to many Nevada deposits of that time, silver was a by-product.

Fluid inclusion and isotopic studies indicate that the ores formed at relatively shallow depths from meteoric water at about 200 to 300°C. There is evidence for boiling of the solutions, and sulfur from pyrite in the ores had a magmatic source. The hydrothermal circulation system was likely a result of the release of SO<sub>2</sub>-rich plumes of magmatic gas from the intermediate-composition igneous centers associated with mineralization (Ashley, 1990). The most likely source of the metals in high-sulfidation type deposits is magmatic fluid of the associated igneous rocks (see Hedenquist and Lowenstein, 1994).

The geochemical suite of associated metallic trace elements includes, in addition to gold, silver, copper, arsenic, antimony, bismuth, tin, tellurium, lead, zinc, mercury, and molybdenum (Ashley and Keith, 1976; Ashley, 1990). Ashley and Albers (1975) suggested that gold, silver, and lead are potentially useful as geochemical prospecting guides to ore in oxidized samples.

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*Eastern Goldfield District*

Field work on the portion of the Goldfield district east of the NAFR boundary was conducted during the summers and falls of 1994 and 1995. Samples were collected from all significant mines and prospects in the study area, and a minor amount of geologic mapping was done in a small area that was not shown on published and unpublished geologic maps of the area provided by Roger Ashley (1975; written communication, 1994). Because the area is adjacent to a major mining district, it has been extensively prospected. Some prospects display so little significant hydrothermal alteration or mineralization that they were not sampled; however, most were examined in the field, at least if bedrock was exposed in them.

The major geologic units exposed in the eastern Goldfield district are briefly described in figure 7-3. About one-half of the pre-Quaternary (bedrock) outcrop area consists of rock units which are older than the alteration and mineralization in the main district (about 20.5 Ma). These rocks are predominantly intermediate in composition (rhyodacites and andesites), and are part of the calc-alkaline early Miocene rocks that are associated with mineralization. Based solely on potassium-argon ages of the unit, the Rhyolite of Wildhorse Spring should be considered a part of this pre-mineralization group; however, it is not affected by the hydrothermal alteration of the main district (Ashley and Silberman, 1976), appears to overlie locally altered Miocene Andesite northeast of Tognoni Mountain, and is considered a post-mineralization unit (Ashley and Silberman, 1976). The remaining bedrock units, constituting more than one-half the outcrops, are clearly post-main-stage Goldfield mineralization. Included in this younger group are the Meda Rhyolite, porphyritic laite, the rhyolite of Cactus Peak, and the Spearhead Member of the Stonewall Flat Tuff. Hydrothermal alteration and mineralization of the low-sulfidation type is found in these younger rocks in the northern part of the eastern Goldfield district.

*Mineral Deposits*

*High-Sulfidation Deposits*

Hydrothermal alteration associated with high-sulfidation epithermal deposits is commonly much more extensive than the areas of ore-grade mineralization, and is highly visible due to bleaching, silicification, iron-staining, etc. The surface expression of the altered area in the main Goldfield district is a dome-like feature shaped much like the letter "O", having a long tail extending eastward toward the area of this study, the eastern Goldfield district (fig. 5-4; Ashley, 1990, fig. H3). This east-striking alteration zone ends at about the west boundary of the NAFR (near the area of the Table Mountain, Dahlonega, and Vistaula claims of fig. 7-2).

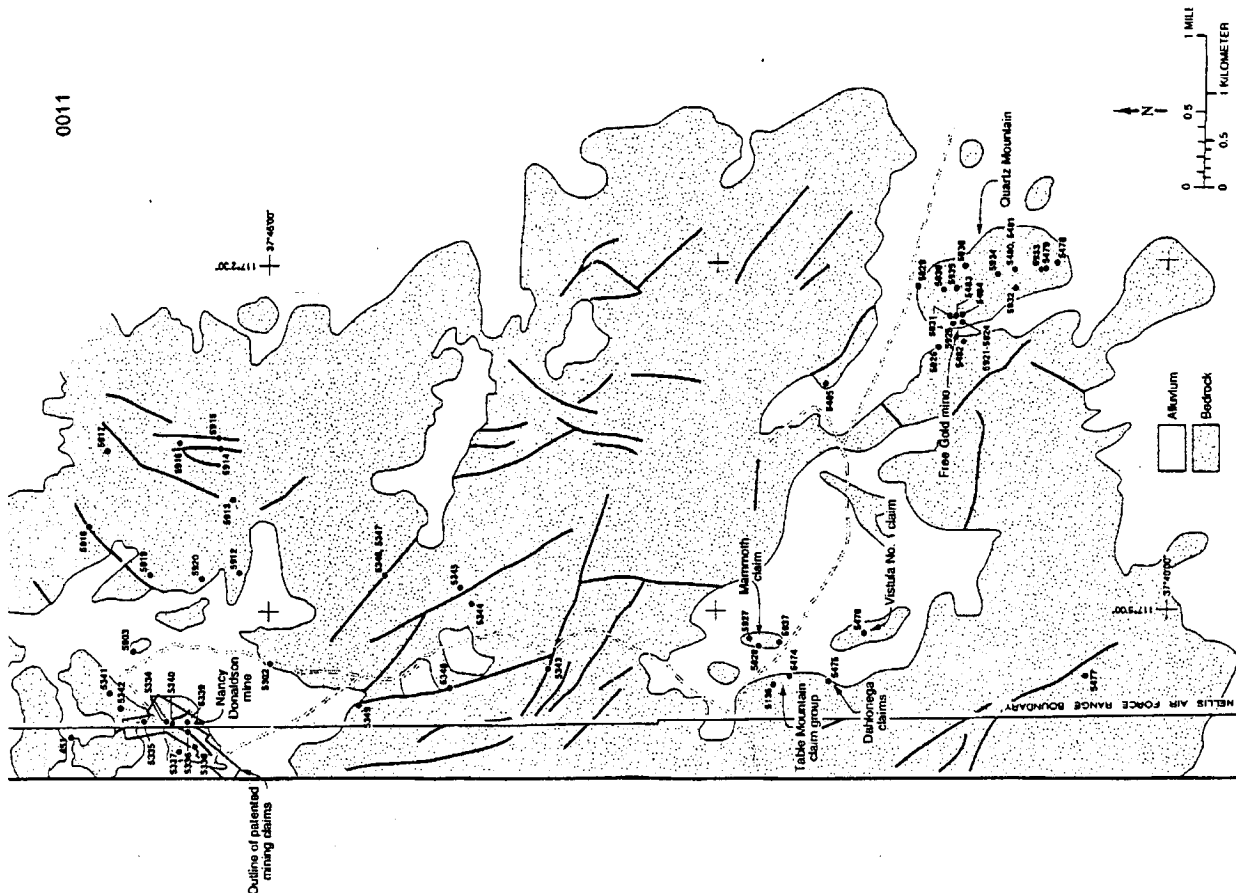
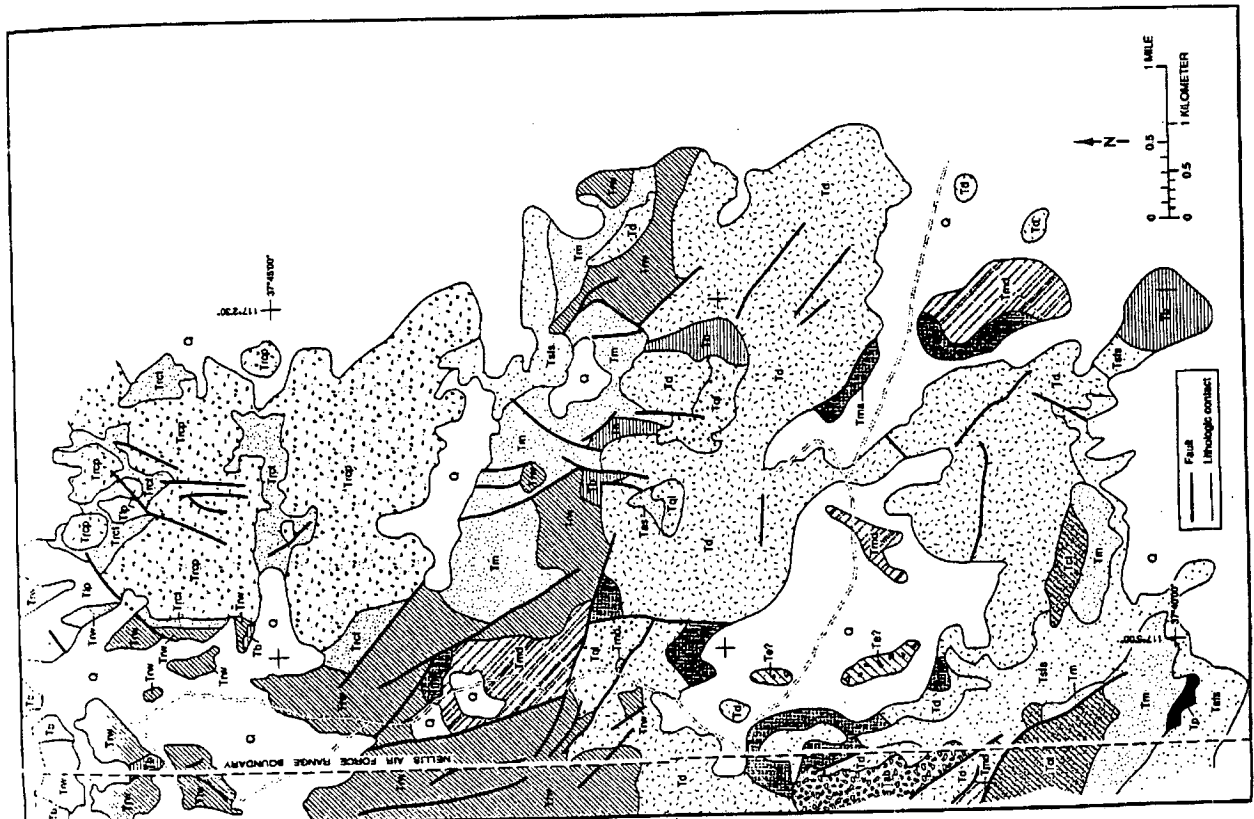


Figure 7-2. Geochemical claims location.

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although spotty and mainly weaker alteration continues to the east. Stronger hydrothermal alteration is evident to the east at one location along this zone, however, at a hill that has been referred to as Quartz Mountain (Kral, 1951, p. 72) because of silicification over much of the hill. This alteration is indicated as a circular anomaly east of the tail of the "Q" on figure 5-4. This anomaly on the Landsat Thematic Mapper (TM) imagery reflects elevated amounts of minerals containing ferric iron or hydroxyl ions (e.g., clays and iron-oxide minerals; see Abrams and others, 1977).

As described previously, high-sulfidation mineralization typical of the main Goldfield district is found only in the southern part of the eastern Goldfield district, because pre-mineralization-age rocks are only exposed there. Significant alteration and mineralization seems to be confined to the two oldest units of the study area, Milltown andesite and porphyritic rhyodacite (units Tma and Tmd of fig. 7.3).

Hydrothermal alteration in the southwest part of the eastern Goldfield district (the area of the Table Mountain, Dablonga, Visula, and Mammoth claims of the early 1900s; see fig. 7.2) is predominantly argillitic, with spotty silicification. Swelling clay minerals (smectite) are observed in some areas. Spotty, elongate ledge-like silicified areas have generally east-west strikes in the Table Mountain and Dablonga areas; however, a north-striking ledge is present in the Mammoth area and may continue to the south the Visula area (sample site 5476). Alunite is likely associated with areas of stronger silicification. Except for a minor amount of pyrite disseminated in the wall rock of dump sample 5476, no sulfide minerals were observed. It is likely that sulfides were oxidized below the level of exploration at most properties in this area. Selenite noted in argillized rock at one locality suggests that pyrite and/or other sulfide minerals have been oxidized near the surface. The mine workings in this altered area are generally shallow (3-30 m). Select dump samples were commonly collected to include the most strongly mineralized rock, even these samples do not have significant gold values. The workings are apparently rather typical exploration efforts on the periphery of Goldfield; it is quite unlikely that any appreciable production came from them.

Kral (1951) refers to a strongly silicified hill of volcanic rock in the eastern part of the Goldfield district as Quartz Mountain (figs. 7-2 and 7-4). The main property in this area is the Free Gold Mine (Free Gold and Extension Group). Kral's (1951) report of 1,800 feet (548 m) of workings in one adit and an additional 500 feet (152 m) of adits and shafts is somewhat high. The "Slope Adit" has about 175 feet (53 m) of workings, and a lower long adit has about 750 feet (229 m). Other horizontal workings at the Free Gold on the northwest flank of Quartz Mountain total less than 100 feet (30 m). Additionally, a shaft near the wash to the west of Quartz Mountain (site 5482) is likely 100 feet (30 m) or

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so deep and may have an equal amount of horizontal workings. Thus, a total of about 1,200 feet (365 m) of workings is more reasonable. Additionally, prospect pits and short adits are found at a number of places on the mountain; the most concentrated area of such workings is near its south end at an area of strong silicification, plus hematite and alunite alteration. One adit there is about 20 m long, and there are several other shorter horizontal workings.

R. P. Ashley (unpub. mapping, see fig. 7-3) has mapped Quartz Mountain as intermediate composition flows and intrusive rocks. Rocks over most of the mountain are silicified, argillized, and iron stained, and commonly only the sparse, relatively large, corroded quartz phenocrysts remain unchanged. Locally, hydrothermal fluids have produced a vuggy silica type of alteration (see Stoffregen, 1987) as well as local concentrations of alunite, hematite, and kaolinite. Two areas of silicification, vuggy silica alteration, and strong hematization with alunite and kaolinite are present on the mountain (see fig. 7-4), a northern area at the Free Gold Mine and a southern, less extensive unnamed area. Silicification of the rocks of Quartz Mountain is essentially confined to the mountain and a small area near the Free Gold shaft at the northwest edge of the mountain. Relatively unaltered younger rhyodacite is present to the west, and to the north across an alluvium-covered area. Similar fresh rhyodacite is also present in small outcrops on the pediment to the east of the mountain. Only to the south is there an opportunity for altered rocks to extend for any appreciable distance under shallow alluvial cover and postmineralization rock units.

Mineralized faults at Quartz Mountain most commonly are north-striking, although shorter, less obvious easterly striking altered and mineralized structures are observed. At the Free Gold Mine, a steep underground is developed along a north-striking brecciated zone that appears, based on surface and subsurface information, to strike about N20°W and dip about 80°SW. At unnamed areas of workings near the south end of the mountain (sample sites 5479 and 5480) both north-striking high-angle faults and low-angle north-west-dipping faults are mineralized. The shaft near the wash in the Free Gold area (site 5482) may have been sunk to explore a fault and silicified zone; the fault has an attitude of N5°W, 55°E. Hydrothermal breccias are observed at the Free Gold Mine in and near the most mineralized areas.

Workings on Quartz Mountain are shallow, with the deepest shaft about 30 m deep. Probably all of the rocks observed on dumps and underground are from within the zone of oxidation. However, as described below, it is likely that pyrite was sparse to rare, and that the mineralization originally consisted of a largely pyrite-free suite including quartz + hematite + alunite + kaolinite ± jarosite ± barite. At the Free Gold Mine and elsewhere on the mountain, the strongest alteration is highly hematitic. In strongly silicified ore and

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A considerable number of prospects are shown on the East of Goldfield 7.5-minute topographic map in the southern part of the eastern Goldfield district, mainly along the Goldfield-Cactus Spring road. These prospects are not included in the above descriptions of the Table Mountain-Dahlonega-Mammoth-Visalia area or the Free Gold Mine area. These scattered prospects were only sampled at two sites (5477 and 5485), although many were examined. Some prospects are in alluvium, some are in slightly bleached rhyolite, some are not represented on the ground by any workings, and some are in slightly argillized rock. Many of the prospects are on the margins of outcrops of rhyolite flow domes (unit Td, fig. 7-3). Hydrothermal alteration in this unit appears to be quite limited.

In geochemical samples from the southern part of the eastern Goldfield district, elements present in anomalous amounts are typical of epithermal quartz-alunite (high sulfuration) gold deposits, and particularly of the main Goldfield district. Anomalous values are sporadic because of the varied nature of the samples collected, from highly to only slightly mineralized. With that qualification in mind, many samples are slightly to strongly anomalous in gold, silver, arsenic, barium, bismuth, mercury, lead, antimony, and tellurium. Additionally, slightly anomalous values in copper and zinc are noted, and one or more samples are anomalous in tin, tungsten, selenium, thallium, or uranium.

Low-Sulfidation Deposits

A number of prospect pits and shallow workings (usually shafts) are found in rhyolitic rocks in the northern third of the eastern Goldfield district, north of Wildhorse Spring. Vertical workings are commonly a few meters to 10 m or so deep; the deepest are probably about 30 m deep. The most extensive localized group of workings is at the Nancy Donaldson Mine on the boundary of the NAFR (fig. 7-2).

Mineralization is mainly in rhyolitic pyroclastic and flow-dome rocks of the rhyolites of Wildhorse Spring or Cactus Peak (fig. 7-3). Banded vein material, commonly spotty, is present at most prospects, and consists of bluish white calcite, saccharoidal to commonly drusy or comb clear quartz, and white to cream massive or parallel bladed (lamellar) calcite. Quartz and chalcedony commonly display parallel or lattice bladed textures indicative of replacement of calcite. Calcite is apparently earlier in some veins, and sparse iron- and manganese-staining is noted. The veins range in width from a few centimeters to half a meter or more and are apparently oxidized below the level of exploration, but limonite boxworks after pyrite(?) were observed. Hydrothermal breccias occur at a number of properties. Wall rock alteration includes silicification, sericitization, local development of smectite clay minerals, and adularization. A thin section from adjacent to the vein at the Nancy Donaldson Mine shows the following alteration minerals:

mineralized rock the hematite occurs as small (about 0.5 mm), black, indescible to earthy rhombohedral crystals disseminated in light gray silica and white alumite. Kaolinite is also common, and hematite is found locally in samples with higher gold values. Hematite is apparently locally oxidized to limonite; pseudomorphs of limonite after pyrite were not observed, and a few crystals of pyrite were noted only at site 5481. Finely crystalline alunite occurs as pink, white, and yellow replacements of feldspars phenocrysts and groundmass minerals and as 1 to 3 cm wide veins. The veins are commonly fine-grained white, pure alunite having an indistinct coarse fibrous texture oriented perpendicular to the vein walls and a 1-3 mm selvage of red hematite at vein margins. At one locality on the northeast flank of Quartz Mountain (site 5935) small (about 0.5 mm) crystals of fluorite occur as drusy open-space coatings on hematized and kaolinized rhyolite. Ilite and a trace of gypsum were also found by X-ray diffraction methods in the sample, which was determined to contain 0.15 percent F.

Kral (1951) reported ore grades of about 0.5 oz of gold per ton from the Free Gold Mine. Select surface and dump samples collected during the early part of this study confirm this gold mineralization, but at lower values. Chip samples from underground in the Slope Adit at the Free Gold Mine (the main area of appreciable production) were highly anomalous (0.045 to 1 ppm) but are generally an order of magnitude less than the 0.5 oz gold per ton reported by Kral (1951). A select sample from a short adit nearby approached those levels (7 ppm or about 0.25 oz gold per ton). Samples from other minor prospects and hydrothermally altered areas on Quartz Mountain confirm that anomalous (but not ore grade) precious and indicator element values are widely distributed throughout the mountain.

The mineralization at Quartz Mountain is almost certainly part of the mineral deposition of the main Goldfield district, and is thus likely about 20.5 Ma, although no dating of alteration minerals was done during this study. The style of mineralization is, however, somewhat different, and is believed to represent largely sulfide-free mineralization characterized by hypogenic quartz, hematite, alunite, kaolinite and barite. The presence of hematite instead of pyrite in the mineral association is an indication of highly oxidized hydrothermal solutions (Holland and Malinin, 1979). Such highly oxidized hypogenic mineralization, where it has been described elsewhere, is believed to be shallower than the more typical sulfide-rich, argillite-gold veins. Stidley and Aracada (1986) reported that barite-alunite ore at the El Tanco deposit (located about 5 km from El Indio, Chile) is observed to pass with depth (at about 75 m) to sulfide-bearing silicified argillite ore. Hypogenic alunite-barite ore similar to that at the Free Gold Mine has also been reported at Summitville, Colorado (Stoffregen, 1987) and intergrown hypogenic alunite and jarosite are reported from Preble Mountain in the main Goldfield district (Keith and others, 1980; see also Albino, 1994).

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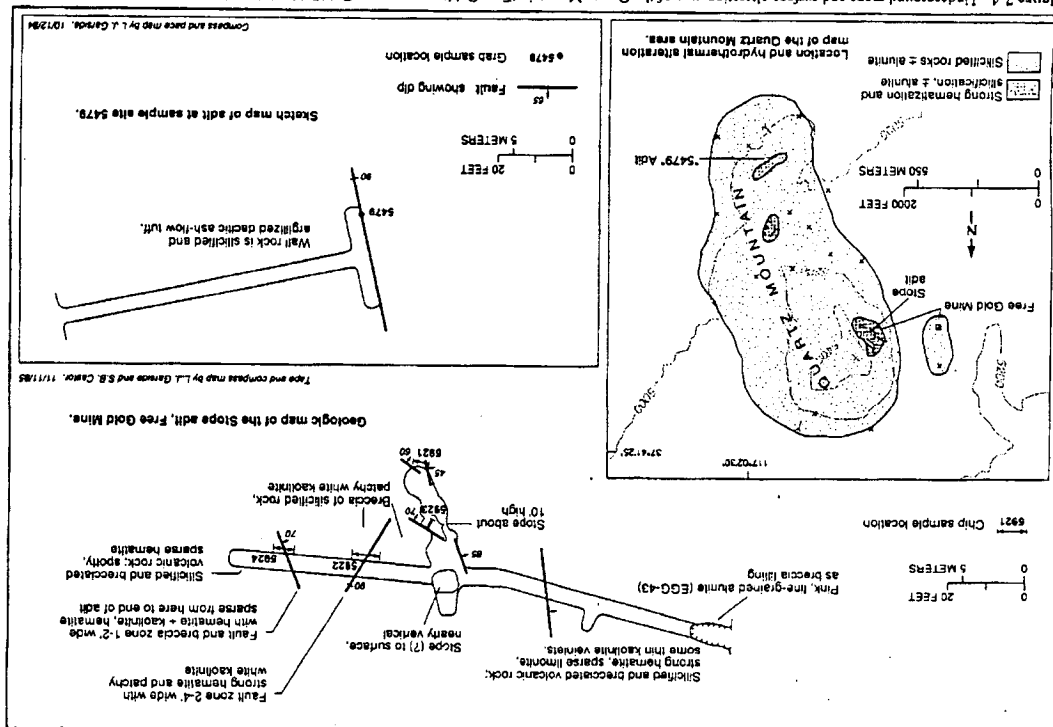


Figure 7-4. Underground maps and surface alteration maps of the Quartz Mountain (Free Gold) area, eastern Goldfield mining district.

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manganese oxide (wad), and sparse drusy quartz and iron oxides. The only manganese oxide mineral identified (by X-ray diffraction analysis) is vermiculite. The north-south striking vein (about 600 m long) occurs in a wide fault breccia zone in flow-banded rhyolite; this wall rock is silicified and iron-stained adjacent to the vein (especially in the hanging wall), and iron-stained faults and fractures are common in the rhyolite over an area of about 2.5 km<sup>2</sup>. If the altered and mineralized flow-banded rhyolite unit is a part of the 11.5 Ma (new constants) rhyolite of Cactus Peak, the mineralization is that age or younger. Silver was apparently the metal sought, as it occurs in amounts of 1 to nearly 2 oz per ton in select dump samples.

Calcic-silica-wad veins with textures indicative of shallow hydrothermal deposition are most likely of the epithermal manganese deposit type (Moser, 1986). Manganese in such veins was probably deposited originally as oxide minerals, as in the Luis Lopez mining district southwest of Socorro, New Mexico (Farnham, 1961), which contains some of the best examples of such epithermal manganese veins. Vermiculite is most commonly identified in deep-sea manganese nodules, although it has a structure similar to pyrochlore and often occurs in fine mixtures with cryptomelane. Workings on the vein are shallow and entirely in oxidized material; it is not known if vermiculite is an oxidation product of other oxide or carbonate manganese minerals or if it is a hypogene phase. Thus, although it is possible to speculate on what the mineralogy of the vein may be deeper in the system (e.g., epithermal silver-gold with manganese-carbonates and silicates, and base-metal sulfides), there is little evidence available to support it.

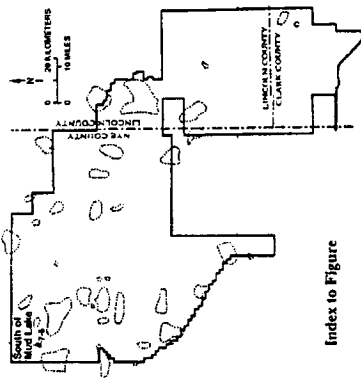
In samples collected from the calcic-silica-manganese vein, manganese, silver, lead, and zinc are strongly anomalous, and copper, arsenic, and mercury are weakly anomalous. Gold is not anomalous, and trace elements in samples collected from minor prospects some distance (fig. 7-5) from the main vein are essentially not anomalous.

**Identified Mineral Resources**

There are no identified mineral resources in the South of Mud Lake district.

**Mineral Resource Potential**

The vein is too narrow to be considered for potential for manganese; a small area in the immediate vicinity of the mineralized vein has a moderate potential for silver in epithermal manganese mineralization, certainly level B. However, similar epithermal manganese veins elsewhere have not been mined for silver, and extraction of silver from manganese-rich ore may be difficult. The mineral potential for such deposits in the adjacent area is low, certainly level C.



Index to Figure

rhyolite, vitrophyre, or iron-stained and brecciated flow-banded rhyolite. The shafts are estimated to range from 3 to 15 m deep.

**History of Discovery, Exploration, and Mining**

No records were found of when or by whom the prospecting was done. Probably, the work was done during the period of the mining activity at Goldfield, in the early part of the twentieth century. There is no indication of any more recent activity. It is unlikely that there was any significant production from these workings.

**Present Investigation**

Field work in the area was mainly in the fall of 1995; two samples were collected from the area of the main workings in 1994.

**Geologic Setting**

The mineralized area is confined to a fault zone in flow-banded rhyolite and a small capping of rhyolitic pyroclastic rock (fig. 7-5). Prospects are found to the east of the fault (mainly at areas of minor iron staining) over an area about 1.5 km long in an east-west direction and 1 km wide. This area appears to be predominantly intrusive rhyolite, surrounded by outcrop areas which include more flows.

**Mineral Deposits**

The mineralized vein at the main workings consists of a wide zone (1-6 m) of very dark brown to black, crustiform and locally cockade material consisting of plagioclase and lamellar dark and white calcite, bluish white chalcedony, porous

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1995), particularly the hot-spring gold-silver type (Berger, 1986) and probably the upper levels of silver-rich systems like Tonopah (see Bonham and Gar-side, 1982). In fact, a continuum may exist between such deposit types.

Surface indications of mineralization at the Nancy Donaldson Mine appear to be confined to the area of the patent claims. Based on geochemical sampling, the prospects and narrow veins found east of the Nancy Donaldson are not very prospectively interesting. Geochemical samples from prospects in the vicinity of Wildhorse Spring do have some indications of anomalous indicator elements, and thus have more prospective value. Possibly these prospects represent the more weakly mineralized periphery for an area of mines just west of the NAFR boundary (west of Wildhorse Spring). These mines were not examined during this study.

**Identified Mineral Resources**

There are no known identified mineral resources in the Eastern Goldfield district.

**Mineral Resource Potential**

Based on the above information, Quartz Mountain has a high potential for high-sulfidation type epithermal gold mineralization, certainly level C. There is high potential here for both high-grade lodes below the depth of present exploration and for shallower bulk-mineable deposits. Two areas of prospects and anomalous pathfinder-element geochemistry located adjacent to the NAFR boundary have moderate potential for precious-metal deposits, one area for high-sulfidation gold-silver and the other for low-sulfidation deposits. In both cases, bulk-mineable deposits are more likely. A certainty level of B is attached to these estimations.

**7.3.1.2 South of Mud Lake District**

**Location**

An area of several shafts and nearby prospects is located in an area of about 2.5 km<sup>2</sup> in volcanic hills to the southeast of Mud Lake. The hills can be considered the northeastern extension of the Goldfield Hills. The shafts and prospects (photo 7-4) are located in Sections 11 and 12 (protracted), T2S, R44E. The workings consist of several shallow shafts, less than 15 m deep, along a quartz-calcite-wad vein which trends N70°E and varies in dip from vertical to 40° northwest. In addition to these workings along the vein, nearly a dozen other small pits are found in the surrounding area. Only the shafts are associated with vein mineralization; the remaining prospect shown on the Mud Lake South 7.5-minute topographic map are in talus, alluvium,

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calcite, sericite after biotite, clay(?), limonite after pyrite, and patchy replacement of feldspar phenocrysts and groundmass by adularia. The veins and associated silicified zones of the northern area have northerly or northwesterly strikes, and are either near vertical or dip steeply west. A similar style of mineralization and strike of mineralized structures is noted at mine workings west of the NAFR boundary (e.g., sample 452 of Smith and Tingley, 1983).

The age of low-sulfidation type mineralization in the northeastern Goldfield Hills is unknown, but is apparently younger than the rhyolite of Cactus Peak (11.5 Ma), as veins cut that unit. However, only veins at the Nancy Donaldson Mine have significant amounts of precious metals and other trace elements, and those veins cut the rhyolite of Wildhorse Spring (21.2 Ma). Because the gangue minerals and vein textures at these essentially nonmineralized prospects are similar to those at the Nancy Donaldson Mine, it seems reasonable to consider all the veins as one period of mineralization. Using this reasoning, mineralization must be about 11.5 Ma or younger.

Twenty-six samples were collected from surface outcrops of veins and dumps at prospects in the northern third of the eastern Goldfield district (the Wildhorse-Spring-Nancy Donaldson Mine area). A number of samples from the Nancy Donaldson Mine and immediately adjacent workings are strongly anomalous in silver and gold (silver being tens to hundreds of times more abundant than gold) and some samples are strongly anomalous in arsenic. These samples are also moderately anomalous in tungsten and weakly anomalous in barium. A few samples are weakly anomalous in lead and weakly or moderately anomalous in antimony, molybdenum and thallium may be considered anomalous in one or two samples. Beryllium is anomalous in one sample. Samples collected from near Wildhorse Spring and to the north and northeast of there have sporadic strongly anomalous mercury, and moderately to strongly anomalous arsenic, silver, barium, and possibly tungsten are also anomalous in some samples. All of the samples collected at minor prospects located in the hills about 1 to 3 km east of the Nancy Donaldson Mine were essentially non-anomalous in all trace elements. None of the samples from the area of low-sulfidation mineralization were anomalous in copper, zinc, bismuth, selenium, tellurium, or tin.

The trace-element geochemical signature of mineralized samples from the area is comparable to other low-sulfidation epithermal systems in the NAFR, for example the Mellan Mountain district. Such a suite of anomalous elements (silver, gold, arsenic, mercury, antimony, ± barium, thallium, tungsten, and molybdenum) combined with high silver-to-gold ratios and low to non-anomalous base metals (e.g., copper, lead, zinc) are typical of certain low-sulfidation hydrothermal systems (White and Hedenquist,

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December 8, 1998

**DEC 30 1998**

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

GE-2 To Whom It May Concern:

BD-4 The Air Force should protect the biodiversity of 3.1 million acres of BLM land north of Las Vegas that has been withdrawn as part of the Nellis Air Range and we request that the Air Force incorporate the Keystone Center's report into its final EIS.

As much as 90% of this land is roadless and the biodiversity of the region is tremendous with several endemic plants and north-south trending ridges and valleys providing essential travel conduits for migrating species.

AF-1 A concern surrounding the withdrawal of the 3.1 million acres is that current roadless areas could be developed in the future. The Air Force should inventory these areas following BLM procedures and make a commitment to not build structures or roads.

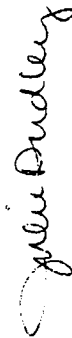
AF-7 You are requested to amend your withdrawal application for a period of 15 years rather than a permanent withdrawal. A less attractive but marginally acceptable alternative would be 25 years. Significant valuable natural resources are in decline, particularly outside the Nellis Air Force Range. Because many of these high value natural resources are extant on the Range, there is an overriding public interest in having a detailed public and political review on a reasonable periodic basis of Air Force management of these resources, and of the continued need for the withdrawal.

To be consistent with national policy, the Air Force should recognize the rights and needs of Native Americans, allowing Native Americans to access sacred sites existing on the Nellis Range. The Air Force should also identify and avoid these sacred sites when planning new buildings and bombing missions.

Finally, we recommend that whatever alternative is selected, the Air Force should choose the "b" subalternative. This would release about 30,000 acres on the west of the range and allow public access on a few small areas to the north, including an area adjoining the Kawitich Range Wilderness Study Area.

Thanks for considering these requests.

Sincerely,



Julie Dudley  
Chair

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JAN 0 6 1998

## Comments on the Draft Legislative Environmental Impact Statement for the Renewal of the Nellis Air Force Range

Submitted By  
Glenn Campbell  
6425 Meadowlark Ln.  
Las Vegas, NV 89103  
702-251-3445

December 1998

GE-2

As a Nevada resident, I am submitting the following comments on the Draft Legislative Environmental Impact Statement for the Renewal of the Nellis Air Force Range, which was released in September 1998.

Since my comments are quite lengthy, I have divided this document into three parts: In Part I, I summarize my comments and the philosophy behind them. In Part II, I list specific inadequacies I see in the Draft LEIS, moving sequentially through the pages of the report. Finally, in Part III, I offer some general conclusions and recommendations.

### Part I: Summary of Comments

Most of my comments are relevant only to Alternatives 1B and 2B in the report. This is the proposal for "administrative realignment" of certain areas, in addition to the renewal of the Nellis Range as it now exists. In Alternatives 1B and 2B, some lands currently under Department of Energy control would be transferred to the Air Force, while some lands under Air Force control would be transferred to DOE.

Specifically, DOE would obtain control of the Pahute Mesa area, which it is currently using, while the Air Force would obtain control of the lands currently withdrawn by DOE under Public Land Order 1662 (PLO 1662). These latter lands, popularly known as "Area 51", are the site of a classified Air Force facility at Groom Dry Lake.

My primary criticism throughout this report is that virtually no environmental information has been provided for the PLO-1662 lands, and that this omission threatens the integrity of the rest of the report as well.

I understand from reading local newspapers that under a recent federal court ruling (in *Erosal vs. Perry*) and an annual exemption from the President, that the Air Force may be entitled to withhold from the public certain environmental data about the Groom Lake base which is deemed a risk to national security. If this is true, I believe that the report should state this explicitly, specifying the general parameters of what is being withheld and the legal authority for doing so.

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### Part I: Summary of Comments

Most of my comments are relevant only to Alternatives 1B and 2B in the report. This is the proposal for "administrative realignment" of certain areas, in addition to the renewal of the Nellis Range as it now exists. In Alternatives 1B and 2B, some lands currently under Department of Energy control would be transferred to the Air Force, while some lands under Air Force control would be transferred to DOE.

Specifically, DOE would obtain control of the Pahute Mesa area, which it is currently using, while the Air Force would obtain control of the lands currently withdrawn by DOE under Public Land Order 1662 (PLO 1662). These latter lands, popularly known as "Area 51", are the site of a classified Air Force facility at Groom Dry Lake.

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### Part I: Summary of Comments

Most of my comments are relevant only to Alternatives 1B and 2B in the report. This is the proposal for "administrative realignment" of certain areas, in addition to the renewal of the Nellis Range as it now exists. In Alternatives 1B and 2B, some lands currently under Department of Energy control would be transferred to the Air Force, while some lands under Air Force control would be transferred to DOE.

Specifically, DOE would obtain control of the Pahute Mesa area, which it is currently using, while the Air Force would obtain control of the lands currently withdrawn by DOE under Public Land Order 1662 (PLO 1662). These latter lands, popularly known as "Area 51", are the site of a classified Air Force facility at Groom Dry Lake.

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### Part I: Summary of Comments

Most of my comments are relevant only to Alternatives 1B and 2B in the report. This is the proposal for "administrative realignment" of certain areas, in addition to the renewal of the Nellis Range as it now exists. In Alternatives 1B and 2B, some lands currently under Department of Energy control would be transferred to the Air Force, while some lands under Air Force control would be transferred to DOE.

Specifically, DOE would obtain control of the Pahute Mesa area, which it is currently using, while the Air Force would obtain control of the lands currently withdrawn by DOE under Public Land Order 1662 (PLO 1662). These latter lands, popularly known as "Area 51", are the site of a classified Air Force facility at Groom Dry Lake.

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As it stands, the Draft LEIS omits most data regarding the PLO-1662 land, with no mention of what is being omitted or why. This, I believe, jeopardizes the integrity of the entire report, since the reader cannot distinguish between "Negative Data," "No Research," "Classified Data" or "Overlooked Data."

To take a simple example, Figure 3.5-5 on Page 3.5-8 of the Draft LEIS provides a map of earthquake faults throughout the Nellis Range, the Nevada Test Site and surrounding areas. There are no earthquake faults shown within the block of land defined by PLO-1662. This strikes me as curious, because faults are often associated with mountain ranges, and a portion of one small range, the Papoose Range, is located within the PLO-1662 lands; yet, the map shows no faults associated with these mountains. Knowing that other environmental data on PLO-1662 has been withheld, the reader is left in the dark about what the absence of data means. He must choose between these possible alternatives:

1. Geological surveys have been conducted within the PLO-1662 lands, and no faults have been found. (Negative Data.)
2. No faults have been found because no survey has been conducted within this area. (No Research.)
3. Faults have been identified, but information about them has been deemed a risk to National Security and thus has been withheld. (Classified Data.)
4. Faults have been identified, but information about them has been omitted due to an administrative error. (Overlooked Data.)

The fact that the authors of the report chose to include the fault map implies that this kind of data could conceivably have an impact on the environmental process. The fact the most faults in this area seem benign does not remove the need for complete data. If one is going to create such a map, it should be reliable, and the absence of data on PLO-1662 lands elsewhere in the report leaves the reader questioning the map. If we look at another portion of the map where there are no faults shown, we must ask the same question: Is this no fault, a classified fault, or a "fault" in the report itself?

Likewise, on page 1-16 of the Draft LEIS, a map of area roads omits all roads within PLO 1662 land. In addition, it omits several prominent roads in the NAFR that lead to PLO 1662 land. It even omits the extensions of these roads into public land and the Nevada Test Site. If facilities within PLO 1662 land are kept secret through a special exemption, the reader is left to wonder where this exemption ends. Does it end at the boundaries defined by PLO 1662, or does it include wide portions of the current NAFR, public land and the NTS as well? As a citizen who might have some valid environmental issues to raise, I cannot comment intelligently on any omission anywhere in the report so long as undefined parts of the data are withheld without notation.

In the specific case of the fault map, the ambiguity would easily be resolved by a simple statement in the text like this: "Complete surveys have identified no faults within the lands described by PLO-1662."

Similarly, most of the other objections I raise in Part II would be resolved by a statement at the beginning of the report saying what kind of data is being withheld and under what authority. Later in the report as specific environmental issues are reviewed, one-sentence statements can refer back

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The report states:  
The process for receiving input includes the following:

- Six public scoping meetings in communities surrounding NAFR.

A note should be added here that although these meetings were indeed held, the public was given no information at the time that PLO 1662 lands would be included in the renewal. The Notice of Intent which announced the scoping meetings (Federal Register: May 30, 1996) mentioned only PL 99-606 and the alternatives given did not include any administrative realignment. Since the public was not told of possible administrative realignment of PLO 1662 (or of any other land), the public could not offer any meaningful input, and the scoping process was effectively bypassed for this part of the current Air Force proposal.

I personally was lead to believe that PLO 1662 was not involved in the Range Renewal. Several days before the scoping meeting in Las Vegas on June 20, 1996, I contacted the Nellis Public Affairs officer, Capt. Andrew Bourland, and requested a township/range description of the lands affected by the Range Renewal. I told him that I could not offer meaningful comment unless I knew what lands I was commenting on. Upon my arrival at the scoping meeting I was given a township/range list similar to that found in Appendix A.10 of the draft LEIS. I determined that PLO 1662 lands were not included on that list, and on this basis I declined comment. Indeed, if I had commented, these comments would not have been relevant because they were not part of the published purpose of the meeting as defined in the Notice of Intent. Because PLO 1662 lands were never mentioned, I and any other citizen interested specifically in these lands were effectively excluded from the scoping process -- even if we attended the meetings -- and our potential concerns could not have been addressed in the Draft LEIS.

**Executive Summary: Page ES-5.**

The report provides a list of issues and concerns raised at the scoping meetings.

Again, a notation should be added here that these issues and concerns do not include PLO 1662 lands, which the public was not given the opportunity to comment on.

**Executive Summary: Page ES-7.**

Regarding Alternative 1A, the report states:

Overlapping withdrawals of NAFR and DNWR lands would remain.

For clarity, it should also be stated here that the PLO 1662 lands would remain under DOE control.

**Executive Summary: Page ES-11.**

Regarding the section "Hazardous Materials and Solid Waste Management" ...

Although information is provided about contaminated sites on the existing NAFR land, none is provided for PLO 1662 lands. The same information that is provided for NAFR should also be provided for PLO 1662 lands.

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to the original statement. (E.g. "This data is being withheld under Presidential exemption, see Section XX.")

Further suggestions are provided in Part III.

**Part II: Specific Inadequacies**

In this section, I will go through the Draft LEIS page-by-page to point out inadequacies I see in the report. Most of these objections concern the omitted data problems I have described above, and most would be rendered moot if Alternatives 1B and 2B were not included in the Air Force proposal.

Many of the comments I make on the Executive Summary also apply to the corresponding sections of the main report.

**Executive Summary: Page ES-3.**

The report states:

Lands within PLO 1662, adjacent to the South Range, are withdrawn for the Nevada Test Site by DOE and used through a Memorandum of Agreement with the Air Force.

Consistent with the descriptions of the North and South Ranges in the same section, a short description of activities and facilities on the PLO 1662 lands should be given, even if to simply state that they are classified.

AF-2

Also, more information should be given on the Memorandum of Agreement, which is not further specified anywhere else in the document. At least the date or document number should be given to allow this Memorandum to be located or referred to. Unlike Public Land Orders and Public Laws, internal memoranda like this are not easily located without more specific information. If the Memorandum of Agreement is classified, this should be stated, as it frees researchers such as myself from filing repeated FOIA requests for it. (My own FOIA requests to Nellis and DOE have failed to produce the document or any useful information about it.)

**Executive Summary: Page ES-3.**

The report states:

The North Ranges includes Pahute Mesa and other areas, which are used by DOE through mutual agreement.

DOE-8

Consistent with the descriptions of the North and South Ranges in the same section, a short description of DOE activities and facilities on Pahute Mesa lands should be given. Even if DOE controls those facilities, they will remain part of the Nellis Range under Alternatives 1A and 2A, so it would be useful to know what is there.

**Executive Summary: Page ES-4.**

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If this information is classified, the LEIS should say so, and there would seem no national security risk in at least stating the number of contaminated sites within PLO 1662.

It should also be stated who will be responsible for environmental cleanup in PLO 1662 lands under Alternatives 1B and 2B, and under what program the sites are currently being identified and cleaned up (for example, FFACO or IRP, as is listed for DOE and NAFR lands).

**Executive Summary: Page ES-12.**

Regarding the section "Earth Resources" ...

Information on prior mining should be given for PLO 1662 lands, as it has for NAFR lands. (If it is the same as NAFR lands, this should be stated.) I am particularly interested in knowing in what year commercial mining stopped in this area.

In addition, there should be a statement as to whether any mining or tunnelling has taken place in NAFR or PLO 1662 lands since they were withdrawn from public use.

**Executive Summary: Page ES-13.**

Regarding the section "Water Resources" ...

Information on water resources should be given for PLO 1662 lands, as it has for NAFR lands.

**Executive Summary: Page ES-13.**

Regarding the section "Biological Resources" ...

Information on biological resources should be given for PLO 1662 lands, as it has for NAFR lands, even to simply state that they are the same as NAFR.

**Executive Summary: Page ES-14.**

Regarding the section "Cultural Resources" ...

Information on cultural resources should be given for PLO 1662 lands, as it has for NAFR lands. The number of identified cultural resources on these lands should be stated.

Since access to PLO 1662 lands has been highly restricted, I would like to know to what extent surveys have been conducted to identify cultural resources. Is the cultural survey of this area considered complete, or has national security hindered it?

**Purpose and Need for the Proposed Action: Page 1-9.**

In the text section "Overview and History of NAFR" ...

A brief history of the PLO 1662 lands should be provided, as it is for the NAFR.

**Purpose and Need for the Proposed Action: Page 1-11.**

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Regarding the table entitled "NAFR History" ...

A list of land transactions for PLO 1662 should be provided as an additional table. PLO 1662 itself should be listed here, along with the Memorandum of Agreement between DOE and Air Force, and any other transactions affecting this land.

**Purpose and Need for the Proposed Action: Page 1-15.**

Regarding the map entitled "NAFR Supporting Airfields and Facilities" ...

This map should include the airfield adjacent to Groom Dry Lake, as seen in unclassified satellite images. Although these facilities are not currently part of the NAFR, they would be under Alternatives 1B and 2B.

**Purpose and Need for the Proposed Action: Page 1-16.**

Regarding the map entitled "Roads on the Nellis Air Force Range" ...

A number of prominent, well-maintained roads are missing from this map, both inside the PLO 1662 land and leading to it through the current NAFR. These missing roads can be plainly seen in published U.S. Geological Survey topographic maps and unclassified satellite images.

Within the current NAFR, at least three actively-maintained, two-lane, all-weather access roads are missing from the map. As a former resident of Rachel, Nevada, I am aware of two major access roads leading into the range from Highway 375 but not appearing on the map beyond the NAFR border. As a past visitor to the Nevada Test Site, I am aware of a third major road leading into the range from the northeastern corner of the NTS, also not shown on the map. Here is an approximate description of these roads based on the map on page 1-16...

- One road starts from State Route 375, about halfway between Rachel and the Lincoln/Nye county line and heads south through NAFR to the vicinity of PLO 1662 and the northeastern corner of the NTS. Even portions of this road on public land north of the NAFR border are omitted, as is another heavily used road that feeds into this one from Route 375 just southeast of Rachel.
- One road starts at the southernmost point on State Route 375 and follows a route west-southwest as shown on the map. On the map, this highway ends when it reaches the NAFR boundary. In truth, that road continues in the same general heading through the NAFR until it intersects the PLO 1662 land.
- One road starts at the northeastern corner of the road network shown within the NTS. It heads northeast into the NAFR, then continues east to intersect with the PLO 1662 land. (In the NTS, this is known as the northern part of the Mercury Highway.)

For further information on these roads, one can consult the USGS 1:100,000 scale topographic map entitled "Fahranagat Range, Nevada" (1985) and other current topographic maps of the area. For the Mercury Highway leading northeast out of the NTS and into the NAFR, one can consult any published DOE map of the Nevada Test Site.

Inside the PLO 1662 land, there are dozens of major roads not given on the map. Consult the

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topographic map above or USGS Landsat imagery of the area.

**Purpose and Need for the Proposed Action: Page 1-24.**

In the section entitled "NAFR Environmental Programs," the report states:

Within the bounds of available funding, each of these programs has been, or is being, completed on the NAFR.

It should also be stated whether the environmental programs have been completed in the PLO 1662 lands as well.

The same information provided for NAFR in that paragraph (beginning with the quote above) should also be provided for PLO 1662. Does the Air Force maintain environmental compliance within the PLO 1662 lands?

**Purpose and Need for the Proposed Action: Page 1-30 and 1-31.**

Two tables are provided to specify the minimum and maximum projected sortie-operations for various aircraft in the North Range, South Range and MOA. The same information should also be provided for sorties from the PLO 1662 land or R-4808W. If this information is classified, the report should say so.

**AF-2 Description of Alternatives: Page 2-1.**

In the section entitled "Process for Identification of Alternatives," the report repeats and expands upon the corresponding sections in the Executive Summary, pages ES-4 and ES-5. My comments on those pages (above) also apply here (that PLO 1662 lands were excluded from the scoping process).

Other comments I made on the Executive Summary (pages ES-4 and ES-5) also apply to the corresponding sections of this "Description of Alternatives" chapter (that issues could not have been contributed from the public regarding PLO 1662).

**Affected Environment: Airspace. Page 3.1-4**

In the section regarding airspace "R-4808 (R-4808N and R-4808S)," the report says that that portions of this airspace "are used for military aircraft transit to and from R-4807 A/B. The report fails to indicate that the airspace also supports aircraft whose final destination is R-4808 (the base at Groom Lake). These flights includes frequent weekday passenger service between McCarran Airport and Las Vegas, which can be seen landing at the base from public vantage points.

Aircraft that land present a different environmental profile than those that merely transit an airspace at altitude, so both kinds of flights should be mentioned in this section.

**Affected Environment: Hazardous Materials and Solid Waste. (Section 3.4)**

This comment applies to this entire chapter (pages 3.4-1 to 3.4-17)...

Information on hazardous materials and solid waste sites within PLO 1662 land is completely

absent from this chapter. The same information that is provided for NAFR should also be provided here for PLO 1662 land.

The details of certain sites within PLO 1662 land may be classified, but that should not prevent the report from listing the number of identified sites and whether they are in compliance with environmental regulations.

The report should also state who is currently responsible for hazardous materials cleanup in PLO 1662 land -- Air Force or DOE -- and who will be responsible if Alternative 1B or 2B takes effect.

**Affected Environment: Earth Resources. (Section 3.6)**

As in the preceding chapter, the text of this chapter provides no information on the geology of PLO 1662 land. If the geology in this area is the same as that of NAFR, the report should say so.

The maps in this chapter show a confusing combination of inclusions and omissions for PLO 1662 land. The Physiographic Map (Page 3.5-3) appears to be complete for PLO 1662 land, but the General Geology map (Page 3.5-5) omits data for this land (as do the maps on page 3.5-31 and 3.5-40). The Mineral Potential on pages 3.5-16 through 3.5-18 both include and omit data for PLO 1662 land, showing some mineral potentials but obviously excluding others.

Other maps within this chapter are ambiguous. (See page 3.5-7, 3.5-8, 3.5-20, 3.5-21, 3.5-27, 3.5-29, 3.5-30, 3.5-32, 3.5-33, 3.5-34, 3.5-35.) As discussed in Part I, it is not clear whether the blank space for PLO 1662 land reflects "Negative Data," "No Research," "Classified Data," or "Overlooked Data."

**Affected Environment: Water Resources. (Section 3.6)**

As in the preceding "Earth Resources" chapter, this chapter on water resources includes a confusing mix of included, omitted and ambiguous data regarding PLO 1662. For example, the maps on pages 3.6-4 and 3.6-5, omit data for PLO 1662 land, while the map of page 3.6-8 seems to include it. The text seems to refer only to NAFR, and makes no mention of PLO 1662 land.

The same information provided for NAFR in this chapter should also be provided for PLO 1662 land.

**Affected Environment: Air Quality. Section 3.7.**

This chapter makes no mention of "exotic" air pollutants that might result from the testing of weapons systems in the NAFR and PLO 1662 land. Instead, this chapter seems to focus only on pollution from the burning of conventional hydrocarbon fuels and the explosion of conventional ordnance. A new kind of aircraft, weapons system or weapon component, such as Stealth aircraft or its radar absorbant covering, might produce a different class of pollutants from conventional military hardware.

Have other air pollutants been identified emanating from either NAFR or PLO 1662 land? The report should summarize the surveys made for exotic pollutants and the available data. (If the data is classified, the report should say so.) This is important for distinguishing between the Action and No Action alternatives, at least in regards to emissions from weapons testing in the current NAFR (which would presumably end under the No Action alternative).

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can distinguish between the portion of Groom Lake which is within the NAFR and the portion that is within PLO 1662 land.

Table F-2 (Page F-3): The sequentially numbered Collector Watershed Designations for Emigrant Valley appears to omit "L-2". The data for this area should be included in the table.

Table F-3 (Page F-5): The sequentially numbered Alluvial Fan Designations for Emigrant Valley appears to omit "L-F2", "L-F3" and "L-F4". The data for these areas should be included in the table.

**Appendix G: Biological Resources Data (Volume 2)**

Appendices G-1 and G-2 fail to include any resource data for PLO 1662 land. If similar studies have been conducted for PLO 1662 land, they should be included here. If no such studies have been conducted, the report should state this.

**Part III: Conclusions and Recommendations**

The renewal of the Nellis Air Force Range, as its borders now exist, is a relatively straightforward and non-controversial action. Matters are greatly complicated by the inclusion of Alternatives 1B and 2B, which attempt to merge a highly secretive facility into a relatively open one. While some activities on the existing Nellis Range may be classified, basic geographic and environmental data is not. In the case of PLO 1662 and the facilities located there, the Air Force is attempting to withhold nearly all geographic and environmental information, even that which is available from open sources and that could have no possible bearing on national security.

In a series of annual Presidential Determinations (95-45, etc.), President Clinton has exempted the Air Force from certain environmental reporting requirements which all other military facilities, classified or unclassified, must obey. The President states:

I hereby exempt the Air Force's operating location near Groom Lake, Nevada from any Federal, State, interstate or local provision respecting control and abatement of solid waste or hazardous waste disposal that would require the disclosure of classified information concerning that operating location to any unauthorized person.

It is plausible that certain environmental data concerning hazardous waste disposal could pose a risk to national security. For example, if a hostile foreign power had access to the exact composition of soil samples from a classified location, it might be able to deduce something about the secret weaponry tested there. There is no need, however, for the Air Force to provide that kind of detailed data in the LEIS. The LEIS is mainly a broad summary of environmental data and compliance. It is not necessary that the Air Force reveal the activities at a classified location, but it should be able to state that it is in compliance with environmental regulations there. It should also provide routine information about the natural environment and manmade artifacts (such as roads) that are plainly visible. Congress and the public may not need to know the exact nature of a certain hazardous waste site, but they should be informed that sites have been identified and be told how environmental clean-up will be affected by each of the proposed alternatives.

One weakness of the Presidential Determination is that it provides no geographic definition of the

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**Affected Environment: Air Quality. Page 3.7-8.**

The report provides a table of Baseline Ground-based and Airspace Emissions.

Any facility within PLO 1662 should be included in this list. (If this data is classified, the report should say so.)

**Affected Environment: Biological Resources. (Section 3.8)**

This chapter appears to omit all biological data for PLO 1662 land. The same information that is provided for NAFR should also be provided for PLO 1662 lands.

**Affected Environment: Cultural Resources. (Section 3.9)**

This chapter appears to omit all data for PLO 1662 land. The same information that is provided for NAFR should also be provided for PLO 1662 lands.

**Affected Environment: Land Use. (Section 3.10)**

This chapter appears to omit all data for PLO 1662 land. If there is no civilian land use within PLO 1662 land (as seems likely), the report should simply say so.

**Affected Environment: Wilderness and Wilderness Study Areas. (Section 3.11)**

This chapter appears to omit all data for PLO 1662 land. If there are no wilderness designations within PLO 1662 land, the report should say so. The report should indicate whether (a) complete wilderness surveys have been conducted with no appropriate lands identified, or (b) complete wilderness studies have not been conducted. (There should be nothing classified in whether a survey has been conducted.)

**Appendix A.10: Land Description (Volume 2)**

This appendix should include a township/range description of PLO 1662 lands (as has already been provided for PLO 7131 lands on page A.10-4).

The table on Page A.10-5 should include land disturbance information of PLO 1662 land.

**Appendix C: Relevant Federal, State, and Local Statutes, Regulations, Agreement, and Guidelines (Volume 2)**

This section fails to include Presidential Determinations 95-45, 96-54, 97-35, and subsequent annual determinations which exempt the Air Force's Groom Lake operating location from certain environmental reporting. It is important that these documents be listed, especially if they are being used as a legal basis for withholding information about PLO 1662 land.

**Appendix F: Water Analysis (Volume 2)**

Table F-1 (Page F-1): This table on dry lakes fails to include any data on Groom Lake, even the portion which is within the current NAFR. This dry lake should be listed. If necessary, the table

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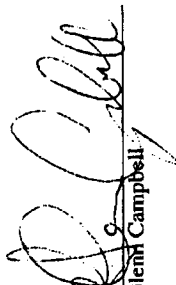
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example, should information on area roads be withheld from the open LEIS, even if they appear on USGS topographic maps? Should the classified supplement include inherently unclassified data such as natural and cultural resources on PLO 1662 land, or should this data be provided in the public LEIS?

The Air Force has never had to deal with these problems because it has never said more than a few sentences publicly about anything within the PLO 1662 land. About all it has acknowledged is that it "does have facilities at Groom Dry Lake." This longstanding silence about the area presents a "Catch-22" to the Air Force, because a generation of secretive behavior and protocols must now be modified. If the Air Force acknowledges that roads exist, then can employees reveal that they use the roads? If a survey has been conducted of natural resources, can the person who conducted it come forward to acknowledge his role?

For years, the official policy about the base at Groom Lake is that it "doesn't exist," and personnel who work at the facility or who are professionally aware of it are instructed to say nothing at all. Now, somebody must say something, at least to define what is classified, or the LEIS will be an ineffective document.

  
Glenn Campbell

12-30-96

Date

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http://www.afomind.com/place/us/nv/nellis/renewal/campbell

"operating location near Groom Lake, Nevada." We don't know if it includes only areas immediately adjacent to the base, the entire extent of PLO 1662 lands, or lands extending far into the existing Nellis Range and NTS. Judging from the omission of roads on Page 1-16 of the LEIS (as mentioned in Part II), the exemption seems to cover hundreds of square miles of the existing Nellis Range, the NTS and even portions of public land.

Another weakness is that the President provides no guidance on what "would require the disclosure of classified information" about the facility. Would the release of information about flora, fauna and geology require the disclosure of classified information? I am sure that certain conservative military managers would interpret it that way (and evidently they have prevailed in the preparation of this LEIS). By the same reasoning, though, one could argue that acknowledging the existence of the state of Nevada might, in some obscure way, reveal classified information about the Groom Lake facility. The fact is, the state of Nevada does exist, as a matter of public record, as do the roads, wildlife and water resources of the PLO 1662 lands. Withholding this kind of routine information may protect the Air Force politically, but it fails the test of reasonableness for the disclosure of classified information.

Without a geographic definition and without any guidance as to interpretation of the Presidential Determination, there are effectively no boundaries for the exemption, and the Air Force is free to apply it arbitrarily to any area within its control, inside or outside of the PLO 1662 land. An arbitrary exemption means that the entire LEIS is meaningless, because any environmental data anywhere in the report can be omitted without notice. The bureaucratic risk is that the only information appearing in the LEIS might be that which is supportive of the sponsor's political agenda.

**Recommendations**

To preserve the integrity of the LEIS, I see two possible alternatives. One is to entirely remove PLO 1662 lands from the proposals for Alternatives 1B and 2B. The realignment of those lands can then be handled by some other petition to Congress which is specifically designed for the special circumstances of this operating location.

The other alternative is to provide clear statements in the LEIS about what data is classified and withheld from the public. As mentioned in Part I, the Air Force could provide a statement at the beginning of the LEIS outlining what kind of data is classified and under what authority it is being withheld. Then, elsewhere in the report where classified information is omitted, a single sentence can be inserted referring readers back to the original statement.

If the Air Force feels that it is not legally required to provide environmental data to Congress about PLO 1662, then it should say so in the beginning of the report. Likewise, if the Air Force chooses instead to prepare a classified supplement for the PLO 1662 land, at least its existence should be mentioned in the public report. Making these statements explicitly, with clear definitions of what kind of data is withheld and within what geographic area, protects the reliability of the rest of the LEIS.

Unfortunately, a classified supplement also presents some problems. One of these is that most members of Congress will not have adequate clearances to read it. However, they will be able to read the rest of the LEIS with the confidence that nothing is being silently omitted.

Another problem with a classified supplement is determining what kind of data belongs in it. For

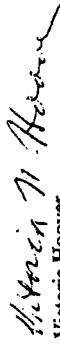
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4. Native American concerns: I ask that the Air Force act diligently to protect the rights and needs of Native Americans, guaranteeing them access whenever feasible to sacred sites that may exist in the Nellis territory. Such special sites should also be avoided when new structures are put in place and when bombing missions are designed.

5. I urge the Air Force to include in its final LEIS the release of approximately 30,000 acres near the west edge of Nellis (as outlined in subalternative 'b') in order to allow public access to several areas of interest, including an important area to lovers of wild lands that borders on the Kawich Range Wilderness Study Area, a WSA included in wilderness proposals by Friends of Nevada Wilderness and others.

Thank you for the opportunity to present these comments.

Sincerely,



Victoria Hoover  
(415)977-5527

cc. Nevada State Director, BLM

0014

Victoria N. Hoover  
735 Geary Street, Number 501  
San Francisco, CA 94109

JAN 06 1998

December 28, 1998

To: Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

Re: Proposed Renewal of Withdrawal of Nellis Air Force Base lands from public domain

GE-2 As a citizen who enjoys frequent journeys into the neighboring state of Nevada to explore some of its many mountain ranges, I would like to offer a comment on the current Draft Legislative EIS for the Air Force has prepared for Nellis Air Force Base.

1. Timing. It is reasonable to renew the withdrawal, which is due for reconsideration in 2001, but it should be withdrawn for not more than 15 years. The rapid pace of technology advance, the change in world events likely within a decade, all leave in doubt whether the withdrawal would still be needed in the same form after 10 or 15 years. It is imperative to allow further assessment of the needs of our military establishment in 15 years or less by another EIS rather than to lock in the withdrawal for a longer period of time or for an indefinite time.

2. Potential impacts on the lands involved: It is only in the last dozen years or so that the science of conservation biology has been born and blossomed and has offered considerable scientific knowledge on how large undisturbed tracts of wild land can preserve and enhance the biological diversity of an area. The land contained within the Nellis Air Force Base, of which only a small percentage (maybe as little as three percent) has been disturbed and altered by bombing exercises offers a remarkable sample of the biological diversity of the biological and geological basin and range province. It is the responsibility of the Air Force, acting as steward of these lands in lieu of the Bureau of Land Management, due to the withdrawal, to guard the preservation of such biodiversity to the extent possible. To that effect, the Air Force should commit to constructing no roads within the considerable roadless areas on the base. Road construction has been shown to be a principal cause of loss of habitat, air pollution, and other significant disturbances to wildlife, both permanent residents and migrating species. In addition to such direct damaging effects of roads, it is also notable that, as our country gradually but steadily increases in population and in developed areas, the remaining, increasingly scarce roadless areas, become a resource of ever-increasing value. The expansion of human intrusions around the metropolis of Las Vegas is a prime example of this loss of habitat and loss of biodiversity through rampant sprawl-type development. The Air Force has the power to guard against needless intrusion effects at Nellis. The final LEIS should reflect clearly the vigorous intent of the Air Force to protect the biological diversity of the range, especially by avoiding road construction. I urge that the Keystone Report prepared by the Keystone Center-facilitated stewardship committee for Nellis, be incorporated into the final EIS.

While of course we still have and will always have gaps in our knowledge of conservation biology, that should not deter our land management agencies (the Air Force in this case) from vigorous action to protect biodiversity, using the best available science. In cases of uncertainty, the Air Force should allow a margin for uncertainty by setting protection standards that err on the side of caution.

AF-1

BD-4

0015



December 8, 1998

Nellis Air Force Range Renewal Office  
P.O. Box 8919  
Las Vegas, NV 89181-0919

Range Renewal Office,

GE-2 The Committee for Idaho's High Desert focuses on the management of desert wildlands for biodiversity and their long-term values to the American public. We are providing the following comments on the Nellis Air Range Renewal.

BD-1 The Air Force must protect the biodiversity of the Range. The Air Force must incorporate the Keystone report into the Final LEIS.

All current roadless areas must be closed to development. The Air Force must inventory all roadless or little roaded areas following BLM procedures. All identified roadless areas must be closed to construction of structures or roads. This is necessary to protect biodiversity. Roads "slice and dice" habitat for native wildlife species, and serve as corridors for the spread of axolotl species.

We urge you to limit the renewal to a period of 15 years. Permit assessment and renewal must occur every 15 years or less, to ensure accountability and proper management to address changing needs. This will allow better accountability to the American public.

The Air Force must address the needs and rights of Native Americans, and allow access to sacred sites existing on the Range. All such known or suspected sites must be avoided with new structures and bombing missions.

The Air Force must choose the "b" subalternative for whichever alternative is selected. This would result in the release of about 30,000 acres on the west side and allow public access to a few small areas on the north, including an area adjoining the Kawitch Range WSA.

Sincerely,  
*Katie Fife*  
Katie Fife  
2011 Tandy  
Boise, ID 83705

1-208-384-1715

cc: Nevada State Director  
Bureau of Land Management  
P.O. Box 12000  
1340 Financial Blvd.  
Reno, NV 89520-0006

0016

L2-30-98

Nellis Range Renewal Office  
P.O. Box 9919  
Las Vegas NV 89191

GE-1 Gentlemen

JAN 06 1999

I have been a resident of Indian Springs for 41 years and have watched the steady progression of the Thunderbirds to fly over our town, and, more particularly, over our school.

To be very blunt about it, I see no need for any Air Force plane or planes to fly over our town as you only have 3,000,000 acres on the north side of U.S. 95 to do with as you please without disturbing our peace and quiet. If a plane should go down, it would be on the north side of the highway and not be a threat to a community with very limited resources to cope with such a disaster. Many years ago, before my house was completed, a plane did go down very close, however, fortunately for us, none of the debris landed on the house. We also experienced a pilot accelerating to attain height when he realized how close he was to the base of the mountains south of my home. That resulted in broken windows in two outside coors plus breaking a solid wood door through the lock section. Another time, a Thunderbird flew so low over my home and was such a shock to my body, that my automatic watch stopped. NOW, maybe you can understand why I am concerned about the Air Force flying over our community.

I feel that I am not being selfish - I just cannot understand why it is so necessary to fly over Indian Springs. To me, it is a complete disregard of our very genuine concerns about the hazards such flights can and do pose.

Sincerely,

*Dorothy M. Bobb*  
Dorothy M. Bobb  
P.O. Box 41  
1051 Old Benn Road  
Indian Springs NV 89018-0041

0017

I therefore believe that Congress should approve ALTERNATIVE 2B which will allow a serious investigation of Air Force needs to be made before further renewal is granted. It will also allow some multiple use of lands that are now restricted, which may be required to support the growth of the Las Vegas area.

Once again, thank you for the opportunity to comment on this LEIS.

Sincerely,



John O. Landreth

cc: Senator Harry Reid  
 Senator Richard Bryan  
 Congressman Jim Gibbons  
 Congresswoman-Elect Shelley Berkley

0017

10633 Shoalhaven Drive  
 Las Vegas, NV 89134  
 December 31, 1998

JAN 06 RECD

Nellis Air Force Range Renewal Office  
 P. O. Box 9919  
 Las Vegas, NV 89191

GE-1 To Whom It May Concern:

I appreciate the opportunity to comment on the Draft LEIS for the Renewal of the Nellis Air Force Range Land Withdrawal.

Few could deny the importance of the Nellis Range to Las Vegas, Nevada and the nation. As the nation's largest Air Force facility, it has provided Las Vegas with sizable income and employment. And, the successful military operations in the Gulf clearly demonstrates the need for the type of training that is available on the Nellis Range.

The Gulf War, and subsequent military operations, also demonstrates the tremendous technological changes that have occurred in the last few years. To think that in the last 200 years transportation has gone from the speed of horseback to the speed of sound, that the speed of communications has gone from the speed of horseback to the speed of light; and that for all time, 90% of all scientists are alive today. We are in store for some exciting technological advances in the next few years.

Because of the likely technological changes that will occur, I believe that it is impossible to know what the future needs of the military will be. To support an indefinite renewal of the Nellis Range is to abrogate the authority of the Congress and create a "military state," nearly four times the size of the State of Rhode Island, within the State of Nevada. Saying that congress will review but "not formally revisit the land withdrawal issues until the national need for NAFLR lands changes," again allows the heavy weight states to rubber stamp continuance of the lease and dictate Nevada land use. This rubber stamping has recently been used between the BLM and the Air Force on the required minerals review.

Three "world class" gold deposits are found adjacent to or near the northwestern and northern ends of the Nellis Range. These deposits include the Bullfrog (Beatty), Goldfields, and Round Mountain. The Nellis Range is known to be well mineralized and was withdrawn from mineral entry prior to the discovery of the heap leach technology that has made Nevada the largest producer of gold in the United States, and mining the second largest industry in the State.

3018

The unending development of new weapons systems and changes in existing systems and support systems, as well as probable changes in weather, and scientific understandings revealing currently unknown hazards to the health, well being, property, and livelihood of the residents of Indian Springs, require that the environmental impacts be frequently and thoroughly reviewed. As the critical emergency medical and fire fighting services within the community of Indian Springs are of a part-time and volunteer nature and lack the ability to respond immediately to the manifold "hazardous materials," and because Indian Springs has recently been informed that the U.S. Air Force will no longer have a formal agreement (as per their legal office) to provide back-up services such as emergency medical and fire protection, though the current command does provide this on an informal basis, enabling directives from the appropriate level, and/or legislation are required to protect the inhabitants, property, etc., of Indian Springs.

Indian Springs has insufficient gravity fed emergency water storage to handle emergency situations, especially in the event of a power outage during an emergency, formerly relying on occasional connections with ISAFAF. An accident in the community could overload the quickly available water for fire fighting, joint community and Air Force aboveground water storage should be developed at no cost to the residents of Indian Springs, Clark County, or the State of Nevada.

In over three decades of residence here we have observed that the community of Indian Springs has always sought a harmonious association with the Air Force, and has in the past linked its sense of community, even its infrastructure, to ISAFAF. When Indian Springs Air Force Auxiliary Field was declared as "Isolated Continental United States" station, and subsequently, "privatized" with the resulting loss of Air Force dependent families as an integral part of the Indian Springs community that community has disappeared. The community now has little contact with the computer military personnel that are here only for their daily shift. Returning military families to Indian Springs would go a long way toward restoring the sense of community and understanding for this heavily impacted community.

The Air Force personnel speaking with us regarding this DLEIS have been courteous, professional, and attempting to address our concerns on a case-by-case or issue-by-issue basis. This was also the case with the Special Nevada Report about one decade ago. In the intervening years our concerns often go unheeded. Reviews such as this LEIS appear to be essential to receive appropriate attention to concerns.

Please send us a copy of the Final LEIS.

Sincerely,  
Ann Brauer  
Ann Brauer

0018

JAN 06 1998

24 December 1998  
P. O. Box 269  
Indian Springs, NV 89018

Nellis Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191

GE-2 Dear Sirs:

The following comments are in response to The Renewal of the Nellis Air Force Range Land Withdrawal Draft Legislative Environmental Impact Statement (NAFR/DLEIS) dated September 1998.

The community of Indian Springs, Clark County, Nevada, has been in existence since the late 1800's, and has remained a quiet, rural residential community with a unique lifestyle in the southern Nevada area. The Nellis Air Force Range is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and the Indian Springs Air Force Auxiliary Field (ISAFAF) had subsequently been established adjacent to the northern border of Indian Springs. The Department of Defense (U. S. Air Force) is currently seeking authorization from Congress to renew withdrawal, in perpetuity, for all or most of the lands associated with NAFR for one purpose, continued military activity.

The environment and the future socio-economic development of Indian Springs, as well as the suitability for continued habitation at present levels would be seriously impacted by the NAFR renewal proposals.

The proposals for withdrawal of the land also include designation of airspace and the underlying land as "unrestricted 15 nautical mile air-to-ground safety requirements" (Fig. 1-12, page 1-40) and "some newer air-to-ground ordinance may require a 30 nautical mile safety buffer," (page 1-39) significant portions of which land and airspace lie outside the confines of the requested NAFR renewal, and which would also include all of the residential community of Indian Springs, and significant portions of the sole highway link to Las Vegas, and would place this community, its properties, and its residents in harms way. These danger areas represent significant expansion of the range impact areas, yet these lands are not addressed as lands to be withdrawn, and no compensations are made to those person impacted by such activity.

Direct over flights of the community present significant hazards to residents and properties, from dropped and falling objects, harmful chemicals, and toxic materials may be expelled by aircraft and missiles in addition to the hazards of debris and ordinance; and the excessive noise from aircraft is destructive to the peaceful conduct of activities, psychologically damaging, disruptive to learning and communication, and damaging to livestock, yet the over flights are frequent, primarily from the U.S.A.F. Aerial Demonstration Team, the Thunderbirds. Though some concessions have been made at various times in the past, the current practice will continue to have flights directly over the community. We continue to observe much avian activity including raptor activity in the settled area of Indian Springs. one sighted several times as late as December of 1998 appears to be a peregrine falcon. Waterfowl, ravens, vultures, stowings in droves are all observed to frequent this watering place. For the protection and well-being of all concerned, the community of Indian Springs needs to have military activities restricted from the airspace over, and immediately to the east, south, and west of the approximately one square mile of territory, similar to the restrictions for the Desert Game Range Station at Corn Creek.

Noise of aircraft activity on the ISAFAF can and does overwhelm activities in Indian Springs. Trees in base housing area have been permitted to die, reducing that acoustic filter. Noise levels from aircraft need to be reduced to tolerable levels, and the peculiar characteristic of the surrounding topography must be accounted for.

The risk assessment for a small falling object greatly understates the real potential for damage by treating people and structures as two dimensional, and by failing to take into account the population and property densities of Indian Springs. As a hypothetical model it lacks statistical reliability as it presents no data beyond those derived from calculations in support of its contentions. The risk in Indian Springs, given the frequency of over flights, would appear to be much greater than that proposed here.

GE-1  
 WE, THE UNDERSIGNED, AGREE with the following Air Force statement concerning the purpose and need for renewing the withdrawal of the Nellis Range:

JAN 06 1970 0019

"The purpose for renewing the land withdrawal for NAFT is to provide a safe and secure location to test equipment and train military personnel to meet nationally directed missions. The missions are to (1) ensure and protect national security; (2) train for the full and integrated spectrum of military operations; and (3) ensure the continued protection of public safety." (LEIS Summary)

WE BELIEVE that the proposal by the City of Caliente and the Lincoln County Commission, that the Air Force should be required to provide a route for rail or truck transportation of nuclear waste across the Nellis Range, would interfere with the safety and security requirements of the Air Force mission.

WE ARE ALSO CONCERNED that establishment of such a route increases the likelihood that high level nuclear waste would be shipped through Lincoln County to a disposal site in Nevada. In a recent vote nearly 50% of Lincoln County residents expressed opposition to such shipping.

Sincerely, RETIRED A.F. CHIEF MASTER SERGEANT - AF 15061504

Signature: *Roscoe C. Vestray, Sr.* Address: P.O. Box 177-A1-amo, NV 89001  
 Signature: *Margaret S. Vestray* Address: P.O. Box 177 - A1-amo, NV 89001  
 Signature: *Loni Bryant* Address: Prince Max Piche NV  
 Signature: *Elizabeth Tennant* Address: P.O. Box 11000  
 Signature: *Ann Kator* Address: Piche, Nevada  
 Signature: *Norlene Latus* Address: H.P. Nevil  
 Signature: *William P. ...* Address: ...

0019  
 Signature: *R. ...* Address: P.O. Box 172, Alamo, NV 89001  
 Signature: *Dorcas May* Address: P.O. Box 62 Hiko, NV 89017  
 Signature: *Nick May* Address: P.O. Box 602 Hiko, NV 89017  
 Signature: *Connie Nelson* Address: P.O. Box 163 Alamo, NV 89001  
 Signature: *Charles ...* Address: P.O. Box 38 Alamo, NV 89017  
 Signature: *John ...* Address: P.O. Box 284 Alamo, NV 89001  
 Signature: *Henry ...* Address: P.O. Box 415 Alamo, NV 89001  
 Signature: *Ed ...* Address: P.O. Box 534 Alamo, NV 89001  
 Signature: *Mike ...* Address: P.O. Box 35 Alamo, NV 89001  
 Signature: *Holmes ...* Address: P.O. Box 406 Alamo, NV 89001  
 Signature: *Mommy ...* Address: P.O. Box 406, Alamo, NV 89001  
 Signature: *Judi ...* Address: P.O. Box 406, Alamo, NV 89001  
 Signature: *Beverly ...* Address: P.O. Box 406, Alamo, NV 89001  
 Signature: *...* Address: P.O. Box 406, Alamo, NV 89001



0019

Signature	John M. ...	Box 512	Alameda, NV
Signature	Michael ...	P.O. Box 101	Alameda, NV
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Signature	John ...	P.O. Box 161	Alameda, NV
Signature	Robert ...	P.O. Box 515	Alameda, NV
Signature	John ...	P.O. Box 515	Alameda, NV
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0019

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Signature	John ...	P.O. Box 81	Alameda, NV
Signature	John ...	Box 354	Alameda, NV
Signature	John ...	Box 354	Alameda, NV
Signature	John ...	Box 517	Alameda, NV
Signature	John ...	Box 107	Alameda, NV
Signature	John ...	Box 215	Alameda, NV
Signature	John ...	Box 155	Alameda, NV
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Signature	John ...	P.O. Box 513	Alameda, NV

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Signature	Edith Sabar	Address	Neko, NV 89017
Signature	Mari Guee	Address	Alamo, NV 89001
Signature	Lea Woodruff	Address	Alamo, NV 89001
Signature	Robert J. Ford	Address	Alamo, NV 89001
Signature	Clayton	Address	Alamo, NV 89001
Signature	Amara Hill	Address	Alamo, NV 89001
Signature	Cherene Cox	Address	Alamo, Nev. 89001
Signature	Phyllis M. Cox	Address	P.O. Box 193 Alamo, NV 89001-0193
Signature	Victoria W. F. Jellum	Address	P.O. Box 3 Alamo, NV 89017
Signature		Address	
Signature		Address	
Signature		Address	
Signature		Address	
Signature		Address	

0019

Signature	Rene A. Cook	Address	P.O. Box 473 Alamo, NV
Signature	Heather A. Duce	Address	P.O. Box 374 Alamo, NV
Signature	Shirley Davis	Address	P.O. Box 166 Alamo, NV
Signature	L. Elaine Davis	Address	P.O. Box 166 Alamo, NV
Signature	Yvonne Z. Paulson	Address	P.O. Box 654 Alamo, NV
Signature	Robin Parker	Address	P.O. Box 154 Alamo, NV
Signature	Shannon Parker	Address	Box 154 Alamo, NV
Signature	Jerry F. Parker	Address	Box 194 Alamo, NV
Signature	Helma Luvik	Address	Box - 365
Signature	Yvonne Mason	Address	Box 187 Alamo, NV
Signature	J. Ma	Address	Box 187 Alamo, NV
Signature	Yvonne Mason	Address	Box 187 Alamo, NV
Signature	Yvonne G. Parker	Address	Box 545 Alamo, NV
Signature	Janet A. Hardy	Address	10 Main St Alamo, NV

0020

JAN 11 1999

January 6, 1999

Nellis Range Renewal Office  
P. O. Box 9919  
Las Vegas, Nevada 89191

GE-1 Dear Sirs:

The following comments are in response to The Renewal of the Nellis Air Force Range Land Withdrawal Draft Legislative Environmental Impact Statement (NAFR/DLEIS) dated September 1998.

The community of Indian Springs, Clark County, Nevada, has been in existence since the late 1800's, and has remained a quiet, rural residential community with a unique lifestyle in the southern Nevada area. The Nellis Air Force Range is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range, and the Indian Springs Air Force Auxiliary Field (ISAFAF) had subsequently been established adjacent to the northern border of Indian Springs. The Department of Defense (U. S. Air Force) is currently seeking authorization from Congress to renew withdrawal, in perpetuity, for all or most of the lands associated with NAFR for one purpose, continued military activity.

The environment and the future socio-economic development of Indian Springs, as well as the suitability for continued habitation at present levels would be seriously impacted by the NAFR renewal proposals.

The proposals for withdrawal of the land also include designation of airspace and the underlying land as "unrestricted 15 nautical mile air-to-ground safety requirements" (Fig. 1-12, page 1-40) and "some newer air-to-ground ordinance may require a 30 nautical mile safety buffer," (page 1-39) significant portions of which land and airspace lie outside the confines of the requested NAFR renewal, and which would also include all of the residential community of Indian Springs and significant portions of the sole highway link to Las Vegas, and would place this community, its properties, and its residents in harms way. These danger areas represent significant expansion of the range impact areas, yet these lands are not addressed as lands to be withdrawn, and no compensations are made to those person impacted by such activity.

Direct over flights of the community present significant hazards to residents and properties, from dropped and falling objects, harmful chemicals, and toxic materials may be expelled by aircraft and missiles in addition to the hazards of debris and ordnance; and the excessive noise from aircraft is destructive to the peaceful conduct of activities, psychologically damaging, damaging to hearing, disruptive to learning and communication, and damaging to livestock, yet the over flights are frequent, primarily from the U.S.A.F. Aerial Demonstration Team, the Thunderbirds. Though some concessions have been made at various times in the past, the current practice will continue to have flights directly over the community. We continue to observe much avian activity including raptor activity in the settled area of Indian Springs, one sighted several times as late as December of 1998 appears to be a peregrine falcon. Waterfowl, ravens, vultures, starlings in droves are all observed to frequent this watering place. For the protection and well-being of all concerned, the community of Indian Springs needs to have military activities restricted from the airspace over, and immediately to the east, south, and west of the approximately one square mile of territory, similar to the restrictions for the Desert Game Range Station at Corp Creek.

Signature	<i>Lorin Lamm</i>	P.O. Box 218	Alamo
Address			0019
Signature	<i>Robert C. Jaramata</i>	Box 234	
Address			Alamo Nev.
Signature	<i>Estelle Formaster</i>	Box 234	Alamo, NV
Address			
Signature	<i>[Signature]</i>	Box 234	Alamo, NV
Address			
Signature	<i>Deanna D. Madson</i>	Box 479	
Address			Alamo, NV 89110
Signature	<i>Mary Ann Smallwood</i>	Box 224	Alamo, NV
Address			
Signature	<i>Letroy Lutz</i>	Alamo	302 P.O.
Address			
Signature	<i>Mary G. Floyd</i>	P.O. Box 302	Alamo, NV
Address			
Signature	<i>Victoria C. Cline</i>	Box 222	Hiko, NV
Address			
Signature	<i>Edwin G. G...</i>	P.O. Box 401	Alamo, NV
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JAN 12 1990

BARRICK BULLFROG INC.  
 Bullfrog Mine  
 P.O. Box 519  
 Hwy 374 West  
 Beatty, NV 89003



December 22, 1998

99th AWF/C Public Affairs  
 c/o Mike Estrada  
 4370 North Washington Blvd.  
 Suite 223  
 Nellis Air Force Base, NV 89191-7078

**RE: Barrick Bullfrog Inc. Response to Draft Legislative Environmental Impact Statement for Renewal of the Nellis Air Force Range Land Withdrawal**

GE-2 Dear Mr. Estrada:

Barrick Bullfrog Inc. has reviewed the Draft Legislative Environmental Impact Statement (LEIS) for the Renewal of the Nellis Air Force Range Land Withdrawal and offers the following comments.

The draft LEIS prepared for the Renewal of the Nellis Air Force Range Land Withdrawal is a good document with extensive disclosure and quality data. However, knowing the high potential for discovery of valuable mineral deposits on Nellis Air Force Range (NAFR) and knowing the mining industry is the second largest in Nevada, Barrick Bullfrog Inc.'s position is allowence should be made for mineral entry and extraction on the NAFR. There are 25 mining districts located within NAFR, 12 of which have recorded past production. The size of NAFR alone is significant from a mineral resource standpoint. A similar-sized region, placed anywhere within the Great Basin will include 2 or 3 major mineral producing districts. Given the large areal extent and numerous known past productive mining districts within NAFR, Barrick Bullfrog Inc.'s preferred alternative is the No-Action Alternative.

However, as a member of a pragmatic basic industry and recognizing the importance of NAFR to the national security interest of the United States, Barrick Bullfrog Inc. strongly supports Alternative 2B, a 25 year withdrawal with non-renewal of 38,400 acres along the western border of NAFR.

The NAFR in general and the western border area in particular are situated in a geologic province containing presently and formerly economic precious metal deposits. Altered

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Noise of aircraft activity on the ISAFAF can and does overwhelm activities in Indian Springs. Trees in base housing area have been permitted to die, reducing that acoustic filter. Noise levels from aircraft need to be reduced to tolerable levels, and the peculiar characteristic of the surrounding topography must be accounted for.

The risk assessment for a single small falling object greatly understates the real potential for damage by treating people and structures as two dimensional, and by failing to take into account the population and property densities of Indian Springs. As a hypothetical model it lacks statistical reliability as it presents no data beyond those derived from calculations in support of its contentions. The risk in Indian Springs, given the frequency of over flights, would appear to be much greater than that proposed here.

The unending development of new weapons systems and changes in existing systems and support systems, as well as probable changes in weather, and scientific understandings revealing currently unknown hazards to the health, well being, property, and livelihood of the residents of Indian Springs, require that the environmental impacts be frequently and thoroughly reviewed. As the critical emergency medical and fire fighting services within the community of Indian Springs are of a part-time and volunteer nature and lack the ability to respond immediately to the manifold "hazardous materials," and because Indian Springs has recently been informed that the U.S. Air Force will no longer have a formal agreement (as per their legal office) to provide back-up services such as emergency medical and fire protection, though the current command does provide this on an informal basis, enabling directives from the appropriate level, and/or legislation are required to protect the inhabitants, property, etc., of Indian Springs.

Indian Springs has insufficient gravity fed emergency water storage to handle emergency situations, especially in the event of a power outage during an emergency, formerly relying on occasional connections with ISAFAF. An accident in the community could overload the quickly available water for fire fighting. Joint community and Air Force aboveground water storage should be developed at no cost to the residents of Indian Springs, Clark County, or the State of Nevada.

In over three decades of residence here we have observed that the community of Indian Springs has always sought a harmonious association with the Air Force, and has in the past linked its sense of community, even its infrastructure, to ISAFAF. When Indian Springs Air Force Auxiliary Field was declared as "isolated Continental United States" station, and subsequently "privatized" with the resulting loss of Air Force dependent families as an integral part of the Indian Springs community that commonality has disappeared. The community now has little contact with the commuter military personnel that are here only for their daily shift. Returning military families to Indian Springs would go a long way toward restoring the sense of community and understanding for this heavily impacted community.

The Air Force personnel speaking with us regarding this DLEIS have been courteous, professional, and attempting to address our concerns on a case-by-case or issue-by-issue basis. This was also the case with the Special Nevada Report about one decade ago. In the intervening years our concerns often go unheeded. Reviews such as this LEIS appear to be essential to receive appropriate attention to concerns.

Please send us a copy of the Final LEIS.

Sincerely,

Michael Bingham  
 P. O. Box 358  
 Indian Springs, Nevada 89018

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and mineralized rocks that comprise the bedrock in the NAFR are the same as those that contain precious metal deposits in the Tonopah - Goldfield - Beauty area. These areas on the NAFR have been sites of historic mining. The potential for undiscovered mineral resources in the area is high. From a regional exploration point of view, the tectonic faults, rock types and styles of mineralization along the western border are similar to known gold deposits. Consequently, the possibility of future mineral extraction in this area should be considered in the assessment of withdrawal.

From work done by the Nevada Bureau of Mines and Geology, it is apparent the diversity of geologic environments on NAFR is great enough that the potential exists for several different mineral deposit types. These include precious metals (gold and silver), base metals (copper, lead, zinc), specialty metals (tungsten, lithium, mercury), and industrial minerals (sand, gravel, limestone).

Mining by its nature depletes the very resource being worked and as a result, the industry must continually search for new reserves. As the largest gold producer in southern Nevada, Barrick Bullfrog Inc. has spent much time and money exploring for additional reserves in the Western Border area. In this effort, Barrick Bullfrog Inc. personnel have laid down considerable boot leather and spent considerable money to gain first hand knowledge of the mineralized areas west of the fence along the western border of NAFR. This work has identified several highly prospective areas that the company would have followed up had the land not already been withdrawn.

The region has great potential for the discovery of another deposit the size of Barrick's Bullfrog mine. Prior to the discovery of the Bullfrog ore body in 1986, total recorded production from the Rhyolite district had been only 112,000 ounces of gold. The three deposits mined by Barrick on the Bullfrog site have produced nearly 2.5 million ounces of gold. This production has come from deposits a stone's throw from the town of Rhyolite, a mining camp thought to be worked out in 1917. This new production is an excellent example illustrating the point that simply looking at past production records is not a good indicator of future mineral potential.

In Nye County, the main economic activities are related to mining and military activity. Currently, mining activity in Nye County is declining due to low precious metal prices and mine closures. It is expected that mining employment will continue to decrease during the next few years. However, opening up the western border region would have a dramatic effect on employment. Lands currently being studied for withdrawal are considered highly prospective for new mineral discovery and could have a significant positive impact on mining related employment in the Tonopah - Goldfield - Beauty areas.

The implementation of alternative 2B would increase mining employment and an expanded retail and service sector. The indirect retail and service employment would increase. Secondary employment generated in the service sector during mineral exploration and mine construction is commonly estimated using an employment multiplier of 1.2. That is, for every five new mining jobs, one more job is created in the

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service sector.

Any new mine project would generate new jobs and result in a significant net revenue increase to Nye County. Revenue increases would come from greater sales tax, property tax, and net proceeds revenues. In addition to mine and mill operations, other commercial and residential activity would occur in the surrounding areas. These developments would contribute to the tax base and add property tax and sales tax revenue to Nye County.

Barrick Bullfrog Inc. commends the excellent work done by the Nellis LEIS participants but believes the economic benefits of mineral entry outweigh the minimal value to national security interests. In view of the high mineral potential and obvious economic benefits to Nye County, Barrick Bullfrog Inc. strongly supports Alternative 2B, that is, a 25-year withdrawal with non-renewal of 38,400 acres along the western border of NAFR. If you have any questions or require additional information, do not hesitate to call Rocky Chase at the above number, extension 15, or Bill Ludwick, at extension 68.

Sincerely,



Rocky Chase  
Environmental Coordinator

cc: D. L. McClure  
W. Ludwick

BLM-2

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12/28/98

JAN 06 1999

Nellis Air Force Range Renewal Office  
Bx 9919  
Las Vegas, NV 89191-0919

BLM Nevada State Director  
Bx 12000  
Reno, NV 89520-0006

GE-2

Dear Sir:

These comments are in reference to the Nellis Air Range Legislative Environmental Impact Statement, Nov. 19, 1998

To me, the most important thing to remember is that these lands belong to all of the people of the United States. Although we have given temporary use of these lands to the Air Force for certain activities, we still own them. We have not only the right but the obligation to see that our land is treated as well as it can be, and to preserve as much access as possible to our land given the mission of the Air Force.

Therefore, I believe that the biodiversity of the range should be protected to the greatest extent possible. The Keystone Report should be made a part of the final EIS. Roadless areas should be inventoried following BLM procedures, and there should be a requirement that these areas be protected by not building roads or structures in them, since these areas possess great values as natural areas. The Air Force can perform its mission while still protecting our land, and the EIS should make this clear.

Also, since this is our land, the renewal should be for a maximum of 15 years, so we can review the stewardship of the Air Force and take appropriate action if our land is being abused. Under no circumstances should a permanent withdrawal be authorized. Access by Native Americans should be permitted when possible, since these are some of their sacred lands. Also, Native American sacred sites should be respected and protected. Finally, to provide more access to our land, subalternative B should be selected regardless of which alternative is selected so that 30,000 acres could be released and better access to the Kawitch Range WSA could be provided.

Thank you for the opportunity to make these comments, and please keep my name on the mailing list.

Sincerely,

*Stan Hays*  
Stan Hays  
230 Larkspur St.  
Ridgecrest, CA 93555

0022

Michelle Satterlee  
822 W. First #1  
Reno, NV 89503  
michells@unr.edu

January 6th, 1999

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

GE-1 To Whom It May Concern:

I am writing you today to stress the importance of maintaining biodiversity in the Nellis Air Range by protecting a significant portion of the area from development and test bombing. Please incorporate the Keystone Report in the final Draft Legislative EIS and inventory your roadless areas in accordance with BLM procedures. To maintain the unique biodiversity of this area, I encourage you to not build any structures or roads within the current roadless areas of the Range. It's also important that you recognize Native American rights and allow access to sacred sites existing on the range. Whichever alternative you select, I encourage you to choose the OBO subalternative which would release 30,000 acres and allow public access. Thank you for considering my opinions.

Sincerely,

*Michelle Satterlee*  
Michelle Satterlee

11-6-98 LEIS - NAIP

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ORIGINAL

NELLIS AIR FORCE BASE  
NATIVE AMERICAN INTERACTION PROGRAM

COMMENT HEARING

for the

DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT  
FOR RENEWAL OF THE NELLIS AIR FORCE RANGE LAND  
WITHDRAWAL

Held at Nellis Air Force Base  
Las Vegas, Nevada

Friday, November 6, 1998

Reported by: Lisa A. Fogleboch, NV CCR No. 298

Laurie Webb & Associates (702) 386-9322  
517 South 9th Street, Las Vegas, Nevada 89101

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1 LAS VEGAS, CLARK COUNTY, NV., FRI., NOV. 6, 1998  
2 2:15 P.M.

3 -ooo-

4 P R O C E E D I N G S

5  
6 MR. FRANK-CHURCHILL: My name is Maurice  
7 Frank-Churchill. I'm the vice chairman for the  
8 Yomba Shoshone Tribe, and the concern I shared with  
9 Colonel Fukey this morning was in regard to the  
10 Ruby Valley Treaty.

11 Within their governmental organizations, they  
12 have more or less scurried around the Ruby Valley  
13 Treaty issue. According to the federal government,  
14 that treaty has been, I guess, more or less  
15 fulfilled with the acceptance of the -- on behalf  
16 of the Western Shoshone Tribe. Western Shoshone  
17 have not accepted any part of the distribution, and  
18 my question is how is the Air Force going to  
19 address the Ruby Valley Treaty?

20 Then the second part is our tribe is wishing  
21 to expand our land base, and part of it runs south  
22 into the Reveille Valley and the northern half of  
23 the Nellis Range, and I'm not sure how the  
24 government is going to address that, and that's  
25 just my question that I have.

GE-2

AF-9

CR-6

Laurie Webb & Associates (702) 386-9322  
517 South 9th Street, Las Vegas, Nevada 89101

11-6-98 LEIS - NAIP 3 6000

1 THE COURT REPORTER: Excuse me, sir,  
 2 could you repeat the valley name.  
 3 MR. FRANK-CHURCHILL: Reveille.  
 4 COLONEL FUKEY: Reveille's  
 5 R-e-v-e-i-l-l-e.  
 6 MR. FRANK-CHURCHILL: My question is how  
 7 is that going to be addressed. It's going to  
 8 happen in the -- oh, hopefully within a ten-year  
 9 period, so I'm hoping that the Air Force will work  
 10 with the tribes in that regard. Those are the only  
 11 comments I have.  
 12 MR. DAVID CHAVEZ: My name is David  
 13 Chavez. I'm the representative of the Chemehuevi  
 14 Tribe, and our chairperson has a statement which I  
 15 will back up.  
 16 But there's one portion in here, the IS, that  
 17 I would like to make a comment on, and under the  
 18 Land Use and Transportation portion, page 310-14  
 19 where it states in here land has no monetary value  
 20 for Indian tribes, and I think that statement was  
 21 taken incorrectly and out of context. I believe  
 22 when we made that statement, we said that to the  
 23 Indian people, you cannot place monetary value on  
 24 the land. That's all I have to say.  
 25 MS. DUNLAP: My name is Gjrjle Duniap.

GE-2

ED-6

GE-2

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 517 South 9th Street, Las Vegas, Nevada 89101

11-6-98 LEIS - NAIP 4 6000

1 I'm the chairlady of Chemehuevi Indian Tribe. I'm  
 2 in opposition in alternatives A, 1-A, 1-B, and no  
 3 action due to the fact the duration is indefinite  
 4 and there are no safeguards of monitoring and  
 5 reporting by whom and by who. We also request the  
 6 right to reserve our comments on the other  
 7 alternatives to A and to B until which time all  
 8 tribes concerned have the same opportunity to  
 9 review all documents and have a consultant prior to  
 10 comment.  
 11 Native Americans, as keepers of the land,  
 12 have a great concern of the environmental impacts  
 13 of depleted uranium and the spread of radioactive  
 14 waste materials on these lands. I'm not satisfied  
 15 with the proposed changes, the proposed cleanup,  
 16 the process of depleted uranium, and it has a  
 17 long-termed effect.  
 18 The department should have included tribes in  
 19 defining regulations which satisfies all parties  
 20 involved to develop a more timely and adequate  
 21 waste disposition process; as Fish and Wildlife  
 22 Services take into consideration the current  
 23 findings on contamination of samples collected, the  
 24 long-term effect and the widespread effect it could  
 25 have on native species in the surroundings areas;

AF-22

AF-12

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11-6-98 LEIS - NAIP

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1 the underground aquifer which may be contaminated  
2 12 miles south a populated area, Indian Springs;  
3 President Clinton's executive order consulting  
4 tribes and establishing being a government, the  
5 government relationship has not been honored.

6 The agreement process involves five entities;  
7 U.S. Air Force, BLM, U.S. Fish and Wildlife,  
8 Department of Energy, and the State of Nevada. The  
9 five-party cooperative does not include the tribe  
10 as a party. We are only secondary to this  
11 agreement. If tribes already have the government,  
12 the government relationship, we should also employ  
13 a significant part in the negotiation process and  
14 planning.

15 MS. GAYLENE MOOSE: My name is Gaylene  
16 Moose. I'm from the Bishop Paiute Tribe and I'm  
17 representing the Owens Valley tribes as  
18 representing the LEIS subgroup.

19 I just want to go on record that I'm backing  
20 the rest of the CGTO group and the decisions that  
21 they're making here today.

22 MS. ROSEANNE MOOSE: Roseanne Moose, Big  
23 Pine Paiute Tribe, tribal chairperson.

24 On behalf of the Big Pine Tribe, I would like  
25 to commend all the tribes represented today in

WR-1

AF-10

AF-12

GE-1

GE-1

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1 giving their testimony on behalf of their own  
2 people, and I think the main concern here with all  
3 of us is our land and our water and the  
4 environment, and as Indian people we know that  
5 we -- we don't wish these things to be destroyed,  
6 and on behalf of the Big Pine Tribe, we oppose the  
7 renewal of the Nellis Air Force Land Range  
8 withdrawal, and I'd like to have that go on  
9 record. Thank you.

GE-2

10 MR. ARNOLD: I've got a question to ask  
11 first. I've got some editorial changes, but it  
12 seems like that may take kind of like a long time.  
13 Is it appropriate to insert those at this time?  
14 And what it's going to necessitate is me flipping  
15 back from page to page, so would it be more  
16 appropriate to submit it in writing?

17 COLONEL FUYEY: I would submit it in  
18 writing.

19 MR. ARNOLD: Okey-dokey.

20 My name is Richard Arnold. I am the  
21 spokesperson for the consolidated group of tribes  
22 and organization of Southern Paiute from Pahrump  
23 and executive director from Las Vegas Indian  
24 Center. I have basically a statement, and just  
25 really a position of the tribes that are

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1 represented here, that it's been basically  
2 confirmed by all of us that we recommend that  
3 the -- let me start over here. Trying to read my  
4 writing. I'm sorry.

5 That we recommend that it is imperative that  
6 the Nellis Air Force Base and the LEIS process and  
7 through that document try and address all treaties,  
8 executive orders, presidential memorandums, federal  
9 law and policies, and that they be adhered to at  
10 all times for all proposed actions, not only  
11 through this LEIS, but also through the operations  
12 of the Nellis Air Force Base, and I guess with  
13 that, we would also further recommend that the  
14 Native American Interaction Program remain intact  
15 and really become part of an institutional process  
16 within the Nellis Air Force Base and not just  
17 something that would perhaps disappear after the  
18 renewal has been granted, if that is what occurs.  
19 End of my statement.

20 MS. MILLER: Lalovi Miller from Moapa.  
21 I support and agree with Maurice Frank-Churchill  
22 and Gjrjle Dunlap and Roseanne Moose. I have the  
23 same concerns they do, so I support what they say,  
24 and Richard Arnold's statement also. Thank you.

MS. CORNELIUS: Good afternoon. My name

Laurie Webb & Associates (702) 386-9322

517 South 9th Street, Las Vegas, Nevada 89101

CR-1

CR-2

GE-1

GE-2

11-6-98 LEIS - NAIP

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1 is Betty Cornelius and I'm with the Colorado River  
2 Indian Tribes, and one of the comments that I  
3 wanted to make was when we did the LEIS with the  
4 group, the American Indian Writers Group, there was  
5 not enough reports that was given to us and that we  
6 went into this LEIS kind of like blind and  
7 handicapped, but that I thought that we had done a  
8 real excellent job.

9 And the other comment I wanted to make was in  
10 Section 81, the CGTO is not listed as the  
11 preparers, and I would like them to be listed.

12 I would like to know through the LEIS if  
13 there's going to be further ethnographic studies  
14 for the future. I know this program is limited,  
15 and I would like to know if the LEIS is going to  
16 address this and if we're going to be a committing  
17 commitment interaction program with Nellis Air  
18 Force Base.

19 I'm also concerned about the funding and also  
20 the commitment. I'm concerned about the trust  
21 responsibility that the Nellis Air Force Base has  
22 with the governments, with our tribal governments,  
23 and I think that LEIS should address this, and I  
24 also would, because of the sovereignty as the  
25 government-to-government relationship with tribals,

CR-3

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11-6-98 LEIS - NAIP

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1 tribal governments, I would still like to invite  
2 Colonel Fukey to come and address our tribal  
3 government.

CR-5

GE-2

4 MS. LAFFOON: Good afternoon. My name  
5 is Lawanda Laffoon. I'm tribal secretary of the  
6 Colorado River Indian Tribal Council in Parker,  
7 Arizona. I'd like to thank the Air Force staff for  
8 letting us give comments at this time on the LEIS.

9 One of the first things I'd like to say is  
10 that we are all people of the Great Basin area of  
11 which the Air Force Base is a part of.

12 One of the concerns that I have is that  
13 Native American governments were not provided the  
14 opportunity to be a part of the five-party  
15 cooperative agreement, and under the  
16 government-to-government relationship with tribes,  
17 I feel that there needs to be this tribal  
18 representation.

AF-12

19 Also, treaties between Native American  
20 governments and the United States of America need  
21 to be recognized and considered during this draft  
22 LEIS statement process, and I guess the last  
23 comment or concern that I have is the broad  
24 interpretation of some of the statements made in  
25 the draft, especially on page 1-7, section 1.2.3.1,

CR-11

CR-12

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11-6-98 LEIS - NAIP

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1 which addresses the alternatives and the fact that  
2 Native Americans were said to have developed two of  
3 the four alternatives. Thank you.

CR-12

GE-2

4 MR. CHARLES: My name is Jerry Charles  
5 of the Ely Shoshone Tribe, Western Shoshone. I  
6 would like to see the Air Force recognize the  
7 treaty of Ruby Valley, and I agree with all the  
8 concerns and issues that the group has brought up.  
9 Thank you.

GE-1

10 MS. JAKE: Good afternoon. I am

11 Vivian-Caron Jake and I'm with the Kaibab Paiute  
12 Tribe. I have represented the tribe as cultural  
13 resources consultant and also as an environmental  
14 program manager. My concerns are related to the  
15 cultural, the cultural impacts that this has to the  
16 Great Basin people.

17 We are the stewards of our country. We have  
18 ties to the land. We are deep rooted to the land.

19 We hold it in high esteem, and there's a  
20 spirituality that ties us to the land, and,  
21 therefore, we have the kind of values and awareness  
22 of things that sometimes other people overlook.

23 We are concerned about sacred areas, what  
24 this training and what this Air Force Base does to  
25 those sacred areas; Mt. Charleston for one, all the

Laurie Webb & Associates (702) 386-9322

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11-6-98 LEIS - NAIP 12  
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1 want to make certain that whatever federal agency  
2 has an interest in this, that they be held to these  
3 statutes. Laws are not only made for Indian people  
4 to follow. We have followed the law in every  
5 situation that we can possibly hold. We have not  
6 exposed or gone into areas where we are not  
7 allowed, and that's because of the fence lines and  
8 other boundaries that are set for us. We have  
9 always complied with the statutes.

10 And I guess my biggest statement today would  
11 be that the laws are not only made for my tribal  
12 people, they are also made for the federal  
13 government and for those federal agencies that are  
14 part of the federal government, and so I, in  
15 supporting those that have spoken about treaties  
16 and executive orders, I am also agreeable that  
17 there should be some special consideration made  
18 within the LEIS to make certain that those mandates  
19 are followed. Thank you very much.

20 MR. LEE CHAVEZ: My name is Lee Chavez,  
21 representative of the Bishop California Tribal  
22 Reservation, and also I've been archeological  
23 monitor, I believe, since 1993 on NTS and the Yucca  
24 Mountain site, and I've been with the consolidated  
25 group since the same period of time, and I'd just

Laurie Webb & Associates (702) 386-9322  
517 South 9th Street, Las Vegas, Nevada 89101

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1 overflights and so forth. We, because we are the  
2 people of the land, know that we have a  
3 responsibility in protecting it. Therefore, we  
4 also are concerned that protection to these lands  
5 we feel might not be adequately met by whatever  
6 decisions are made, and that possibly in the long  
7 run in the future for future generations, even we  
8 feel that if this land, if the withdrawal was  
9 indefinite, that access to these lands would not be  
10 made possible for those people who have the  
11 responsibility for helping to heal the land.

12 We have spiritual leaders and religious  
13 leaders who need access and we have children who  
14 probably in the future will want to look at this  
15 land, and one of, I guess, the experiences that I  
16 have had in working with federal agencies, there  
17 has been no compliance to either their own  
18 regulations or the policies that they make. The  
19 federal statutes are not always complied with, and  
20 federal agencies have been guilty of  
21 noncompliance.

22 Last year I was in court with a federal  
23 agency because of that very reason, for  
24 noncompliance, and so I have had personal  
25 experience with that, but not only that, but we

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11-6-98 LEIS - NAIP 13  
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1 like to go on record right now as stating that I am  
2 only a representative of the Bishop Valley  
3 Reservation and I can only speak how I feel, but I  
4 can feel safe to say that my tribe would back what  
5 I'm saying in agreeing with the rest of the  
6 consolidated group on all their concerns and  
7 situations and future motions they may move or  
8 pass, and that's about it.

9 I feel that the government should come to our  
10 government and talk to us face to face. We go out  
11 of our way since, like I said, since I've been  
12 here, 1993, to come over to this place to meet with  
13 United States government and their representatives,  
14 and I feel it's time that they should come to us  
15 and talk to us on our terms, and that's about it.

16 MS. CERVANTES: May name is Eldene  
17 Cervantes, and I'm a representative of the Paiute  
18 Tribes of Utah. I agree and support everyone about  
19 the issues and statements they have said here  
20 today. That's all I have to say.

21 MS. DOMINGO: My name is Charlotte  
22 Domingo, Paiute Tribe of Utah member. I am in  
23 support of the comments made by all tribes  
24 represented here today.

25 MR. LYNCH: This is Liza?

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1 THE COURT REPORTER: Lisa.  
2 MR. LYNCH: Oh, it's Lisa. Okay, Lisa.  
3 Every time I think about a court reporter, last  
4 time I run into one, I throw her out of court.  
5 That's what I thought of. And that's one of the  
6 reasons I made a complaint about the court reporter  
7 and the photographer at the beginning of the  
8 meeting before you guys come back in. But my name  
9 is Charles Lynch, you spell it with a Y, L-y-n-c-h.

10 THE COURT REPORTER: Thank you.

11 MR. LYNCH: I'm a representative of the  
12 Panzump Paiute Tribe by marriage only. I'm a  
13 registered Cherokee. I'm a part Wyandot, I'm a  
14 part Delaware and I'm a part Shawnee, and I've  
15 lived in this area since 1944, so I've watched  
16 Nellis Air Force Base, all these areas, as well as  
17 some other bases in the area.

18 But my biggest complaint was when I was  
19 reading this morning, when he gave his speech that  
20 he was going to give the general public, he come  
21 down to summary, and I'm just wondering if his  
22 summary was sufficient in order to convince people  
23 of what it's all about.

24 Why are we making this study to begin with?  
25 Is it for jobs? What's it for? Or is it for the

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11-6-98 LEIS - NAIP 16  
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1 was that we should split that and give it back to  
2 the Base, let them have it, let the Base have it.  
3 They need it. I know why they need it. The  
4 colonel knew why they needed it.

5 The colonel's letter didn't state that when  
6 he answered, but it was nice enough to answer, and  
7 his answer was somewhat smoothed over and forgot  
8 about, but now that I have an opportunity to bring  
9 it back up, I'm going to emphasize it. We need  
10 another hospital here. We need a veterans  
11 hospital. But above and beyond that, in the same  
12 letter his next sentence, will include 17,000  
13 Indians in the Las Vegas area alone, and those  
14 Indians need a hospital in Las Vegas, and if  
15 there's anything that can come of good out of this  
16 meeting or these meetings with the Air Force, I  
17 hope and pray to God that we can get that and get  
18 an Indian hospital in Las Vegas.

19 I'm 78 years old. This is probably the last  
20 speech I'll ever make, but my heart goes out to the  
21 Indians. Even though my relatives signed the  
22 Declaration of Independence, you'll find his name  
23 on there as Thomas Lynch, and we've been fighting  
24 these battles all these years and we'll still keep  
25 fighting them, so my prayers go out not only to the

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1 protection of the United States government and the  
2 protection of the people of the United States of  
3 America? And I'm hoping that it's for the  
4 protection of our stakes in this world, and I'm  
5 hoping that they will revise their summary to  
6 include some patriotism where they can revive the  
7 people to see their point.

8 Their point of view that they gave was real  
9 good. The point of view that these people have  
10 gave is real good. But one of the biggest problems  
11 that we have with Indian people, with our study  
12 from coast to coast, is that we forget that they're  
13 human, that they need to be treated equal. And  
14 once you can treat an Indian equal, you can do  
15 anything on this earth that you want to, because  
16 he'll be right beside you.

17 Other than that, I don't have much to say  
18 except for one thing: I wrote Colonel Bolt at the  
19 last meeting, and I said in my letter -- and I  
20 didn't figure I'd be needing the letter, I would  
21 have brought it, but the letter says this: That we  
22 have a hospital here on the base, next door to the  
23 base, that is part Veterans and part American  
24 Air Force Base, half and half. And my suggestion  
25 to him was -- and I think it should be addressed,

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1 Indians, but also to the Base, that the Base can  
2 see what's going on. We thank you.

3 MS. SAVALA: My name is Gevene Savala  
4 and I'm from the Kaibab Paiute Tribe, and I wanted  
5 to back up and support the tribes that are here at  
6 this meeting, and I would like to see the  
7 government-to-government relationship be more  
8 meaningful to the government and the Nellis Air  
9 Force Base. Even though our thoughts and yours  
10 don't run in the same direction on specific issues,  
11 we hope that -- I hope that Nellis Air Force Base  
12 personnel in the future will know our cultural  
13 beliefs and honor these beliefs.

14 And I also would like to say what Mr. Lynch  
15 said about the hospital, there is -- we're in the  
16 Phoenix area and we have to travel quite a ways.  
17 We're under contract care, and contract health care  
18 only takes people that are severely injured or  
19 that's really in need of health service really bad,  
20 so we have to travel to Phoenix, Arizona, and  
21 that's about 300 and -- I would say about 350 miles  
22 one way, so, you know, and sometimes the community  
23 service personnel that takes us don't have enough  
24 money, you know, for gas and all that stuff, so  
25 sometimes ones that can go by themselves, they have

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1 to use their own personal cars to go, and we do  
2 need -- are in need of help for health services.  
3 Thank you.

GE-1

4 MS. BRADLEY: Hello. My name is Carmen  
5 Bradley, chairman of the Kaibab band of Paiute  
6 Indians. The concern I have is the activities of  
7 Nellis Air Force Range affects our lives as Indian  
8 people in regards to our health and our social  
9 economics and is not limited to archeological or  
10 historical remains of our ancestors but also  
11 includes natural resources.

12 The president's memorandum regarding  
13 government-to-government relationship has not been  
14 fully honored as intended. We, as tribal  
15 governments, need to be recognized as sovereign  
16 nations to be able to sit down at the table to  
17 discuss and be a part of the decision-making  
18 process and not be an afterthought.

19 Indian people have cared for Nellis Air Force  
20 Range resources and will continue to do so. We  
21 consider ourselves as the caretakers of the land  
22 more so than the BLM or the U.S. Fish and Wildlife  
23 Service will ever do. Therefore, I oppose the  
24 no-action alternative due to the lack of proper  
25 management from the mentioned agencies. Thank

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1 You.

GE-1

2 MR. MILLER: Good afternoon. My name is  
 3 Vernon Miller, former tribal chairman for some  
 4 30-odd years of Fort Independence, of which I'm a  
 5 representative of, and I would like to concur with  
 6 what has been said here this day. I think that  
 7 sometimes people misunderstand or misinterpret our  
 8 feelings towards the land or whatever the situation  
 9 may be. We certainly don't feel that it belongs to  
 10 us, that's someone's placed us here or some powers,  
 11 and we have that respect basically for all those  
 12 things.

13 I'd like to mention about the Ruby Valley  
 14 Treaty, which is very controversial. In fact, the  
 15 Supreme Court has turned it down; rejected it,  
 16 basically. But I support that, some of the things  
 17 that Betty Cornelius said and the lady from Kaibab  
 18 said, and even what Charles there had mentioned.

19 But again, I'd like to stress the fact that  
 20 the importance of the relationship between tribes  
 21 or the government-to-government relationship, and,  
 22 I guess, the other things that I want to stress is  
 23 the fact that we certainly aren't an adversary in  
 24 the sense towards the military or the federal  
 25 government. I think we have the best country in

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1 the world and I appreciate it and I'm grateful for  
 2 the fact that I'm able to come and sit in on these  
 3 programs.

4 In fact, I just feel like I'm an extended  
 5 family of all these people here that are sitting  
 6 today, and I've certainly learned a lot in terms of  
 7 other various tribal things that they did, so much  
 8 of it is the same out there that we see, we go out  
 9 and see these baskets of Indian artifacts that's  
 10 left out there.

11 In my mind, I go back in my mind, but we go  
 12 back to the time when the Department of Energy,  
 13 probably in the late '80s, and it's just been a  
 14 learning process in terms of it, and some of the  
 15 things that we knew in our own areas all are  
 16 basically the same out here, and again, I want to  
 17 stress the fact that I am certainly appreciative of  
 18 the fact that we have the opportunity to come out  
 19 here, and I would certainly hope that the federal  
 20 government or the agency here at Nellis would have  
 21 that same respect that we have of everything. I  
 22 don't care what it is, whether it's the animals  
 23 that are crawling around or the mountains that we  
 24 have here, and again, as I say, I am very  
 25 appreciative of the fact of them speaking or of

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1 having the opportunity to speak here. Thank you.

GE-2

2 MR. CLOQUET: Kalawoa. That means, Hi,  
3 how are you doing, in my language, that means,  
4 Greetings, and my name is Don Cloquet. I'm the  
5 official tribal contact representative for the  
6 Las Vegas Indian Center, and I'd like to make a  
7 quote from a famous chief from the pacific  
8 northwest. Chief Self (phonetic) said, and I  
9 quote: Earth does not belong to Man; Man belongs  
10 to Earth. And we only have one earth, and there is  
11 no one on this earth who can take better care of  
12 our land here, the United States, other than the  
13 Indian people, because we are the first so-called  
14 environmentalists.

15 We have revered our lands, the water, the  
16 trees, everything that grows, including every rock,  
17 and I'm really appalled with the fact that we are  
18 not -- the CGTO is not being invited to be part of  
19 this five-party agreement, which I believe that we  
20 should make it a six-party agreement because of the  
21 fact that we have been here since time immemorial,  
22 and who better would know to take care of the land  
23 other than the Indian people; the indigenous people  
24 of this area, in particular.

25 I've been in southern Nevada for ten years,

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1 and my tribe from the state of Washington, we  
2 worked diligently in regard to the respect of the  
3 land that we have in Washington state. And also I  
4 would respectfully request that we receive, the  
5 CGTO receive a copy of the U.S. Fish and Wildlife's  
6 American Indian policy, which I have not yet seen.  
7 I don't know if they have one, but most federal

AF-20

8 agencies are mandated by the President of the  
9 United States to develop an American Indian policy,  
10 and also, and finally, I would like to state that I  
11 agree with most everything that's stated here with  
12 my fellow brothers and sisters here this afternoon,  
13 that we respectfully hope that the LEIS for Nellis  
14 Air Force Base turns out to be a positive action.  
15 And furthermore, I would just like to state  
16 that we need an area like the Nellis Air Force Base  
17 in Range Four in protection of the United States of  
18 America. Thank you.

GE-1

19 MS. GOAD: My name is Grace Goad. I'm  
20 from the Timbisha Shoshone Tribe. I'm a tribal  
21 council member; also, historical preservation  
22 committee. My tribe will agree on all Native  
23 American issues and concerns and its  
24 government-to-government relationship. They are  
25 not following it, and like the Ruby Valley Treaty,

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tribal governments regarding this issue and I want that for the record. Thank you.

COLONEL FUKEY: Okay.

(Thereupon, the proceedings adjourned at 3:00 p.m.)

HZ-1

- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

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no one recognizes it.

MS. CARTER: My name is Lila Carter.

I'm from the Las Vegas Paiute Tribe and our chairman sent me here to listen in on this meeting. I don't know what it was all about. This is my first time, but I do respect my people for what they're saying and everything, but our people, listening to them, seemed like we're always begging for something and nobody pays attention, so that's all I can say.

COLONEL FUKEY: Okay. Thank you.

(A brief conversation was held off the record.)

MR. DAVID CHAVEZ: David Chavez from the Chemehuevi Tribe. On page 3.4-17 under American Indian issues concerning hazardous materials and solid waste management, the very last paragraph, "Tribal governments would like to cooperate with Nellis Air Force Base in the development and implementation of safe transportation policies," I'm sure this is a concern to us, and then it goes on to say: "However, no systematic consultation with tribal governments has been conducted to date."

Well, there should be consultation with the

GE-1

- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

HZ-1

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**CONSOLIDATED GROUP OF TRIBES  
AND ORGANIZATIONS**

November 24, 1998

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, Nevada 89191-0919

GE-2 Dear Sir:

Enclosed please find a detailed listing of recommendations that are being presented on behalf of the Consolidated Group of Tribes and Organizations (CGTO). The CGTO has a long standing relationship with the Nellis Air Force Base through their Native American Interaction Program. Please note that these recommendations are in addition to those provided by tribal representatives at the Legislative Environmental Impact Statement Hearing that was held on November 6, 1998.

Should you have any questions regarding this submittal, please feel free to contact me.

Sincerely,



Richard W. Arnold  
CGTO Spokesperson

enclosure: 1

c/o Las Vegas Indian Center • 2300 W. Bonanza Road • Las Vegas, Nevada 89106

**Recommended Changes and Comments**

to the  
NAFBL/LEIS  
by the

**Consolidated Group of Tribes and Organizations**  
November 18, 1998

The following recommendations and/or comments are submitted on behalf of the Consolidated Group of Tribes and Organizations (CGTO). The CGTO formally supports the Native American Indian Resource Document entitled: *American Indian Perspectives on the Legislative Environmental Impact Statement (LEIS) for the Nellis Air Force Range Renewal* that was developed by the American Indian Writers Subgroup. The document collectively represents the concerns and views of the CGTO and supports the inclusion of text and references from this document. Additionally, the official statements that were provided at a special meeting with tribal representatives on Friday November 6, 1998 should also be addressed accordingly in the Final LEIS.

With respect to editorial changes and/or comments to the LEIS, the following information is provided for inclusion and/or response in the Final LEIS.

ED-2	Page 1-7 (Last Sentence) Add: "Tribal Governments" before Tribal organizations. Tribal organizations have a specific meaning; it describes organizations but does not apply to tribal governments.
CR-15	Page 3.9-8 (3.9.4.2, 1st Paragraph, Last Sentence) Add: "Owens Valley Paiute & Shoshones" after Western Shoshone.
CR-18	Page 3.9-8 (3.9.4.2 2nd Paragraph, 3rd Sentence) Comment: Southern Paiutes were also known to raise maize, beans, pumpkins, and melons as described in the literature. It is recommended that Southern Paiutes be added in this passage. It is further recommended that the LEIS writers clarify which group is being referred to. There are Mojaves who live in Needles, California who are members of the Fort Mojave Tribe and then there are Mohaves who live in Parker, Arizona who are members of the Colorado River Indian Tribes, each with different spellings.
CR-20	Page 3.9.9 (Second Paragraph) Comment: The writers should clarify which Chemehuevi Tribe they are speaking about. The correct names are either the Colorado River Indian Tribes in Parker, Arizona or the Chemehuevi Tribe at Havasu Lake, California.
CR-16	Page 3.9-15 (2nd Paragraph, last sentence) Add: "may" include dry lakebeds. Comment: This sentence states that "areas with lower sensitivity for the presence of significant cultural resources include dry lake beds" This statement is contrary to what is stated on Page 3.9-7 (1st Paragraph,

6001	<p>tribal communities within Clark and Nye Counties. The table should be expanded and text be written to address this matter. Specific text and information was provided in the Native American Resource Document for the NAFB/LEIS.</p> <p><b>Page 3.13-34 (3.13.9 American Indian Region of Influence, Last Sentence) ADD:</b> "Paiute Tribe" after "the Patrum." The sentence is incorrect in the way it is currently written.</p> <p><b>Page 3.14-2 (6th Paragraph, 4th Line) Change:</b> "Colony" to "Paiute Tribe" Comment: It is unclear why the Fort Mojave is included in the Region of Influence since it does not appear to be within the designated airspace.</p> <p><b>Page 3.14-4 (Map) Comment:</b> The map does not include nor identify low income or minority communities within the two federally recognized Indian Tribes in Northern Nye County.</p> <p><b>Page 9-1 (9.0 Consultation, 5th Bullet) - Native American Consultations, Comment:</b> Please add to this section consultations with the Consolidated Group of Tribes and Organizations (CGTO) as part of the Native American Interaction Program.</p>	<p>SE-11</p> <p>EJ-1</p> <p>EJ-2</p> <p>CR-3</p>
600	<p>Last Sentence) that describes early period sites that are often located along rivers, streams and playa or lake margins.</p> <p><b>Page 3.9-15 (Last bullet) Change:</b> <i>Shoshonean</i> to <i>Numic</i>. This identifier is more inclusive and refers to Western Shoshones, Southern Paiutes, Chemehuevis and Owens Valley Paiutes and Shoshones.</p> <p><b>Page 3.10-2 (Map)</b> The map omits two federally recognized tribes that have reservation lands relatively close to the boundaries of the NAFB Airspace. ADD: Yomba Shoshone Reservation and the Duckwater Shoshone Reservation in northern Nye County; the map symbols for the reservations appear on the map but are not labeled. The Yomba Reservation is the symbol in the northwest portion of the map, and the Duckwater Reservation symbol is in the northern central portion of the map.</p> <p><b>Page 3.13-2 (3.13.3.1 Employment) Comment:</b> The information describing available jobs and unemployment rates does not apply, nor are they included in these statistics. Indian statistics can be acquired directly from the respective tribal governments, the Bureau of Indian Affairs, the Bureau of Census - Detailed Population Characteristics for Nevada or the State of Nevada Indian Commission. It is recommended that the text respond to this area in view of the on-going government-to-government relationship that has been established with the NAFB.</p> <p><b>Page 3.13-8 (Table - Total Earnings) Comment:</b> This data does not apply to Indian tribes located in Nye County. This should be so noted or reflected in the table.</p> <p><b>Page 3.13-11 (Table - Total Earnings) Comment:</b> This data does not apply to Indian tribes located in Clark County. This should be so noted or reflected in the table.</p> <p><b>Page 3.13-14 (3.13.4 1st Paragraph, Second Sentence) Add:</b> "or held in trust" before "(see Table 3.13.14)" Comment: Tribal lands are not owned by the federal government but rather held in trust for Indian tribes. The writers should clarify this fact by including the recommended text.</p> <p><b>Page 3.13-21 (3.13.7.1 Health Care) Comment:</b> Indian Tribes are provided health services through the U.S. Indian Health Services. There is no mention of this within this section. It is recommended that the text be expanded to include this information.</p> <p><b>Page 3.13-24 (3.13-23 Public Schools) Comment:</b> This section does not include tribal schools that fall within Nye County nor does it address Headstart Program or Pre-Kindergarten Programs in both Clark and Nye Counties. The table should be expanded and text written to address this matter. Specific text and information was provided in the Native American Resource Document for the NAFB/LEIS.</p> <p><b>Page 3.13-25 (3.13.7.3 Law Enforcement/Table 3.13-26) Comment:</b> This section does not include tribal police departments nor the Bureau of Indian Affairs police that provide services to</p>	<p>CR-16</p> <p>CR-17</p> <p>LU-1</p> <p>SE-10</p> <p>SE-12</p> <p>SE-11</p>

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Formal Comments on the Draft Legislative Environmental Impact Statement can be sent to:

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

OR

Nevada State Director  
Bureau of Land Management  
1340 Financial Blvd.  
Reno, NV 89520

GE-2

AF-3

*As it true that we have foreign troops training at Nellis? Please explain. Improving our roads, Range, Environment*  
*Geary D. Duckham*

7000

Written Comment Sheet  
Nellis Range Land Withdrawal Renewal  
Draft Legislative Environmental Impact Statement

DATE NOV 10 '98

**ORIGINAL**

Thank you for your input

PLEASE PRINT

GE-1 I AM IN STRONG SUPPORT FOR THE NELLIS A.F. RANGE RENEWAL. THE MOST IMPORTANT REASONS TO RENEW INCLUDE THE FOLLOWING: (1) TO OPTIMIZE NATIONAL SECURITY BY CONTINUING THIS UNIQUE AREA TO ALLOW FOR TRAINING SITUATIONS FOR AIRBORNE NAVY & ARMY PILOTS (IE RED FLAG EXERCISES, ETC.) THIS RANGE SITE IS UNIQUE BECAUSE OF ITS LARGE SIZE & RELATIVE ISOLATION FROM POPULATION CENTERS. (2) THIS CONTRACT PROTECTS RESOURCES IN THOSE SENSITIVE NATIVE AMERICAN HISTORICAL SITES WHICH WOULD OTHERWISE BE DEGRADED AND VANDALIZED IF NOT PROTECTED. THERE IS AN ARCHEOLOGIST AND BIOLOGIST ON STAFF TO PRESERVE AND MAINTAIN THESE FUNCTIONS. (3) THIS RANGE CONTAINS PRECIOUS JOBS FOR THE THOUSANDS OF CIVILIAN EMPLOYEES BY THE RANGE. (4) THE FACT THAT THERE IS NO SIGNIFICANT WATER SUPPLY OUT THERE MAKES THIS A LESS DESIRABLE AND LESS NECESSARY RESOURCE FOR THE NEVADA POPULATION IN GENERAL.

\*\*\* CONTINUE OR BACK FOR MORE SPACE \*\*\*

NAME: GEORGE ALEXANDER MD  
ADDRESS: 8601 MIRADA DEL SOL  
CITY: LAS VEGAS  
STATE, ZIP CODE: NEVADA 89128

Please check if you would like to receive a copy of the Final LEIS

PLEASE HAND THIS FORM IN OR MAIL BEFORE DECEMBER 31, 1998 TO:

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191

Written Comment Sheet  
Nellis Range Land Withdrawal Renewal  
Draft Legislative Environmental Impact Statement

Thank you for your input

DATE 1 Oct 98

PLEASE PRINT

GE-1 AS A resident of Indian Springs and an employee at ISARNE I feel that relevant changes at the Air Force installation should be addressed on a concurrent basis. Community informational meetings, briefings, etc. could and should be addressed at another forum other than town board meetings preferably on the installation itself. Water issues, PM10, and noise pollution are rarely responded to on a case by case basis. We would like a consistent forum.

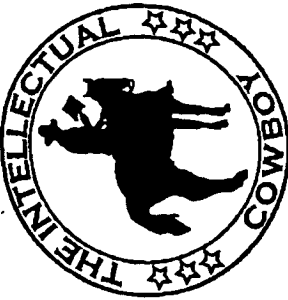
\*\*\* CONTINUE ON BACK FOR MORE SPACE \*\*\*

NAME: LORI S. FINCH / CABACO, Inc.  
ADDRESS: PO BOX 569  
CITY: Indian Springs  
STATE, ZIP CODE: NV 89018

Please check if you would like to receive a copy of the Final LEIS

PLEASE HAND THIS FORM IN OR MAIL BEFORE DECEMBER 31, 1998 TO:

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191



BOOKSTORE  
CALIENTE, NEVADA

Larry & Cathy Wisbeck  
P.O. Box 156 89008

November 11, 1998

Department of the Air Force  
Submitted at the Public Hearing  
Caliente, Nevada

GE-2

I oppose the granting of air and land rights to the Department of the Air Force on an indefinite basis. In that "indefinite" seems to mean forever, I would object to a continued lack of public oversight on the Air Force Operations.

Whether the "grant in perpetuity" is given or not, there are two concerns that must be addressed.

DOE-3

1. A transportation corridor must be dedicated to permit direct travel by rail or truck between the rail-head at Caliente and the Yucca Mountain Nuclear Repository and the Nevada Test Site. This transportation corridor is going to be necessary for the safe shipment of nuclear waste to Yucca Mountain. It will further be necessary for the economic well being of Caliente and Lincoln County if the Nevada Test Site is developed into a manufacturing center as has been proposed by the Federal and State Governments.

2. The Department of the Air Force and the Federal Government must come up with an equitable way to compensate the citizens of Caliente and Lincoln County for the use of the land and air space withdrawn and to be withdrawn. The Department of the Air Force has placed two different values on the land they use and propose to use forever. When it comes to valuing the space for purposes of compensating Lincoln County the value is close to zero. It is arid desert land suitable for no purpose whatever. When valuing it for purposes of training, security and National Defense it is a priceless treasure. The citizens of Lincoln County have been living with this dichotomy for decades with the effect of living in an economic nightmare. Our children must leave the County and their families in order to earn a paycheck. Businesses serve a community with meager resources to buy their products. There is virtually no opportunity to develop the resources of Lincoln County because the resources are held by the Department of the Air Force and other agencies of the Federal Government. In some cases the Federal Government will deny benefit to Lincoln County because multi-million dollar installations are so top secret that their very existence must be denied.

Regards,

Larry L. Wisbeck

7004

GE-1 Written Statement, which our group was denied to perform on 11/17/98, Hearing concerning land withdrawal for Nellis Air Force base.

John Hadden

John Hadden

Kathy Rusco

Kathy Rusco

David A. Bandy

Marti Seavers

Jim Lund

J. Lund

Jack Rupp

Collectively, we do not support the land withdrawal

7004

Major Rogers meets The X-Files  
Theoretical Theatre Productions  
10/10/98

Abbreviations: M - Agent Fox Mulder, S - Agent Dana Scully, MR - Major Rogers (information officer), K - Colonel Kirtz, LR - local Rancher, Kd - local High School Student, Dr - Doctor Julian Lovebomb, MIB - Men In Black, NA - Native American

SCENE 1: X-files, office of Fox Mulder, slide projector on Murder's desk

The X-files music plays. Agent Mulder sits in his office, with a short stack of slides in front of him and looking a one up to the light. Agent Scully enters.

M: Oh, Scully there you are. You know I've been thinking you could use a little sun. You've been looking a little pale - too much time in the morgue. You know all that fluorescent light is bad for your immune system. [Mulder gets up and begins loading the slides into the projector]

S: That's never been conclusively proven. Mulder, but what are you getting at? I'm not sure I'm ready to take a chance on another of your psychic hunches...

M: Oh come on Scully. I think you are ready to..... Gamble! [holds up two tickets]

S: Las Vegas... oh no Mulder not area 51 again... besides even you believe they moved everything, if there ever was anything unusual there.

M: This is bigger than Area 51, we're going to investigate the disappearance of the Great Basin.

S: The Great Basin? That's the area of the west so-called because no rivers escape the inland mountain ranges to flow to the sea. It's all desert right? But you're talking geographic impossibilities now. Mulder, the Great Basin can't just disappear!

M: Ah but it can Scully... [Mulder picks up the projector switch and turns on the projector] it can if larger and larger tracts of land are stolen from the public trust under the umbrella of National Security. It can if the government systematically denies the activities it conducts there, or [Mulder advances to the next slide] in the case of those living near the Nevada Test Site, the effects of years of nuclear testing carried to them on the desert winds. They've made the treaties disappear that promised to preserve [advances again] the ancestral land of Native Americans for their use. And now Nellis Air Force base wants to "disappear" another 3.1 million acres of land from the Great Basin [advances once again], not to mention all of the airspace above these vast tracts as well. Our right to know vanishing along with it.

S: I'll pack my sunscreen.

7004

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**SCENE 2:** The set of Major Rogers Neighborhood

[ Announcers voice: Partial funding for Major Rogers Neighborhood is brought to you by the Military Industrial Complex - we create better weapons today for a peaceful world tomorrow - and by you, the citizens of the United States. And now boys and girls, it's time for Major Rogers Neighborhood....! ]

[ Music starts, and Major Rogers enters, taking off his uniform and putting on goofy "casual" clothes. He does not remove his side-arm. ]

[ Announcer: Major Rogers was dreaming of the new annex to his neighborhood...! ]

MR: [ Singing to himself, doesn't know anyone is watching ]

That's why we're gonna take your neighborhood  
We're gonna take your neighborhood....

MR: [ cheerfully self-confident ]

It's a beautiful day in my neighborhood  
A beautiful day for Nevada to be mine, to be mine  
It's a wonderful day on the Air Force base  
A day for top-secret aircraft to be flyin', to be flyin'  
It's a beautiful day for a weapons test  
Don't worry, here in the desert things are fine, things are fine  
That's why you can't be, no you can't see  
No you can't be.... my neighbor.

Good Afternoon boys and girls! Yes indeed it's a beautiful day to be protecting this wonderful country of ours, and I know you don't want to be worrying your little heads about these things, and besides it wouldn't be polite to mention some of the things we do out here. You remember when your mom taught you that many things in life are better off not spoken of - it just upsets people. That's one of the reasons we have something called National Security. Can you boys and girls say that - [ slowly and phonetically ] NATIONAL SECURITY ... sure, I knew you could! Now we've been making our neighborhood a little bigger over the years, and since it's not polite to take things that aren't yours without getting permission - we've decided to ask you if you would mind. Being the polite little boys and girls that you are, well, we're just sure that you won't!

[ knock at door. MR goes to answer ]

MR: [ not recognizing initially ] I'm sorry you ... wait just a minute ... I think I know ... [ looking more closely, while the visitor remains stone faced ] Why is it! Colonel Kirtz. Undercover again?

K: Yes again Major. Its not like the old days when I'd just load up the NAPALM and ...

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MR: Times change. Now did you come over just to show us your disguise? That beard looks real.

K: It is real. It took me a long time to grow this. Anyway, I thought its about time for that helicopter ride.

MR: Oh! A special treat today a trip in Kirtz's top secret helicopter.

K: Well, actually Major this one is not top secret: at least not any more. You know we couldn't ride in, well you know.

MR: Of course not. You see everybody there are some things best not generally known. Remember how your parents wouldn't tell you everything they knew about some things because you wouldn't be able to understand. The knowledge would just be confusing and upsetting or you could get into trouble, and later you understood why. Its kind of the same here with certain things. Back then you trusted your parents to give you what you needed. That's another important word today can we all say that ... T R U S T ... good I knew you could. And of course trust is important to, that's right, National Security. Now then Col. Kirtz where are we going today?

K: Major Rogers we have a special visitor on the ba... ah in the neighborhood [Rogers queues Kirtz visually when he begins to say base to use neighborhood] I think everybody will like to meet him.

MR: Wonderful. I love surprises. Just let me get my flight gear.

[ both go out the door ]

**SCENE 3:** Kirtz and Rogers are now in the helicopter.

K: I thought on the way we could buzz the protest ...

MR: Oh, there's the Sudan Crater. How spectacular. Its just amazing what can be done with a little element 92 and some old fashioned American know-how.

K: Yes Sir it is. Of course this is a sight not many ever get to see. Civilian aircraft are kept out of the area above our neighborhood, for their protection of course.

MR: That's right. Boys and girls that is called Restricted Air Space, can you say that? Restricted Air Space, sure I knew you could! That's just another important piece of ... you guessed it ... National Security.

K: I've we are Major. I'll just land it over there.

MR: splendid. I know where we are. This is the technology and testing center. Now I wonder who's here.

[ Kirtz & Rogers get out of the helicopter and are met by Dr. Lovebomb, who was watching them land ]

K: [ exchanging handshakes ] Major Rogers, this is Dr. Julian Lovebomb.



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Dr: My experiments are very important, and with the computer models I developed we can see how an explosion would take place. [scarcely his voice and tempo] Some of the simulations are quite realistic. You just have to imagine a little bit and you can see the fireball, and now with the laser program, [Rogers looking nervous and looks for an opening] where we have constructed enormous multi-armed laser apparatus to focus on little pellets of deuterium and tritium, we are able to create miniature thermonuclear explosions. [Rogers cuts in a bit] "Why that's just a bit too technical" but Lovebomb goes off with great zeal! Just think of the possibilities, if we take this technology a little further, we could create even more powerful weapons

MR: Yes Dr. that sounds very interesting. I know that someday we will be able to use the lasers to develop hydrogen fusion reactors to supply our world with clean electricity. Isn't that right Dr.?

Dr: [recovering] Why of course. Yes. Fusion Power for electricity. Yes that's the reason for my research.

MR: Of course it is. Now we have to go now. Everybody say good-bye to Dr. Lovebomb, and let's wish him well in his work.

Dr: Oh, but I haven't had a chance to explain the new dual axis radiographic hydrodynamic facility or the ...

MR: I'm sorry we must be leaving.

Dr: [sardly looking after MR as he hurries off] Good-bye...

SCENE 4: Back at MR's office, after the flight

MR: Well there you are boys and girls, you see why we need to make our neighborhood a little bigger and how we'll take such good care of it. [knock on door]

LR: Open up Rogers, I know you're in there.

MR: The information office is closed to the public for the day, you'll have to come back tomorrow.

LR: Don't give me that evasive crap, Rogers. I got a ton of new chaff on my range, and my wife says one more overflight and the house will shake apart. What gives you the right to treat my land like a war zone? People and animals live out here you know.

MR: I'm sorry you'll have to come back tomorrow and fill out form M.J.-12. The procedure is very clear.

LR: [interrupting] Sure I'll come back, and who will do my work tomorrow?

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MR: How do you do Dr. Lovebomb?

Dr: A pleasure Major Rogers.

K: Well, I'll be back after I check the turbo-lifters on the chopper.

[Dr. Lovebomb turns and nods towards Kirtz]

MR: Very good Colonel, [Rogers turns back to Lovebomb] I've read about you, so I'm glad we have this chance to meet you and tell all of the wonderful people out there what you do at Livermore Labs. That is where your work?

Dr: Yes, of course. I am only visiting here to oversee the data gathering on our subcritical testing. A very important part of our research at Livermore.

MR: Oh yes the subcritical testing program. Very important to understanding the stability of our nuclear weapons, so they are safe. Another important part of our National Security ... let's all try that one ... SUBCRITICAL ... very good. Now, not too technical for us, but what does that mean? Oh Dr. Lovebomb is very smart.

Dr: [with humility] Please Major Rogers. Oh yes, subcritical essentially means that the configuration of the plutonium in the test package is unfortum ... [members himself] rather it will not result in a nuclear explosion, so no chain reaction. [somewhat mournfully] I guess the days of real nuclear testing are over. [with a subtle undercurrent of anger] I mean, well, that's good. Right, of course... good.

MR: Of course its a good thing. You know all you folks out there kept asking us "do you really need to test nuclear bombs?" You wanted us to stop. Well, as good neighbors we listened and came up with an alternative. Isn't that right Dr.?

Dr: Oh yes, an alternative .. of course.

MR: We knew you didn't want nuclear explosions any more, so we developed computers so we could stop exploding nuclear bombs in our neighborhood. And the President has signed a Treaty saying we won't do that anymore. Now Dr. Lovebomb you're going to take the data collected here with you back to Livermore.

Dr: Oh no Major Rogers. You see the data is all sent by special courier, so that it remains safe. We wouldn't want it get in to the wrong hands. I come once in while to inspect the experimental chambers to make sure the conditions are correct to gather the necessary data for our experiments.

MR: I see.

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MR: [Aside] Sometimes, boys and girls, when people are upset they forget that there are rules that we still have to follow.

MR: Well boys and girls where were we? Oh yes... [another knock]

Kd: Hello? Is this the office of Major Rogers?

MR: Yes I'm sorry we're closed right now.

Kd: I was told that you would be an official source of information on the Shoal Project... did we really explode an atomic bomb above ground near Fallon in 1968? Why did we do that?

MR: I'm sorry I can't comment on that...

Kd: But my teacher said that you would be able to help. I've been trying to find information and...

MR: I'm sorry son, come back on field trip day, we have a whole packet of information about the base that we distribute.

Kd: Um... OK thanks.

MR: Boys and Girls, we're going to play a little game. Sometimes when people keep interrupting with their questions it's OK to pretend that we're not home.

NA: Major Rogers, when will the government return our treaty lands to us?

MR: [whispering] We're not here....

NA: Major Rogers! Major Rogers! hum

[Mulder and Scully arrive]

M: [knocks on door] Federal Agents:

MR: Uh-oh, that sounds important, I guess we won't pretend anymore right now. [opens door]

M: Federal Agents, Fox Mulder and Dana Scully, are you Major Rogers, area information officer?

MR: Why yes I am... what a pleasant surprise! Look boys and girls a couple of FBI agents, all the way from our nation's capital, I'd guess, just to visit us. [reading Mulder's badge] Special agent Fox Mulder, can you boys and girls say that... Fox Muld...

M: [interrupting] Major Rogers we're here investigating the disappearance and possible death of the Great Basin.

MR: [confused] Disappearance and death ... [as if Mulder is crazy] I'm sure I have no idea what you are talking about.

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M: Not surprising. I am referring to the large tracts of land have been disappearing, or as you would say "withdrawn" from the Great Basin.

MR: Now wait a minute, nothing has disappeared ...

M: Perhaps not physically, but indeed virtually.

MR: Virtually? Now agent Mulder ...

M: Yes! These lands have become virtually untouchable to the vast majority of citizens. In many cases the local ecosystem has been severely damaged. It seems you consider this death to be a "justifiable homicide."

MR: Now you keep talking about a homicide. I don't see any dead bodies.

M: Well actually if you consider...

S: Excuse me, Mulder. Major, I feel a medical analogy fits here. If we were to remove any of your vital organs, intrinsic parts of your body, the rest of your body would begin to wither and die.

MR: I'm not sure I see what you're getting at...

S: Think of indicator species in an ecosystem when they begin to die it is an indication that the entire system is unhealthy.

MR: All this talk of death and I still don't see who's dying!?

M: Open your eyes! The Great Basin is dying, parts of the body have been cut out, poisoned with radiation and toxic chemicals. The only question is, can this be justified?

MR: Now Mr Mulder, we all know that is not a fair assessment. We try to protect the land. [Mulder attempts to interfere; with chemical toxins] And the people in our neighborhood. [Mulder tries again; by exposing them to radioactivity] As federal agents you deal with issues of National Security. You must recognize the vital work that is being done here. It's needed so that all Americans can pursue life, liberty, and happiness.

S: Does that pursuit include losing most of your family to cancer? Many have as a result of downwind fallout from nuclear testing.

MR: Now we all know the courts support our understanding that the cancer rates are not clinically significant.

M: Oh come on, you can't believe that yourself. Is that what you tell the survivors... the guinea pigs for the nation, your not clinically significant?

S: A nice bit of legal maneuvering those court findings, more likely based on political expedience than scientific fact.

MR: Now, you know we don't do Nuclear weapons testing anymore, we signed the CTB treaty.

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M: And we dishonored it with subcritical testing just as we dishonored the Treaty of Ruby Valley to steal this land in the first place. (Rogers sees that he can't double talk his way out of this one, and tries to show that he is listening while he really looking for an opening) You talk a lot about National Security, but what kind of security is it to live in a world with nuclear weapons, eating at our unconscious like so many termites eroding the meaning and foundations of our society. What kind of security is it for the people in the downwind sacrifice zone to lose much of their family to various cancers, and what about the future generations that will have to try desperately to remove the radioactivity and toxic contaminants, like JP5 jet fuel, in their groundwater - as a result of activities here, not responsible to the public, all hidden under the umbrella of National Security? What about the voices of the people who live here that you ignore? There is no place for this in a true democracy.

MR: (mostly addressing the audience) I think we need to take a short commercial break right now.

M: Too many eyes Rogers.

MR: (turning to Mulder and Scully) You know what agents Mulder and Scully, there are some folks you need to meet. I'll be right back.

M: More maneuvers Rogers ... you can't hide from the truth ...

S: (turning towards Mulder) I don't like this Mulder ... who do you think he means.

(they exchange looks)

M: The public has a right to know what really happens here! (Mulder begins to follow Rogers only to be intercepted by two "Men in Black")

S: I was afraid of this.

(The Men In Black begin to manhandle Scully and Mulder taking their guns)

M: Federal agents ... you can't do this ... we're investigating a crime ...

MIB: You have no jurisdiction here Mr. Mulder.

S: Major Rogers hasn't addressed our questions. This is very heavy handed ... we'll be back ...

MIB: That may be your right, but I would recommend against it.

M: And the same thing will happen just as it always has ... (as Mulder and Scully are tossed off stage) ... the truth is in there! ...

MR: Well agents Mulder and Scully got called back to Washington. Oh, such is the life of an FBI agent. Let's all thank all our guests today Col. Kurtz, Dr. Lovebomb, and everyone else in our neighborhood. Bye now.

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ORIGINAL

\* \* \* \* \*

PUBLIC INFORMATIONAL MEETING REGARDING  
THE RENEWAL OF THE NELLIS  
AIR FORCE RANGE LAND WITHDRAWAL

DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

\* \* \* \* \*

Held at Indian Springs Community Center  
715 Greta  
Indian Springs, Nevada

On Monday, November 9, 1998  
At 7:30 p.m.

Reported by: JANE V. MICHAELS, RPR  
NV CCR No. 601, CA CSR No. 10660

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APPEARANCES:

PAGE

For the United States Air Force:

Colonel Pat Sweeney 3  
Colonel Bill Percival 9  
Colonel Mike Fukey 19

Public Speakers:

James R. Cozby 34, 55  
Ashley Hall 35  
Josephine Sproul 39  
John Sproul 39  
Terrie Houpt 43, 52  
Michael Bingham 47

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1 AS I indicated, the transcript of these  
2 proceedings will become part of the record of the  
3 hearing and will be included in the final LEIS.

4 The reporter will be able to make a  
5 complete record only if she can hear and understand  
6 what you say. So please speak very clearly and  
7 slowly.

8 We have one individual who's identified  
9 themselves as a government or elected official, and  
10 that's Mr. Cozby, who's listed as the town board  
11 chairman of Indian Springs. And we'll begin by  
12 hearing from him.

13 What I would ask is, maybe the best area  
14 for you to speak from is in the center aisle, perhaps  
15 halfway down the center aisle or so, so that you are  
16 not too close to us and so that all present in the  
17 room can hear what you have to say.

18 Mr. Cozby?

19 MR. COZBY: Sorry I was late getting  
20 here.

21 I have had a chance to read over about 70  
22 percent of the literature that I have received from  
23 the Air Force, and I'm just thoroughly lost.

24 The only thing that I can really go by is  
25 the fact that what I have seen in the last 27 years

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1 of living in Indian Springs -- and for the record,  
2 yes, I am the town board chairman, but I'd like to  
3 speak as an individual. I don't want to represent  
4 anybody tonight but myself.

5 I have been a business owner here for over  
6 20 years also. I have never in my life seen anybody  
7 try as hard to please the citizens of Indian Springs  
8 as the Air Force has in all the years of living here.

9 And, as I have said, I've read a lot of  
10 the literature. I really don't understand a lot of  
11 it, but I do know this.

12 What I have seen the Air Force do has been  
13 top quality. Their interests are our interests. In  
14 times when the base was open, their families lived  
15 here. We commingled.

16 I guess the bottom line is -- my thoughts  
17 to you are, you know what you need. You know what  
18 you're doing. I don't really understand at all, but  
19 I want to give you the best that I can do.

20 And with that, I'll sit down. Thank you.

21 HEARING OFFICER SWEENEY: Thank you,

22 Mr. Cozby.

23 Next, from Ashley Hall.

24 MR. HALL: Mr. Chair, ladies and  
25 gentlemen, my name is Ashley Hall. I'm the

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1 vice president of Orgill/Singer and Associates, a  
 2 research investment insurance group that does  
 3 business throughout Nevada.  
 4 I'm also a member of the Nellis Support  
 5 Team, which is a group of business individuals  
 6 from -- throughout southern Nevada who support Nellis  
 7 Air Force Base. It began with priority for all  
 8 Americans, along with millions of freedom-loving  
 9 people everywhere.  
 10 We know that freedom is really not free.  
 11 A price must be paid every day. Having served in the  
 12 U.S. military as a civilian soldier for nearly 34  
 13 years and also being a native Nevadan, whose roots  
 14 run deep in Nevada soil, the sound of freedom to me  
 15 is the sound of pilots who risk their lives every day  
 16 to prepare to defend the freedoms and opportunities  
 17 that each of us enjoy.  
 18 It is our hope that the current LEIS  
 19 process will allow all interests -- and that includes  
 20 all interests -- environment, religious, cultural  
 21 historical, and DOD -- to work together to work out a  
 22 process that will allow the continued use of  
 23 Alternative 1A that has been requested by DOD.  
 24 Americans have learned through sad  
 25 experience in past hostilities that once an

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1 air/ground force is committed to action, without  
 2 realistic advanced training, as is offered on the  
 3 Nellis ranges, both life and equipment are  
 4 short-lived.  
 5 As Colonel Percival has indicated, with  
 6 ten combat missions, for example, the loss ratio,  
 7 both in human life and in cost, were reduced  
 8 significantly.  
 9 The overall economic impact provided to  
 10 families and businesses throughout southern Nevada  
 11 attribute to the ranges and their usages  
 12 considerably.  
 13 Of the approximately 3 million acres  
 14 currently under stewardship of Nellis Air Force Base,  
 15 only 3 percent is disturbed as target areas, roads,  
 16 infrastructure, or other areas. The remaining 97  
 17 percent is pristine in its usage, used as safety and  
 18 secure buffers.  
 19 Over a period of years, Nellis has  
 20 categorized and cataloged almost the entire range.  
 21 This has been done through a cooperative effort by  
 22 the Federal Fish and Wildlife Service and many  
 23 religious, cultural, and historical related  
 24 interests.  
 25 Thomas Jefferson once said, "The cost of

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1 Alternative 1A as the recommendation by this  
2 committee. Thank you.

3 HEARING OFFICER SWEENEY: Thank you,  
4 Mr. Hall.

5 Next is listed John and Josephine Sproul.  
6 Do you both want to speak or just one?

7 MRS. SPROUL: Basically just to agree with  
8 what I have already heard. Basically, I just have to  
9 agree with what I have heard.

10 I firmly believe that our country cannot  
11 survive without this range, without the care that is  
12 needed so that our pilots can fly and protect us.

13 So that's basically all I wanted to say.

14 HEARING OFFICER SWEENEY: Thank you.

15 Mr. Sproul, do you want to add to that?

16 MR. SPROUL: The only thing I was going to  
17 say, other than that she's a native of Nevada and  
18 born and raised. I've only been here since 1950. So  
19 I'm just a newcomer.

20 But we've been involved with the range  
21 here off and on throughout this time. And I say,  
22 let's go for it, because it is part of the history  
23 that is down the road.

24 And the base is one of the things -- the  
25 whole site is one of the things that the whole

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1 freedom is eternal vigilance." The continued usage  
2 of the Nellis ranges, as we prepared to meet the new  
3 challenges and opportunities of a new millennia,  
4 constitutes sound thinking and action on part of this  
5 nation, its interest, and the interests of  
6 freedom-loving people everywhere.

7 I think one of the most important things  
8 is that Nellis has committed itself through cultural,  
9 religious, and historical programs, as recognized by  
10 it being awarded the Environmental Restoration  
11 Excellence award in 1985, which emphasis continues  
12 today.

13 We feel it is possible to meet all  
14 existing environmental, cultural, ethnic, religious,  
15 and historical need criteria in relation to future  
16 air/ground usage of this range.

17 The combat readiness of the free world's  
18 air capabilities rests on these ranges. Without the  
19 ranges, the functional mission of Nellis is severely  
20 curtailed. We say, "If not here, where and at what  
21 cost?"

22 Nellis Air Force Base and ranges, again,  
23 are recognized as the crown jewel of the US  
24 air/ground combat.

25 Again, we recommend the recommendation of

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1 dark about what's going to happen with portions of  
 2 the base.  
 3 Base housing is our question right now.  
 4 There is an area that is going to be demolished. As  
 5 I understand it, it's going to be subjected to  
 6 asbestos removal, I think is the big project over  
 7 there.  
 8 But what's going to happen to that land?  
 9 There's been numerous suggestions of what could  
 10 happen to it.  
 11 We suffer from our topography here, from  
 12 unique topography, with mountains behind or on the  
 13 south of us that present more or less an amphitheater  
 14 and focusing the sound, perhaps, at my house. I  
 15 don't know if other people have as much of an impact  
 16 from it.  
 17 But the Air Force did not maintain the  
 18 trees that they had in base housing, which acted as  
 19 something of a filter for aircraft on the ground.  
 20 I don't believe the LEIS addresses  
 21 sufficiently the ground aircraft noise in the  
 22 community, the impact there.  
 23 I don't think they address the electrical  
 24 magnetic radiation thoroughly. I have a constant fly  
 25 times a minute, every-12-second blip on the 900

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1 United States can be proud of down the road.  
 2 HEARING OFFICER SWENEY: Thank you.  
 3 Mr. Brauer?  
 4 MR. BRAUER: While recognizing completely  
 5 the need for the ranges, I am concerned about some  
 6 aspects of the renewal process.  
 7 For example, the indefinite renewal period  
 8 seems to only mention that it will be reviewed after  
 9 15 years. That does not seem to be a written  
 10 requirement.  
 11 In my three decades of living in Indian  
 12 Springs, I've watched a decline in the support that  
 13 the community receives from the Air Force, largely, I  
 14 suppose, because the Air Force no longer has  
 15 dependents in this area.  
 16 We used to have pretty much joint use of  
 17 some of the base facilities, such as bowling alley,  
 18 theater. The water system used to claim that the Air  
 19 Force would back them up with pressure from the tower  
 20 over there.  
 21 As a result, this community did not  
 22 develop the kinds of infrastructure that it needs to  
 23 meet its current needs. And that is a definite  
 24 concern.  
 25 We are -- it seems to me -- always in the

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SF-1 1 megahertz phone that I use. Anybody that's called me  
 2 knows that.  
 3 I think that there needs to be a periodic  
 4 review and a periodic LEIS, because not only do  
 5 weapons systems change -- and perhaps we'll be  
 6 getting into biological or chemical weapons. I hope  
 7 we don't, but perhaps we may be.  
 8 But our understanding of biological  
 9 mechanisms and tolerance levels are or everything  
 10 from hydrazine that's used in some of our aircraft to  
 11 the fuel oil to the smoke that the Thunderbirds put  
 12 out.  
 13 The Thunderbirds, by the way, when they  
 14 fly over the school -- they sometimes fly over the  
 15 school, and it depends on the commander -- are not  
 16 only audible, but you can smell them. They drift  
 17 down to ground level fairly abruptly.  
 18 So I think there are a number of  
 19 concerns. And I'll have to conclude now so that I  
 20 can start listing them.  
 21 And I would like to add that this is a  
 22 copious document. I received the whole thing there.  
 23 It is not well indexed.  
 24 Well, if you look up Indian Springs,  
 25 you'll find a lot of things about Indians and a lot

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1 of things about springs, but you won't find some of  
 2 the necessary maps.  
 3 Oh, there is one map I'd like to draw the  
 4 people's attention to. And it's on figure 1-12,  
 5 "Unrestricted 15 nautical mile air to ground safety  
 6 requirements."  
 7 And these are areas that go beyond the  
 8 ranges. Indian Springs is the only community shown  
 9 on those areas. And I would really question whether  
 10 it's a good idea to have a civilian population in  
 11 those areas.

AF-8

Thank you.

HEARING OFFICER SWEENEY: Thank you

Mr. Brauer.

Ms. Houpt?

MS. HOUPT: I'm just a private citizen out  
 here. But I've lived out here since 1972.

We're on the Clark County Fire

Department. We're currently volunteers for the

Indian Springs Fire Department. My husband is

captain of Rescue 83.

We have a joint effort cooperation right  
 now with the Air Force. And at times, depending on  
 the commanders, it's been iffy.

And we've totally been grateful for the

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1 crashes out there, too, sometimes. And some of your  
2 men are on our fire department. So we'd like to see  
3 this stay like it is.

4 And I've been in the county since 1953.  
5 That was one thing.

6 The other question I have is on the water  
7 issue. I would like to know how many wells they are  
8 drafting out of across the street at the base and  
9 what your expected draft is and what it might impact  
10 onto our community of our private wells in the future  
11 and if we can maintain a backup water system in case  
12 something goes down here.

13 I don't know how many wells you're working  
14 out of at one time. I thought it was five. But I'm  
15 not sure.

16 I would like that checked out and see what  
17 could be arranged through that.

18 HEARING OFFICER SWERNEY: On that point,  
19 I'm not sure anyone present has the answer to that,  
20 but it will certainly be addressed.

21 MS. HOUPPT: The mining issues that came  
22 up, I'm not real clear on. We would like it  
23 addressed. If we leave it as is, if it would stay as  
24 is, does that mean stripping mining inground? Does  
25 that mean gravel pits can open up? How much will it

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1 Air Force out here and us back to them. It's just  
2 been a total support thing.

3 But just a few, couple of months ago, they  
4 said they were going to be tightening up to the fact  
5 that they won't be coming over to support our town.  
6 We're a small town. We're a small unit. And we need  
7 that joint effort.

8 And when he said that at one of the town  
9 board meetings, I think it was 24 hours, one of their  
10 men was hurt. And we went over, as normal, and took  
11 care of business after their business hours. We've  
12 gone out to Point B, Silver Flag.

13 We don't mind doing this. It's great  
14 training for us. We'd like to see that maintained,  
15 if that's at all possible. It was touched on very  
16 lightly, and it acted like it would be maintained.

17 Firewise, I don't know what we would do  
18 out here if just our rigs could respond and yours  
19 couldn't back us up. It would be a tough go because  
20 some of these trailer parks are close together.

21 Our medical help, our personnel, work  
22 during the day. We need this back up, if possible.  
23 I realize you have operations, and you can't always  
24 leave.

25 But it's been a joint effort when you have

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1 give and take on the property?

2 We've been battling gravel pits out here

3 at our back door, side doors, and we don't need to be

4 dusted out.

5 We'd appreciate if there's any impact at

6 all through the Air Force and the back up there --

7 I'm not sure what your requirements are through

8 that -- keeping the land as is or even giving back

9 some. I'm not sure where that sits.

10 HEARING OFFICER SWEENEY: I'm not sure if

11 I understand your question with respect to leaving

12 the land as is. Are you referring to the No-Action

13 Alternative?

14 MS. HOUPT: Uh-huh, right. I'm just not

15 clear on that. I don't understand it.

16 HEARING OFFICER SWEENEY: I'm not sure we

17 can answer that.

18 COLONEL FUKEY: Basically, if there's a

19 No-Action Alternative, the lands that are not at

20 Nellis Air Force range would revert to BLM or -- and

21 it's up to that service, depending on what BLM -- for

22 example, if a minor agency would approach them, it

23 would have to be something worked out between those

24 two agencies.

25 MS. HOUPT: I understand that. I was just

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1 wondering if you are going to allow mining on what

2 you presently have and what you might allow, would it

3 affect us or not. I got lost somewhere on this

4 mining issue.

5 COLONEL FUKEY: Under the co-use areas,

6 they are west of NTS. There are no co-use areas in

7 Indian Springs at all.

8 MS. HOUPT: I'm grateful for that.

9 COLONEL FUKEY: So co-use is not an

10 issue.

11 MS. HOUPT: Thank you very much and thank

12 you for your cooperation and your invitation here.

13 HEARING OFFICER SWEENEY: Thank you,

14 Ms. Houpt.

15 And our last speaker is Mr. Michael

16 Bingham.

17 GE-1 MR. BINGHAM: I'm the new kid on the

18 block, only living here 2-1/2 years. I moved out

19 here to raise Helsteiner horses, which is a German

20 warm-blood.

21 And I'm very proAmerican. My father

22 fought in two wars. And I agree with everything

23 that's been said.

24 The only thing that I want to add is that

25 if I speak to Indian Springs and I get caught, I have

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1 to pay a fine.

2 Two years in a row, when the jets have

3 flown for the Thunderbird show here, there had been

4 one or two planes that have gone off course and have

5 bombed my barn, with neighbors seeing this happen

6 last year.

7 It cost me 1100 in vet bills. And I

8 called. My calls were not returned. I called

9 Nellis. They were not returned. I'm promised that I

10 will get a form to fill out for damages.

11 And I just feel like, you know, leaving

12 patriotism out of it. People have to be accountable

13 for their actions.

14 Now, when I bought my home, I signed

15 papers knowing that planes would fly over. And when

16 they are practicing, that's fine.

17 But when somebody just sees a bunch of

18 horses down in the field and takes a dive at them, I

19 think it's wrong. And I think they should be held

20 accountable.

21 HEARING OFFICER SWEENEY: And I just want

22 to let you know, that man on the right, sir, here

23 with us is a representative from our legal shop. And

24 he has the proper paperwork for making a claim for

25 this incident. You can see him.

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1 As a legal officer myself throughout my

2 career, 30 years, in the Air Force, I know we have a

3 very clear claims process for handling the exact sort

4 of complaint that you raise. And it disturbs me a

5 lot to hear that your calls have not been returned.

6 And it's very important for you to bring

7 that to the Air Force authorities as quickly as

8 possible so that it can help us identify which planes

9 may have been involved in the mission.

10 So please make sure you get Mr. Hines'

11 phone number and make sure you get it into the system

12 that way.

13 And if you make phone calls and they are

14 not returned, try to remember the name of the person

15 that you left that phone call with.

16 MR. BINGHAM: Living here a few years, we

17 hit the deck a few times. What I would like to know

18 is, why do we have to deal with Nellis when it's a

19 local issue?

20 Can't they handle some of these complaints

21 when they come up rather than doing them long

22 distance? Because they are long-distance phone calls

23 from out here, and it would be much easier to take

24 care of the problem here.

25 COLONEL FUYEY: There's a 1-800 number.

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1 The second thing, public affairs is the responsible  
 2 organization that you would talk to to make that  
 3 complaint. Public affairs is at Nellis. So you  
 4 don't necessarily have to call Nellis to make a  
 5 complaint.

6 The range is divided up into north and  
 7 south ranges. Each component of the range has a  
 8 range commander that works for me. And their  
 9 particular job is to make sure that the missions work  
 10 out here and that everything is okay.

11 Part of their job description, if you  
 12 will, involves making sure that everyone is getting  
 13 what you need.

14 So if you wish to call somebody locally,  
 15 you can call Major Mike Flein (phonetic). It's  
 16 652-3830.

17 MR. BINGHAM: I think one of the problems,  
 18 though, is that those numbers go through the Nellis  
 19 switchboard.

20 HEARING OFFICER SWEENEY: Sitting behind  
 21 you is Carlos Penia. He can get ahold of them. He  
 22 has the local phone number. And then, of course,  
 23 they get transferred to myself.

24 UNIDENTIFIED SPEAKER: I know it's  
 25 difficult calling over there.

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1 MR. BINGHAM: When the special Nevada  
 2 report was compiled -- I believe it was in '91, and  
 3 we have some testimony on that, particularly in  
 4 regards to Thunderbird overflights -- you'll notice  
 5 when you go out there, the elementary school is north  
 6 of the tower there. And they were flying over the  
 7 school and diagonally over the town.

8 At the time General Jumper, I believe it  
 9 was, responded that his pilots wouldn't be flying  
 10 over the school.

11 And that is, in fact, what happened. They  
 12 moved the flight pattern over. But then in changes  
 13 of command, the Thunderbirds come back over here.

14 And then sometimes we can get them moved  
 15 back to the west. There just seems to be a lack of  
 16 cooperate memory here with the Air Force.

17 And it is a safety concern, a noise  
 18 concern. It's disruptive to schools, school  
 19 classes. And I would like the Air Force to pay a  
 20 little more attention to that.

21 It seems to be more of a problem now when  
 22 there are not Air Force dependents living here. When  
 23 there were dependents living here, we didn't see that  
 24 as much.

25 HEARING OFFICER SWEENEY: Those are the

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1 only people who have requested to speak.  
 2 Is there anyone else who has not filled  
 3 out a card who would like to have an opportunity to  
 4 speak at this point?  
 5 In view of the hour and since we said we'd  
 6 be here until 10:00, what we'll do is, we'll recess  
 7 the formal portion of this hearing.

8 And Air Force officials and BLM and DOD  
 9 officials will be available for some period of time  
 10 to more informally answer any questions that you  
 11 have.

12 If someone does want to fire up the formal  
 13 portion of the hearing again so that you can go more  
 14 formally on record with your verbal comments, we'll  
 15 be pleased to do that as well.

(Recess taken.)

16  
 17 HEARING OFFICER SWEENEY: Please identify  
 18 yourselves.

19 MR. HOUGHT: I'm Terry Hought. And as  
 20 concerned citizens in Indian Springs, we have a  
 21 problem with our TV out here. And it's over on your  
 22 hill. The problem is overlapping, I guess, with some  
 23 of your radio frequencies.

24 What can we do about this? Are we going  
 25 to lose what we call "TV Hill"? I don't know what

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1 it's diagnosed. I don't know what its name is, what  
 2 is going to happen with us here. Are you guys  
 3 strictly cable and satellite?

4 Because the equipment belongs to Indian  
 5 Springs. It belongs to the town's people. And what  
 6 is going to happen if you're on cable and you have to  
 7 come through our translators? How can you furnish a  
 8 co-op with us to help us keep TV out here?

9 Not everybody out here can afford  
 10 satellite or cable nor wants it, necessarily. So  
 11 we're kind of primitive.

12 Our translators are going downhill fast.  
 13 They cost 14-, \$15,000 each. Systems are being  
 14 upgraded in Las Vegas and not necessarily out here.

15 How can you help us as a town? You guys  
 16 have been wonderful before in the past, over the  
 17 years. How can you continue to help us in that  
 18 area?

19 HEARING OFFICER SWEENEY: That appears to  
 20 be a nonenvironmental concern, and I'm not an expert  
 21 on exactly how we can help you on that.

22 COLONEL PERCIVAL: I'm not sure I  
 23 understand each of the issues.

24 You've got an antenna system up on this  
 25 hill, and you're worried about losing that?

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1 MS. HOUPT: About your maintaining it or  
 2 helping to maintain it or losing it altogether. We  
 3 don't know where you stand exactly.  
 4 HEARING OFFICER SWEENEY: Roger, do you  
 5 know anything about this?  
 6 MAJOR SCHOFIELD: There's a place called  
 7 Beacon Hill. In the town of Indian Springs, one of  
 8 the hills there we call Beacon Hill.  
 9 They've maintained antennas up there for  
 10 at least 15 years. I do not know of anything that  
 11 will kick you off the hill.  
 12 Are you talking about maintenance of the  
 13 systems up there?  
 14 MS. HOUPT: Or just maintaining it up  
 15 there.  
 16 MAJOR SCHOFIELD: I don't know of any  
 17 intent to remove it. I know the county school  
 18 districts are going through the renewal process, and  
 19 there are two antennas up there.  
 20 MS. HOUPT: What about the Air Force  
 21 helping us foot some of the bill? Does that have  
 22 anything to do with some of the renewal thing?  
 23 MAJOR SCHOFIELD: No, it doesn't.  
 24 HEARING OFFICER SWEENEY: Maybe we can  
 25 take that question off-line and see if one of the

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1 agencies can help you, either Major Kuide (phonetic)  
 2 or Major Roger Schofield.  
 3 MR. COZBY: Jay Cozby again.  
 4 I'm not as educated as a lot of people in  
 5 this room. But there's one thing that I do  
 6 understand. And that's the common sense and the  
 7 backbone of what they're trying to do here.  
 8 And my hat really goes off to them because  
 9 they opened the doors, and they let anybody that  
 10 wanted to go down and go through their rooms down  
 11 there, their intelligent rooms, while they're  
 12 actually flying.  
 13 And they took us all -- we spent the whole  
 14 day down at Nellis going through their control rooms,  
 15 whatever it was. I really got a better understanding  
 16 of what's going on.  
 17 And I don't know if you're going to open  
 18 that up again or have another day, but I encourage  
 19 anybody that has the time to go down, because you can  
 20 go to a meeting and say yes. But until you actually  
 21 see what they're doing, you don't really have an  
 22 understanding of what's going on.  
 23 And, believe me, not everybody was for the  
 24 Air Force, because I met a guy called Glen Campbell.  
 25 I can't remember the lady's name who lives up past

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1 of the public hearing, and we'll be trying to end  
2 them by 10:00 o'clock each evening.

3 Then on Wednesday evening we'll be in  
4 Caliente, Nevada, at the Caliente Youth Center.

5 Thursday, November 12th, will be at Pahrump Valley  
6 High School in Pahrump, Nevada. Friday,

7 November 13th, will be at Beatty High School in  
8 Beatty, Nevada.

9 Monday, November 16th, we'll be moving to  
10 the Tonopah Convention Center in Tonopah. And then  
11 on Tuesday, November 17th, we'll be at the Airport  
12 Plaza Hotel in Reno.

13 So if any of you will be able to join us  
14 on any of those occasions and would like to add to  
15 your comments, please feel free to do so.

16 All right. As I indicated, Air Force  
17 officials and BLM and DOD officials will remain  
18 available for a period of time this evening.

19 If there's nothing further, we will recess  
20 the formal portion of the hearing and then no desire  
21 to reopen. We'll end it shortly before 10:00  
22 o'clock.

23 Thank you very much. The hearing is  
24 adjourned.

25 (Thereupon, the proceedings

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1 Alamo. I mean, this lady was always calling in  
2 because they were flying too fast over her house or  
3 whatever.

4 They took the time to show us, to teach  
5 us, and to answer our questions. And they were very  
6 concerned about it.

7 And if they're going to have to, please  
8 get some posters up so that the people who really  
9 want to know what's happening and cares can go down  
10 there.

11 HEARING OFFICER SWEENEY: I will remind  
12 you all that the public comment period will stay open  
13 until the 31st of December, 1998.

14 Comments may be submitted at any of the  
15 subsequent hearings. And let me give you a sense of  
16 when those are going to occur. Tomorrow evening in  
17 Los Angeles -- Las Vegas at Eldorado High School.

18 And all of these, I believe -- correct me  
19 if I'm wrong, Colonel Percival -- will be on the same  
20 timing schedule.

21 COLONEL PERCIVAL: That's correct.

22 HEARING OFFICER SWEENEY: 6:30 will be  
23 opening the doors, informal discussions with the  
24 subject matter experts at the various displays.

25 7:30 we'll start the more formal portion

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were adjourned at 9:00 p.m.)  
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LEIS MEETING 11/10/98

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1

ORIGINAL

\*\*\*\*\*

PUBLIC INFORMATIONAL MEETING REGARDING

THE RENEWAL OF THE NELLIS

AIR FORCE RANGE LAND WITHDRAWAL

DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

\*\*\*\*\*

Held at Eldorado High School  
1139 Linn Lane  
Las Vegas, Nevada 89110

On Tuesday, November 10, 1998  
At 7:30 p.m.

Reported by: JENNIFER D. CHURCH, RPR  
NV CCR No. 568, CA CSR No. 11556

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1 their comments we will take oral comments from  
2 others of you who have filled out cards, as I  
3 indicated, in random order. And I'd like to remind  
4 you once again of the five-minute time limit for  
5 speaking.

6 First we'll hear from Mr. Randy Black who  
7 is speaking on behalf of the mayor of the City of  
8 Las Vegas, Ms. Jan Lavery Jones.

9 MR. BLACK: Thank you, Colonel Sweeney.  
10 Randy Black. Again, the letter is addressed to  
11 you, the Nellis Air Force Range Renewal Committee.

12 "Dear Colonel Sweeney, As the mayor of  
13 Las Vegas for the past seven years, I have grown  
14 to appreciate the importance of Nellis Air Force  
15 Base and its many contributions to both our local  
16 economy and to the national defense and security  
17 of the United States.

18 "I am keenly aware of the importance that  
19 Nellis Air Force Base Range plays in providing a  
20 training ground to sharpen the skills of our  
21 fighting forces. This range, and the crucial role  
22 it plays in the security of our country cannot be  
23 disputed. It is a one-of-a-kind item that simply  
24 must be protected and retained so that our armed  
25 forces can continue high quality training long into

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1 the future.

2 "In my opinion, it is imperative that the  
3 Nellis range be maintained. I wholeheartedly  
4 support the Air Force proposal to renew the  
5 reauthorization of the Nellis range and  
6 congressional reauthorization beyond the year  
7 2001.

8 "The citizens of Las Vegas have strongly  
9 supported Nellis Air Force Base and its many  
10 activities. As mayor, I am convinced that the  
11 citizens of our Valley would unquestionably support  
12 the reauthorization of the Nellis range and its  
13 continued long-term use, both tactical and  
14 operational needs, by the armed forces of the  
15 United States of America.

16 "Sincerely, Jan Lavery Jones, Mayor,  
17 City of Las Vegas."

18 HEARING OFFICER SWEENEY: Thank you,  
19 Mr. Black.

20 Next we'll hear from Ms. Dianna Fyke of  
21 the Henderson Chamber of Commerce.

22 MS. FYKE: Good evening. My name is  
23 Dianna Fyke, the president of the Henderson Chamber  
24 of Commerce, composed of more than 750 members.

25 I'm here to present you with the

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1 Henderson Chamber of Commerce Resolution No. 1198.  
 2 This is a resolution of the Henderson Chamber of  
 3 Commerce in support of the range renewal of Nellis  
 4 Air Force Base, a Resolution of Henderson Chamber  
 5 of Commerce Board of Directors expressing its  
 6 unanimous and enthusiastic support of the Nellis  
 7 Air Force Range Renewal which encompasses Clark  
 8 County and Nye county and the State of Nevada.  
 9 "Whereas the natural and cultural  
 10 resources within the Range's 3.1 million acres  
 11 under Nellis stewardship are being preserved to  
 12 protect the plant life, wildlife, and areas of  
 13 archeological and historical sites;  
 14 "Whereas, Nellis' goal is to conduct the  
 15 most realistic combat training and systems testing  
 16 while protecting the natural and cultural resources  
 17 of lands under their stewardship;  
 18 "Whereas, the mission of the Department  
 19 of Defense is more than aircraft, guns, and  
 20 missiles, part of the Defense job is protecting the  
 21 land, waters, timber, and wildlife, the priceless  
 22 natural resources that make this great nation of  
 23 ours worth defending;  
 24 "Whereas, there are vital Air Force  
 25 protection, security, and environmental resource

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1 actions conducted on the Nellis Air Force Range;  
 2 "Whereas, a direct negative economic  
 3 impact to Clark County and Nye County will be  
 4 effected by the closing of the Nellis Air Force  
 5 Range;  
 6 "Whereas, there could be a direct loss of  
 7 3,090 active duty military and 855 federal civil  
 8 personnel assigned to Nellis Air Force Range in  
 9 Clark County, 584 contractor personnel in Clark  
 10 County, and 216 contract personnel in Nye County.  
 11 There also would be a reduction in TDY  
 12 expenditures, purchases, and construction activity  
 13 on Nellis and Nellis Air Force Range;  
 14 "Whereas, in Clark County secondary jobs  
 15 lost from reduced economic activity resulting from  
 16 non-renewal of Nellis Air Force Range is projected  
 17 to be equivalent to 2,677 jobs, the Nellis Air  
 18 Force Base and Nellis Air Force Range direct, plus  
 19 secondary jobs lost in Clark County at the end of  
 20 2003 would be 7,422 jobs;  
 21 "Whereas, in Nye County the non-renewal  
 22 of Nellis Air Force Range would also terminate  
 23 Tonopah Test Range activities, this would result in  
 24 loss of 21 government employees and 77 contract  
 25 employees, annual salaries paid to all workers of

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1 \$4,960,000, purchase of goods and services in Nye  
 2 County economy are estimated to total 700,000  
 3 annually, and TDY expenses amount to 22,400  
 4 annually;  
 5 "Now, therefore the Henderson Chamber of  
 6 Commerce, through its Board of Directors, expresses  
 7 its unanimous and enthusiastic support of the  
 8 continuance of the Nellis Air Force Range, passed  
 9 and adopted by the Board of Directors of the  
 10 Henderson, Nevada Chamber of Commerce, incorporated  
 11 on the 5th day of November, 1998."  
 12 HEARING OFFICER SWEENEY: Thank you.  
 13 Next will be Mr. Somer Hollingsworth from  
 14 the Nevada Development Authority.  
 15 MR. HOLLINGSWORTH: Somer Hollingsworth,  
 16 for the record, President, Nevada Development  
 17 Authority.  
 18 The Nevada Development Authority is a  
 19 43-year-old nonprofit corporation. The history of  
 20 the NDA and Nellis Air Force goes way back beyond  
 21 the 43 years with a lot of our members and a lot of  
 22 our executive committee.  
 23 The importance of that base for us is in  
 24 recruiting right now, in recruiting the personnel  
 25 for the tech companies that we are bringing into

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1 Southern Nevada.  
 2 Over the last five years, the NDA has  
 3 relocated 186 companies to southern Nevada. We've  
 4 created 25,000 new jobs. We've created over \$2  
 5 billion in economic impact and have created about  
 6 \$45 million in tax dollars.  
 7 Diversification is what we do. If we are  
 8 going to bring in the high-tech companies that we  
 9 are working on right now, we can't get the  
 10 high-tech personnel. So we've gone to Nellis Air  
 11 Force Base, not only with the personnel that you  
 12 have that is enlisted right now, but the ones that  
 13 are mustering out. We've been able to find all the  
 14 tech people that we need. So it's a little bit  
 15 selfishness on our part.  
 16 The other side of the coin is, in all of  
 17 the years that we've been involved in Nellis, and I'm  
 18 a 45-year resident here, is that we've always seen  
 19 you take care of everything in the finest manner,  
 20 including your personnel and including the  
 21 environment out at the range.  
 22 So you have the support of Nevada  
 23 Development Authority and its 600 members, which is  
 24 really the corporate side of Southern Nevada.  
 25 Thank you.

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HEARING OFFICER SWEENEY: Thank you.

Next we'll here from Mr. Steve Mongrain from the North Las Vegas Chamber of Commerce.

MR. MONGRAIN: Good evening. I'm Steve Mongrain. I'm the president of the North Las Vegas Chamber of Commerce.

The North Las Vegas Chamber of Commerce has had a longstanding relationship with Nellis Air Force Base. In fact, each year we actually sponsor a Military Appreciation Day where we raise anywhere from 12 to 15 grand to feed the Nellis Air Force Base personnel and hold a picnic for them. It is our way of just saying, "Thank you."

And we do it because we know that Nellis lets over \$400 million in contracts annually. We know that just over 56 million of that comes to our local economy here in the Las Vegas Valley. So it's imperative that we support Nellis in everything that it's doing.

So on behalf of the North Las Vegas Chamber of Commerce, I want to read our resolution.

"Whereas, the North Las Vegas Chamber of Commerce has had a close working relationship with Nellis Air Force Base for several decades;

"And whereas, the North Las Vegas Chamber

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of Commerce recognizes the extreme significant impact of the Nellis Air Force Base community and its associated test range upon the economic, social, environmental, and cultural well being of both the City of North Las Vegas and the County of Clark;

"And whereas, the North Las Vegas Chamber of Commerce strongly supports not only Nellis' mission generally in defense of our country and its system of values, but especially the continued role of Nellis Test Range in its current size and configuration as integral to that mission;

"And whereas, the North Las Vegas Chamber of Commerce is aware and appreciative of the extraordinary efforts of Nellis Air Force Base personnel to preserve and protect the environment, historical, and cultural considerations of the Range and its neighbors;

"Now, therefore, be it resolved by the North Las Vegas Chamber of Commerce on behalf of its Board of Directors, Officers, and Members that the Chamber commends and urges the renewal of the Nellis Test Range indefinitely into the future in a manner and configuration to be recommended by the United States Air Force to the Congress and others

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1 in coming months and years in respect whereof the  
2 undersigned attest to this resolution."

3 Thank you.

4 HEARING OFFICER SWEENEY: Thank you.

5 Our next speaker needed to speak a bit  
6 out of order because of another speaking  
7 commitment. Ms. Kami Dempsey.

8 MS. DEMPSEY: Good evening. My name is  
9 Kami Dempsey and I represent the Las Vegas Chamber  
10 of Commerce.

11 On behalf of the Las Vegas Chamber of  
12 Commerce and our 5,600 members, I would like to  
13 offer strong support of the Nellis Air Force Base  
14 Range renewal. I would like to address the  
15 importance of the range to the citizens of Clark  
16 and Nye County and to the economic well being of  
17 those areas.

18 If the Test Range is not renewed, several  
19 other ranges would close including the Tonopah Test  
20 Range, the EC South Range, and the Indian Springs  
21 Air Force Auxiliary Field. In addition,  
22 approximately 50 percent of current Nellis mission  
23 activities would be relocated to other bases.  
24 Overall it is estimated that nearly 5,000 jobs  
25 directly related to the base would be lost in Clark

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1 and Nye Counties. This does not include the  
2 economic impact on the other jobs and businesses as  
3 a result of reduced economic activity, that is, the  
4 goods and services those individuals consume. It  
5 is estimated that nearly 3,000 people in secondary  
6 support jobs would be out of work.

7 It may be gaming which drives the  
8 economic engine in Nevada, but it cannot be  
9 understated that Nellis Air Force Base and the Test  
10 Range have made significant contributions to our  
11 community's economic stability and well being.

12 We strongly encourage Congress to renew  
13 the Nellis Air Force Base Test Range. Thank you.

14 HEARING OFFICER SWEENEY: Thank you very  
15 much. Mr. Anthony Hilder.

16 MR. HILDER: Do you solemnly swear to  
17 tell the truth and nothing but the truth so help  
18 you God when answering questions asked by the  
19 people at this hearing under the threat of perjury  
20 or imprisonment? Simply a "yes" or "no" and a hand  
21 or a nod would be in order.

22 HEARING OFFICER SWEENEY: Mr. Hilder,  
23 perhaps you misunderstood the purpose of the public  
24 comment period. This is your opportunity to make  
25 comments that will be considered by Air Force and

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1 BLM officials when determining what actions to take  
2 on the Draft LEIS.

3 MR. HILDER: I'm going to then ask some  
4 questions which I feel need to be answered and  
5 these questions --

6 HEARING OFFICER SWEENEY: One moment. If  
7 you recall my earlier explanation of the ground  
8 rules --

9 MR. HILDER: That is correct.

10 HEARING OFFICER SWEENEY: -- clarifying  
11 questions may be asked as part of your comments,  
12 but the primary purpose of this hearing is for you  
13 to give us your comments on the Draft LEIS and the  
14 BLM Land Withdrawal.

15 MR. HILDER: Let me ask these questions.  
16 Do you now have or have you ever tested  
17 bacteriological, biological, or chemical warfare  
18 weaponry on the Nellis Test Site either on the  
19 surface or below the ground in one of your  
20 underground laboratories? That's question one.

21 And what would be the environmental  
22 impact upon the land and upon the people of this  
23 State and upon the country were you to have tested  
24 bacteriological, biological, or chemical warfare  
25 weaponry at this site?

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1 Third, there's a growing number of  
2 individuals, as you know, that have been  
3 contaminated, contaminated while working on or near  
4 Area 51's secret underground facilities. These  
5 individuals have come to you asking help. They  
6 have received none. This has recently gone up  
7 before the Supreme Court. They have denied a  
8 hearing. What are you now or what will you do with  
9 regards to these individuals who are dying or dead  
10 or who are begging for help?

11 Can you tell us why you have not  
12 addressed this issue and taken care of your  
13 wounded?

14 Now, as you know, the President of the  
15 United States is now in the process of impeachment,  
16 for crimes possibly against this country, possibly  
17 high treason. And you are under the authority of  
18 the President to do exactly what he says, when he  
19 says. If he tells you to jump, you ask, How high?

20 As you know, the President was elected  
21 with the direct aid of the Chinese Communist  
22 Military Complex and has given this nation, the  
23 Chinese Communist Nation, aid and trade and  
24 technology which now allows them to take out the  
25 city of Los Angeles, Las Vegas, Dallas, Chicago,

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1 New York, and Atlanta with simply the pressing of a  
2 button.

3 As we understand it, there is no Star  
4 Wars defense. There is no missile defense. Are  
5 you to continue to follow the orders of this  
6 President when you know that they have received  
7 their nuclear capacity from him? And what would be  
8 the environmental impact -- I ask you all: What  
9 would be the environmental impact if 53 or 4 atomic  
10 bombs were to hit our cities? What would be the  
11 environmental impact? Has that been raised? And  
12 if not, why not?

13 And has the Air Force ever lied to us,  
14 the public, about the existence of man-made  
15 anti-gravitational flying craft that have been  
16 tested within the Nellis Air Force Test Site?

17 You smile, Commander. Has the Air Force,  
18 the CIA, or any agency of this government ever  
19 performed medical experiments upon human beings at  
20 or under the facilities of Area 51, S-4 or any  
21 laboratory located within the confines of the  
22 Nellis Test Site?

23 And are you not now under the command of  
24 the United Nations? And are you not now under the  
25 directions of State Department Bulletin 7277, which

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1 calls for the complete and total disarmament of the  
2 United States?

3 And I am asking a question here: Is this  
4 internment camp, which I have pictures of here,  
5 which was just built, this is within the past 30  
6 days on Range Road, to be used to incarcerate  
7 citizens of the United States were we to be under  
8 martial law? And how does the impact of that rest  
9 upon the people of the State of Nevada? These are  
10 the pictures.

11 HEARING OFFICER SWEENEY: Mr. Hilder,

12 your time has expired. Thank you.

13 The next speaker will be Mr. James  
14 Hardy.

15 MR. HARDY: Pass.

16 HEARING OFFICER SWEENEY: The next  
17 speaker will be Mr. Norio Hayakawa.

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18 MR. HAYAKAWA: My name is Norio Hayakawa  
19 and I live in Torrance, California. I'm a concerned  
20 citizen and I am for the government's legitimate  
21 use of Nellis Air Force Range for the realization  
22 of much needed research, development, and testing  
23 as part of the continual effort to improve all  
24 aspects of our strategic national defense programs.  
25 However, there are certain issues that need to be

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1 clarified.  
 2 First of all, in 1994, 4,000 acres of  
 3 public land were expropriated to basically, simply  
 4 to cover the viewpoints from where the, you name  
 5 it, Groom Lake Complexes or the Area 51 facility,  
 6 is located. That's the only reason that the 4,000  
 7 acres were taken. And what we are really concerned  
 8 is the hazy, ambiguous terms used to describe this  
 9 location. Not only that, but the hazy, ambiguous  
 10 relationship between the DOA and the Air Force, the  
 11 relationship that the public completely just  
 12 doesn't understand because of the hush-hush and the  
 13 secrecy.

14 So I am proposing that the government  
 15 construct a clearly marked new fence or other  
 16 substantial border structure along the restricted  
 17 boundary line particularly on both sides of Groom  
 18 Lake Road, instead of vague, thin, orange posts  
 19 posted wide apart.

20 Number two, that the government construct  
 21 a new guard shack right at the restricted boundary  
 22 line on Groom Lake Road instead of the present  
 23 guard shack which is more than a third of a mile  
 24 inside the restricted area.

25 And the reason I'm saying that is, since

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1 the 4,000 acres belong to part of the 3 million acres  
 2 of land withdrawal, it is a relevant issue. We  
 3 cannot separate that location from this topic.

4 And we wish that there will be a recognized  
 5 public affairs office established specifically for  
 6 that location, not the PA Office at Nellis Air  
 7 Force Base.

8 And the biggest issue is that this  
 9 particular location that borders three million --  
 10 the Air Force land and the DOA land, is just --  
 11 it's just very ambiguous and we would like that if  
 12 the Air Force finally is handed that particular  
 13 location known as Area 51 or Groom Lake Complexes,  
 14 which I don't mind, I think that the Air Force  
 15 could better function if they are handed over that  
 16 particular location. But yet they should name that  
 17 location in clear terms and give a description and  
 18 a mission designation for the public.

19 And so finally, we also would like an  
 20 announcement, once and for all, whether those  
 21 workers, former and possibly current workers at the  
 22 site, is guaranteed a statement be made by the Air  
 23 Force in conjunction with the DOA that everything  
 24 has been taken care of. That's all we're  
 25 interested in.

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1 But again, I am for the strong Air Force,  
 2 and if that's the case, that location known as  
 3 Groom Lake Complexes or Area 51 should be part of  
 4 the -- under the Air Force jurisdiction, contrary  
 5 to the, right now, the present vague, ambiguous  
 6 description of that whole place, which is part of  
 7 the -- partly responsible for the public's  
 8 imagination or the public's conspiratorial angle  
 9 that's being developed, which is damaging the  
 10 national defense, as far as I'm concerned.

11 So the request is that there be a  
 12 definite location name described, not just an  
 13 operating base by Groom Lake. I suggest that the  
 14 Air Force get together with the DOA or whatever to  
 15 describe and designate the name in clearer terms.  
 16 And that's all I'm interested in. Thank you.

17 HEARING OFFICER SWEENEY: Thank you,  
 18 Mr. Hayakawa.

19 Next will be Mr. Earle Dixon.

20 MR. DIXON: I decline.

21 HEARING OFFICER SWEENEY: Next will be  
 22 Mr. Aaron Johnson.

23 MR. JOHNSON: Good evening, gentlemen.  
 24 I'm a fellow airman. Formerly I was a potential  
 25 pilot candidate for the Air Force. I feel proud to

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1 be amongst you tonight, standing before you to be  
 2 able to speak my mind, where unfortunately most of  
 3 our elected officials have failed to let us do. I  
 4 thank you very much for that opportunity, and I  
 5 salute you for your duty to our country, keeping us  
 6 free, giving us open skies.

7 You do need a place to test-fire weapons,  
 8 to practice attacks. This is important to national  
 9 defense. But my concern is an area called Groom  
 10 Lake and facility there commonly referred to as  
 11 Area 51 or S-4. I protested the deal in Long Beach  
 12 to allow the Communist Chinese to come in. I did  
 13 so because I did it as a fellow airman to you and  
 14 to my fellow Americans in this room. I did it  
 15 because I felt it was right to fight against  
 16 communists, that's what we were fighting from the  
 17 beginning and that's what we're fighting today.

18 It saddens me to hear that at the Groom  
 19 Lake facility and the impacts associated with any  
 20 kind of chemical weapons testing ground or  
 21 biological testing, there are people that are  
 22 experiencing illbs and are not being treated. This  
 23 is not America in my opinion. That is not what we  
 24 are fighting for. We are fighting for the rights  
 25 of every American to be free and healthy that's why

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1 we have a defense.

2 My also concern is this, the supposed

3 space alien landing that did not happen, which was

4 seen by witnesses that did. Was it terrestrial?

5 Did we make it from advanced technologies over the

6 years that we've done through black operations?

7 To me, national security is important,

8 but national stupidity with regard to the treatment

9 of these people can no longer be accepted.

10 Back to the -- what I'm concerned about

11 is, is the, what I call the "Beast," the Battle

12 Engagement Area System Tracking. This possibly

13 could be using electromagnetic fields, which could

14 be then -- which could then, according to a book by

15 Dr. Nick Begich called Angels Don't Play This

16 HAAXE, magnetic fields can affect the human mind in

17 a certain way and cause chemical reactions to cause

18 either a form of insanity, temporary anger, or

19 emotional distress of some sort, and, therefore,

20 could be causing problems with our society today as

21 we know it.

22 I do not know if this is a reality. I

23 don't even know if there was an impact report done

24 on this. But I do know this: That the continued

25 freedom of this country is dependent upon loyal

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1 airmen, seamen, Marines, and soldiers of the United

2 States Army for our freedom.

3 And in closing, again, gentlemen, I

4 salute you. I thank you for your duty and I thank

5 you for your time. Thank you.

6 HEARING OFFICER SWEENEY: Thank you,

7 Mr. Johnson.

8 Next will be Mr. Michael DeFloria.

9 MR. DeFLORIA: I'm Michael DeFloria. I

10 represent myself.

11 Who owns this land anyway? The United

12 States Federal Government is claiming that 86

13 percent of Nevada land belongs to the United States

14 Government. Several other western states and

15 Alaska also have been victimized by the US

16 Government. The US Government also tried to lay

17 claim to Alaska oil deposits. If they would have,

18 the people in Alaska would not be getting their

19 thousand dollars a year bonuses from the oil

20 profits, I guarantee you.

21 The State of Nevada doesn't have a clue

22 as to who owns this land. The former and present

23 governors, Nevada politicians, could care less who

24 owns this land. All they seem to worry about is

25 how much their pension is going to be. The casinos

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1 could care less. Judges and lawyers don't care.  
2 In fact, nobody cares, except the American Indians  
3 and me.

4 So who does this land belong to, which is  
5 made up of parts of eight western states, really  
6 belong to?

7 The following information was taken from  
8 a newsletter several years ago. The purpose of  
9 this newsletter was to outline the current status  
10 of the ongoing dialogue negotiations between the  
11 Western Shoshone Nation and the United States  
12 Government.

13 The Western Shoshone National Council is  
14 committed and dedicated to the preservation of  
15 their ancestral land, culture, and tradition.  
16 There has always been a Western Shoshone Council  
17 for the Western Shoshone Nation. From the facts  
18 available today, this council dates back to time  
19 immemorial.

20 The United States recognized the Shoshone  
21 title to this ancestral territory at Ruby Valley,  
22 in 1863, when it solemnly signed a treaty of peace  
23 and friendship known as the Treaty of Ruby Valley.  
24 This treaty has never been modified or abrogated.  
25 It still stands as a form of domestic and

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1 international law, just like any other treaty  
2 between the United States and any other nation.

3 I wish you had a podium up here.

4 But what began as an act of Western  
5 Shoshone goodwill to facilitate travel to

6 California is being perverted by the federal  
7 government to swindle the Western Shoshone people  
8 out of their land and, therefore, their livelihood.

9 The government's legal manipulations over  
10 the years have been complex and confusing. The  
11 most shameless attempt to defraud the Western  
12 Shoshone people occurred in 1979, when the  
13 government tried to pay the Western Shoshone \$25  
14 million, just 15 cents per acre, for land that has  
15 never been for sale.

16 This one sales transaction proved without  
17 a shadow of a doubt that the Treaty of 1863 was and  
18 still is a legal document. But the government,  
19 claiming to be a trustee, put the money into a  
20 government account and called the transaction  
21 complete.

22 As Jack Anderson wrote in the Washington  
23 Post, 28th April, 1984, "The government argued,  
24 somewhat absurdly, that just by its offer of  
25 payment it becomes the owner of Shoshone land and

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1 Western Shoshone Nation. Secretary of Interior is  
 2 directed to establish a distribution for payment of  
 3 benefits.  
 4 Now, when you offer somebody money to buy  
 5 your car or something, that means you are trying to  
 6 buy something that belongs to somebody else. The  
 7 United States proved that this land belongs to the  
 8 American Indians because they offered them 15 cents  
 9 an acre.  
 10 The United States Supreme decision 1985,  
 11 legislative purpose of the Indian Claims Commission  
 12 and the principle of payment under the common law  
 13 of trust has been applied to relations between  
 14 Native American communities and blah, blah, blah.  
 15 To the trade United States. Once the money was  
 16 deposited into the trust account, payment was  
 17 effected.  
 18 The unanimous decision means the Indian  
 19 Claims Commission settlement has been carried out,  
 20 although the tribes still have not accepted any  
 21 money. The tribe no longer can claim the land.  
 22 Isn't that something?  
 23 This is US Court of Appeal 1989, rules --  
 24 ruled that the individual aboriginal land,  
 25 (unintelligible) American Indians, are restricted

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1 thus the Indians were trespassers. This  
 2 'Godfather' theory of real estate, making an offer  
 3 that can't be refused, should strike fear into the  
 4 hearts of every homeowner in the country." That  
 5 means you people in this room.  
 6 The United States taxpayers, with the  
 7 help of Uncle Sam's generosity, gave the State of  
 8 Israel \$90 billion for free since 1948, plus  
 9 domestic and other foreign aid to help Israel take  
 10 back the land they claim was theirs 5,000 years  
 11 ago. And just last year they said, Oh, it was only  
 12 3,000 years ago. Shouldn't the American Indians  
 13 get equal treatment and be compensated for all the  
 14 pain and suffering of their ancestors?  
 15 The Japanese-Americans were compensated  
 16 after World War II for their mistreatment during  
 17 World War II.  
 18 I have a copy of the Treaty of 1863, the  
 19 Shoshone Indians. It's only two pages, was signed  
 20 by 11 American Indians who couldn't read or write  
 21 and they signed their name with an X.  
 22 Here's more proof that this land does not  
 23 belong to you. The US Indian Claims Commission,  
 24 December 6, 1979. The United States shall pay \$26  
 25 million, Department of Interior, as trustee for

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1 to land their linear ancestors occupied before  
2 1934. The grazing rights of the Danns are limited  
3 to the number and types of animals. They kicked  
4 the Danns out of their land.

5 HEARING OFFICER SWEENEY: Mr. DeFloria,  
6 your time has expired. We may be able to give you  
7 some more time at the end of the hearing, but if  
8 you'd like to finish your thought, please.

9 MR. DeFLORIA: I took an oath in World  
10 War II to defend my country against all enemies  
11 foreign and domestic, against all enemies foreign  
12 and domestic. Now, you took the same oath. I hope  
13 if you find something, there's something wrong with  
14 this country and you don't report it to the people  
15 of the United States, you are committing treason.  
16 Thank you.

17 HEARING OFFICER SWEENEY: Thank you,

18 sir.

19 Next will be Mr. Steve Linder.

20 MR. LINDER: Thank you. As a private  
21 citizen I would like to say that I think that the  
22 United States has a role in world politics to  
23 provide deterrents to foreign governments that  
24 would like to subvert our way of life and the  
25 democracy that we have fought so valiantly to

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1 pursue and uphold.

2 And I think that the Air Force and our  
3 allies and the armed forces of other countries that  
4 use this test range need to have the training that  
5 is so vital for their accomplishing their mission,  
6 and I believe that those -- the land is absolutely  
7 needed and I support the renewal of the Test Range  
8 and the land. Thank you.

9 HEARING OFFICER SWEENEY: Thank you,  
10 Mr. Linder.

11 Next Mr. Randy Black is a speaking in his  
12 own capacity this time.

13 MR. BLACK: Thank you, Colonel Sweeney.

14 I'm Randy Black. I'm a local developer of Rock  
15 Springs Vista Condominiums. I own the Virgin River  
16 and Casa Blanca hotels in Mesquite, Nevada. And  
17 I'm a real estate broker, Diversified Realty, here  
18 in Las Vegas. And today I have the express and  
19 profound opportunity to speak for my fellow  
20 countrymen, those members of this community, my  
21 state, the State of Nevada, and my country, the  
22 United States of America, and if you will, those  
23 individuals in the free world who believe in  
24 Nellis' mission.

25 The free world is free because the price,

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1 paid in lives and infrastructure by our forefathers  
 2 and our allies has been given. In part, the grief  
 3 and turmoil that has been spent by those individuals  
 4 is immeasurable.

5 Since time began wars have been fought,  
 6 and it is my belief that individuals like Hitler  
 7 and Saddam and other world-conquering maniacs will  
 8 continue to be put in power and will be followed.

9 We must guarantee that our forces are  
 10 honed to a razor's edge to assure aggression will  
 11 be met with a swift, accurate, and deadly force.  
 12 That known power, in and of itself, will deter most  
 13 of our enemies.

14 I believe that there exists no place in  
 15 the world, certainly not in the United States,  
 16 where Nellis, the ranges, could be duplicated,  
 17 certainly, not in this country and certainly not for  
 18 less than billions of dollars in investments of the  
 19 American taxpayers' money.

20 The Nellis range is the heart of our Air  
 21 Force, our air superiority, and the crown jewel of  
 22 the United States Air Force. From the beginning of  
 23 Nellis' range stewardship and throughout the last  
 24 50 years, Nellis has developed plans outlined in  
 25 the LEIS to protect the environmental, cultural,

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1 ethical, religious, and historical aspects of the  
 2 range. Physically all aspects and facets of  
 3 previous, existing, and future life on the range  
 4 have been planned for. The Air Force is, was, and  
 5 will be committed to protecting, to use its 3  
 6 million plus acres to benefit all that can be  
 7 served. Only about 3 percent of the 3 million  
 8 acres is disturbed. The rest of the 97 percent  
 9 remains pristine, untouched, and protected. The  
 10 Nellis ranges are the nucleus of our tactical  
 11 superiority and readiness.

12 Growth is inevitable. I expect that  
 13 Nevada will continue to be the premier state in the  
 14 union and a place to move to. We must ensure by  
 15 approving an indefinite renewal that Nellis ranges  
 16 will not be impacted by that growth.

17 Nellis is second only to gaming in  
 18 revenue in the State of Nevada and it's very  
 19 important to the economy. It's so important to  
 20 this community that we've named one of our major  
 21 north/south arterials after it, how we all got here  
 22 today. It is an \$8 billion plus investment that  
 23 the State of Nevada cannot and should not and will  
 24 not, I hope, lose.

In conclusion, the Nellis ranges are

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1 desperately needed. The Draft LEIS addresses all  
2 the impacted environs of the range. And the Air  
3 Force has demonstrated the United States needs the  
4 range and that the Air Force has the capability to  
5 steward the ranges.

6 I respectfully submit that Congress  
7 approve the LEIS and the Air Force's request.  
8 Thank you.

9 HEARING OFFICER SWEENEY: Thank you,  
10 Mr. Black.

11 Our next speaker is Mr. Stewart Webb.

12 GE-1 MR. WEBB: My name is Stewart Webb, and  
13 for the edification of the people that are in this  
14 room and yourselves, I've been involved in the  
15 exposure of many scandals during 80's and the 90's  
16 involving what is known as Bush and Company. I  
17 was involved and worked with, not only Congress on  
18 the HUD matter, but the savings and loans, as well  
19 as the Denver International Airport and other  
20 illegal activities that were going on. And I was  
21 involved in getting Arlen Adams, special independent  
22 prosecutor appointed on the HUD scandal, et cetera,  
23 back in 1989.

24 I've been after a group of men in the  
25 Office of Naval Intelligence, which operates at

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1 your base, that have been involved in drugs and  
2 guns and other things that are tied to this current  
3 administration and the past administration.

4 The reason that I was asked by Mr. Hilder  
5 to come down here to speak is because of my  
6 knowledge through my investigations of these  
7 demonic, satanist pigs, meaning Bush and Company  
8 and this group of men, Admiral Zumwalt and others,  
9 that are involved in, not only kidnapping children  
10 and taking them to Nellis Air Base, for what  
11 purpose no one knows, but the kids are never  
12 reported taken back, and we know that guns and  
13 drugs and other things are coming in there through  
14 Apex Aviation and other CIA organizations. And it  
15 all falls under the office of Naval Intelligence.

16 Now, since I only have five minutes, I'm  
17 asking that, because of the evidence that not only  
18 Anthony Hilder has, I have, O'Briens, Cathy O'Brien  
19 on mind control; Ted Gunderson, former FBI  
20 nomination for director in 1975, retired from the  
21 FBI in '79, the evidence he has; John DeCamp,  
22 former state senator, Nebraska, as well as a man  
23 who was exposing, worked for, as a matter of fact,  
24 the CIA director back in 1992 -- Anthony, what was  
25 his name, the one that DeCamp worked for? It

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1 wasn't Casey and, I apologize, it slipped my mind.  
 2 But he has a background that he has  
 3 investigated a chain, kidnapping across the United  
 4 States of children, and that are being taken, part  
 5 of these children -- I mean, they are in the nearly  
 6 a hundred thousand, Ted Gunderson says, and others.  
 7 Part of these children that we know are being  
 8 transported to Area 51, what the purpose is, nobody  
 9 knows.

10 And that's something, I want it in the  
 11 record, because I believe that grand jury -- before  
 12 this air base is voted on, should be conducted to  
 13 investigate what is going on and I'm talking about  
 14 without getting people killed because of what I'm  
 15 saying now -- I've had six attempts on my life, by  
 16 the way, of the exposures that I've done.

17 And there needs to be something at this  
 18 Papoose Lake, south of Groom Lake, where this  
 19 demonic activity is going on, something needs to be  
 20 done about it, and that's my objection.

21 I'm a former Marine. I believe in the  
 22 United States' security. My family has backgrounds  
 23 in various things with Bendix Corp. and others. I  
 24 know that defense is needed. I also know the  
 25 economic impact it would have on Nevada if it were

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1 lost.

2 Nellis has been around since the 1800's  
 3 is my understanding. I don't have a problem with  
 4 that. I don't have a problem with the security of  
 5 this nation.

6 The problem that I have is illegal  
 7 activities of kidnapped children being taken to  
 8 this air base. We have evidence of it. We have  
 9 witnesses of it. We have other things and we are  
 10 demanding and asking for a grand jury before this  
 11 be opened back up and approval of this, something  
 12 be done about it.

13 There are enough people and enough  
 14 witnesses that secretly would come forward in the  
 15 grand jury if they didn't get killed. And if it  
 16 could be handled right, maybe we could clean this  
 17 problem up.

18 But we know that Papoose Lake is it, and  
 19 we know that drugs and guns with Zumwalt, Inman and  
 20 others involved in this Office of Naval  
 21 Intelligence, coming in and something needs to be  
 22 done.

23 So that's the statement I have of the  
 24 record. And I would also like, for the record, a  
 25 copy of my flyer I gave you, give you brief

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1 background on myself, be entered in here, because I  
 2 have been involved in the exposure. I've never  
 3 been sued. The government has held me as a  
 4 political prisoner. I've been arrested 30 times  
 5 illegally, all acquittals, as a result of my  
 6 exposure. And I'm laying my rear end out on the  
 7 line even talking about this demonic activity at  
 8 Papoose Lake.

9 So that's all I have to say. Thank you,  
 10 gentlemen.

11 HEARING OFFICER SWEENEY: Thank you

12 Mr. Webb, and your written comments will be added  
 13 to the record.

14 The last individuals who have asked to  
 15 speak this evening are Mr. Dale and Sally Burkhart.  
 16 I'm not sure whether one will be speaking or both.

17 MR. BURKHART: My name is Dale Burkhart.  
 18 I'm a radio talk show host here in town.

19 As an ex-military man myself, I have the  
 20 highest respect for the United States military. I  
 21 have no respect at all for United Nations troops.  
 22 I do support the use of the range by the Air Force  
 23 under these conditions that the rightful owners of  
 24 that property, which is the Shoshone Indian Nation,  
 25 that they are compensated for the use of their land

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1 and they are provided with jobs.

2 I'm not asking that each and every one of  
 3 them be given a job, but, you know, in proportion  
 4 to the civilian population that does work for the  
 5 Air Force, it shouldn't be a problem to put it in  
 6 line.

7 Also, as long as the Air Force keeps the  
 8 testing and keeps their military exercises confined  
 9 to the range, I have no problem with that also.

10 But what concerns me is, is that within the last  
 11 two years, there have been unidentified airplanes  
 12 flying over the city limits of Las Vegas at a high  
 13 altitude. I have no idea how high. I've tried to  
 14 identify them with binoculars.

15 And what they do, on a daily basis, is  
 16 they fly and they spray something out of the back  
 17 of those planes in checkerboard patterns. And this  
 18 is becoming more and more frequent. And I would

19 ask that the Air Force -- I've called down to the  
 20 Air Force and asked them about it, and they didn't  
 21 have any information to give me on these unknown  
 22 airplanes that are flying over spraying this  
 23 white-cloud stuff, JP-8 gas or whatever you call  
 24 it. I don't know what it is.

25 But I'm not even sure if they are Air

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1 Force, United States Air Force airplanes that are  
 2 flying over. They might be United Nations Air  
 3 Force planes or whatever.

4 But, I have noticed though too, that the  
 5 following day after they spray the skies, and they  
 6 spray in checkerboard patterns -- and I have told  
 7 hundreds of my friends, you know. And I even get  
 8 on the phone. I call them up and tell them to go  
 9 outside and take a look, so they can see with their  
 10 own two eyes what's going on here -- the following  
 11 day, then, in epidemic proportions, we have the flu  
 12 or whatever, some kind of germ disease that's going  
 13 around town.

14 Last year, two days following this heavy  
 15 spraying over the city of Las Vegas, the emergency  
 16 rooms and every hospital in town was completely  
 17 full. You couldn't get in because of this  
 18 unnecessary spraying, whatever it is. And I would  
 19 ask that the Air Force provide the citizens of this  
 20 community and other communities around the country  
 21 where they are spraying -- I've also noticed this  
 22 in California too, out there towards Victorville.  
 23 There's another Air Force out that way, base.

24 And I would ask that they would provide  
 25 us and be more open with information and let us

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1 know what exactly they are doing up there  
 2 spraying. And I feel, personally, that it's not  
 3 only having environmental effect, but it's having a  
 4 health effect on the community. And if there's any  
 5 information that the Air Force could pass on, that  
 6 would be greatly appreciated.

7 And also I would like to ask too, as far  
 8 as the range goes, that security be provided, a  
 9 hundred percent, by the United States Air Force and  
 10 not those thugs known as the BLM.

11 Thank you very much.

12 HEARING OFFICER SWEENEY: Thank you,  
 13 Mr. Burkhart.

14 Did you wish to speak too, Ms. Burkhart?  
 15 Please.

GE-1

16 MS. BURKHART: Thank you. My name is  
 17 Sally Burkhart, and I would like to, sort of,  
 18 follow up with Dale.

19 I have seen those planes in the air with  
 20 the checkerboard. It's actually, we counted -- two  
 21 days ago we counted 15 of those planes in the air.  
 22 And usually two to three days after this spraying  
 23 the hospitals are full of people, where they are on  
 24 gurneys in the aisles.

And I would really like to know, what are

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1 those airplanes? We have called Nellis. We have  
2 called different airports. We have tried to find  
3 out what those airplanes were. And it's as though  
4 they don't even exist. They are saying it's sort  
5 of like we're seeing things, so I would like to  
6 have some kind of answer as to what those planes  
7 are.

8 And also I'm wondering, if you are asking  
9 for all of this land back and it's for preservation  
10 and spiritual reasons and I imagine that it's for  
11 the Indian reservations that are there on that  
12 land, why is it that the Indians can't take care of  
13 that? As far as I am concerned, they take care of  
14 their animals and their land a whole lot better  
15 than anybody in this room or in this government  
16 could even think of taking care of. They care about  
17 their horses. They care about the animals. They  
18 care about their land and their burial grounds and  
19 their religious areas and everything else. Why  
20 cannot they be responsible for taking care of  
21 this?

22 As far as the environment goes, why can't  
23 we, the people, take care of it? Why does it have  
24 to be a federal organization or the thugs, the BLM,  
25 or people that don't really care about us? All

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1 they are looking for is money, money, money.  
2 Thank you.

3 HEARING OFFICER SWEENEY: Thank you.  
4 That completes those who had asked to  
5 speak this evening. I will ask in a moment if  
6 there's any of our previous speakers who were  
7 frustrated by the time limit and would like to  
8 revise and expand on their remarks. If there's a  
9 significant number who would like to do that, I  
10 propose that we take a brief recess before hearing  
11 from others.

12 So if I could have a show of hands of any  
13 of our previous speakers or people who didn't get  
14 an opportunity to speak who would now like to  
15 speak, if you just raise your hand, please.

16 Mr. DeFloria, if you are the only one,  
17 Mr. DeFloria, why don't you go ahead and continue  
18 now, please.

19 MR. DeFLORIA: It will only be a few  
20 moments.

21 HEARING OFFICER SWEENEY: You can use the  
22 podium if that would be more comfortable, sir.

23 MR. DeFLORIA: That's all right.

24 I'd like to explain a little bit on how  
25 the Americans stole the land from the native

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1 American Indians.

2 This article was from the book Where  
3 White Men Fear To Tread, by Russell Means:

4 On a knoll overlooking the Missouri River  
5 is a 40-foot-square granite, oblong base monument  
6 to commemorate the treaty between the United States  
7 of America and the Yakatan (phonetic) Tribe of the  
8 Sioux Dakota Indians concluded at Washington D.C.,  
9 April 1885, ratified by the Senate 1859.

10 The real story of how they took the lands  
11 from the Indians. Several Indian leaders were  
12 taken to Washington D.C., kept in their hotel rooms  
13 for months in house arrest. Penniless, homesick,  
14 and confused by whiskey and grand promises, they  
15 ceded millions of acres of their ancestral hunting  
16 grounds to the US, reserving only 430,000 acres for  
17 themselves and descendants.

18 The Sioux were to be paid 1.6 million  
19 during 50 years. Instead of cash, the government  
20 supplied them with food, clothing, farm equipment,  
21 livestock and other necessities. If the Indian  
22 population decreased, so would the payments and the  
23 equipment. They would later be slaughtered like  
24 the 4 million buffalo, dozens of small pox  
25 epidemics induced by the President's agents after

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1 they distributed blankets infected with the small  
2 pox virus or hundreds starved or froze to death  
3 because agents had stolen their treaty goods.

4 About two years after the treaty, a US  
5 agent was caught stealing many supplies in payments  
6 from the Indians. Boarding schools for Indians  
7 were havens for pedophiles. Generations of boys  
8 and girls endured sadistic sexual psychological  
9 violations from perverts. Many of them were  
10 priests and nuns. If the children complained, they  
11 were whipped for making trouble. In the 70's, this  
12 was still going on.

13 The most notorious of Indian boarding  
14 schools was Intermountain School near Provo, Utah,  
15 run by the Mormon Church. Hundreds of Indians died  
16 trying to escape through the mountains. The church  
17 remained silent on the subject.

18 Today in practice the US Bill of Rights  
19 does not apply to reservation Indians. They are  
20 not free to bear arms, not free to practice their  
21 religion. Unemployment is 80 percent.

22 On relocation, the Eisenhower  
23 administration plan was to depopulate the Indian  
24 reservations from 1950 to 1960, integrate Indians  
25 into an urban ghetto, so that in a few generations

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1 they would intermarry and get lost in the  
 2 underclass. Then the government would take the  
 3 rest of the Indians' land so no one would be left  
 4 to object. The Eisenhower program, as termination  
 5 had grown out of the BIA, Bureau of Indian Affairs,  
 6 policy from the Truman years, a plan to dream up,  
 7 by Dillard Meyer (phonetic), the man who had run  
 8 FDR's concentration camps for American citizens of  
 9 Japanese ancestry during World War II. This was  
 10 designed to rid American Indians Nations by buying  
 11 up Indian land for a lump sum paid at 1850 prices.  
 12 Tribal councils also were nothing more  
 13 than extensions, Bureau of Land Management rubber  
 14 stamps for policies created in Washington. Over 60  
 15 Indian nations had been terminated, was no longer  
 16 recognized as a sovereign nation.

17 Let me -- one more item here. Roosevelt  
 18 believed that ignorant savages should have been  
 19 exterminated because they had no right to land that  
 20 they didn't know how to use properly. The United  
 21 States Government -- I'm not going to say  
 22 anything. He represented the epitome of Manifest  
 23 Destiny, the doctrine popularized by Jefferson. It  
 24 claimed, in essence, that God had intended all  
 25 North America for European man.

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1 The truth about Thanksgiving. After a  
 2 colonial militia had returned from murdering the  
 3 men, women, and children of an Indian village, the  
 4 government proclaimed a holiday and feast to give  
 5 thanks to the massacre and encouraged other  
 6 colonies to do likewise. In other words, every  
 7 autumn after harvest, go kill Injuns and celebrate  
 8 your murders with a feast.

9 On page 381, the Indians filed a 300  
 10 million damage suit on behalf of Indian women who had  
 11 been tricked or coerced into sterilization by the  
 12 IHS. Senator What's His Name forced the government  
 13 into a moratorium on the program. Today the  
 14 government is still sterilizing Indian women under  
 15 family planning.

16 I could go on and on and on, but you get  
 17 the idea. Those poor Indians were murdered and, like  
 18 I say, you took an oath to defend your country  
 19 against all enemies foreign and domestic. You know  
 20 there are foreign enemy and local governments that  
 21 are committing treason. And I want you people with  
 22 uniforms to do something about it.

HEARING OFFICER SWENEY: Thank you,

sir.

Mr. Hilder, you indicated you said

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1 "question." You mean public comment; right?

2 MR. HILDER: Yes. In legalese, I guess  
3 that would be the correct answer.

4 when might I and others who think like I,  
5 be able to get an answer to the questions that I  
6 raised here today, if ever, outside of a grand  
7 jury? And maybe you could simply answer that one  
8 question.

9 HEARING OFFICER SWEENEY: As I explained  
10 the process to you earlier, Mr. Hilder, all  
11 comments that are made this evening, any public  
12 comments, will be reviewed by Air Force and BLM  
13 authorities for the purpose of determining the  
14 application of those comments to the Draft LEIS and  
15 the BLM Withdrawal Application, and those which are  
16 appropriate and directly related to the Draft LEIS  
17 will be responded to in the final LEIS.

18 Those which are non-environmental and do  
19 not relate to the purpose of this evening and the  
20 public comment for this evening, in my judgment,  
21 will not likely be responded to. But you certainly  
22 have every opportunity to submit those written  
23 comments in writing directly to Air Force or BLM  
24 authorities and seek a response.

25 MR. HILDER: Well, I think that it would

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1 be of concern to people to find out the  
2 environmental impact of over 50 hydrogen bombs on  
3 our major cities caused by actions of the President  
4 of the United States, and I await an answer, maybe  
5 in writing, maybe you fellows could go on the air.  
6 The invitation is there. I'm sure that Lou Epton  
7 would invite any of you at any time, wherever you  
8 are, to answer these questions. Thank you.

9 HEARING OFFICER SWEENEY: Thank you,  
10 Mr. Hilder.

11 MR. JOHNSON: I'd like to add some more  
12 comments too, sir.

13 HEARING OFFICER SWEENEY: All right. If  
14 you would, please. Mr. Johnson, I believe?

15 MR. JOHNSON: That's correct.

16 My additional concern also relates back  
17 to the so-called fictitious Area 51. I recently  
18 attended a rally there that we had on the road, I  
19 guess, that leads to the Papoose Lake facility.

20 As Mr. Hayakawa spoke earlier, the  
21 markings were very unclear, and amongst those that  
22 are concerned about this area and activities there,  
23 have accidentally wandered further down this road  
24 than they intended to, nor did they understand  
25 this. Subsequently, in my opinion, at all military

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1 bases I've ever seen, Navy and Air Force --  
 2 specifically enjoying Edwards Air Force, I go to  
 3 the air show there quite frequently -- there's a  
 4 security guard shack there, manned.

5 This is not the case with this road and  
 6 this facility. We definitely need to put this  
 7 facility into existence and, again, I don't  
 8 understand why it is a national security issue  
 9 because we have an open-skies policy right now with  
 10 Russia. They are flying their satellites over as  
 11 we speak, which makes me concerned about your  
 12 earlier statements of practicing with highly  
 13 classified aircraft, and you need the  
 14 classification on the aircraft. I do understand  
 15 the national security issues there.

16 But this open-skies policy is allowing  
 17 Russian satellites to go over this facility and  
 18 photograph it, under the guise of the STAR 2  
 19 Treaty, which was to demolish, I should say  
 20 downgrade our ballistic missile offensive  
 21 capabilities.

22 Subsequently, this ballistic missile  
 23 downgrading also has me concerned in that, as I've  
 24 recently heard from a friend in aerospace, that in  
 25 the middle of this month of November all programs

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1 supporting a ballistic missile defense development  
 2 procurement and operational status will cease to be  
 3 functional. All jobs associated with that will be  
 4 gone. We are talking approximately 14,000 jobs at  
 5 Raytheon alone. That's not including subcontractors  
 6 such as Lockheed and Boeing or Reynaldos (phonetic)  
 7 or whoever would be involved in this.

8 This has me concerned because, as you  
 9 know or don't know, Hughes and Raytheon had allowed  
 10 the upgrade of the -- as the Chinese have said  
 11 themselves, and I have this recording, and if you  
 12 are interested, I'll be more than happy to make a  
 13 recording and give it to you -- the great war  
 14 company's long-march 3B rocket. This rocket does  
 15 have the range to reach the United States. It also  
 16 has MIRV capabilities, Multiple Integrated Reentry  
 17 Vehicles. And you know what that means in plain  
 18 simple English because you are military and you  
 19 understand where I am coming from.

20 We are in dangerous times, with respect  
 21 to Communist Chinese, and their buildup through,  
 22 unfortunately, our technological help, thanks to  
 23 this President. And I hope that you will do your  
 24 duties, if it ever comes to a time, to defend this  
 25 country in the name of the United States of

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1 America, and I guess I'll put this as simply as I  
2 can, not the United Nations of America.

3 And I thank you for my additional time.

4 HEARING OFFICER SWEENEY: Thank you,  
5 Mr. Johnson.

6 Mr. Burkhart, additional?

7 MR. BURKHART: My name is Dale Burkhart.  
8 Just one quick question as a comment. My  
9 question would be to the United States Air Force of

10 the United States: Is the United States Air Force  
11 Y2K compliant? What is going to happen on  
12 January 1st the year 2000? Is the United States  
13 Air Force going to be there for us?

14 Now, it's my understanding that the  
15 United States Air Force has millions of computers.  
16 Unless each and every one of them are compliant,  
17 it's sort of like, you know, the chain theory. The  
18 chain is only as strong as its -- right -- weakest  
19 link, right.

20 So if one computer isn't compliant, my  
21 question to the Air Force would be: Are they all  
22 going to go down? Are we going to be safe under  
23 the wings of the Air Force come January 1st the  
24 year 2000? Thank you.

25 HEARING OFFICER SWEENEY: Thank you,

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PUBLIC INFORMATIONAL MEETING REGARDING  
THE RENEWAL OF THE NELLIS  
AIR FORCE RANGE LAND WITHDRAWAL

DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

\* \* \* \* \*

Held at Calliente Youth Center  
Administrative Building  
Calliente, Nevada

On Wednesday, November 11, 1998  
At 7:30 p.m.

Reported by: JANE V. MICHAELS, RPR  
NV CCR No. 601, CA CSR No. 10660

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APPEARANCES:

For the United States Air Force:  
Colonel Pat Sweeney 3  
Colonel Bill Percival 9  
Colonel Mike Fukey 20

Public Speakers:

Kevin Phillips 35  
Key Flake 40, 64  
Louis Benezet 45, 65  
Marjorie Detraz 48  
Kristin Thomas 49, 68  
Jim Olds 50, 62  
Larry Wissbeck 51, 57  
Connie Simkins 51, 57  
William Revell 56  
Ed Uehling 58, 65

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1 several dignitaries with us tonight who will not be  
2 speaking but should be introduced since they thought  
3 enough of the process to attend.

4 We have Mr. Jim Maner, Lincoln County  
5 Commissioner, and also Mr. Paul Donahue, who's the  
6 Lincoln County commissioner select.

7 We will now begin by hearing from the  
8 government or elected officials who have asked to  
9 speak and. Following their comments, we will take  
10 oral comments from others of you who have filled out  
11 cards in random order. Again, I wish to remind you  
12 of the five-minute time limit for speaking.

13 First, we will hear from Mayor Kevin  
14 Phillips, the mayor of Caliente.

15 MR. PHILLIPS: Colonel Sweeney, my name is  
16 Kevin Phillips. I am the mayor of the City of  
17 Caliente. We would like to thank you for the  
18 tremendous courtesy you have extended to us. It is  
19 greatly appreciated.

20 The Caliente City Council discussed the  
21 submission of input at this evening's hearing, and  
22 the Council approved the submission of these  
23 comments. The City intends to provide the Air Force  
24 with additional comments prior to the December 31st  
25 deadline. At the outset it is important to note that

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1 the City of Caliente supports the comments of Lincoln  
2 County and incorporates each of the County's comments  
3 by reference herein.

4 The City of Caliente appreciates and  
5 supports the important role that the Air Force  
6 activities in Lincoln County play in maintaining our  
7 nation's military capability and national security.

8 Throughout the years the City of Caliente  
9 has hosted Air Force personnel working in the  
10 region. The city has served as a rail corridor for  
11 equipment destined for the Nellis complex.

12 Notwithstanding the national security benefits which  
13 have accrued to city residents, Air Force operations  
14 within and above Lincoln County and the city have  
15 impacted upon resident quality of life.

16 Sonic booms have produced physical damage  
17 to area residences and businesses. Range fires  
18 ignited by military operations have burned valuable  
19 forage upon which the livelihood of some city  
20 residents depend.

21 Restrictions to mining upon withdrawn  
22 lands has limited regional economic activity, a  
23 significant portion of which would have accrued to  
24 the City of Caliente.

25 In past years the success of the Air Force

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1 in mitigating these impacts has been limited at  
 2 best. The City of Caliente has not seen a serious  
 3 initiative on the part of the Air Force to ensure the  
 4 equitable distribution of the economic and fiscal  
 5 benefits normally attributable to large military  
 6 installations.  
 7 Rather the majority of Nellis-related  
 8 economic and fiscal benefits have been accrued by  
 9 communities in Clark County and outside of Nevada.  
 10 The Caliente City Council believes that  
 11 any legislation enacted by the Congress which  
 12 reauthorizes Air Force use of the Nellis Range must  
 13 include mechanisms which ensure that in the future  
 14 Lincoln County and the City of Caliente accrue  
 15 significant benefits from the Air Force presence in,  
 16 above, and around the county and city.  
 17 To ensure that such mechanisms are  
 18 effective and to keep the Air Force accountable to  
 19 their successful implementation, the City of Caliente  
 20 recommends that the Air Force be required to return  
 21 to the Congress every 15 years to seek  
 22 reauthorization for continued use of the Nellis  
 23 Range.  
 24 The City of Caliente recommends that the  
 25 following mitigation/compensation measures be

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1 identified within the final LEIS and included within  
 2 any subsequent record of decision mitigation plan  
 3 and/or legislation regarding reauthorization of the  
 4 use of the Nellis Range.  
 5 First, the Air Force should consider  
 6 establishing a public information office within  
 7 Caliente to provide area residents with updates on  
 8 Air Force activities and a local point of contact to  
 9 discuss ongoing mitigation of potential impacts of  
 10 continued Air Force operations in the area.  
 11 Secondly, the Air Force should agree to  
 12 pay the City of Caliente and Lincoln County not less  
 13 than \$1 million per year in payments in lieu of  
 14 taxes.  
 15 The amount of such payments should be  
 16 adjusted annually to reflect increases in the  
 17 consumer price index or other similar cost indexes.  
 18 Thirdly, the Air Force should agree to  
 19 provide and maintain security clearances for one City  
 20 of Caliente representative to enable said person to  
 21 access all Air Force facilities within Lincoln County  
 22 for the purpose of identifying procurement, labor  
 23 participation and in lieu of tax opportunities.  
 24 Fourthly, the Air Force should consider  
 25 developing and/or utilizing rail to truck intermodal

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1 facilities in Caliente as a means to transport  
 2 equipment into the northern areas of the Nellis  
 3 Range.

4 Fifth, the Air Force should provide  
 5 technical and financial assistance to Lincoln County  
 6 and the City of Caliente to evaluate the feasibility  
 7 of developing rail access into northern areas of the  
 8 Nellis Range.

9 Sixth, the Air Force should agree to  
 10 provide a safe, secure corridor along the Valley Road  
 11 and through Gate 700 for truck and/or rail shipments  
 12 of low-level radioactive waste, spent nuclear fuel,  
 13 including that produced by the Navy, and other  
 14 high-level radioactive wastes.

15 Seventh, the City of Caliente, jointly  
 16 with Lincoln County, should have first right of  
 17 refusal to all equipment utilized at Air Force  
 18 facilities within the county, which are determined to  
 19 be surplus.

20 And, eighth, a fund should be established  
 21 by the Air Force and administered jointly by the Air  
 22 Force and the City of Caliente for use in paying  
 23 claims for sonic-boom-induced property damage within  
 24 the city.

25 In a nutshell, sir, as a businessman, when

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1 you go to purchase a business, you buy sometimes  
 2 what's referred to as goodwill. This is a value  
 3 that's associated with any business that has to do  
 4 with the fact that the business is up and running.

5 The Colonel indicated in his presentation  
 6 that this air complex is irreplaceable in the world.  
 7 We concur with that and certainly support its  
 8 activity here.

9 We just hope that as long as so much of  
 10 our land mass is federally managed, we could share  
 11 more in the opportunities for economic development  
 12 and employment. Thank you very much.

13 HEARING OFFICER SWEENEY: Thank you. Next  
 14 we'll here from Mr. Rey Flake, who is also a Lincoln  
 15 County Commissioner.

16 MR. FLAKE: Thank you, Colonel. My name  
 17 is Rey Flake. I live here in Caliente. I'm vice  
 18 chairman of the Board of Lincoln County  
 19 Commissioners.

20 The Lincoln County Commission discussed  
 21 the submission of these comments at this evening's  
 22 hearing and approved the submission of these  
 23 comments.

24 We also intend to provide the Air Force  
 25 with written comments prior to the December 31st

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1 deadline.

2 We also support the comments of the

3 Caliente City Council and incorporate each of the

4 City's comments by reference herein.

5 The Board of Lincoln County Commissioners

6 supports the mission and presence of the

7 United States Air Force in Lincoln County.

8 Air Force activities on and above the

9 Nellis Range and surrounding areas play a very

10 important role in maintaining our nation's military

11 readiness and strong national defense.

12 Lincoln County has had the privilege of

13 hosting important Air Force initiatives for many

14 years. Unfortunately, Air Force requirements to

15 control airspace above significant land areas within

16 the County have served to constrain the already

17 narrow economic base and have imposed impacts upon

18 the County's residents and its environment.

19 For example, at the LEIS notes in Figures

20 3, 5, and 8, several areas of Lincoln County within

21 the Nellis Range have moderate to high gold, silver,

22 copper, or molybdenum mining potential.

23 Access to these areas for mining is not

24 possible as long as the Nellis land area is withdrawn

25 from multiple use.

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1 Over the years these impacts have not been

2 adequately mitigated. Most economic benefits of the

3 Air Force presence in Lincoln County flow south to

4 Clark County or out of state.

5 Mitigation of environmental

6 consequences -- noise impacts, range fires,

7 et cetera -- have been slow due to interagency or

8 other bureaucratic delays.

9 While the nation as a whole has benefited

10 dramatically from Nellis activities in the county,

11 Lincoln County residents have seen only minor

12 benefits.

13 The Board of Lincoln County Commissioners

14 believes that any legislation enacted by the Congress

15 which reauthorizes Air Force use of the Nellis Range

16 should include mechanisms to ensure that in the

17 future Lincoln County accrues significant benefits

18 from the Air Force presence in and above the county.

19 To ensure that such mechanisms are

20 effective and to keep the Air Force accountable to

21 the successful implementation, Lincoln County

22 recommends that the Air Force be required to return

23 to Congress every 15 years to seek reauthorization

24 for continued use of the Nellis Range.

25 Also, Lincoln County requests that the

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1 following mitigation and compensation measures be  
 2 identified within the final LEIS and included within  
 3 any subsequent record of decision, mitigation plan,  
 4 and/or legislation regarding reauthorization of the  
 5 use of the Nellis Range.

6 The Air Force should agree to provide  
 7 Lincoln County Power District with first right of  
 8 refusal to provide all electrical energy required at  
 9 Air Force facilities within Lincoln County.

10 The Air Force should agree to set aside a  
 11 portion of all procurement for goods and services  
 12 used at Air Force facilities within Lincoln County  
 13 for vendors located within the county.

14 The Air Force should agree to set aside a  
 15 portion of all civilian employment opportunities at  
 16 Air Force facilities located within Lincoln County  
 17 for residents of Lincoln County.

18 The Air Force should provide employee  
 19 bussing from the Hiko area to all Air Force  
 20 facilities located within Lincoln County for all  
 21 county residents employed now or in the future at  
 22 such facilities.

23 The Air Force should provide security  
 24 clearances to enable Lincoln County residents to  
 25 cross the Nellis Range to reach places of employment

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1 at Air Force and Department of Energy facilities  
 2 within and adjacent to the county, not required to  
 3 make great detours around.

4 Also, we feel that the Air Force should  
 5 agree to pay Lincoln County and the City of Caliente  
 6 not less than one million per year in lieu of taxes.

7 The amount of such payments should be  
 8 adjusted annually to reflect increases in the  
 9 Consumer Price Index or other similar cost indexes.

10 The Air Force should agree to provide and  
 11 maintain security clearances for one Lincoln County  
 12 representative to enable said person to access all  
 13 Air Force facilities within Lincoln County for the  
 14 purpose of identifying procurement, labor  
 15 participation and in lieu of tax opportunities.

16 The Air Force should agree to provide a  
 17 safe, secure corridor along the Valley Road and  
 18 through Gate 700 for truck and/or rail shipments of  
 19 low-level radioactive waste, spent nuclear fuel,  
 20 including that produced by the Navy, and other  
 21 high-level radioactive wastes.

22 A fund should be established by the Air  
 23 Force and administered jointly by the Air Force and  
 24 Lincoln County for use in paying for rehabilitation  
 25 of range lands burned in fires started by Air Force

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1 activities and in compensation permittees for the  
2 loss of grazing forage.

3 The Air Force should provide financial and  
4 technical assistance to Lincoln County for the design  
5 and construction of improvements to the Alamo  
6 Airfield, which is used by the Air Force for training  
7 purposes.

8 And, finally, the Air Force should  
9 compensate Lincoln County for costs incurred by the  
10 district attorney and justice court in handling Air  
11 Force-related cases involving protesters and  
12 trespassers.

13 The Board looks forward to working with  
14 the Air Force in addressing these options for  
15 mitigating/compensating impacts within the final LEIS  
16 related documents and subsequent legislation. I  
17 would be happy to answer any questions you might have  
18 regarding these comments. Thank you.

19 HEARING OFFICER SWEENEY: Next will be

20 Mr. Louis Benezet.

GE2 21 MR. BENEZET: Thank you. My name is Louie  
22 Benezet. I live in Pioche. And I'm going to speak  
23 today primarily as a private citizen.

24 What I'm going to address specifically is  
25 one of the mitigation measures which was presented by

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1 Mayor Kevin Phillips, specifically, the safe  
2 transport of radioactive waste across the Nellis  
3 Range.

4 For several years the City of Caliente and  
5 Lincoln County have taken a rather controversial  
6 stand on the issue of radioactive waste.

7 They have tried to encourage the placement  
8 of radioactive waste of Lincoln County and transport  
9 through the county as a means of economic  
10 development.

11 However, there is considerable division in  
12 the county over whether such an action would be a  
13 benefit or a risk, primarily to the citizens.

14 The question therefore as to whether safe  
15 conduct or radioactive waste across the Nellis Range  
16 would be a fair mitigation to the citizens of Lincoln  
17 County is pretty much up in the air.

18 Now, I have made an effort over the last  
19 year to try to get some input to our county  
20 government over how the people in Lincoln County feel  
21 about these issues.

22 The significance of the Nellis Range is  
23 very important as far as whether Lincoln County  
24 becomes a corridor for radioactive waste.

25 Any plan to conduct radioactive waste

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1 through Lincoln County comes up against the obstacle  
2 of the Nellis Range; for example, the bills in  
3 Congress to place a temporary storage facility at the  
4 test site and the Yucca Mountain proposal.

5 If radioactive waste were taken off a  
6 train at Caliente, it would then face a 350 mile  
7 truck route or rail route to Mercury or to Yucca  
8 Mountain, going through the towns of Tonopah, Beatty,  
9 Goldfield, and so forth.

10 A route across the Nellis Range greatly  
11 enhances the likelihood that Caliente will be the  
12 corridor for radioactive waste.

13 We placed a question on the ballot this  
14 year to find out how people feel about this role that  
15 Lincoln County might play in the issue.

16 And we showed that 50 percent of Lincoln  
17 County residents throughout our communities would  
18 oppose radioactive waste shipments over our highways  
19 and through our communities.

20 Therefore, whether or not radioactive  
21 waste gets shipped across the Nellis Range is a  
22 controversial issue for us.

23 And I'm here to say, from my perspective,  
24 you're looking at a county that's very divided on  
25 this issue.

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1 And I believe that it should be part of  
2 the record as far as whether that is considered as a  
3 mitigation measure for Lincoln County. Thank you.

4 HEARING OFFICER SWEENEY: Thank you. Next  
5 we have Ms. Margie Detraz. I hope I pronounced that  
6 correctly.

7 MS. DETRAZ: My name is Marjorie Detraz.  
8 I live in Alamo, Nevada.

9 My husband, I would like to state, is a  
10 retired military chief master sergeant, served in the  
11 military, in the Air Force, 22 years. I'm very proud  
12 of him and his service. He tried to give 110 percent  
13 for those 22 years.

14 And as we attended the 50th anniversary at  
15 Nellis Air Force Base and as I looked at the Stealth  
16 Bomber and some of those -- the entire day's  
17 activities, I was so proud that my husband was a part  
18 of this Air Force.

19 And as I looked at the Stealth Bomber, I  
20 was overwhelmed to see what our country was able to  
21 produce.

22 But it had to be done with some research,  
23 and it had to be done in an area that was secure and  
24 safe.

25 And I, 100 percent, want to state my

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1 approval of the Air Force having access to this area  
2 that's in question.

3 I think that the national security comes  
4 above and beyond anything and especially in this day  
5 and time, when we have international terrorist  
6 activities that we know are going to come.

7 There are other serious conditions, and I  
8 think that our -- it's more important that we train  
9 our pilots to protect this nation and that national  
10 security should come first and foremost above all  
11 other considerations. And I thank you very much.

12 HEARING OFFICER SWEENEY: Thank you,  
13 Mrs. Detraz. Next is Kristin Thomas.

14 MS. THOMAS: My name is Kristin Thomas.  
15 I'm a teacher in speech pathology. I live in Alamo,  
16 Nevada, and I was raised in Caliente.

17 My father was a principal of the  
18 elementary school. My mother was a first grade  
19 teacher. And I was brought home here in 1936, so  
20 that you know how long and how much part of Nevada I  
21 have been.

22 I watched the Nellis Air Force Base grow,  
23 and I have been aware of their activity for many,  
24 many years.

25 And I know that in the beginning there

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1 were a lot of mistakes because we weren't checking on  
2 things.

3 But I am so aware of their environmental  
4 studies. My daughter is in environmental law, and  
5 I'm so aware of the things that have been happening.

6 And I know this corridor. I know this  
7 area is absolutely essential because things have  
8 happened.

9 In fact, one of my dearest friends is  
10 Barbara Williamson. Her husband was a colonel of Red  
11 Flag. And he's just a delight.

12 I've had him in my home a few times, and  
13 we've talked about this, how important this area  
14 was. And there is nothing in the world like it. I  
15 mean, there just isn't.

16 And some of these proposals tonight are so  
17 difficult because it's making this very secure, safe  
18 area very insecure. And once it's opened and once  
19 things are changed, our safety everywhere is  
20 changed.

21 And so I just think it should be made the  
22 way it is, and I will support that. Thank you.

23 HEARING OFFICER SWEENEY: Thank you. Next  
24 is Mr. Jim Olds.

25 MR. OLDS: Colonel, I've had my questions

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1 and concerns talked about, and I withdraw my  
 2 statement or question at this time. Thank you.

3 HEARING OFFICER SWEENEY: Thank you. Next  
 4 will be Mr. Larry Wissbeck.

5 MR. WISSBECK: My concerns have been  
 6 addressed by other speakers. I have some written  
 7 comments, which I have submitted.

8 HEARING OFFICER SWEENEY: All right.

9 Thank you. Next is Ms. Connie Simkins.

10 MS. SIMKINS: My name is Connie Simkins,  
 11 and I live in Pioche, Nevada. I'm speaking tonight  
 12 as an individual.

13 There are a number of things that concern  
 14 me about this, but I think it's important to  
 15 reiterate some of the things -- what some of the  
 16 previous speakers have said about national security  
 17 and the need for the military presence and the need  
 18 for the military training.

19 We have always looked upon ourselves as  
 20 very patriotic. And in my personal family, I have an  
 21 uncle who was a prisoner of war in Vietnam for five  
 22 years and ten months. So we understand the  
 23 importance of the military presence, and we  
 24 understand the training -- the importance of the  
 25 training.

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1 My concerns this evening center more  
 2 around process and procedures rather than the  
 3 contents of this report.

4 Obviously, I hadn't seen the report until  
 5 I walked in the building this evening. And you can't  
 6 digest a 3-inch report in an hour or two.

7 I feel like you should have done a better  
 8 job earlier on to let more people know about this  
 9 hearing. And I think you should have made a  
 10 concerted effort to get these books available in the  
 11 community, in the schools, in the libraries, public  
 12 access, in advance of this meeting so that the people  
 13 who choose to learn what is in this book could speak  
 14 intelligently through this public comment process  
 15 this evening.

16 One of the phrases that I did come across  
 17 in the book talks about cumulative impacts. This is  
 18 something that I've been interested in in a volunteer  
 19 job that I have with the Nevada Test Site Community  
 20 Advisory Board.

21 And I do not speak for the Community  
 22 Advisory Board this evening, but these next few  
 23 comments are things that I have learned from them  
 24 through serving on the board.

25 And the Nevada Test Site is currently

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1 work there. They have an impact to the people  
2 working for the government in the surrounding areas.

3 So the impact, the noise and the sonic  
4 booms and the other things that you -- the water, the  
5 things that you have discussed in your report, should  
6 be considered cumulatively with these other projects  
7 in the same area there.

8 It has concerned me somewhat the way the  
9 wild horse population on the Nellis bombing range has  
10 been handled in the past.

11 I am not in support of the way the Bureau  
12 of Land Management has managed a number of these  
13 horses.

14 I am in contact with the government  
15 contractor who is paid to do the gatherings of these  
16 horses on the Nellis Range.

17 Last year when we had the severe drought,  
18 some of these horses were gathered three times. They  
19 put them in a corral and keep them for a few days and  
20 think it's okay. "This guy is old enough. They're  
21 going to die anyway." Some of these older horses  
22 that were in dire need for food and water were  
23 gathered three times.

24 And I'm not in favor of that. I do not  
25 see myself as an avid horse lover, but I do

AF-13  
DOE-4

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1 undergoing an EIS. Your Nellis Range is currently  
2 undergoing an EIS sometime in the near future. We  
3 understand the Yucca Mountain project will be  
4 undergoing an EIS.

5 It is my serious contention to you that  
6 the impacts of each of these activities should be  
7 considered cumulatively.

8 You and the Air Force do not consist in a  
9 vacuum nor does the current operations at the  
10 ordinary part of the Nevada test site nor will the  
11 Yucca Mountain project if it becomes in place on this  
12 Nevada test site.

13 For instance, the thing that I'm most  
14 interested in is transportation. If one of your  
15 military trucks is taking something out to your  
16 installations that's necessary and prudent, and  
17 another truck is going onto the Nevada test site, and  
18 another truck is going onto the Yucca Mountain  
19 project, you don't have one truck; you have three  
20 trucks.

21 And so you need to have the cumulative  
22 impacts of each one of those trucks no matter what  
23 they're carrying.

24 They still have an impact to the  
25 environment. They have an impact to the people that

AF-13  
DOE-4

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1 understand that a horse needs food and water.  
 2 And the horse population on the Nellis  
 3 Range has been handled very poorly in the past. I  
 4 encourage you to seek out citizen board members or  
 5 the group that makes the decisions on how to manage  
 6 these horses.

7 And the same comment goes with -- I think  
 8 you should create a citizens board to somewhat review  
 9 the activities that you will -- not the military  
 10 activities, but the resource management activities on  
 11 the Nellis Range.

12 There are people living here that know  
 13 about the mining activities. There are people living  
 14 here that know what is healthy for a horse and what  
 15 is healthy for a cow and what it takes to support a  
 16 wildlife population.

17 Those kinds of citizens should be sought  
 18 out and use their expertise in how to better manage  
 19 what goes on on the range.

20 HEARING OFFICER SWEENEY: Ms. Simkins,  
 21 your time has expired.

22 MS. SIMKINS: I just have a couple more  
 23 comments.

24 HEARING OFFICER SWEENEY: Please, go  
 25 ahead.

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1 MS. SIMKINS: One of the other things you  
 2 talk about in the book is public safety and the  
 3 flares that you send during your military operations  
 4 and the burning it does and the rehabilitation costs  
 5 that you never seem to get around to helping us with.

6 I personally support you obtaining this  
 7 renewal. I would like to see the legislation call  
 8 for clarification of how you manage the resources on  
 9 this range, not how you do your military, because I  
 10 don't think any private citizens are qualified to do  
 11 that, but the resources that are there.

12 I support your continued monitoring and  
 13 research. And I think the legislation should call  
 14 for a regularly accountable way for you to report  
 15 back to the public and receive public input. It  
 16 shouldn't have to happen once every 20 years. It  
 17 should be at least once a year. Thank you.

18 HEARING OFFICER SWEENEY: Thank you,  
 19 Ms. Simkins.

20 Our next speaker is Mr. William Revell.

21 MR. REVELL: Gentlemen, my name is Bill  
 22 Revell, and I reside in Caliente, Nevada. And I'm  
 23 also a businessman in Caliente, Nevada.

24 My remarks were well covered by the mayor  
 25 of Caliente and the commissioner that represents me.

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1 And I want to thank you.

2 HEARING OFFICER SWEENEY: Thank you,

3 Mr. Revel.

4 MS. SIMKINS: May I say one more

5 sentence?

6 HEARING OFFICER SWEENEY: Those are all

7 the people that indicated a desire to speak. If

8 there is anyone who is frustrated because of the time

9 limit --

10 MS. SIMKINS: I did not say that. You

11 said this is designed for public comment.

12 HEARING OFFICER SWEENEY: You may use your

13 public comment time to ask clarifying questions, and

14 if we are able to answer them --

15 UNIDENTIFIED SPEAKER: I thought when we

16 get more into the informal portion, after we closed

17 the formal portion of the hearing --

18 HEARING OFFICER SWEENEY: If you have

19 questions for any of the Air Force people who are

20 present in the room, please feel free to do that.

21 Ms. Simkins, would you like to add

22 additional comments?

23 MS. SIMKINS: My additional comment has to

24 do with the possibility of a rail corridor onto the

25 bombing range. There's been talk about low-level

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1 waste.

2 But my comment is not concerning either

3 one of those. My comment centers around private

4 industry. I would like to see the legislation

5 contain provisions that private industry would have

6 the opportunity to use this rail as -- if it is ever

7 built -- for whichever reason the Congress decides.

8 There are alfalfa farmers that can put them in the

9 cubes.

10 I would like to see the provision in the

11 legislation that guarantees public access to this

12 rail if the choice -- if the decision is made to

13 build it.

14 HEARING OFFICER SWEENEY: Thank you.

15 Mr. Uehling, did you want to add public comment?

16 MR. UEBLING: Yes, I'm sorry, I had a

17 question. Perhaps my comments would be answered by a

18 question.

19 My comment is that it's just amazing to me

20 how the process here that's being put forward

21 demonstrates how far afield we are of the original

22 intent of our government.

23 The original intent of the government was

24 that the local government and the people would have

25 the power, and the federal government would come to

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1 those people and ask them for permission to do  
 2 certain things.  
 3 The federal government seeks permission,  
 4 seeks consent from the people, but here these people  
 5 are having things taken away from them. And they're  
 6 having to come and plead with you to compensate them  
 7 for the things that you're taking away from them.  
 8 And that is just the total reverse of the  
 9 4th Amendment. It's the total reverse of the 10th  
 10 Amendment. It just demonstrates how far afield of  
 11 the intent of the Constitution we are. And I just  
 12 wanted to make note of that.  
 13 There's nothing in the Constitution that  
 14 gives an agency of the federal government the powers  
 15 of, in essence, a government. And yet that's what  
 16 you're doing. You're taking away these people's  
 17 privacy.  
 18 I don't live up here. But you're taking  
 19 away their peace of mind. You're taking away their  
 20 ability to deal with environmental dangers. And  
 21 you're not compensating them one penny.  
 22 And the 4th Amendment calls for  
 23 compensation. You cannot take people's property away  
 24 from them without compensating them for that.  
 25 Now, we can go into things like what has

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1 been mentioned here, that security is above all. I  
 2 don't think that's written in the Constitution, that  
 3 just because you represent the security of the  
 4 country in some way, you have the right to destroy  
 5 all our freedoms, all our constitutional  
 6 protections.  
 7 What do we have -- what do we gain with  
 8 all this security if we lose our freedom in the  
 9 process? And that's exactly what's happening here.  
 10 And this whole process illustrates it so well.  
 11 HEARING OFFICER SWEENEY: Thank you,  
 12 Mr. Uehling. Your questions are more process  
 13 focused. And I believe that perhaps either myself or  
 14 possibly Colonel Fukey can talk to you privately and  
 15 maybe we can --  
 16 MR. UEHLING: I didn't deal with my  
 17 question at all.  
 18 HEARING OFFICER SWEENEY: And your  
 19 question is?  
 20 MR. UEHLING: You indicated here that we  
 21 really are considering two things. One is the  
 22 environmental impact study, and the other is the --  
 23 this legislative environmental impact statement, and  
 24 the other is the withdrawal application of the BLM.  
 25 Where is the withdrawal? What is that?

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1 Where is it? How do we get it? How do we discuss  
 2 it? Are we able to make any comments about that?  
 3 What is it?  
 4 COLONEL FUKEY: Sir, the purpose of this  
 5 evening's activity is to provide the withdrawal  
 6 alternatives that I mentioned earlier. Alternatives  
 7 1A, 2A, 1B, and 2B are different alternatives that we  
 8 are presenting to BLM and that we will be presenting  
 9 to Congress as different options for the Congress to  
 10 consider for the potential -- the proposed withdrawal  
 11 of the Nellis Air Force Range, the LEIS which you  
 12 have in front of you, which have been on the streets  
 13 since September. It also goes into what the current  
 14 environmental situation is on the range.

15 Then we presented the alternatives. And  
 16 in the LEIS we have each of those alternatives as far  
 17 as those 14 protocols which I had up on the board  
 18 earlier, to discuss what the environmental impact  
 19 would be for each of those alternatives, to present  
 20 clear studies, evidence to the public, for them to  
 21 decide.

22 If there is something you have a concern  
 23 about present your public comments. Those public  
 24 comments, the transcripts for tonight's meeting, and  
 25 all the transcripts for all of the public hearings

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1 will be in the final LEIS as well as our response to  
 2 your comments. Does that help?

3 MR. UEHLING: I still want to know, where  
 4 is the application? Where is the BLM? They are not  
 5 here at this meeting.

6 MR. OLDS: My name is Jim Olds. I'm not  
 7 from this area. I would like to be from this area.

8 My major question that has developed  
 9 through this at this point is, where is BLM? I had  
 10 some questions earlier that I thought were really  
 11 applicable to a BLM person answering the question  
 12 and. That's why I kind of didn't go into my question  
 13 at that time.

14 But just a few moments ago and even more  
 15 adamantly, where is BLM? Because they are the ones  
 16 that are pushing this whole thing, pushing the Air  
 17 Force to do what they have to do. And they are out  
 18 someplace not accountable for anything.

19 COLONEL FUKEY: BLM has been with us the  
 20 last two nights. And we were given the name of a BLM  
 21 representative. I do not know the reason.

22 MR. OLDS: Yes, sir, I appreciate what you  
 23 say. My consolation, if that's an appropriate word,  
 24 is directed to BLM, because they are the ones who  
 25 have started this whole thing, by putting you folks

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1 in the position, putting us in the position. And  
 2 they are not here to answer anything. And I think  
 3 that's kind of bad.  
 4 COLONEL FUXEY: Your comments are part of  
 5 the record. BLM will certainly see them.  
 6 MR. OLDS: I just wondered how can the  
 7 public continue to be involved in this process and,  
 8 specifically, in the resource management plan.  
 9 COLONEL FUXEY: What we initiated some  
 10 time ago was a five-party cooperative agreement. The  
 11 five parties are the Department of Energy, the Air  
 12 Force, BLM, Fish and Wildlife Service, and the Air  
 13 Force.  
 14 There is going to be a public meeting,  
 15 probably in the mid to late January time frame, of  
 16 those five parties. The public is invited.  
 17 The basic genesis for the organization is  
 18 so that we can have a commonality of the ego system,  
 19 to do it by diversity.  
 20 As I said, each of those agencies will be  
 21 available to answer your questions and take your  
 22 comments at that time. Likewise, on a repetitive  
 23 basis, the five-party cooperative will be one meeting  
 24 each year, which is open to the public.  
 25 MR. OLDS: How do we find out when and

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1 where?  
 2 COLONEL FUXEY: It will be published.  
 3 MR. OLDS: Where?  
 4 COLONEL FUXEY: In the newspapers.  
 5 MR. OLDS: Which paper?  
 6 COLONEL PERCIVAL: We'll make sure that  
 7 the information gets up here. We'll deal with the  
 8 same folks that spread the word about tonight.  
 9 MR. FLAKE: Rey Flake from Caliente. If I  
 10 may make a comment.  
 11 Number one, I think your five-party  
 12 agreement is lacking. I think that some counties and  
 13 some local government should be involved in that.  
 14 I think that we shouldn't be continually  
 15 run over with federal agencies when it's local  
 16 decisions and local input that need to be put in  
 17 there. So I think that that's a bureaucracy  
 18 organization.  
 19 Also, to echo on the wild horses: I've  
 20 been on the Nevada wild horse range, which is on the  
 21 Nellis Range, about three times. The times that I  
 22 have been there, the resource has been over 90  
 23 percent utilization. There's been horses dying. In  
 24 fact, we've called people out to put horses down.  
 25 I know that BLM manages the horses on the

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1 Nellis Air Force Range. I know there's an  
2 environmental hold by your organization to let this  
3 happen by anybody to trash the resource and let the  
4 horses die. I think that you should be more  
5 responsible if this is withdrawn land, BLM, no matter  
6 what.

7 MR. UEHLING: I just want to put in  
8 perspective what the financial aspects are. Your  
9 agency has a budget of around 3,000 million dollars.  
10 These people are asking for a million dollars --  
11 3,000 million dollars that you spend for golf  
12 courses, for fancy housing, for travel, for health  
13 benefits, for salaries for consultants, for all sorts  
14 of things.

15 And I'm sure that these people feel like  
16 they're asking for the moon, for something with one  
17 of those \$300,000, and I bet they don't get it.

18 HEARING OFFICER SWEENEY: Is there anybody  
19 else that would like to add to the public comment  
20 period?

21 And could you restate your name for the  
22 record, please.

23 MR. BENEZET: Louis Benezet from Pioche.  
24 I'd like to point out a couple of things  
25 that were said earlier and show my support for the

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1 idea of, number one, a limited term withdrawal. And  
2 I'd like to explain why I feel that way.

3 When I first became aware of Nellis's role  
4 in Lincoln County was when I was at a County  
5 Commissioners meeting. A rancher from Santa Fe  
6 Springs Valley said, "Do you know what they are doing  
7 out there? They are keeping us off the range."

8 At that time the Air Force was going  
9 through the process of their renewal, their 25-year  
10 withdrawal coming to an end. They felt the need for  
11 a buffer. There were a couple of raising allotments  
12 in the area.

13 In the process of applying for their  
14 renewal, they simply put those townships and ranges  
15 into the Nellis range and sent it on to Congress,  
16 assuming this would get rubber-stamped.

17 And it created a bit of a furor. And the  
18 Air Force had to come back to the table. I think  
19 they were granted a two-year withdrawal while they  
20 went through the process of preparing a special  
21 environmental statement for the whole Nellis  
22 withdrawal.

23 And when Congress finally granted the Air  
24 Force that withdrawal, they also put a limit on the  
25 time of the whole Nellis withdrawal, limiting it to

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1 15 years as opposed to the 25 years, which it had  
2 been prior to that.

3 Since that time, I think there are a lot  
4 of us in Lincoln County and in the state of Nevada  
5 that felt the Air Force -- and a lot were out of  
6 line -- and the military was arrogant in Nevada.

7 During that 15 years that has lapsed --  
8 since then, we have seen a change. And I think that  
9 most of us here in Lincoln County feel that the Air  
10 Force are better neighbors than over 15 years ago.

11 Part of that is because you have to come  
12 back to the table, to Congress, and say, "We need  
13 this again."

14 And here is why this is a very important  
15 exercise. I know that there are those of you who say  
16 this should be an indefinite withdrawal. It costs us  
17 a lot of money to jump through this hoop.

18 But I think it's worth the expense, and it  
19 provides the people in the area where you fly to  
20 comment, if they have any concerns about anything  
21 that is going on, to voice those concerns.

22 Therefore, I am very much in favor of limited term  
23 withdrawal for the next stretch.

24 In addition to that, Ms. Simkins raised  
25 the issue of some sort of an advisory committee being

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1 set up. I believe it would be worth the expense to  
2 have some sort of federally authorized advisory  
3 committee, similar to what they have at the Nevada  
4 test might, to continue ongoing observation and  
5 relationship with the Air Force and with managers of  
6 the land here.

7 And I would add one thing to that, that  
8 the meetings should be held in the surrounding areas,  
9 rotating around, so that people in Lincoln County can  
10 actually go to these meetings and participate,  
11 hearing what's going on, become educated about what  
12 the issues are and give their input.

13 I think Las Vegas is a long ways for us to  
14 get to the meetings. Thank you.

15 HEARING OFFICER SWENEY: Thank you. IS  
16 there anyone further who would like to speak before  
17 we close the formal public comment period?

18 MS. THOMAS: Kristin Thomas, Alamo,  
19 Nevada.

20 I am going to comment and agree with  
21 something that was said. I agree that there could be  
22 a limit. And I also agree that you have been much  
23 better neighbors the last 15 years because of the  
24 environmental impact, that you really cared about  
25 that.

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1 To the people who are not native Nevadans,  
 2 you don't know that it was a government land to begin  
 3 with. And we knew, those of us moving here, that  
 4 much of this property was already government  
 5 property. I mean, we knew this. So anybody studying  
 6 Nevada history realizes that this is a unique state  
 7 to begin with, number one; and, number two, that the  
 8 area that has been used is unique, and there is no  
 9 other way to duplicate it.  
 10 We knew that, and we have known it. And  
 11 it's very hard for people just moving in and not  
 12 having that as a history -- it's very hard for them  
 13 to realize why this is so important.  
 14 But the one thing that was nicely  
 15 commented on by Connie and by Louie is that we -- it  
 16 doesn't have to be the business people so much that  
 17 are a part of this committee. It should be citizens  
 18 that have children, that have cattle, that have a  
 19 very big stake in this community. They should have  
 20 some comment.  
 21 And we should be allowed to comment  
 22 whenever we can and be a part of it, not for a  
 23 million dollars a year. That isn't important.  
 24 What's important is that we all feel like  
 25 we're all working together for one common purpose.

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1 And I think that really is essential. And we have to  
 2 have a voice in it, because it is part of it.  
 3 HEARING OFFICER SWEENEY: Thank you,  
 4 Ms. Thomas. If there are no further comments, since  
 5 we said the hearing will go until 10:00 o'clock, what  
 6 I propose we do is, we recess the formal portion of  
 7 the hearing.  
 8 And then Air Force officials, technical  
 9 experts, will be available to answer questions, as we  
 10 indicated, at the displays.  
 11 If no one comes and would like to have  
 12 their comments made part of the formal record, then  
 13 there will be no need to reopen, and we will adjourn  
 14 for the evening. Sometime after that we will recess  
 15 the hearing.  
 16 This is the third of several hearings.  
 17 The next meaning will be tomorrow night. It will be  
 18 held in Pahrump, Nevada, at Pahrump Valley High  
 19 School.  
 20 On the agenda that you saw before: 6:30  
 21 open house and informal discussions, 7:30 starting  
 22 with the more formal portion of the meeting, and  
 23 ending approximately 10:00 o'clock.  
 24 Then on Friday the 13th we will be at  
 25 Beatty High School in Beatty, Nevada. And then on

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1 the 16th, Monday, we will be in Tonopah, Nevada, at  
2 the Tonopah Convention Center. And then on the 17th  
3 we will be at the Airport Plaza Hotel in Reno,  
4 Nevada.

5 Is there anything further by way of public  
6 comments at this time?

7 We'll recess the hearing, as I've  
8 indicated, and Air Force officials will be  
9 available. Thank you very much.

10 (Thereupon, the proceedings  
11 were adjourned at 9:10 p.m.)

12 -000-

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LEIS PUBLIC MEETING 11/12/98 8400 1

**ORIGINAL**

\* \* \* \* \*

PUBLIC INFORMATIONAL MEETING REGARDING  
THE RENEWAL OF THE NELLIS  
AIR FORCE RANGE LAND WITHDRAWAL

DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

\* \* \* \* \*

Held at Pahrump Valley High School  
501 Calbada  
Pahrump, Nevada 89049

On Thursday, November 12, 1998  
At 7:30 p.m.

Reported by: Christy Kirker, RPR, CCR 583

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APPEARANCES:

For the United States Air Force:  
Colonel Pat Sweeney 3  
Colonel Bill Percival 8  
Colonel Mike Fukey 18

Public Speaker:  
Charles Hollis 32  
Geneva Neuhauser 33  
Kelly Keenan 34  
Mike Cosgrove 35

\* \* \* \* \*

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1 that if you do have any extra copies of your remarks,  
 2 that you leave them with her so that will assist her  
 3 in accurately reflecting any names or places that you  
 4 may use during your public comment.

5 As I indicated, the transcripts of these  
 6 proceedings will become part of the record of the  
 7 hearing and will be included in the final LEIS and  
 8 that is very important for the court reporter to keep  
 9 a complete report which she can only do if she can  
 10 hear and understand what you say. So please speak  
 11 very clearly and slowly and loud enough for each  
 12 person in this room to hear you.

13 All right. We'll take a brief break of  
 14 approximately ten minutes and receive public comments  
 15 from any of you who desire to be heard.

16 (A brief recess was taken.)

17 HEARING OFFICER SWEENEY: We now would  
 18 like to begin the public comment period. We have  
 19 three people who indicated a desire to make remarks,  
 20 and we'll begin first with Mr. Charles Hollis, who is  
 21 the Chairman of the Pahrump Town Board.

22 SPEAKER 1: My name is Charles Hollis, and  
 23 my address is P.O. Box 1847, Pahrump, Nevada 89041.  
 24 I'm here to address the portion, if I may, of this  
 25 area here.

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1 HEARING OFFICER SWEENEY: Thank you.  
 2 SPEAKER 1: The reason why I would like to  
 3 see this withdrawal is because of the high  
 4 mineralization in this area, and it means a lot to my  
 5 county as far as net proceeds, and that's taxes to  
 6 us, and this would be an economic boost for us if  
 7 this is withdrawn, and I would just like you to know  
 8 that if there is any way, we would like this piece of  
 9 land withdrawn and put back to multiple use. Thank  
 10 you.

11 HEARING OFFICER SWEENEY: I think what you  
 12 really meant to say is not have it withdrawn. The  
 13 purpose of what we are doing is action alternatives  
 14 to continue to withdraw so you would like to not  
 15 withdraw that area, not to have the government keep  
 16 using it. The terminology can be confusing. What  
 17 the Air Force is talking about withdrawing land for  
 18 military purposes and you're asking that a portion,  
 19 the portion marked in red above proposal 1B and 2B  
 20 not be withdrawn for military purposes because of the  
 21 mineral rights.

22 SPEAKER 1: Right.  
 23 HEARING OFFICER SWEENEY: Our next speaker  
 24 is Ms. Geneva Neuhauser for Nye County.  
 25 SPEAKER 2: Geneva Neuhauser, Nye County

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1 Budget Director. My address is P.O. Box 371, Tom Tom  
2 Nevada 89049; and I just want to reiterate what  
3 Mr. Hollis and current town Chairman said, that  
4 economically for Nye County, if that was in, could be  
5 used for mining and other economic issues that that  
6 would be better left that way as in 1B.

7 HEARING OFFICER SWEENEY: Thank you. Next  
8 we have Kristina and Kelly Keenan. Which one desires  
9 to speak?

10 GE-1 SPEAKER 3: I'm here as a citizen. My  
11 name is Kelly Keenan. I am here to say I think we  
12 should keep as much land as we can for the safety and  
13 the public as much as we can keep it and just for  
14 National Defense.

15 I think we need it in other countries, and  
16 other countries need it to come over here and train  
17 to help our country. If we give it back, how much  
18 more land is the -- if we give up land, how much  
19 later on will they want, the state, the county, or  
20 whoever? If we give it up now, how much more will  
21 they want? I think they should keep it all.

22 HEARING OFFICER SWEENEY: I want to make  
23 sure. It sounds like you're saying that amount of  
24 land that the Air Force has already withdrawn for  
25 military purposes, should be held onto, and the

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1 withdrawal should be renewed; is that correct?

2 SPEAKER 3: Yes, sir.

3 HEARING OFFICER SWEENEY: Thank you.

4 Those are the only

5 three people who indicated a desire to speak. Is  
6 there anyone else present who would like to make a  
7 public comment; or the three, would they like revise  
8 or add to their remarks?

9 HEARING OFFICER SWEENEY: Please.

10 GE-1 SPEAKER 4: My name is Mike Cosgrove. I'm  
11 the town manager for the town of Pahrump. I live at  
12 361 Twilight Avenue in Pahrump. One of the main  
13 concerns I had with this whole project is the growth  
14 in Pahrump. We've exceeded 30,000 people. After  
15 looking at the proposal, I support wholeheartedly the  
16 withdrawal.

17 My only concern was the area Gary Hollis  
18 had pointed out. However, it looks like it's a good  
19 strong support. I do not realize anyplace in the  
20 United States where this type of land is available  
21 for this type of training; so I would say that as a  
22 citizen of Pahrump, I support it as a town manager.  
23 I am concerned about the growth of Pahrump and the  
24 effects it may have on us. Thank you.

25 HEARING OFFICER SWEENEY: Thank you. We

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1 do have a card for you; is that correct? We do have  
2 a card filled out? Thank you.

3 Ladies and gentlemen, if there is no one  
4 further who would like to make public comments this  
5 evening, what we'll do is to recess the formal  
6 portion of the hearing, and then the Air Force  
7 officials at the displays will answer some of your  
8 more informal comments, if you would like.

9 I'd like to, before we close the hearing,  
10 give you information as to the other hearings that we  
11 will have on this proposal, that will still be coming  
12 up.

13 Tomorrow evening will be at Beatty High  
14 School in Beatty, Nevada. On Monday the 16th will be  
15 at Tonopah Convention Center in Tonopah, Nevada; then  
16 Tuesday the 17th of November will be at Airport Plaza  
17 Hotel in Reno, Nevada; so any of you are welcome to  
18 join us at those locations as well.

19 Is there anything further by anyone who is  
20 attending this hearing or any questions that you  
21 have? Thank you and good night. This hearing is  
22 adjourned.

23 (Thereupon, the proceedings were  
24 concluded at 9:00 p.m.)  
25

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LEIS PUBLIC MEETING 11/13/98 8500 1

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PUBLIC INFORMATIONAL MEETING REGARDING  
THE RENEWAL OF THE NELLIS  
AIR FORCE RANGE LAND WITHDRAWAL

DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

\* \* \* \* \*

Held at Beatty High School  
1 Hornet Avenue  
Beatty, Nevada 89003

On Friday, November 13, 1998  
At 7:30 p.m.

Reported by: FELICIA RENE ZABIN, RPR  
NV CCR No. 478, CA CSR No. 11180

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APPEARANCES:

PAGE

For the United States Air Force:

Colonel Pat Sweeney 3  
Colonel Bill Percival 8  
Colonel Mike Fukey 10

Public Speaker:

Sandy Harmon 33

\* \* \* \* \*

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1 the public comment period. We only have two  
 2 individuals who have asked to speak. So if someone  
 3 else would like to reconsider whether they'd like to  
 4 speak please, feel free to do so.

5 First, we'll hear from Mr. Sandy Harmon.

6 MR. HARMON: Good evening. I'm Sandy

7 Harmon, Executive Director for the Economic  
 8 Development Authority of Esmeralda and Nye Counties;  
 9 that's 122,000 square miles of this part of the  
 10 state. I'm from Tonopah, Nevada, covering this  
 11 entire area.

12 I wish to address socioeconomic issues  
 13 raised in the LEIS. A statement was made a while ago  
 14 backed up in the LEIS and the summary regarding loss  
 15 of jobs in the No-Action scenario. This raises a  
 16 point of concern and contention in the area aside  
 17 from the other concerns, the loss of 300 jobs.

18 It's been found that the jobs counted in  
 19 this county are by people that work in this county on  
 20 federal reservations but do not in fact reside in  
 21 this county. Very few of your employees at Nellis  
 22 Range or anywhere else actually reside in Nye  
 23 County.

24 Typical of other federal reservations, the  
 25 goodies are all done here; the garbage is left here;

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LEIS PUBLIC MEETING 11/13/98 8500 34

1 and the money also leaves here. That is a concern  
 2 that needs to be addressed.

3 In that same area of concern,  
 4 socioeconomic, it's mentioned that the No-Action --  
 5 or the other actions scenarios -- excuse me -- the  
 6 four of them would result in no change in the  
 7 socioeconomic of the area and that in itself is a  
 8 great difficulty. Lack of change in economics is  
 9 death; slow strangulation, which we are certainly  
 10 facing here. Anybody that's known this area for any  
 11 period of time can see that. We are very rapidly  
 12 being strangled. And not all, of course, the blame  
 13 could be laid on federal reservations.

14 However, this is the second or third  
 15 arguably largest county, Nye by itself, in the  
 16 continent of the United States and it is 93.5 percent  
 17 federally owned in this area. That equates to  
 18 essentially the Nellis Range as well as NTS up north,  
 19 Tonopah Test Range.

20 Some land has been offered, or some lands  
 21 proposed, to be released for mining and agriculture.  
 22 Specifically two mining areas is represented in the  
 23 right area just very near to the town of Beatty. A  
 24 number of other areas have been active mining areas,  
 25 and we -- in our written notes from the Economic

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1 Development Authority and our written comments, we  
2 have identified these. So I don't need to repeat  
3 them this evening. But there are a number of other  
4 demonstrated mining districts that have been  
5 arbitrarily closed off and shut down.  
6 Now, while we need these mining districts,  
7 in the summary and in the draft full document itself  
8 it's identified that the 1B and 2B proposals would  
9 release some land for mining and agriculture. As I  
10 mentioned, we do need even more land for mining and  
11 for agriculture.

12 However, mining and agriculture has been  
13 the stable economic base of this area for a great  
14 number of years, and it's a base that's dwindling.  
15 The price of gold has demonstrated how drastically  
16 affected we are, especially here in the town of  
17 Beatty, with the pending closure of the last real  
18 gold mine and the town's last major employer. We  
19 need to diversify. This is the charge given to my  
20 organization is to diversify the economy of the area,  
21 which means we must get away from dependence on  
22 mining and agriculture. Hence the need for  
23 additional land.  
24 We are currently working on a number of  
25 projects that will diversify the economy away from

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1 mining and agriculture, again, maintaining a mining  
2 and agricultural and industrial base here. That's  
3 always good money, almost cyclic in nature, both of  
4 those industries. We need to get away from that.  
5 But, again, we need some land. And there's very  
6 little available.

7 We could also use greater involvement.  
8 This is not identified in socioeconomic indicators in  
9 either of the initial comments or in the current  
10 Draft LEIS. It's something I wish to see addressed  
11 in the final version. And that is, as I mentioned  
12 earlier, 300 jobs; very few of those related to  
13 here.

14 The jobs that are occurring in this area,  
15 and primarily through contractors, on various lengths  
16 and terms of their contracts, short-term through  
17 multiple years, from prime contractors to  
18 subcontractors. These people come into the area as a  
19 rule; no administrative facilities; very little in  
20 the way of operational facilities; and has an impact  
21 on the economic base, the employment base of the  
22 area.

23 The people that do come in here into the  
24 area to work, such as the Antomechi (phonetic) people  
25 and the rest of it, are considered transients. They

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1 live in motel rooms; do not rent houses, apartments,  
2 or any of the other housing infrastructure that's  
3 available in the area. By staying in the hotel rooms  
4 at the government rate, there are no room taxes  
5 collected. The room taxes essential for these  
6 communities to develop and diversify their economic  
7 base as well as to attract tourism. This money is  
8 not collected even though the occupancy rate is very  
9 high.

10 We would hope that the Air Force will  
11 understand that we have very little support. Some  
12 contractors do occasionally come in and assist with  
13 the educational system and the rest. There are no  
14 stable employments offered to the people that have  
15 lived in these areas for a number of years.

16 We are finding this out right now not with  
17 the Nellis Range but with Nevada Test Site. People  
18 here losing their jobs at the mine cannot make  
19 themselves available for the jobs that are opening at  
20 NTS. Because everything is done out of Las Vegas,  
21 people here do not get the jobs.

22 We would like to see the Air Force address  
23 this issue and become a much better neighbor to Nye  
24 and Esmeralda Counties by bringing some business that  
25 they now spend a lot of money with in Clark County in

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1 bringing that business up here, making jobs  
2 available, requiring contractors to interact with the  
3 communities, being supportive of the Chamber of  
4 Commerce, being supportive of the educational system,  
5 being supportive of economic development and local  
6 government. This is essential to the survival and  
7 hopefully diversification of our base down the road  
8 in the next few years. Thank-you.

HEARING OFFICER SWEENEY: Thank-you,

9 Mr. Harmon.

10 Our next speaker is identified as George.

11 All right. Those are the only two  
12 individuals we had that indicated a desire to speak.  
13 Is there anyone else at this point that would like to  
14 make a public comment? Apparently not.

15 What we'll do, then, is recess the hearing  
16 since we're projected to be available until 10:00  
17 o'clock. And the Air Force officials will remain  
18 available to answer questions around the displays.  
19 And if it appears at some point that there's no  
20 further questions and no one else is coming, then  
21 we'll adjourn the proceeding for the evening.  
22 Thank-you very much for coming. We'll recess the  
23 proceeding at this time.

(Thereupon, the meeting concluded.)

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TONOPAH, NEVADA, MONDAY, NOVEMBER 16, 1998, 7:30 P.M.

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COL. SWEENEY: Before beginning to take your oral comments, I'd like to announce that we have a number of dignitaries with us tonight but who will not be speaking, but have thought enough of the process to attend. We have Miss Susan Dudley, who's the Chairman of the Esmeralda County Chairman, or Esmeralda County Commission, excuse me. Miss Harriet Ebey, who's Esmeralda County Commissioner Elect. Miss Cindy Cominsky from the Tonopah Town Board, and Mr. Bob Sorenson who's the Manager of the town of Tonopah. Thank you all for being with us.

We will now begin the public comment period by hearing from those who have asked to speak. First we'll hear from Miss Lynn Johnson who's speaking for Mr. Sandy Harmon from the EDEN, or the Economic Development Authority of Esmeralda/Nye.

LYNN JOHNSON: I just have a letter that my boss has written and has asked me to read into the record and I'm just going to read the letter and then I'm going to sit down and it says Sirs, as the Economic Development Authority charged with improving the job base, tax base and quality of life for the County of Nye which contains a large portion of, and has been impacted by the Nellis Air Force Range, and the County of Esmeralda which abuts and is impacted by the same federal reservation, I wish to address our concerns related to the renewal of the withdrawal of these lands and proposed alternatives thereto.

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Nye and Esmeralda Counties have born the brunt of various federal programs over the years. Nye County is better than 93 percent federally owned, Esmeralda in excess of 97 percent federally owned. A sizable portion of this land has been used for testing and training which involves nuclear and conventional arms and munitions, along with the use of many toxic chemicals. As a result, much of our land has been rendered dangerous, deadly to man, useless, and non-productive for countless generations to come. The economic benefit of various federal projects on this land over the years has been received primarily the urban area to the south and outside of Nye and Esmeralda Counties. Local benefits have been minimal and cyclic in nature. Our very survival depends on generating a diversified economic base which is not dependent on federal activities. This diversification mandates that land be available for the various industries attracted to our area, especially mining.

We find Alternatives 1A and 2A as offering no relief from current conditions and are therefore unacceptable. The No-Action Alternative may appear palatable to many local residents and businesses at first glance, however, the adverse impact on training missions which affect national security are worthy of careful consideration. The residents of this area are well known for their sacrifices and support of the defense of our country. Further concern over whether or not that land which is safe for use by the public would be returned to the state and/or counties makes this a less than desirable alternative without considerable public input and guarantees. The loss of our few local jobs related to NAFR occurring under this scenario is of concern as well. We believe that the only two alternatives contain some benefits for our area and are worthy

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1 of further consideration and discussions, namely 1B and 2B. Alternative 1B offers the  
 2 release of 30,000 to 35,000 acres from military use with no designation as to any planned  
 3 recipients but which we hope would be returned to the state or county preferably for  
 4 disposal to the private sector for consumptive and other uses. Not only do we request  
 5 that this land be returned formally to local government for beneficial use but believe  
 6 that the acreage be increased beyond the Wagner and Clarksdale districts. It is our  
 7 desire that 15,360 acres comprising the eastern Goldfield district be returned to local  
 8 control benefiting the town of Goldfield which has been the recipient of many adverse  
 9 economic impacts over the years.

10 We also urge the release of land comprising the following mining districts:  
 11 Reveille Valley, 2,560 acres, Quail Springs, 5,120 acres, Silverbow, 7,680 acres, Cactus  
 12 Flat, 30,720 acres, Cactus Peak, 22,400 acres, south of Mud Lake, 7,680 acres, Gold  
 13 Crater, 3,840 acres, Thirsty Canyon, 16,640 acres and Transval, 6,400 acres. These  
 14 districts contain proven reserves of precious and industrial minerals and have been  
 15 actively worked prior to their being withdrawn by federal edict. Today's modern  
 16 recovery techniques for these previously worked mineral deposits would result in  
 17 considerable improvement to our economy.

18 Of notable concern is the proposed indefinite withdrawal contained in this  
 19 alternative. We agree completely with local and county government that withdrawals  
 20 of land in our areas should be authorized for periods of no more than 15 years.  
 21 Additionally, the proposed areas of co-use would allow certain activities for periods of  
 22 only one year. It is our desire to see much longer guarantees of public access take to

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1 these areas. Language proposing co-use includes the term non-consumptive which we  
 2 read to mean that the land would be open for nothing more than hiking or birding. We  
 3 contend that a sufficient number of wilderness areas have already been withdrawn  
 4 from productive use and purpose that these areas be open to wood gathering or  
 5 practical and ecologically sound and hunting among other possible consumptive uses.

6 Alternative 2B is nearly identical to 1B with the exception of being proposed  
 7 withdrawal authorization of 25 years. As noted in our comments on 1B we recommend  
 8 that the withdrawal be authorized for no period longer than 15 years. The balance of  
 9 this proposal is addressed by our comments under item 1B. We respectfully request  
 10 that the Department of the Air Force appreciate the depressed economic conditions of  
 11 Nye and Esmeralda Counties as set forth in this document as well as in resolutions  
 12 regarding same which are attached. We urge the drafters of the final proposal to take  
 13 into account the conditions and suggestions made herein and include them in said final  
 14 proposal for acceptance by the United States Congress. Respectfully submitted, Sandy  
 15 Harmon, Executive Director.

16 COL. SWEENEY: Thank you Miss Johnson. Next will be Mr. James Marble,  
 17 the Nye County Natural Resources Office.

18 JAMES MARBLE: On behalf of Nye County, I welcome you to Tonopah. My  
 19 name is Dr. James Marble. I'm the Director of the Nye County Natural Resources  
 20 Office. My comments this evening will be brief but we will follow up with written  
 21 comments by your deadline and they will include proposals for socioeconomic  
 22 mitigation measures.



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1 Thank you for traveling to our community to afford us the opportunity to

2 express Nye County's comments on the Nellis Air Force Range Renewal Draft

3 Legislative Environmental Impact Statement. The range's presence in our county is

4 welcome and is valued. We recognize the significant role of the air warfare center at the

5 Nellis Range and our own Tonopah Test Range in national defense. We're honored to

6 serve as the host community to these world-class facilities and we look forward to

7 working in partnership with the Air Force to maintain Nellis' continued success.

8 Nye County is the third largest county in the lower 48 states and larger than

9 the combined areas of Massachusetts, Connecticut, Delaware and Rhode Island. We're

10 also one of the fastest growing and our population has doubled in the last 15 years,

11 excuse me, it's tripled, and we expect it to double again in the next 15 years. A key

12 long-term goal for the county is to realign its relationship with the federal government

13 so that installations that we host make a greater contribution to our residents and

14 economy. The federal government has an overwhelming presence in Nye County.

15 Altogether, 93 percent of the county is managed by the federal government, mostly by

16 the Bureau of Land Management. The Nellis Range, Tonopah Test Range, and the

17 Nevada Test Site occupy millions of acres, about 18 percent of the total land in the

18 county. Unfortunately Nye County has not realized benefits commensurate with the

19 dominating presence of the federal installations in the county.

20 The Draft LEIS, as well as the 1991 Special Nevada Report which was

21 completed as a requirement of the 1986 Military Land Withdrawal Act, found that the

22 beneficial effects from the Nellis base and range accrue almost exclusively to Clark

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1 County. The report forecasted that by the year 2000, Nellis activities would add more

2 than 1 billion dollars to Clark County gross regional product compared to only 6

3 million dollars for Nye County. Furthermore, if other economic activities such as

4 mining or grazing had developed in the areas currently reserved for the Nellis and

5 Tonopah Test Ranges, total employment in gross regional product in the county could

6 be up to 62 million dollars per year higher. By the Air Force's own analysis, during the

7 2015 peak employment year, Nye County personal incomes could increase by 65 million

8 dollars by eliminating the Nellis Air Force Range.

9 Nye County bears the inherent risk of the activities that take place on and

10 over the range and while the benefits accrue, they accrue to our neighbor in Clark

11 County. The distributional inequity must be mitigated through jobs and economic

12 stimulus that Nellis Range can supply. We note too that Nellis, that Tonopah still

13 suffers economically from the loss of the 37th Tactical Fighter Wing in 1991.

14 And finally, continued federal encouragement for contractors to refuse

15 payment of their possessory use tax liability has been a source of great frustration to the

16 county. Contractors should be encouraged to be good corporate citizens by paying

17 their tax obligation to the county and we look forward to having the special Nevada

18 Report analysis of Nellis' economic impact in our county updated through the draft

19 LEIS. The challenge for Nye County is to insure that important decisions about Nellis

20 not be made without the county's meaningful input. Designating Nye County as a

21 cooperating agency as we have requested would have insured that the analyses and

22 assessments discussion accurately portrayed the impacts to Nye County. The Nellis Air

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Force Base command has, through the Nellis Range Renewal DLEIS, overlooked a unique opportunity to have a meaningful, mutually beneficial relationship with Nye County. Nye County notes that the alternative recommended in scoping that considers the withdrawal renewal at 15 years as has been the case under the Military Lands Withdrawal Act of 1986 has not been included or acknowledged in the DLEIS. Nye County is concerned that Congress, under the 25 year renewal alternative, may conduct a review of the withdrawal through one of its authorizing committees using an adhoc structure and a process that suits its particular purpose at that time. In short, the current Nellis Range requirements have provided an opportunity for the host community to be consulted, or put in a different way, if NEPA did not have to be invoked, would our voice be heard at all during a congressional review?

Unfortunately, our standing as a rural community being what it is, we think not.

Executive Order 12898 entitled Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations requires that each federal agency analyze the human, health, economic, and social effects of federal actions on minority and low-income communities. Mitigation measures are required to be defined that address significant and adverse environmental effects of proposed federal actions on these communities. As a rural low-income community, Nye County falls under the requirements of the Environmental Justice Executive Order and must be afforded the extra considerations, opportunities for participation, and mitigation measures called for by this order. Nye County notes that the method used in the DLEIS to examine

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environmental justice further diminishes the adverse socioeconomic impacts realized by the county.

Another major point is that the DLEIS must take into account local responsibility for emergency management and response. As noted during scoping, the document must acknowledge and discuss Nye County's role and capabilities for emergency preparedness, first on scene, first response, and incident command in off-site incidents, and to consider and resolve issues regarding mutual aid and cleanup responsibilities.

COL. SWEENEY: Dr. Marble, your time has expired. If you have significant more comments, I'll ask that you hold them for the end. Thank you.

Next we'll hear from Mr. Dirk Pearson.

DIRK PEARSON: O.K., my name is Dirk Pearson with People for the Constitution, P.O. Box 3666, Tonopah, NV 89049. NEPA requires both the consideration of the economic impacts on the community and health and safety impacts. I would like to see to be done with the 15 year withdrawal, after all even the Soviet Union didn't last forever thank goodness, and thanks to you gentlemen. I think a 15-year period would be a more reasonable one to reassess what is needed. I also would like to ask that certain specific mining districts that have produced commercially valuable materials that are on the border of the Nellis Air Force Base be considered for removal from Nellis Air Force Base and opened to general exploration as they would be as BLM land. Specifically, right here at this corner we have the Reveille Valley, 2 miles by 2 miles, you'd have to build 4 miles of new fence, it's right on the edge. Silver Bow, that's 2

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The other issue concerns health and safety, and that is that there's a considerable amount of military nuclear waste that's being brought in to be buried at the nuclear test site, which I think is a very good place to put the stuff. For example, from Fernald, Ohio alone there are going to be three truckloads per day for several years. Everybody agrees that the safest way to ship the stuff is by railroad as far as possible and by truck as little as possible. The people at Caliente and the government there are willing to accept a railroad transfer station to remove waste from the railroad and put it on trucks. Currently the suggestion is that it's gonna go all the way around past Rachel up on Highway 6, which I might point out is unfenced and there's cattle wandering all over that highway 24 hours a day, through Tonopah, Goldfield, Beatty, Amargosa Valley Junction and then back up in to the nuclear test site. This is a ridiculous, long route over a very highly traveled road when you're talking about Highway 95. I have here a copy of a map, a Nevada State road map back from before World War II that shows a highway coming down from the Crystal Springs area that is between Alamo and Hiko, comes on down along the route of 375 but it continues all the way down to Indian Springs. Now if you take a look at the Nevada Atlas and Gazetteer, the Delorme, it shows unlike most maps, a lot of roads inside of the nuclear test site and also the Nellis Air Force Base. The road that already exists here, if it were to cross just about 20 miles of Nellis Air Force Base, could get to the nuclear test site and avoid all this round about, in some cases high traffic, high danger roads. I've heard that the Secretary of the Air Force considers it inappropriate for security reasons to allow the trucks to travel over that road. Might I suggest that the trucks unload their drivers at

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miles by 6 miles, again it's right on the edge, this would require the construction of 10 miles of new fence. South of Mud Lake, you have this marked here as a possible co-use area, we'd like to see that open to mining year round. Again, we're talking about an area only 2 miles by 6 miles. In this case it would require 8 miles of new barbed wire fence. The Reveille Valley is Township 2 South, Range 51 East, Sections 1, 2 and 11 and 12, Silver Bow is Township 1 South, Range 49 East, Sections 1 to 12, South of Mud Lake is Township 2 South, Range 44 East, Sections 1 to 12. Most important of all I think is West Goldfield. The Goldfield mining district has a current price of produced over 1 billion dollars of gold. That's billion with a B. Esmeralda County has been really hurt by having a lot of Esmeralda County taken out of commission, the same with Nye County. I think that there's a potential for tremendous amount of minerals in this area. We are not talking about a large area, 4 miles by 6 miles, right again on the edge of the Nellis Air Force Base, this is Township 2 South, Range 44 East, Sections 16 to 21 and 28 to 33, Township 3 South, 44 East, Sections 3 to 10, 15 to 18. This would require the construction of approximately 14 miles of 5-strand barbed wire fence. Wagner, Clarkdale, Thirsty Canyon, Transvale, the latter two are in this co-use area, but again, for mining purposes, it would need to be open all year round. All four of those are right on the border of Nellis Air Force Base and are this side of the mountains, so miners working them would not be tearing down into Nellis Air Force Base. I mean you can see these areas from Highway 95. You can also see that they're not used for bombing for rather obvious reasons because they're so close. I do not think that these are unreasonable accommodations.

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1 the guard gate, right here, and use Air Force drivers to drive the things over to the  
 2 nuclear test site and the Air Force can bill the trucking companies for the time for those  
 3 drivers.

4 I'd also like to point out that if in this withdrawal the Air Force is not  
 5 accommodating on this matter, I strongly suggest that you look at the Constitution  
 6 which expressly prohibits, under any circumstances, the central government from  
 7 taking property belonging to a state and using it for a military base without the  
 8 permission of the state legislature and payment. I'm not claiming that the state of  
 9 Nevada owns the land here. I am claiming however, that for any roads used by the  
 10 public for either October 21, 1976 or before Nellis Air Force Base came into existence,  
 11 whichever one was earlier, are called RS2477 Right-of-Ways and the state and the  
 12 county does own an interest in passage over those roads that cannot be taken away  
 13 under the Constitution under any circumstances. I think you will see a lawsuit on the  
 14 part of Nye County to open all of those roads within your Air Force Base unless you're  
 15 willing to be accommodating and allow the use of just one road to take that waste  
 16 across Nellis for about 20 miles into nuclear test site. I think this is a very minor  
 17 accommodation and I would like to suggest that you look at Schultz vs. Army. A 9th  
 18 Circuit Court of Appeals decision. A guy in Alaska had an RS2477 Right-of-Way, the  
 19 Army built a military base on top of it, wouldn't let him through. The 9th Circuit Court  
 20 of Appeals said you can't keep him out. You can set reasonable hours, you can have  
 21 guards go along with him to make sure he doesn't do what he shouldn't be doing, but  
 22 you can't prevent him from using that road. So I would suggest that rather than have a

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1 law suit over this, and again we are in the area of jurisdiction of the 9th Circuit Court of  
 2 Appeals, I would suggest that you include in your withdrawal the proposal to allow to  
 3 carry military nuclear waste over this section of Nellis Air Force Base, right here, at  
 4 hours convenient for the function of Nellis Air Force Base and under Nellis guard.  
 5 Thank you very much.

6 COL. SWEENEY: Thank you Mr. Pearson. I hope you weren't rushed and if  
 7 you'd like to expand your remarks later on, we'll give you an opportunity to do that.

8 DIRK PEARSON: No, I think I got everything out. The bottom line is there  
 9 are right-of-way rights that can't be taken away. The 9th Circuit Court of Appeals has  
 10 already decided this issue, for our circuit anyway, and you could end up having a lot of  
 11 people having access to that base in a lot less convenient ways if you don't go along  
 12 with a reasonable accommodation. Let's do this without a law suit, just put it in there,  
 13 tell the Secretary of Defense to look at Schultz vs. Army and a whole long chain of  
 14 decisions by the courts that have pointed out that you can't take away RS2477 Right-of-  
 15 Ways. You can regulate their use for public safety, for military security, but you cannot  
 16 prohibit their use. Thank you.

17 COL. SWEENEY: Thank you Mr. Pearson. Next we have comments from  
 18 Miss Trish Rippie.

19 GE-2 TRISH RIPPIE: I'd like to ditto everything that Lynn said on behalf of Sandy  
 20 Harmon and Jim Marble said to the county and what Dirk just said. I am the Tonopah  
 21 representative to EDEN, the Economic Development Authority of Esmeralda and Nye  
 22 County, as well as a realtor and I've been in business here in this area for 18 years

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during which time the economy has prospered and the economy has suffered. Since 1990, the population of this area has been cut in half, the economy has gone steadily downhill and I don't think I'm exaggerating when I say that the communities that border the test range, which are your neighbors, are choking, they are literally dying. The chances to develop an economy here are so limited.

First of all, there's so little land. We say Nevada has 87 percent federal lands, Nye County has 93 percent federal lands. In this immediate area, I'd say there's probably 1 percent of the land that's privately held. There's so little opportunity for developing mines, ranching, farming. We're not like the rest of the country in this respect. What opportunities do we have for economic development here? Well, that range is a big thing and we should be reaping the benefits of that range to a larger extent than we are. When the stealth came in our population grew, it was probably twice what it is now. A lot of the people with the stealth project chose to live in Tonopah. As Mr. Percival pointed out to me, they were not required to live here, they had the option, they could live in Vegas and a lot of the people did live in Vegas but they did have a choice. We tried to be a very good partner in the stealth project. I think the commendation on the wall over here that the Air Force gave us after the stealth project was removed kind of says it, it says "To the Patriots of Tonopah, thanks for keeping this a secret." Whatever is going on out there now apparently is more secret, because I've been told that's why the people are flown up instead of living here in Tonopah. Now I realize we do have the Lockheed people, the ASI people, some of the contractors live here but on these projects that are going on now I know that a lot of the

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people fly up daily on commuter airlines at a great expense to the taxpayers. We would like to see a larger percentage of the people who work out there living in Tonopah and the argument I hear most often is well, it's too hard to hire people that live in Tonopah, they don't want to live here, the quality of life in Tonopah, Goldfield is not what the highly skilled technical people who work at the range want. But I've noticed also that the Air Force and the DOE seem to work on old sociological data. I'm in the trenches every day. I know what's going on with the way people want to live and there is a lot of movement of people wanting to get out of the big city. There are a lot of people who would like to live up here, but it's so easy when you have subsidies, when it's so much cheaper to live in Vegas and fly up here, and also our quality of life has suffered after the stealth left. We lost our bowling center, our indoor swimming pool. Our quality of life isn't what we would like it to be just because of the sheer numbers, our population's so small. I'd like to see the Air Force take just a tiny fraction of what you spend on those flights which costs millions and millions of dollars. For just a little bit of those millions, in one year you could build a golf course here. We could have a bowling center, we could have all the recreation that people desire. We could improve the quality of life here. We could be partners. A lot of people would, I think, choose to live up here if you just give us a level playing field and stop the subsidies and that would take a lot of the hostility out. This feeling that the Air Force is not our friend anymore. They're choking us off. The point that Jim brought up, Mr. Marble brought up, about the 62 million dollars of the economy. If we had, I've seen statistics about the ranching industry and the mining industry. If we had that 62 million dollars, we wouldn't be

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here asking the Air Force to be more accommodating, but we lose the money because we don't have the use of the land and we aren't getting the benefits of the test range and that's all I'd like to say is that we should have more of the benefits of the test range.

COL. SWEENEY: Thank you. Next possibly is Miss Athene Benson. Dr. Marble, did you want to continue?

JAMES MARBLE: I only have a short summary paragraph that I want to include. In summary, Nye County values Nellis and Tonopah Ranges and we recognize their important role. As a community that meets the environmental justice criteria, Nye County should be afforded extra consideration in impact mitigation opportunities and we believe an additional alternative that investigates the 15-year withdrawal period should have been included in the assessment or at a minimum acknowledged and should be included in the final draft. Finally, environmental and emergency management issues must also be taken into account within the Draft LEIS and we feel should be included in the final draft. Thank you again for this opportunity to address these issues.

COL. SWEENEY: Those are the only individuals who asked to speak this evening. Is there anyone else at this time who upon further reflection has decided that they'd like to speak? All right, apparently not. Since we have no more public speakers and since we're earlier than our not later than time, what we'll do is I'll recess the formal portion of the hearing and Air Force officials and BLM officials will be available for some period to answer any questions that you might have and if anyone does desire us to reopen we will do that, otherwise we will adjourn for the evening. Just to help

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you recognize, there will be another opportunity for public hearing and that is tomorrow evening in Reno, Nevada. That will be at the Airport Plaza Hotel and that'll be on the same schedule that we had here this evening, 6:30 Open House and 7:30 begins the public hearing, in case anyone is interested. So if there's nothing further then, we will recess, I'm sorry, Miss Rippie?  
TRISH RIPPIE: I just forgot to say I support 2B on 15-year withdrawals.  
COL. SWEENEY: All right. Thank you. We'll make sure you were able to be heard. All right we'll recess the formal portion of the hearing. Thank you very much for coming.

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NELLIS RANGE LAND WITHDRAWAL RENEWAL

DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARING

TUESDAY, NOVEMBER 17, 1998

RENO, NEVADA

Reported by: CAROL HUMMEL, RPR, CCR #340  
 Transcription --- Computer ---

**BONANZA REPORTING - RENO ORIGINAL**

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1 most critical portion of our combat crews' training.  
 2 We must have areas that are remote enough from  
 3 population where live ordnance can be used, and  
 4 simulated battle, threats and tactic can be trained.

5 Nevada is the leading growth state in the  
 6 nation. Inevitably, like all other ranges throughout  
 7 the United states, encroachment is occurring and will  
 8 continue to occur. The safety of America and the free  
 9 world depends on the continued operation of Nellis and  
 10 its ranges. I urge you to ask congress for permanent  
 11 withdrawal of their ranges to allow this premiere  
 12 testing facility to remain as the one place we will  
 13 have forever to train our fighting forces.

14 Sincerely, Kenny C. Guinn, Governor-Elect,  
 15 State of Nevada."  
 16 And the second letter, Mr. Chairman, from  
 17 the mayor of Las Vegas.

18 "Dear Committee Chairman. As the mayor of  
 19 Las Vegas for the past seven years, I've grown to  
 20 appreciate the importance of Nellis Air Force Base and  
 21 its many contributions to both our local economy and to  
 22 the national defense and security of the United States.  
 23 I am keenly aware of the importance that the Nellis Air  
 24 Force Base Range plays in providing a training ground  
 25 to sharpen the skills of our fighting forces.

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1 speak this evening.  
 2 First we'll hear from Mr. J. J. Winters,  
 3 who is representing Governor-Elect Guinn and Mayor  
 4 Jones of Las Vegas.

COMMENTS OF J.J. WINTERS

5 Good evening. As mentioned, I'm J. J.  
 6 Winters, member of the Nellis Support Team in  
 7 Las Vegas, and I'd like to read, first of all, a letter  
 8 prepared by Governor-Elect Guinn.

9 "Dear Mr. Chairman. As governor-elect of  
 10 the state of Nevada, one of my priorities will be to  
 11 make sure that the ranges for Nellis Air Force Base are  
 12 renewed on a permanent basis. For the last 50 years  
 13 Nellis has been an integral part of the development of  
 14 the state of Nevada. It has played a major role in the  
 15 economics in many of our communities, and statewide  
 16 leaders who were once stationed at Nellis come back to  
 17 make Nevada their home.

18 The United States of America's ranges in  
 19 Nevada cannot be developed anywhere in the world. The  
 20 3.2 plus million acre facility we have in Nevada would  
 21 cost taxpayers billions of dollars to reproduce. This  
 22 testing facility, which is absolutely critical to our  
 23 nation's superiority in the air, must be protected for  
 24 the safety of all Americans. Testing ranges are the  
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1 This range and the crucial role it plays  
2 in the security of our country cannot be disputed, it  
3 is a one-of-a-kind item that simply must be protected  
4 and retained so that our armed forces can continue  
5 high-quality training long into the future. In my  
6 opinion, it is imperative that the Nellis Range be  
7 maintained.

8 I wholeheartedly support the Air Force  
9 proposal to renew the reauthorization of the Nellis  
10 Range and congressional reauthorization beyond the year  
11 2001. The citizens of Las Vegas have strongly  
12 supported Nellis Air Force Base and its many  
13 activities. As the mayor, I'm convinced that citizens  
14 of our valley would unquestionably support the  
15 reauthorization of the Nellis Range and its continued  
16 long-term use for both tactical and operational needs  
17 by the armed forces of the United States.

18 Sincerely, Jan Laverty Jones, Mayor of the  
19 City of Las Vegas."

20 COL. PERCIVAL: Thank you, Mr. Winters.

GE-1 21 Next, Mr. Tim Mikita representing

22 Mr. Cortez, Las Vegas Convention Authority, and

23 Miss Gates, the Clark County Commissioner, is that

24 correct?

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COMMENTS OF TIM MIKITA

1 Yes, sir. I am Tim Mikita, and I'm  
2 representing both of those people, the first letter  
3 from Manuel Cortez.  
4

5 "Dear Committee Chairman. The purpose of  
6 this letter is to urge you to consider supporting the  
7 test range renewal for Nellis Air Force Base Range  
8 beyond the year 2001.

9 As president and CEO of the Las Vegas  
10 Convention and Visitors Authority, a former four-term  
11 member of the Clark County Board of Commissioners, and  
12 a long-time resident of southern Nevada, I know  
13 firsthand, personally and professionally, what this  
14 facility has meant to our country and our community  
15 throughout many decades.

16 The range plays an integral role in the  
17 vital security interests of the United States,  
18 providing crucial training to thousands of military  
19 personnel over the years.

20 Nellis Air Force Base and its test ranges  
21 have been woven into the fabric of the lives of  
22 southern Nevadans for a very long time. We are proud  
23 of the national security interest that the base and  
24 ranges represent and are keenly aware of the economic  
25 benefits that the entire facility provides to the

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1 citizens of southern Nevada.  
 2 What's more, the Las Vegas Convention and  
 3 Visitors Authority, as the marketing arm for the  
 4 southern Nevada resort industry, believes that the  
 5 worldwide, positive exposure provided to our  
 6 destination by the Thunderbird aerial demonstration  
 7 team, as well as the annual red flag exercises, is  
 8 invaluable and cannot be overstated.  
 9 I am convinced that community support for  
 10 test range renewal runs deep throughout this area and  
 11 respectfully ask that you consider this when making  
 12 your decision. Thank you for your consideration.  
 13 Sincerely, Manuel Cortez, President and  
 14 CEO of Las Vegas Convention and Visitors Authority."  
 15 My second letter is from Yvonne Atkinson  
 16 Gates.  
 17 "Dear Committee Chairman. It is my  
 18 pleasure as Chair of the Clark County Board of  
 19 Commissioners to offer my support for the renewal of  
 20 reauthorization for the Nellis Air Force Base Test  
 21 Range. This facility not only contributes to Nevada's  
 22 economic stability, but it is one of our nation's most  
 23 valuable air combat training and weapons test sites.  
 24 Should the operations at Nellis Air Force  
 25 Base Test Range not be continued, the local community

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1 and our national security would certainly suffer  
 2 detrimental consequences, including the loss of  
 3 thousands of active-duty military and federal civilian  
 4 personnel in Clark County and our neighboring counties.  
 5 The termination of this range would additionally result  
 6 in a closure of Indian Springs, Tonopah, Tolicha Peak  
 7 and EC South Ranges where additional testing takes  
 8 place.  
 9 The Nellis Air Force Base Test Range plays  
 10 an integral role in the preservation of our country's  
 11 security. The information we gain and the training  
 12 that this range provides are truly invaluable as these  
 13 elements are critical in building up our defense in  
 14 war-time crises where the livelihood and well-being of  
 15 our nation are jeopardized. It is my firm belief that  
 16 the Nellis Air Force Base Test Range continue its  
 17 operations in order to maintain military superiority  
 18 and to ensure the safety of the American people.  
 19 Sincerely, Yvonne Atkinson Gates, Chair."  
 20 Thank you, sir.  
 21 COL. SWEENEY: Thank you, Mr. Mikita.  
 22 Next we'll hear from Mr. Dick Carver who  
 23 is the chairman of the Nye County Commission.  
 24 COMMENTS OF DICK CARVER  
 25 Thank you. It's quite an honor for me to

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1 resolution here, it shows -- it's got a map attached,  
2 and you can see that we have highlighted the areas all  
3 around the north end and the west boundaries that we  
4 would like to have released for mineral interest.

5 I think it's important to look at the  
6 issue that has really surfaced since the November 3rd  
7 election when Proposition 5 was passed in California.  
8 It's going to take gaming -- some of the gaming out of  
9 the state of Nevada, you have to realize the gaming and  
10 mining are the two leading industries, and when we lose  
11 gaming, we have got to look at mining.

12 What happened in Montana is they passed an  
13 initiative up there that's going to outlaw cyanide as  
14 used in mining, and that's going to cripple the mining  
15 industry, so we have to look at a little bit more  
16 industry in our county. So we're very interested in  
17 these mineral withdrawals, but we're very concerned  
18 about a permanent withdrawal on the site itself. We  
19 feel that times do change, and it's been a temporary  
20 withdrawal for the last 50 years, and we think it  
21 should remain that way. So one of your proposals that  
22 can have a shorter withdrawal period and release that  
23 mineralized area, we would be strongly supportive of.  
24 We have got written comments that we have  
25 submitted to you, and there is no use me going over

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1 come to Reno. I missed Tonopah last night because we  
2 had a commissioner meeting down in Fahrump, but I tried  
3 to fly here and got here a little late, so I want to  
4 apologize for missing the presentation.

5 Nye County is very concerned about the  
6 land of permanent withdrawal. Nye County covers a  
7 little over 18,000 square miles, about 93 percent of  
8 our county right now is managed by the federal  
9 government one way or the other, and we're losing more  
10 of that ground every day as the other agencies, mainly  
11 the Forest Service and BLM, acquire some of our ground.

12 Nye County is very concerned. When the  
13 NEPA process was originally started, we asked,  
14 following the NEPA rules, guidelines, that we be given  
15 cooperating agency status, we were denied that. Since  
16 that time frame we have created a natural resources  
17 federal facilities office, we have a natural resources  
18 federal facilities director, and he's got staff, and we  
19 would like to ask for a 60-day extension of time so we  
20 can address some of the issues that have been raised  
21 here.

22 We are very concerned about the permanent  
23 withdrawal, we oppose it, but we are also very  
24 interested in the release of some of the areas that  
25 have a high mineral potential. And I've got a

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1 that. I've got about 30 copies of this resolution  
 2 addressing the issue of the mineral withdrawal land,  
 3 and if anybody here tonight is interested, I'll be glad  
 4 to give it to them.

5 Thanks a lot for the opportunity to speak.

6 COL. SWEENEY: Thank you, Mr. Carver.

7 Next we have Miss Marti Searcy

8 representing the Sierra Inter-Faith Action For Peace.

9 COMMENTS OF MARTI SEARCY

10 Good evening, ladies and gentlemen. My

11 name is Marti Searcy, I'm a citizen of the state of

12 Nevada. I came here tonight to voice an opinion, which

13 is my right as an American citizen, but my friends and

14 I were not allowed to voice that opinion.

15 Colonel Sweeney tells us the avenue that we wished to

16 use to provide our public testimony, a 17-minute mini

17 play, is not allowed.

18 The six of us have worked for several

19 months to put together what we felt was an educational

20 and fairly entertaining opportunity for congress to

21 hear what we had to say. We have been denied our

22 chance to share with you our thoughts about this land

23 withdrawal.

24 Tonight we learned that not only are there

25 no rules of procedure for this hearing, Colonel Sweeney

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1 stated that unequivocally, but he is the only one who  
 2 determines who comments, and what order, and for how  
 3 long. He has denied us due process according to the  
 4 Fifth Amendment of the constitution, and the right of  
 5 free speech, the First Amendment of the constitution.

6 In an attempt to be sure our voice is

7 heard, we're giving a copy of our script to the court

8 reporter, and we hope that that will be placed into the

9 testimony.

10 (Eight page written script submitted.

11 as written comments and not included

12 herein.)

13 COL. SWEENEY: That will. Thank you.

14 Next Mr. Tom Myers from the Friends of

15 Nevada Wildernes.

16 COMMENTS OF TOM MYERS

17 Thank you. My name is Tom Myers, and I am

18 Conservation Director for Friends of Nevada Wildernes.

19 I guess my first comment is earlier this

20 year and last year I served on the stewardship

21 committee for the Nellis Air Range. Somehow the

22 mailing list from that didn't get on the mailing list

23 for this, because actually yesterday was when I learned

24 of this meeting tonight, and I just got of copy of the

25 EIS. I wasn't involved in '96, and it looks like they

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1 did a reasonably good job with public involvement, just  
2 somehow I think the stewardship committee was missed,  
3 because I didn't get it.

4 I served on it, the Friends of Nevada  
5 Wilderness had me serve on it, because we do care about  
6 the land out there, and about diversity on that land,  
7 whether we're ever going to get to see it or not. One  
8 of the advantages out there is indeed the fact that 97  
9 percent of the land that is not bombed is in a fairly  
10 good -- still in fairly good condition, it's one of the  
11 few places that hasn't seen livestock grazing in a long  
12 time, and hasn't seen mining activity in a long time.

13 That's one of interests we presented quite  
14 often during the stewardship meetings, and that I will  
15 present again tonight, is that we are very interested  
16 in preserving the biodiversity and the wilderness  
17 potential that exists on the 97 percent of land out  
18 there.

19 As it is, it's not -- it's not  
20 currently -- when it is returned to the public -- and I  
21 do like to say when it is returned to the public -- we  
22 would like to see that it is in as good as condition as  
23 possible. And one of the potential impacts of this  
24 renewal that I don't think you've included in my  
25 cursory look at this, and from listening to

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1 Colonel Fukey earlier, one of the potential impacts of  
2 the renewal is that you could still build structures in  
3 areas that are currently roadless, and we would like to  
4 see you try to avoid doing that. I realize there is  
5 not a legal mandate to do that, but we would like to  
6 see that so that when this land is returned that some  
7 of the roadless areas that are there continue in their  
8 current -- or excuse me, the areas are still roadless  
9 when it is released.

10 For that reason we don't really support  
11 either a 25 year or a permanent renewal, we believe  
12 that the 15 year, 15-year renewal period is sufficient.  
13 I think it is good to come back to the public and tell  
14 us what's going on out there and allow us to reassess  
15 the conditions, allow us to reassess the need for the  
16 area every 15 years. I mean, things change a lot. I  
17 mean, if you think back to 1986 what has changed since  
18 then is remarkable, and I think we need to have that  
19 again in the year 2016, or whenever it is, assuming  
20 that the renewal does go through.

21 I believe that will be all, and I will  
22 submit any further comments by letter. Thanks.

23 COL. SWEENEY: Thank you, Mr. Myers.  
24 Next will be Miss Grace Potorti.  
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COMMENTS OF GRACE POTORTI

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Good evening. My name is Grace Potorti, I'm representing the Rural Alliance for Military Accountability tonight, better known as RAMA. My first comment is the Federal Register notice on this was published by the BLM, and I seem to say this every time, but how come the BLM isn't sitting up there, they're the one that's going to write the legislation, where are they?

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UNIDENTIFIED SPEAKER: I'm sitting right here.

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MS. POTORTI: I want to know where the big guys are in D.C. who are going to do this. This is 3.1 million acres.

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We don't buy into the notion of an indefinite withdrawal, there's a number of reasons why we don't buy that. One, we believe if we have an indefinite withdrawal that the arm of public oversight will virtually be cut off. I mean, indefinite withdrawal, no more questions asked, we're out of the process.

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Make no mistake, this is history, this is the first comprehensive environmental impact statement on the Nellis Range, and we don't want it to be our last. We believe it's impossible for the military to

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determine what kinds of weapons are going to be used in the future, you don't know what's going to be here in five years, and I don't know what's going to be here in five years, and therefore you cannot predict the impact to the natural resources.

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I mean, just look at the last ten years, the Berlin Wall came down, the cold war is over, things change big time.

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In short, NEPA isn't broken, the Engle Act isn't broken, we need to stay the course. And when I say "stay the course," I agree, get the Air Force land for 15 years, but then again, let us know what's happening to those lands. It's a lot of land. Where will we be in 15 years, I don't know, but inquiring minds want to know what's happening on those lands, we want to know.

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We don't believe the cost of the environmental impact statement is prohibitive to doing another environmental impact statement. When you compare the cost of this to the overall budget of Nellis Air Force Base or even the cost of one Stealth fighter, it's not even a drop in the bucket, folks, not a drop in the bucket, this is nothing.

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Furthermore, we don't believe that a permanent withdrawal is warranted, because there's

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never been a national needs assessment prepared by the military. When I say that, I mean the Navy, the Air Force, the Marines, the Army, get together, get the stakeholders together, including the Department of Interior, AOPA, all of the stakeholders together, do a national needs assessment, determine what you want, and then bring it to the public. That has never been done. There's no office at the Pentagon where I can call and say, what do you have, how much airspace do you have, how much land do you have, it doesn't exist.

Regarding the LEIS, there's some comments in it that leads one to believe that there is some airspace that could be returned to the public. For instance, on Page 401-3 it states, and I quote, "Some training may not warrant continued retention of all five military training routes." Well, if that's the case, give it back, we want it back.

I'm still sort of shocked, and I believe there needs to be an independent investigation into the military airspace that's associated with base closures around this country. We're not getting that airspace back, the airspace is being retained by the military, rubber stamped by the FAA. A perfect example of that is the Reno MOAs, right over us, over the Black Rock

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Desert. The National Guard no longer has the F-4s, they don't need the MOAs, so they turn it over to the Navy. No public hearings, no NEPA documentation, no nothing, done deal. Why, because there's no sunset clause on airspace, once they get it, they get it forever. There is no congressional approval for airspace, they simply fill out a blank utilization record every year, send it in to the FAA, and Bingo, it's there forever.

Regarding the renewal legislation, we believe that the legislation must recognize the current five-party agreement that has been signed by the federal agencies in this state, and that that should be broadened to include public and tribal representation as well.

We also noticed in the Legislative EIS there's a big issue that got about two paragraphs, and that was the resumption of use of depleted uranium on the Desert National Wildlife Refuge. There are 200 vehicles out there that are radioactive, they are hot, they're sitting there, they have virtually turned the Desert National Wildlife Refuge into a low level nuclear waste dump. We believe that this needs to be stopped, and we do not approve of it, nor do we condone it, and that the site should be cleaned up, and the

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1 National Wildlife Refuge is not the place to conduct  
 2 those types activities.

3 Regarding the ecosystem management plan,  
 4 and if there is anyone who wants this, it's very slick,  
 5 very good. I too participated in this process;  
 6 however, I have some fears, and my fear is that this  
 7 may be a window dressing to get the renewal, and then  
 8 we may not see the money that we need to see these  
 9 recommendations move forward. And Colonel Fukey is  
 10 here, and he did a bang-up job, and I know he's come  
 11 around, but I want you to have some help, money talks,  
 12 and BS walks. I want this in the legislation, I want  
 13 it recognized, I want the recommendation recognized,  
 14 and, by God, I want a budget for this to happen at  
 15 Nellis. I think there's good people in the Air Force  
 16 who want to do this, and they need the resources to do  
 17 it, and unless we Nevadans do it, it's not going to  
 18 happen.

19 I believe there needs to be a federal  
 20 advisory committee established that meets once a year  
 21 to see how this is going. I know there is an  
 22 integrated natural resource plan, that needs to be  
 23 updated every five years. That is not good enough,  
 24 five years is too long.

25 COL. SWEENEY: Miss Potorti, your time has

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1 expired. If you wouldn't mind reserving your remarks,  
 2 I'm sure we'll get an opportunity at the end.

3 MS. POTORTI: I can finish in two seconds.  
 4 COL. SWEENEY: All right.

5 MS. POTORTI: The only thing I would like  
 6 to say is that you need to do a programmatic EIS for  
 7 all the expansions in the southwest, because every  
 8 state in the southwest is having major expansion,  
 9 they're connecting the ranges, and I think the  
 10 military, the Department of Defense, needs to start  
 11 thinking about that very seriously.  
 12 Thank you.

13 COL. SWEENEY: Thank you.  
 14 Next we'll hear from Miss Marjorie Sill,  
 15 Toiyabe Chapter of the Sierra Club.

16 COMMENTS OF MARJORIE SILL  
 17 I'm Marjorie Sill, I'm the federal land  
 18 coordinator for the Toiyabe Chapter of the Sierra Club,  
 19 we have over 4,000 members in Nevada and eastern  
 20 California. We're very concerned about public lands,  
 21 we're very concerned about the environmental resources.  
 22 I want to compliment Nellis for doing the  
 23 kind of work that they did, particularly through the  
 24 stewardship team. I looked over particularly the  
 25 botanical inventory, that kind of thing, and I'm

AF-22

BD-6

AF-23

GE-2



8700 51

1 delighted it was done, I think it's a very important  
2 part, because eventually we want those lands returned  
3 to the public, and this gives us some idea of what we  
4 have out there.

5 The Toiyabe Chapter completely opposes a  
6 permanent, what you call an indefinite withdrawal, and  
7 that is because we have no idea what is going to happen  
8 in the future. Things are moving very fast right now,  
9 and I look at, for instance, an area that I care a lot  
10 about, Hunter Liggett, and Hunter Liggett was a  
11 military reservation, it is now going to go back to  
12 public lands. Fortunately, a lot of things were  
13 preserved there, but I have the feeling that in the  
14 future, and it may be a long future, but that all of  
15 this huge amount of land is going to be returned to the  
16 public. I think this is a very important goal to keep  
17 in mind.

18 I'm concerned, because when I went to the  
19 scoping hearing at the University of Nevada in 1996 or  
20 whenever it was, most of us spoke for a 15-year period,  
21 and now it's been bumped up to a 25-year period, and I  
22 am also concerned that during that 25-year period that  
23 there's no opportunity for public or congressional  
24 review. If it's going to be 25 years, I would suggest  
25 that every five years some examination, some

AF-7

AF-24

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1 presentation to both the public and congress be made.  
2 We would far prefer the 15-year period that was talked  
3 about in the scoping hearing.

4 I will try to amplify my remarks in  
5 written form, because I haven't had time yet to look at  
6 the difference between Alternative 2A and 2B. Probably  
7 the alternative that gives more land for joint or  
8 public use would be our preferable alternative, but I  
9 would like to look at those particular areas.

10 Thank you.

11 COL. SWEENEY: Thank you, Miss Sill. I  
12 notice that you did not list that you wanted a final  
13 copy of the LEIS. Would you like me to check that for  
14 you?

15 MS. SILL: I actually -- oh, do I want to  
16 receive one?

17 COL. SWEENEY: A final copy.

18 MS. SILL: Yes, please. Thank you very  
19 much.

20 COL. SWEENEY: Certainly.

21 Next will be Miss Kathy Rusco, I believe.  
22 She stepped out? Okay.

23 Mr. Vernon Brechin, Citizen Alert.

24 COMMENTS OF VERNON BRECHIN

25 My name is Vern Brechin with Citizen

GE-2

8700 53

Alert. I'm just reading from a few of the notes that I have taken here.

First of all, I would like to urge that the no action alternative be chosen. This would be an unprecedented move, because very rarely in such studies is a no action alternative ever chosen.

I've reviewed the Legislative EIS, and I find a number of problems with it. One of my primary interests is in the abuse of government secrecy provisions to cover-up or hide embarrassing environmental situations. It's standard policy not to inform the public what is being withheld from them, that's part of the standard security practice. As a result, the decisions made in this process are not based upon a full set of information.

One thing I would like to address is Public Land Order 1662, which is popularly known as Area 51, which in another legal sense was forced, and it was called the operating location near Groom Lake. That apparently was done to stifle a lawsuit against the government dealing with a wrongful death situation. It says in the Public Land Order 1662 that that area was reserved for the use of the Atomic Energy Commission. The standard map of the Nevada Test Site, which is the Atomic Energy Commission, DOE, is this

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thing here, (indicating).

COL. SWEENEY: Sir, would you show that toward the camera that way, please? Thank you

MR. BRECHIN: This is how the Department of Energy depicts the Nevada Test Site, the land that they control. It doesn't show Public Land Order 1662. In their recent environmental impact statement in 1996 that area wasn't analyzed, because the Department of Energy said it was actually controlled by the Air Force. We need to get some things straightened out, and I notice in Alternative 1A and 1B there is an attempt to straighten out some of these administrative things.

Under the Military Land Withdrawal Act of 1986, which has been in effect for 12 years, that assumed the information that was passed to congress, assumed that Public Land Order 1662 was part of the Department of Energy, and that also assumed that Pahute Mesa was part of the Nellis Air Force Range.

One thing you mentioned about contamination. Pahute Mesa, that's quite an interesting area. There have been about -- quite a few underground nuclear tests in that area, which is, according to public -- according to the Military Lands Withdrawal Act, that's Nellis Air Force Range

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territory. And I would like to recite some of the contamination that's under there. The Legislative EIS says nothing about the contamination under there. When a nuclear explosion takes place, it's essentially a nuclear reactor that blows up and scatters its radio nuclides underground.

Most of those, 95 of those tested in Pahute Mesa, took place either below the groundwater table or very close to it. The Tritium levels under there are 58 million curies, Cesium is 1.3 million curies, Strontium 90; 950,000 curies; Technetium 99, 250 curies; Iodine 129, .78 curies; Plutonium, all isotopes, 100 thousand curies. That's about a third of a metric ton is buried under Pahute Mesa. Americium, 241 is 3.9 thousand curies; Neptunium, 237 is 30 curies; Curium 244 is 2.5 thousand curies; Carbon 14 is 4.60 -- 460 curies.

On another --

COL. SWEENEY: Mr. Brechin, your time is expired. We may be able to give you an opportunity at the end.

MR. BRECHIN: Thank you very much.

COL. SWEENEY: If you would like to wrap up that thought before stepping down, feel free.

MR. BRECHIN: I will continue later on, if

DOE-7

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possible.

COL. SWEENEY: Next is Mr. John Hadder.

MS. POTORTI: John was part of the theater group.

COL. SWEENEY: Next is Miss Lee Dazey, Citizen's Alert.

COMMENTS OF LEE DAZEY

Good evening. Lee Dazey, I'm the northern Nevada Director of Citizen Alert.

I concur with a lot of comments. On behalf of Citizen Alert, we're a group that's been in the state for about 25 years, and we're very much concerned about future generations of Nevadans, and I would say that our primary take on the proposals here is that we'll not support an indefinite withdrawal of the land. I think we would concur with ROMA's concerns about not knowing what type of weapons would be used in the future really doesn't guarantee that our ranges would be kept safe for future generations.

And I don't want to go into a lot of details, because frankly I haven't looked at the draft LEIS. We did make comment in 1996 on the scoping.

Two questions though I would like to ask, and I don't know if I'll be able to get an answer tonight, but for the record I think many of us here

GE-2

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DOE-5

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1 would want to know what the Air Force's position about  
 2 low level and high level transportation routes through  
 3 Nellis, through the Nellis Range, and have that  
 4 documented in the draft, the final LEIS that would be  
 5 released to congress.

6 It's our understanding that Lincoln  
 7 County, of which much of Nellis sits within, is very  
 8 much supportive of having an interim site transfer  
 9 station, that they are very much interested in having a  
 10 route that would go through the Nellis Range, and I  
 11 believe that their consultants see certain benefits in  
 12 terms of supporting a permanent withdrawal of Nellis,  
 13 and certain benefits that they could get through that.

14 So our organization is very much concerned  
 15 this year, as we have been in the last few years, with  
 16 interim storage bills being passed. And I think if  
 17 they could identify a route to get to the Nevada Test  
 18 Site, it would eliminate a lot of the concerns about  
 19 having, you know, about costs of putting in a route.  
 20 And so we just hope that Nellis would say no to the  
 21 Department of Energy on that issue, no routes through  
 22 Nellis.

23 We support, along with other environmental  
 24 groups here tonight, we support a 15-year withdrawal.  
 25 We think that it's not really clear that there is a

AF-18  
DOE-5

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1 true no action alternative, since the no action  
 2 alternative proposes more than what is currently there.  
 3 And I guess that's about it right now.  
 4 Thank you very much.

5 COL. SWEENEY: Thank you, Miss Dazey.  
 6 Next will be Mr. Gene Gerdes representing  
 7 the Nevada Trappers Association.

8 COMMENTS OF GENE GERDES  
 9 I'll not repeat the 25 years or the  
 10 indefinite withdrawal. Our views are very much the  
 11 same as has been expressed. Lumping recreation use,  
 12 with mining and grazing as potential long-term adverse  
 13 effects to the environment is not valid. Recreation  
 14 activities such as hunting, hiking, trapping have  
 15 little or no impact to the environment. These  
 16 foregoing activities need to be identified and  
 17 discussed in the final environmental impact statement.

18 The descriptions of populations of game  
 19 birds, game mammals and other mammals with pelt values,  
 20 with the exception of big horn sheep, are quite meager,  
 21 quantitative data is lacking, the reader can only get  
 22 sketchy information about the magnitude of these  
 23 resources from the DLEIS.

24 Throughout the DLEIS we note a recurring  
 25 theme that suggests total exclusion of the public to

AF-25

GE-2

RV-4

BI-11

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1 withdrawn lands is the best type of management for the  
2 natural resources. This is one type of management, but  
3 not the only one. The report ignores other highly  
4 successful management strategies that occur on national  
5 forests, vacant public lands, and private lands.

OP-6

6 It is encouraging to note possible areas  
7 for nonrenewal and co-use as described in action  
8 Alternative 1B and 2B. It does appear though there are  
9 much larger areas that need not be withdrawn if NAFR is  
10 to continue. For instance, Pahute Mesa, Stonewall  
11 Mountain, Kawich Range, and so forth are some areas  
12 that need not be withdrawn.

AF-15

13 We question the statement which  
14 essentially says that visual access to targets and  
15 tactics could compromise national security, this is  
16 found in 2-16. While we recognize there are probably  
17 some areas that shouldn't have visual access such as  
18 Groom Lake, the all inclusive statement does not appear  
19 valid. We note that all ranges used by Naval Air  
20 Station Fallon can be viewed by the public.

OP-7

21 Thank you.

22 COL. SWEENEY: Thank you, Mr. Gerdes.

23 Mr. Gerdes, I notice that you did not request a final  
24 copy of the LEIS. Would you like one?

25 MR. GERDES: I would, please.

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1 COL. SWEENEY: Next we'll hear from

2 Mr. Alan Coyner from the Nevada Division of Minerals.

3 COMMENTS OF ALAN COYNER

4 Thank you. My comments will be restricted  
5 to the mineral resource value on the range.

GE-2

6 We're quite supportive of the Air Force  
7 and their work out there with regard to the mineral  
8 surveys that they have done through the Nevada Bureau  
9 of Mines and Geology. We feel that much of the context  
10 of that report offsets the Keystone dialogue that was  
11 previously done, which in our opinion neglected to  
12 sufficiently address the mineral resource values. I  
13 never thought we would be in somewhat of agreement with  
14 some of the other groups here tonight, but the 15-year  
15 renewal time period is much preferable from the  
16 division's standpoint as well, 25 years is an awful  
17 long time without re-examination of the possible  
18 resource potential or resource exploitation.

AF-26

19 Specifically, we have looked at some of  
20 the mine districts that are on the exterior boundaries  
21 of the range and feel that those can be more closely  
22 looked at as possible areas for release, we support  
23 that. Specifically we support the release of the area  
24 in the eastern Goldfield District, which is just east  
25 of the town of Goldfield, it's quite an active area

AF-27

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1 with regard to mineral exploration, and I think that  
 2 particular strip of land, say about four miles on the  
 3 northwestern edge of the range, could be looked at  
 4 specifically.

5 We refer to the withdrawal of those  
 6 13-plus major mineral districts or mining districts  
 7 that are on the range as an opportunity cost, that we  
 8 need to continue to remind ourselves that that is what  
 9 exactly it is, that the citizens of Lincoln County and  
 10 Nye County in particular are being denied an  
 11 opportunity to build their tax base through the  
 12 withdrawal of those mining districts.

13 Finally, in substance I think the division  
 14 supports the continued renewal of the range. On a  
 15 personal note, I think it's worth thinking about the  
 16 fact that there's many places in this world that the  
 17 citizens are not allowed to have this kind of dialogue  
 18 with the military, I think that's an important factor  
 19 that we all need to remember.

20 We'll submit written comments prior to the  
 21 end of the closing of the written comment period.  
 22 Thank you.

23 COL. SWEENEY: Thank you, Mr. Coyner.

24 That completes all of those who would  
 25 like -- who indicated a desire to speak, so I will turn

AF-27

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1 to some of those who may have been frustrated by the  
 2 five-minute cutoff.

3 Miss Potorti, did you desire to add some  
 4 additional remarks?

5 ADDITIONAL COMMENTS OF GRACE POTORTI

6 Yes, I will.

7 The only thing that I wanted to say was  
 8 that the Air Force has really taken some positive steps  
 9 in this state, unlike the Navy who seem to slam the  
 10 door shut on us all the time, and I do want to give you  
 11 all credit for doing that, although I'm very  
 12 disappointed to see some of our Fifth Amendment and  
 13 First Amendment rights violated tonight, and that makes  
 14 me sad, but all in all the Keystone dialogue was a  
 15 positive experience, I was honored to be part of it,  
 16 and I really, really hope that the Air Force follows  
 17 through on it. And that's really our concern is we  
 18 want to see those lands managed, we want to see them  
 19 managed properly. And like I said, I want them to have  
 20 money to do it, and we need to make sure that that's  
 21 part of the legislative process.

22 Thank you.

23 COL. SWEENEY: Thank you, Miss Potorti.

24 Mr. Brechin.

8700 63

ADDITIONAL COMMENTS OF VERNON BRECHIN

The Alternative 1B and 2B involve freeing up, possibly, some mineral resources, and also this trade administrative over these questionable things that have been -- we don't really know who's been administering them for a while, that's a Public Land Order 1662, which is Area 51, and Pahute Mesa.

My opinion is that essentially BLM transferred these lands over to the Air Force, and then later the DOE, and then the Air Force and the DOE, kind of behind closed doors, transferred the use of these lands between each other. I feel that that was an illegal process, and I think congress should look into that process.

The Pahute Mesa now has been used by the DOE for 35 years, and Area 51, which is Public Land Order 1662, has been used by the Air Force rather than the DOE for 40 years. It's about time that we understand what a grave thing will happen to national security if virtually anything about Area 51 is released, including the size or whatever.

Anyway, another issue is as part of this 1B and 2B, perhaps the offer by Nellis Air Force Base to provide access to private mineral extractive operations under its Alternative 1B and 2B is evidence

8700 64

that it is throwing out a poison carrot in order to straighten out the legal control problems with Pahute Mesa and Area 51.

According to a Federal Register notice published on 8-29-97 the Nellis Air Force Base and the BLM have already determined that, quote, "that no withdrawn lands within the Nellis Air Force Range are suitable to opening for operation under the Mine Law of 1972, the Mineral Leasing Act of 1920 as amended, the Mineral Leasing Act for Acquired Lands of 1947, the Geothermal Steam Act of 1970, or any one or more of such acts." It's Federal Register 62 FR, Page 4, 5, 6,

Another aspect of this alternative that was proposed between the original scoping issue in the original Alternative A which was stipulated for 25 years has now been broken into or split into a 25-year period, and another one that involves the indefinite period alternative. The original proposed action which was proposed for an indefinite period of withdrawal with a 15-year review would have been reviewed by the FLPMA, the Bureau of Land Managements FLPMA, and the Legislative EIS process which would have involved public and congressional input. This apparently in the new thing has been replaced by an Air Force report to

AF-7

8700 65

1 congress about its need for the Nellis Air Force Range  
2 every 15 years. I think that's somewhat abused, and in  
3 fact that report, I think, would be a waste of money  
4 since the Air Force, I'm sure, delivers a report to  
5 congress each year about its needs.

6 Thank you very much.

7 COL. SWEENEY: Thank you Mr. Brechin.

8 Ladies and gentlemen, that completes all  
9 who had asked to speak this evening. Since we're  
10 earlier than our allotted time, what I propose to do is  
11 we recess the formal portion of this hearing and give  
12 you an opportunity to speak with the Air Force  
13 technical representatives at the various displays, and  
14 they will be happy to answer any questions that you may  
15 have.

16 I would remind you that the public comment  
17 will extend through the 31st of December of 1998.  
18 Comments may be submitted in writing, as I have  
19 indicated, and the addresses are available right  
20 outside on the comments table.

21 If there is nothing further then, we'll  
22 recess the public hearing at this time, and if there is  
23 no need to further reopen, we'll adjourn.

24 Thank you very much.

25 (Proceedings concluded at 9:10 P.M.)

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AF-7



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HENDERSON CHAMBER OF COMMERCE  
RESOLUTION NO. 1198

THIS IS A RESOLUTION OF THE HENDERSON CHAMBER OF COMMERCE IN SUPPORT OF THE RANGE RENEWAL OF NELLIS AIR FORCE BASE.

A RESOLUTION OF THE HENDERSON CHAMBER OF COMMERCE BOARD OF DIRECTORS, EXPRESSING ITS UNANIMOUS AND ENTHUSIASTIC SUPPORT OF THE NELLIS AIR FORCE RANGE RENEWAL, WHICH ENCOMPASSES CLARK COUNTY AND NYE COUNTY IN THE STATE OF NEVADA.

WHEREAS, The natural and cultural resources within the Range's 3.1 million acres under Nellis stewardship are being preserved to protect the plant life, wildlife and areas of archaeological and historical sites.

WHEREAS, Nellis' goal is to conduct the most realistic combat training and systems testing, while protecting the natural and cultural resources of lands under their stewardship.

WHEREAS, The mission of the Department of Defense is more than aircraft, guns and missiles. Part of the defense job is protecting the land, waters, timber, and wildlife - the priceless natural resources that make this great nation of ours worth defending.

WHEREAS, There are vital Air Force protections, security and environmental resource actions conducted on the Nellis Air Force Range.

WHEREAS, a direct negative economic impact to Clark County and Nye County will be affected by the closing of the Nellis Air Force Range.

WHEREAS, There could be a direct loss of 3,090 active-duty military and 855 federal civilian personnel assigned to Nellis Air Force Range in Clark County, 584 contractor personnel in Clark County and 216 contractor personnel in Nye County. There also would be a reduction in TDY expenditures, purchases and construction activity on Nellis and Nellis Air Force Range.

WHEREAS, In Clark County, secondary jobs lost from reduced economic activity resulting from non-renewal of Nellis Air Force Range is projected to be equivalent of 2,677 jobs - the Nellis Air Force Base and Nellis Air Force Range direct, plus secondary jobs lost in Clark County the the end of 2003 would be 7,422 jobs.

WHEREAS, In Nye County, the non-renewal of Nellis Air Force Range would also terminate Tonopah Test Range activities. This would result in loss of 21 government employees and 77 contractor employees. Annual salaries paid to all workers \$4,960,000. Purchase of goods and service in Nye County economy are estimated to total \$700,000 annually and TDY expenses amount to \$22,400. annually.

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ORIGINAL

HENDERSON CHAMBER OF COMMERCE  
590 So. Boulder Highway • Henderson, Nevada 89015 • (702) 565-8951

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November 6, 1998

Nellis Support Team  
Lt. Col. William M. Garner  
Director, Range Renewal Office  
3770 Duffer Drive  
Nellis Air Force Base NV 89191-7001

GE-1 Dear Lt. Col Garner,

Enclosed is a copy of Resolution passed by the Henderson Chamber of Commerce Board of Directors on November 5, 1998, unaniously and enthusiastically in support of the Range Renewal as it directly impacts the economy of Clark County and Nye County.

We feel that the Range Renewal is vital to these counties due to the large number of active-duty military, federal civilian personnel, and contractor personnel that are employed by Nellis Air Force Base, as well as the construction activity and purchases made in these counties by Nellis and NAFR.

Thank you for your presentation on the Range Renewal.

Sincerely,  
HENDERSON CHAMBER OF COMMERCE

*Alice Martz*  
Alice Martz  
Executive Director


Enclosure  
/g/r

NOW, THEREFORE, The Henderson Chamber of Commerce, through its Board of Directors, expresses its unanimous and enthusiastic support of the continuance of the Nellis Air Force Range.

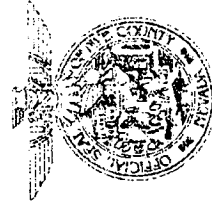
PASSED AND ADOPTED BY THE BOARD OF DIRECTORS OF THE HENDERSON, NEVADA CHAMBER OF COMMERCE, INC., ON THE 5<sup>th</sup> DAY OF NOVEMBER, 1998.

  
Dianna M. Foye, President

ATTESTED TO BY:

  
Alice J. Martz, Executive Director

SEAL



**NYE COUNTY**  
**DEPARTMENT OF NATURAL RESOURCES & FEDERAL FACILITIES**  
1210 E. Basin Rd. Ste. #6 • Pahrump, Nevada 89048  
(702) 727-7727 • Fax (702) 727-7919

December 4, 1998

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, Nevada 89191-0919

GE-2 Subject: Oral Comments Presented November 16, 1998, in Tonopah, Nevada

On behalf of Nye County, I welcome you to Tonopah. My name is Dr. James Marble and I am Director of the Nye County Natural Resources Office. My comments this evening will be brief but we will follow up in writing by your deadline. Our follow-up comments will be specific and will include proposals for incorporating socioeconomic mitigation measures.

Thank you for traveling to our community to afford us the opportunity to offer Nye County's comments on the Nellis Air Force Range Renewal Draft Legislative Environmental Impact Statement (DLEIS). The Range's presence in our county is welcomed and valued. We recognize the significant role the Air Warfare Center and the Nellis Range, not to mention our town's own Tonopah Test Range, play in our national defense. We are honored to serve as the host community to these world-class facilities and look forward to working in partnership with the Air Force to maintain Nellis' continued success.

Nye County is the third largest county in the lower 48 states--larger than the combined areas of Massachusetts, Connecticut, Delaware, and Rhode Island. We are also one of the fastest growing. Our population tripled during the last 15 years and we expect it to double again during the next 15 years.

A key long-term goal for Nye County is to realign its relationship with the federal government, so that installations we host make a greater contribution to our residents and economy. The federal government has an overwhelming presence in Nye County. Altogether, 93 percent of Nye County is managed by the federal government, mostly the Bureau of Land Management. The Nellis Range, Tonopah Test Range, and Nevada Test Site occupy 2.1 million acres, or about 18 per cent of the total land area in the County. Unfortunately, Nye County has not realized benefits commensurate with the dominating presence of these federal installations in the County.

9001

Nellis Air Force Range Renewal Office  
December 4, 1998  
Page 3 of 3

Executive Order 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that each federal agency analyze the human health, economic and social effects of federal actions on minority and low-income communities. Mitigation measures are required to be defined that address significant and adverse environmental effects of proposed federal actions on these communities. As a rural low-income community, Nye County falls under the requirements of the environmental justice executive order and must be afforded the extra considerations, opportunities for participation and mitigation measures called for by this order. Nye County notes that the method used in the DLEIS to examine environmental justice further diminish the adverse socioeconomic impacts realized by the County.

EJ-4

EJ-3

Another major point is that the DLEIS must take into account local responsibility for emergency management and response. As noted during scoping, the document must acknowledge and discuss Nye County's role and capabilities for emergency preparedness, first-on-scene, first response and incident command in off-site incidents and to consider and resolve issues regarding mutual aid and cleanup responsibilities. Such discussions have apparently been overlooked in the DLEIS.

SF-5

In summary, Nye County values the Nellis and Tonopah Ranges. As a community that meets the environmental justice criteria, Nye County should be afforded extra consideration and impact mitigation opportunities. This should be reflected in the Final LEIS. We believe an additional alternative that investigates a 15 year withdrawal period should have been included in the assessment, or at a minimum, acknowledged. This also should be reflected in the final LEIS. Finally, environmental and emergency management issues must also be taken into account within the DLEIS.

Thank you again for the opportunity to address you this evening.

NYE COUNTY,

*James R. Marble*

James R. Marble, Ph.D.  
Director, Natural Resources Office

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Nellis Air Force Range Renewal Office  
December 4, 1998  
Page 2 of 3

The DLEIS, as well as the 1991 Special Nevada Report, which was completed as a requirement of the 1986 Military Land Withdrawal Act, found that the beneficial effects from the Nellis Base and Range accrue almost exclusively to Clark County. The Report forecasted that, by the year 2000, Nellis activities would add more than 1 billion dollars to the Clark County gross regional product compared to only 6 million dollars for Nye County. Furthermore, if other economic activity, such as mining or grazing, had developed in the area currently reserved for the Nellis and Tonopah Test Ranges, total employment and gross regional product in the county could be up to 62 million dollars per year higher. By the Air Force's own analysis, during the 2015 peak employment year, Nye County personal incomes could increase by 65 million dollars by eliminating the Nellis Air Force Range.

Nye County bears the inherent risks of the activities that take place on and over the Range, while the benefits accrue to our urban neighbor Clark County. This distributional inequity must be mitigated through jobs and economic stimuli that the Nellis Range can supply.

SE-2

We note, too, that Tonopah still suffers economically from the loss of the 37<sup>th</sup> Tactical Fighter Wing from TTR in 1991. And, finally, continued federal encouragement of contractors to refuse payment of their possessory use tax liability has been a source of great frustration to the County. Contractors should be encouraged to be "good corporate citizens" by paying their tax obligation to the County.

AF-28

We look forward to having the Special Nevada Report analysis of Nellis' economic impact in our county updated through this DLEIS. The challenge for Nye County is to ensure that the important decisions about Nellis not be made without the County's meaningful input.

AF-17

Designating Nye County as a cooperating agency, as we have requested, would have ensured that the analyses and assessment discussions accurately portrayed the impacts to Nye County. The Nellis Air Force Base Command has, through the Nellis Range Renewal DLEIS, overlooked a unique opportunity to have a meaningful, mutually beneficial relationship with Nye County.

AF-37

Nye County notes that the alternative recommended in scoping, that considered the withdrawal renewal at fifteen years, as has been the case under the Military Lands Withdrawal Act of 1986 has not been included or acknowledged in the DLEIS. Nye County is concerned that Congress, under the 25 year renewal alternatives, may conduct a review of the withdrawal through one of its authorizing committees, using an *ad hoc* structure and process that suits its particular purpose at that time. In short, the current Nellis Range requirements have provided this opportunity for the host community to be consulted. Or, put in a different way, if NEPA did not have to be invoked, would our voice be heard at all during a Congressional review? Unfortunately, our standing as a rural community being what it is, we think not.

AF-38

AF-36

9002

Page Two  
December 15, 1998  
RE: Comments LEIS Esmeralda County

2) Alternative 2B is requesting the withdrawal of approximately 2.911 million acres as opposed to 3.035 million acres currently withdrawn. Esmeralda County requests the additional withdrawal of the Eastern Goldfield Mining District, as defined on Figure 3.5-7 in the LEIS, comprising approximately 15,000 acres. We would further request the withdrawal of the Stonewall and Wagner Mining Districts also defined on Figure 3.5-7.

AF-15

The Eastern Goldfield Mining District and Stonewall Mining District have resource potential in gold and silver, as defined on Table 3.5-2 in the LEIS, high to moderate. These districts contain proven reserves of precious minerals and have been actively worked prior to the district being withdrawn for federal use. Opening of this land to mineral exploration and development with today's modern recovery technique for mineral deposits would result in considerable improvement the Esmeralda County's economy. The enhanced economy would greatly offset the adverse impacts of the Nellis Air Force Range (NAFR) to Esmeralda County.

Nevada has led the nation in gold and silver production since prior to the turn of the century. In 1994 over 3 billion dollars in mineral resources were produced. Nevada produces 67% of our nation's gold and approximately one-third of the world's gold output. Mining contributes over 90 million dollars annually in State and Local taxes, including 40 million dollars in net proceeds of mine tax. Additionally, the highest paid sector of Nevada's population is employed by the mining industry, with an average annual salary of \$43,000.00. Mining directly employs approximately 12,500 people with an additional 30,000 people dependent on the industry for their livelihoods. As ore reserves are depleted statewide, new ones must be found.

The West side of the Nellis Air Force Range contains the above-referenced mining districts that would directly impact the economy of Esmeralda County. Esmeralda County firmly believes the return of this resource is not an unreasonable request and would compensate the County for the acres of public land in the proximate area to Esmeralda County controlled by the Nellis Air Force Range. Seventeen mining districts and parts of many others occur within the Nellis Air Force Range.

AF-15

Nellis Air Force Range has had a devastating effect on the economy of Esmeralda County as well as a restrictive effect on mineral development in Nevada. Had this public land been open for exploration for the past 50 years, it is impossible to predict how many

9002



**BOARD OF COUNTY COMMISSIONERS**  
ESMERALDA COUNTY, NEVADA

**MEMBERS**  
SUSAN W. DUDLEY, CHAIRMAN  
GARY O'CONNOR, VICE CHAIRMAN  
BEN VILJOEN, LIQUOR BOARD

**STAFF**  
BEVERLY J. RELYEA  
ADMINISTRATIVE ASSISTANT  
(702) 485-3406

DEC 30 RECD

December 15, 1998

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, Nevada 89191-0919

Nevada State Director  
Bureau of Land Management  
1340 Financial Blvd.  
Reno, Nevada 89520

**RE: DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT  
RENEWAL OF THE NELLIS AIR FORCE RANGE LAND  
WITHDRAWAL**

GE-2 Dear Sirs:

Esmeralda County has reviewed the Draft Legislative Environmental Impact Statement - Renewal of The Nellis Air Force Range Land Withdrawal (LEIS) and provide the following comments.

We are appreciative of the opportunity to review and comment on the LEIS. We welcome this opportunity to realign our relationship with the Air Force.

Esmeralda County supports the military use of the land and agrees with the necessity of the continued use. After considering all of the factors, Esmeralda County supports Alternative 2B with the following variations to said Alternative.

- 1) Range Renewal of 15 years instead of 25 years. We feel the Air Force should be held accountable to the public for the use of public land and a shorter renewal period would give all interested parties better opportunity review the accountability.

AF-38

Page Four  
 December 15, 1998  
 RE: LEIS Comments - Esmeralda County

on the nation's most problematic watersheds. The Nevada Division of Environmental Protection and the U.S.D.A. Natural Resources Conservation Service was given the task to rank each of Nevada's 72 eight digit hydrologic units into one of four categories. Category 2 is defined as watersheds meeting goals, but needing action to sustain water quality. Category 4 is defined as watersheds where more data is needed to assess the condition. These watersheds lack data, critical data elements, or the data density to make a reasonable assessment at this time.

As shown of Figure 1 and Table 2 from the CWAP report, copies of which are attached, Hydrologic Units 1606003 - Southern Big Smokey Valley is defined as a Category 2 and 160600011 - Ralston-Stone Cabin Valley, is defined as a Category 4. Both of these Hydrologic Units are within the boundaries of the NAFR and Esmeralda County. Hydrologic Unit - 1606003 involves the source of the drinking water supply to the Town of Goldfield. It is important to Esmeralda County to have the Air Force share data relative to these units with the County, NDEP and NRCS.

WR-4

The Counties in which the range is located receive P.I.T. payments and the impacts on their counties are addressed in the LEIS. Esmeralda County, Goldfield in particular, is located very close to the NAFR and does not realize benefits commiserate with the land. We believe we should accrue some benefits in exchange for the negative effects on the community. As good will the Air Force should share more economic opportunity with Esmeralda County. The Air Force should consider the creation of jobs and economic stimulants for Esmeralda County.

The Air Force should set aside a portion of civilian employment opportunities at the Air Force facility to Esmeralda County residents.

The Air Force should set aside procurement for goods and services for vendors located within Esmeralda County as well as support vendors supplying goods and services to the Air Force to locate in Esmeralda County.

AF-29

The Air Force should consider working with Esmeralda County Law Enforcement and Emergency Services for first responder preparedness. Esmeralda County desires entering into mutual aid agreements.

Page Three  
 December 15, 1998  
 RE: LEIS Comments Esmeralda County

mines might be in operation or how large they might be today. Had these districts been open to exploration the deposits would likely have been developed in the 1970's and be profitable operations today.

Since World War II the military's effect on the economy of Central Nevada has been disastrous. During World War II all mines and mills were shut down by the Special War Powers Act, Bill 208. With the mines shut down, the railroads fell upon hard times and were requisitioned by the war department, then scrapped to aid in the war effort. NAFR made mineral exploration and ranching east of Goldfield impossible. For the past 50 years Esmeralda County's population has been declining due to the above. The tax base as a result has eroded. After the war the U.S. Government rebuilt Japan and Germany but in Central Nevada the bombs are still falling, livestock stampeding, windows still rattle and new cracks are still showing up in the Historical Goldfield Courthouse. NAFR has been anything but a good neighbor.

Esmeralda County residents' quality of life, particularly in Goldfield, is affected by the activities on the NAFR. Some of the negative impacts are defined below and are not adequately addressed in the LEIS.

NS-2

SONIC BOOMS - This is a major concern of the residents of Esmeralda County.

HIGH EXPLOSIVE NOISE - Is another concern of the Esmeralda County residents.

RESTRICTION TO MINING AND GRAZING. Esmeralda County comprises approximately 3,460 square miles, of which 98% is public land. Our survival depends on generating a greater economic base and opening of lands within 3 to 4 miles of Goldfield for the purposes of mining and grazing would help accomplish our goal.

SE-4

SURFACE WATER - The concern of wildlife from the test range crossing into Esmeralda County if the surface water from which they drink is not completely safe, what affect would they have on Esmeralda County.

WR-2

GROUND WATER - The Clean Water Action Plan (CWAP) was sent to the Vice President on February 14, 1998. It is a new initiative to focus new money and resources

9002

Page Five  
 December 15, 1998  
 RE: LEIS Comments - Esmeralda County

AF-18  
 DOE-5  
 700.

The Air Force should agree to provide a safe secure corridor for rail and highway shipments of low-level radioactive waste, spent nuclear fuel, and other high-level radioactive waste through the NAFR, perhaps along the Valley Road and through Gate

Even as Congress plans to trim U.S. Forces, close bases and cut the budget, the military is expanding bombing and training ranges in Nevada. For example, the Groom Range, the designation of the Navy's 5,500 square miles Supersonic Operations Area (SOA), the buyout of Dixie Valley, designation of the Hart Military Operations Area, as well as the bombing and contamination of 35,000 acres of public lands surrounding Fallon. At present over 4,145,039 acres of public lands are withdrawn for military use in Nevada. The Fallon Air Station plans to withdraw from public domain another 391,000 acres for bombing and electronic warfare ranges.

The State has continued to suggest that the Department of Defense provide compensation in the form of acre-for-acre land trade or exchange for any public land withdrawn for military use. Senator Richard Byran has gone on record in favor of the acre-for-acre compensation. A letter to the Deputy Secretary of Defense John Deutch regarding the land withdrawal at Groom Range, Senator Bryan wrote: "I feel it would greatly benefit the continued public relationship if a comparable area of unneeded Department of Defense Land in Nevada could be made available for Public Use".

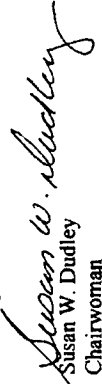
In conclusion Esmeralda County would like the Department of Defense to change its position on the closed door policy to County environmental, public safety and economic development concerns and work with the State and Local government on mitigation measures. If the closed door policy remains unchanged the DOD will remain out of touch with Esmeralda County's concerns and will reinforce our need to ensure the NAFR be held accountable to the State and residents of Esmeralda County.

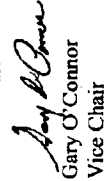
9002

Page Six  
 December 15, 1998  
 RE: LEIS Comments - Esmeralda County

Thank you again for the opportunity to review and comment on the LEIS. We look forward to continue working with the Air Force on these issues. We encourage you to give serious consideration to these comment in preparing the Final LEIS.

Sincerely,

  
 Susan W. Dudley  
 Chairwoman

  
 Gary O'Connor  
 Vice Chair

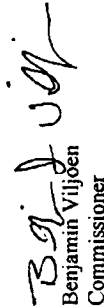
  
 Benjamin Viljoen  
 Commissioner

Table 2. Continued

HLUC #	Watershed Name	Category	Priority
16050302	West Walker	1	16
16050303	Walker	1	9
16050304	Walker Lake	1	7
16060001	Dixie Valley	4	
16060002	Gabbs Valley	4	
16060004	Northern Big Smoky Valley	2	
16060005	Diamond-Monitor Valley	2	
16060006	Little Smoky-Newark Valley	4	
16060007	Long-Ruby Valleys	2	
16060008	Spring-Steptoe Valleys	2	
16060009	Dry Lake Valley	4	
16060010	Fish Lake-Soda Springs Valley	4	
16060012	Hot Creek-Railroad Valleys	2	21
16060013	Cactus-Sarcobatus Valleys	4	17
16060014	Sand Spring-Tiibabo Valleys	4	25
16060015	Jvampah-Pahrump Valleys	2	27
17040211	Goose	2	
17040213	Salmon Falls	1	
17050102	Brunson	1	
17050104	Upper Owyhee	1	
17050105	South Fork Owyhee	1	
17050106	East Little Owyhee	4	
17120007	Warner Lakes	2	
17120008	Gusano	4	
17120009	Alford Lake	2	
18080001	Surprise Valley	2	
18080002	Madeline Plains	2	
18080003	Honey-Eagle Lakes	2	
18090101	Mono Lake	2	
18090102	Crowley Lake	2	
18090201	Eureka-Saline Valleys	4	
18090202	Upper Amargosa	2	
18090203	Death Valley-Lower Amargosa	2	

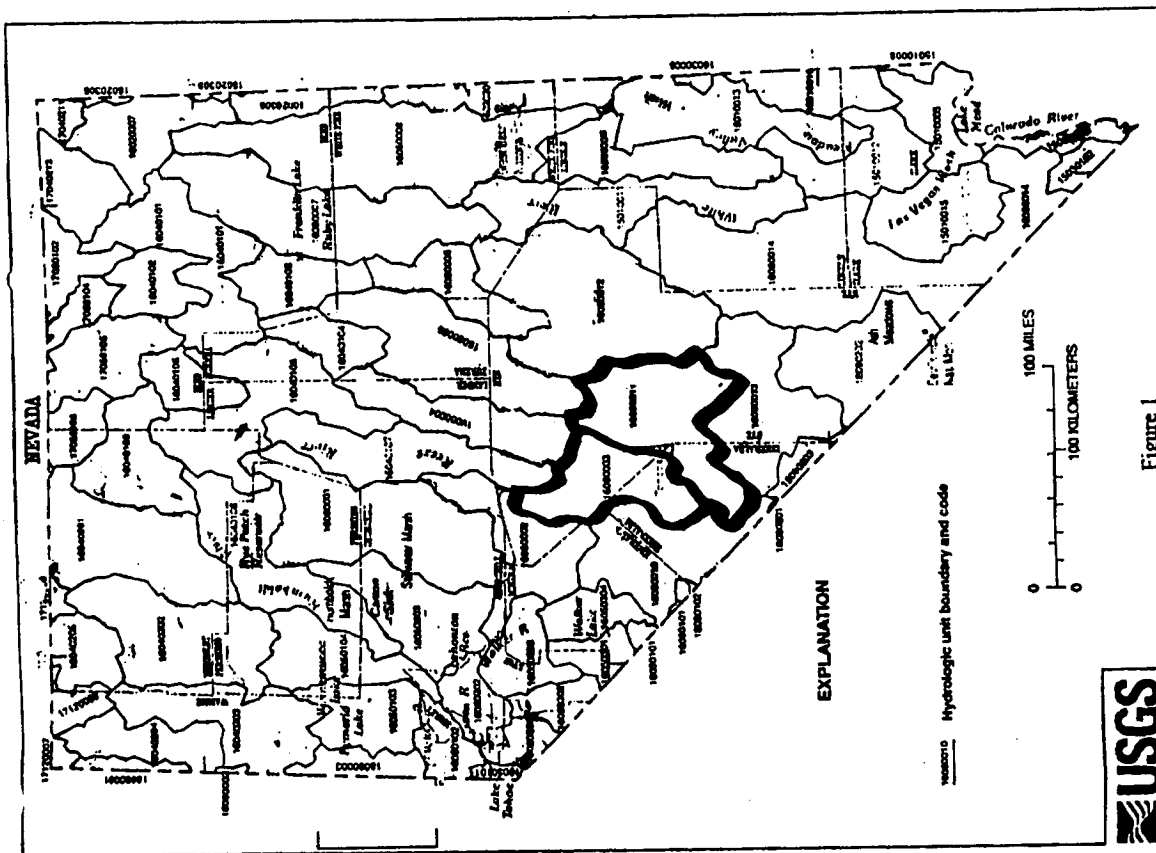


Figure 1

AF-18  
DOE-S

9003

**NELLIS WITHDRAWAL WRITTEN COMMENTS, PAGE TWO**

that 15,360 acres comprising the Eastern Goldfield district be returned to local control, benefitting the town of Goldfield which has been the recipient of many adverse economic impacts over the years.

**AF-15**  
We also urge the release of land comprising the following mining districts:

- Reveille Valley - 2,560 acres
- Corral Springs - 5120 acres
- Silverbow - 7680 acres
- Cactus Flat - 30,720 acres
- Cactus Peak - 22,400 acres
- South of Mud Lake - 7,680 acres
- Gold Crater - 3,840 acres
- Thirsty Canyon - 16,640 acres
- Transvaal - 6,400 acres

These districts contain proven reserves of precious and industrial minerals and have been actively worked prior to their being withdrawn by federal edict. Today's modern recovery techniques for these previously worked mineral deposits would result in considerable improvement to our economy.

Of notable concern is the proposed indefinite withdrawal contained in this alternative. We agree completely with local and county government that withdrawals of land in our area should be authorized for periods of no more than 15 years. Additionally, the proposed areas of co-use would allow certain activities for periods of only one year. It is our desire to see much longer guarantees of public access to these areas.

Language proposing co-use includes the term "non-consumptive" which we read to mean that the land would be open for nothing more than hiking or birding. We contend that a sufficient number of wilderness areas have already been withdrawn from productive use and propose that these areas be opened to wood gathering (where practical and ecologically sound) and hunting, among other possible 'consumptive' uses.

Alternative 2B is nearly identical to 1B with the exception being a proposed withdrawal authorization of 25 years. As noted in our comments on 1B, we recommend that the withdrawal be authorized for no period longer than 15 years. The balance of this proposal is addressed by our comments under item 1B.

We respectfully request that the Department of the Air Force appreciate the depressed economic conditions of Nye and Esmeralda counties as set forth in this document as well as in resolutions regarding same which are attached. We urge the drafters of the final proposal to take into account the conditions and suggestions made herein and include them in said final proposal for acceptance by the United States Congress.

Respectfully submitted,



Sandy Harmon  
Executive Director

att: 5 resolutions

9003

NAFR Renewal Office  
P. O. Box 9919  
Las Vegas, NV 89191-0919

November 3, 1998

Sirs:

**GE-2**  
As the economic development authority charged with improving the job base, tax base and quality of life for the county of Nye which contains a large portion of and has been impacted by the Nellis Air Force Range, and the county of Esmeralda which abuts and is impacted by this same federal reservation, I wish to address our concerns related to the renewal of the withdrawal of these lands and proposed alternatives thereto.

Nye and Esmeralda counties have borne the brunt of various federal programs over the years. Nye county is better than 91% federally owned, Esmeralda in excess of 97% federally owned. A sizeable portion of this land has been used for testing and training which involves nuclear and conventional arms and munitions, along with the use of many toxic chemicals. As a result, much of our land has been rendered dangerous, deadly to man, useless and non-productive for countless generations to come. The economic benefit of various federal projects on this land over the years has been received primarily the urban area to the south and outside of Nye and Esmeralda counties. Local benefits have been minimal and cyclic in nature. Our very survival depends on generating a diversified economic base which is not dependent on federal activities. This diversification mandates that land be available for the various industries attracted to our area, especially mining.

We find alternatives 1A and 2A as offering no relief from current conditions and are therefore unacceptable.

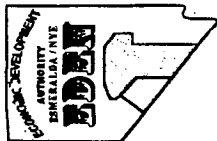
The 'no action' alternative may appear palatable to many local residents and businesses at first glance. However, the adverse impact on training missions which affect national security are worthy of careful consideration. The residents of this area are well known for their sacrifices and support of the defense of our country. Further, concern over whether or not that land which is safe for use by the public would be returned to the state and/or situs counties makes this a less than desirable alternative without considerable public input and guarantees. The loss of our few local jobs related to NAFR occurring under this scenario is of concern as well.

We believe that only two alternatives contain some benefits for our area and are worthy of further consideration and discussion, namely 1B and 2B.

Alternative 1B offers the release of 30,000 to 35,000 acres from military use, with no designation as to any planned recipient(s) but which we hope would be returned to the state or county (preferably) for disposal to the private sector for consumptive and other uses. Not only do we request that this land be returned formally to local government for beneficial use but believe that the acreage be increased beyond the Wagner and Clarksdale districts. It is our desire

**AF-15**

**We're Tempting!**  
P. O. Box 153, Tonopah, NV 89009 / PHONE (702) 492-8130 / FAX (702) 492-7380  
e-mail: meder@apl.com / home page: www.nye.gov/govnet/nr/efdr/index.htm





9005

Resolution No. 97-46  
NYE COUNTY BOARD OF COMMISSIONERS

BOARD OF COUNTY COMMISSIONERS  
COUNTY OF NYE, STATE OF NEVADA

GE-1 Resolution urging the Secretary of Defense and the Secretary of the Interior to make certain areas of the Nellis Air Force Range available for use by the public

WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and

WHEREAS, soon after the creation of the Range its lands were made unavailable to the public for multiple use and were reserved exclusively for military use; and

WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishment of the Range its lands were used for various purposes, including prospecting, mining and recreation; and

WHEREAS, prospecting and mining within the are now known as the Range began in the late 1860s and continued until terminated by the federal government in the early 1940s; and

WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, and most mining taking place in the western and northern part of the area now known as the Range; and

WHEREAS, all or part of some 25 major mining districts are located in the western and northern part of the Range, and precious metals were mined in these districts, and

WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-606) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and

WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the Year 2001, unless certain areas of the Range are found suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act; and

9004

*Col Sweeney*

November 10, 1998

Chairman  
Nellis Air Force Range Renewal Committee  
PO Box 9919  
Las Vegas NV 89191

Dear Committee Chairman:

As the Mayor of Las Vegas for the past 7 years, I have grown to appreciate the importance of Nellis Air Force Base and its many contributions to both our local economy and to the national defense and security of the United States. I am keenly aware of the importance that the Nellis Air Force Base Range plays in providing a training ground to sharpen the skills of our fighting forces.

This range and the crucial role it plays to the security of our country cannot be disputed. It is a one-of-a-kind item that simply must be protected and retained so that our armed forces can continue high quality training long into the future. In my opinion, it is imperative that the Nellis Range be maintained.

I wholeheartedly support the Air Force proposal to renew the reauthorization of the Nellis Range and Congressional reauthorization beyond the year 2001. The citizens of Las Vegas have strongly supported Nellis Air Force Base and its many activities. As the Mayor, I am convinced that the citizens of our valley would unquestionably support the reauthorization of the Nellis Range and its continued long-term use for both tactical and operational needs by the Armed Forces of the United States.

Sincerely,

*Jan Laverty Jones*  
Jan Laverty Jones  
Mayor  
City of Las Vegas



JAN LAVERTY JONES  
MAYOR

GE-1

CITY OF LAS VEGAS  
400 EAST STEWART AVENUE  
LAS VEGAS, NEVADA 89101

702 228-6041  
(FAX) 365-7980  
702 398-9108 (TDD)

9005

WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) to support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities; and

WHEREAS, the U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and

WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 of the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register.

NOW THEREFORE, it is hereby resolved as follows:

1. The Nye County Board of Commissioners urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see Attachments 1 and 2) and having a total area of approximately 127,000 acres.
2. The Nye County Board of Commissioners urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U.S. mining laws, pursuant to Section 12 of the Act.
3. The Nye County Board of Commissioners urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities to support this resolution.
4. The Nye County Clerk is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, each member of the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities.

DATED this 4th day of November, 1997.

PROPOSED on the 4th day of November, 1997 by the Nye County Board of Commissioners.

9005

VOTE: AYES

McRae  
Carver  
Revert  
Davis

NAYS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ABSENT:


Copress

EFFECTIVE this 4th day of November, 1997.

BOARD OF COUNTY COMMISSIONERS  
COUNTY OF NYE, STATE OF NEVADA

By:

Chairman



ATTEST:

Juanita "Arte" Robb  
Juanita "Arte" Robb, Nye County Clerk  
and Ex-Officio Clerk of the Board

9005

MINING DISTRICTS OF INTEREST ALONG FRINGES OF NELLIS RANGE

APPROXIMATE LOCATION AND ACRE  
 BY WALT LOMBARDO, NEVADA DIVISION OF MINERALS

REVELLE VALLEY -	T.2S., R.51E., SEC. 1,2,11,12 (Unsurveyed)	2,560 ACRES
CORRAL SPRINGS -	T.2S., R.50E., SEC. 1 - 4, 9 - 12 (Unsurveyed)	5,120 ACRES
SILVERBOW -	T.1S., R.49E., SEC. 1 - 12 (Unsurveyed)	7,680 ACRES
CACTUS FLAT -	T.1N., R.48E., SEC. 13 - 36 (Unsurveyed) T.2N., R.48E., SEC. 1 - 24 (Unsurveyed)	30,720 ACRES
CACTUS PEAK -	T.1S., R.45E., SEC. 33 - 36 (Unsurveyed) T.1S., R.46E., SEC. 31 - 33 (Unsurveyed) T.2S., R.45E., SEC. 1 - 4, 9 - 16, 21 - 24 (Unsurveyed) T.2S., R.46E., SEC. 4 - 9, 16 - 21 (Unsurveyed)	22,400 ACRES
SOUTH OF MUD LAKE -	T.2S., R.44E., SEC. 1 - 12 (Unsurveyed)	7,680 ACRES
EASTERN GOLDFIELD -	T.2S., R.44E., SEC. 16 - 21, 28 - 33 (Unsurveyed) T.3S., R.44E., SEC. 3 - 10, 15 - 18 (Unsurveyed)	15,360 ACRES
GOLD CRATER -	T.4S., R.45E., SEC. 36 (Unsurveyed) T.4S., R.46E., SEC. 31 (Unsurveyed) T.5S., R.45E., SEC. 1, 12 (Unsurveyed) T.5S., R.46E., SEC. 6, 7 (Unsurveyed)	3,840 ACRES
WAGNER -	T.6S., R.44E., SEC. 18, 19, 30 (Unsurveyed)	1,920 ACRES
CLARKDALE -	T.7S., R.45E., SEC. 34 - 35 (Unsurveyed) T.8S., R.45E., SEC. 2, 3, 9 - 11, 15, 16, 21, 22 (Unsurveyed)	7,040 ACRES
THIRSTY CANYON -	T.9S., R.47E., SEC. 13 - 30, 32 - 36 (Unsurveyed) T.10S., R.47E., SEC. 1, 2, 12 (Unsurveyed)	16,640 ACRES
TRANSVAAL -	T.10S., R.48E., SEC. 25, 26, 36 (Unsurveyed) T.10S., R.49E., SEC. 30 - 33 (Unsurveyed) T.11S., R.49E., SEC. 4 - 6 (Unsurveyed)	6,400 ACRES

127,360 Acres

9005 ES-9

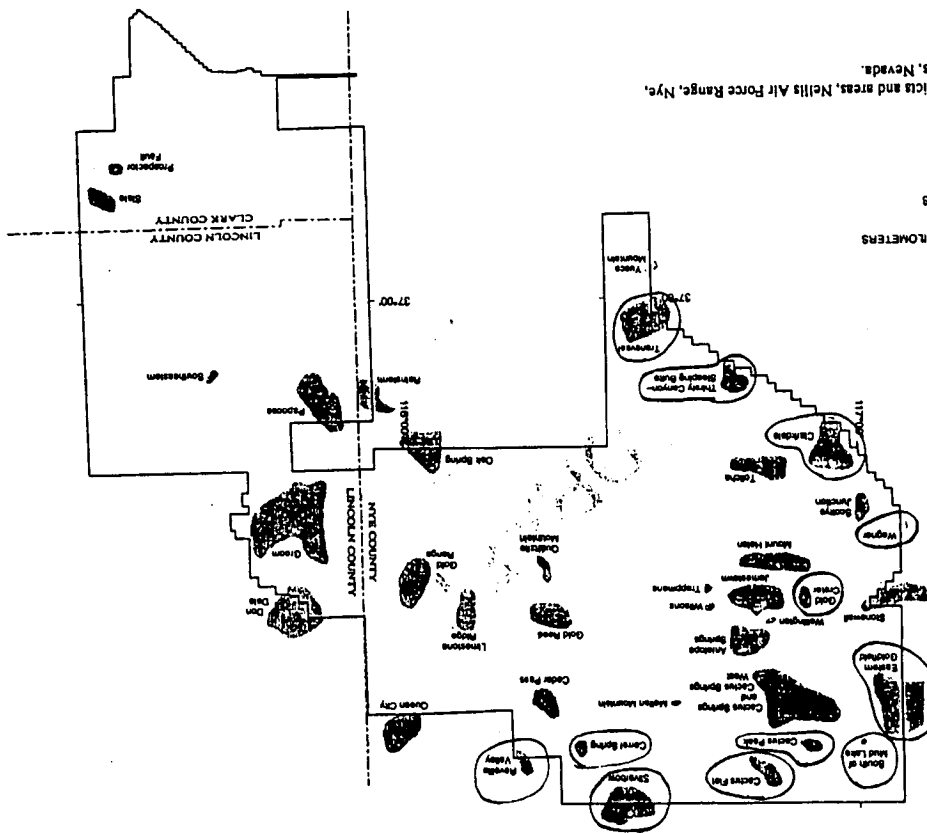


Figure ES-9 Mining districts and areas, Nellis Air Force Range, Nye, Lincoln, and Clark Counties, Nevada.

Wayne Cameron, Commissioner  
Julio Castello, Commissioner  
Brent Kludge, Commissioner  
Carol O. McKenzie, Commissioner  
Cheryl A. Noriega, Commissioner  
Donna M. Bath, Ex-Officio Clerk of the Board

9006

Courthouse Annex  
953 Campion St.  
Ely, Nevada 89301  
(702) 289-8841  
Fax: (702) 289-8842

### White Pine County Board of County Commissioners

November 17, 1998

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, Nevada 89191

RE: Preliminary Comments of White Pine County Regarding the Draft Legislative Environmental Impact Statement (DLEIS) for Renewal of the Nellis Air Force Range Land Withdrawal

GE-2 To Whom It May Concern:

White Pine County is pleased to submit these preliminary comments to the Draft Legislative Environmental Impact Statement (DLEIS) for Renewal of the Nellis Air Force Range Land Withdrawal. The County reserves the right to provide further written comments to the DLEIS prior to the December 31, 1998 deadline for receipt of such input.

While not directly impacted by military operations associated with continued use of the Nellis Range by the Air Force (although Air Force related low-level military overflights and sonic booms do occur in White Pine County), the location of the Range and its access restrictions represent a potential barrier to resolution of an issue which does pose the potential for direct impact to White Pine County. In particular, the location of the Range requires that shipments of spent nuclear fuel (including Naval fuel) and low and high level radioactive wastes be shipped either through the populated Las Vegas Valley or from the north through White Pine County. In fact, the State of Nevada has evaluated alternative highway routes for transporting spent nuclear fuel through Nevada and has concluded that absent the ability to cross the Nellis Range, preferred routes would traverse White Pine County.

The alternatives for transporting radioactive wastes through Nevada to the Nevada Test Site (NTS) which appear to minimize risk of exposure to Nevadans include: 1) entering Nevada via the Union Pacific Railroad east of Caliente and accessing NTS by way of a direct rail spur across the Nellis Range in the vicinity of Rachel or; 2) via rail to truck intermodal at Caliente with trucks crossing the Nellis Range in the vicinity of Rachel. The Board of Lincoln County Commissioners and the Caliente City Council have each requested the Air Force to consider provision of a safe secure corridor for radioactive waste transport across the Nellis Range. White Pine County supports Lincoln County and the City of Caliente in their requests.

AF-18  
DOE-5

Page 2  
Nellis Air Force Range Renewal Office  
November 17, 1998

9006

In its present form, the DLEIS provides insufficient consideration of the implications of restrictions of access posed by continued use of the Nellis Range by the Air Force. The No Action Alternative would remove current restrictions to minimizing the risks of transporting radioactive wastes across Nevada to NTS. The Preferred Alternative would maintain current restrictions on using routes across the Nellis Range, which might effectively minimize the risk of transporting radioactive wastes across Nevada. The Final LEIS must consider the implications of continued restrictions of access of the Nellis Range in conjunction with efforts by the Department of Energy (DOE) to minimize the risks of transporting radioactive wastes across Nevada. The Final LEIS should include an offer by the Air Force to provide a safe secure corridor for rail and/or truck transport of low and high level radioactive wastes and spent nuclear fuel across the Nellis Range and into NTS.

White Pine County appreciates the opportunity to offer these preliminary comments.

Sincerely,

*Wayne Cameron*  
Wayne Cameron  
Commissioner

cc: Board of Lincoln County Commissioners  
Caliente City Council

WC:ep

9006



# Beatty Town Advisory Board

P.O. Box 837  
Beatty, Nevada 89003  
Phone/Fax: (702) 553-2050

Resolution 98-01  
BEATTY TOWN ADVISORY BOARD

GE-1

BEATTY TOWN ADVISORY BOARD  
COUNTY OF NYE, STATE OF NEVADA

Resolution urging the Secretary of Defense and the Secretary of the Interior to make Certain Areas of the Nellis Air Force Range Available for use by the Public.

WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and

WHEREAS, soon after the creation of the Range its lands were made unavailable to the public for multiple use and were reserved exclusively for military use; and

WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishment of the range its lands were used for various purposes, including prospecting, mining and recreation; and

WHEREAS, prospecting and mining within the area now known as the Range began in the late 1860's and continued until terminated by the Federal Government in the early 1940s; and

WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, and most mining taking place in the western and northern part of the area now known as the Range; and

WHEREAS, all or part of some 25 major mining districts are located in the western and northern part of the Range, and precious metals were mined in these districts, and

WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-406) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and

WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the year 2001, unless certain areas of the Range are found suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act; and

WHEREAS, the communities adjacent to the Range suffer from poor economical conditions as well as continuing to suffer the adverse economic impact caused by the Range, both of which would

9007

## RESOLUTION BY THE NORTH LAS VEGAS CHAMBER OF COMMERCE

GE-1

Whereas, the North Las Vegas Chamber of Commerce has had a close working relationship with Nellis Air Force Base for several decades, and

Whereas, the North Las Vegas Chamber of Commerce recognizes the extremely significant impact of the Nellis Air Force Base community and its associated Test Range upon the economic, social, environmental, and cultural well being of both the City of North Las Vegas, the County of Clark, and the State of Nevada, and

Whereas, the North Las Vegas Chamber of Commerce strongly supports not only the Nellis mission generally in defense of our country and system of values, but especially the continued role of the Nellis Test Range in its current size and configuration as integral to that mission, and

Whereas, the North Las Vegas Chamber of Commerce is aware and appreciative of the extraordinary efforts of Nellis Air Force Base personnel to preserve and protect the environment, historical, and cultural considerations of the Range and its neighbors, now therefore,

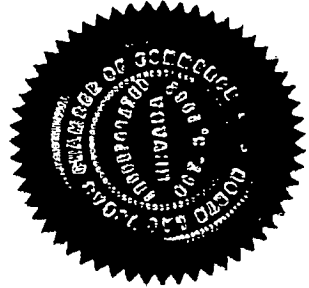
Be it resolved, by the North Las Vegas Chamber of Commerce on behalf of its Board of Directors, Officers and members, that the Chamber commends and urges the renewal of the Nellis Test Range indefinitely into the future, in a manner and configuration to be recommended by the United States Air Force to the Congress and others in coming months and years.

In respect whereof, the undersigned attest to this Resolution,

*Steve Mongrain*  
Steve Mongrain, President  
Board of Directors  
North Las Vegas Chamber of Commerce

*Richard L. Conner*  
Richard L. Conner  
Executive Director, C.E.O.  
Corporate Secretary

Date: November 4, 1998



TEL: 702-482-7389

Mar 05 '98 12:34 No. 002 P. 10 9008



**Beatty Town Advisory Board**

P.O. Box 837  
 Beatty, Nevada 89003  
 Phone/Fax: (702) 553-2050

be partially offset by precious and industrial metal development, and

WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) to support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities; and

WHEREAS, The U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and

WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 of the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register.

NOW THEREFORE, it is hereby resolved as follows:

1. The Beatty Town Advisory Board urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see attachments 1 and 2) and having a total area of approximately 127,000 acres.
2. The Beatty Town Advisory Board urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U. S. mining laws, pursuant to Section 12 of the Act.
3. The Beatty Town Advisory Board urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, The Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities to support this resolution.
4. The Beatty Town Advisory Board is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, Emeralds and Mye County Commissioners, the Governor of the State of Nevada, each member of the Nevada

TEL: 702-482-7389

Mar 05 '98 12:35 No. 002 P. 11



**Beatty Town Advisory Board**

P.O. Box 837  
 Beatty, Nevada 89003  
 Phone/Fax: (702) 553-2050

Legislature, the Nevada Association of Counties and the Nevada League of Cities.

DATED this 13<sup>th</sup> day of January, 1998.

Beatty Town Advisory Board

BY: [Signature]  
 Laurence GARY, Chairman

BY: [Signature]  
 Harmon B. Fordyth Jr., Sec-Treas

BY: [Signature]  
 Johnnie Jarvick, Member

BY: [Signature]  
 Bill Zaquetti, Member

BY: [Signature]  
 Jerry Adcox, Member

ATTEST:

[Signature]  
 Mary Baily Notary

EDFN TEL: 702-482-7389 Mar 05 '98 12:36 No. 002 P. 12  
44372 90(

ROUND MOUNTAIN TOWN BOARD  
COUNTY OF NYE, STATE OF NEVADA

Resolution urging the Secretary of Defense and the Secretary of the Interior to make certain areas of the Nellis Air Force Range available for use by the public

GE-1

WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and

WHEREAS, soon after the creation of the Range its lands were made unavailable to the public for multiple use and were reserved exclusively for military use; and

WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishing of the Range its lands were used for various purposes, including prospecting, mining and recreation; and

WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, with most mining taking place in the northern part of the area now known as the Range; and

WHEREAS, all or part of some 25 major mining districts are located in the northern part of the Range, and precious metals were mined in these districts; and

WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-606) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and

WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the Year 2001, unless certain areas of the Range are found suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act, and

WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) to support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities; and

WHEREAS, the U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and

WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 of the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register,

EDFN TEL: 702-482-7389 Mar 05 '98 12:36 No. 002 P. 13  
44372 90(

1. The Round Mountain Town Board urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see Attachments 1 and 2) and having a total area of approximately 127,000 acres.

2. The Round Mountain Town Board urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U.S. mining laws, pursuant to Section 12 of the Act.

3. The Round Mountain Town Board urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, the Nevada Legislature, the Nevada Association of Counties, and the Nevada League of Cities to support this resolution.

4. The Town Administrative Supervisor is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, each member of the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities.

Dated this 25 day of November, 1997.

PROPOSED on the 25 day of November, 1997 by the Round Mountain Town Board.

VOTE: AYES: Stephen Amundson NAYES: Johanny Arcehuleta  
Joni Eastley  
Pat Hansen  
Marianne Firebaugh  
ABSTENTIONS: None ABSENT: None

EFFECTIVE this 25 day of November, 1997.

ROUND MOUNTAIN TOWN BOARD  
COUNTY OF NYE, STATE OF NEVADA

BY: Joni Eastley  
Joni L. Eastley, Chairperson

ATTEST:

Marianne Firebaugh  
Marianne Firebaugh, Town Clerk

<p>GE-1</p> <p>Resolution 97-009</p> <p>Resolution Urging the Secretary of Defense and the Secretary of the Interior to Make Certain Areas of the Nellis Air Force Range Available for Use by the Public</p> <p>WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and</p> <p>WHEREAS, soon after the creation of the Range its lands were made available to the public for multiple use and were reserved exclusively for military use; and</p> <p>WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishment of the Range its lands were used for various purposes, including prospecting, mining and recreation; and</p> <p>WHEREAS, prospecting and mining within the area now known as the Range began in the late 1860s and continued until terminated by the federal government in the early 1940s; and</p> <p>WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, with most mining taking place in the northern part of the area now known as the Range; and</p> <p>WHEREAS, all or part of some 25 major mining districts are located in the northern part of the Range, and precious metals were mined in these districts; and</p> <p>WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-606) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and</p> <p>WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the Year 2001, unless certain areas of the Range are found</p>	<p>9010</p> <p>1 suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act; and</p> <p>WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) to support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities; and</p> <p>WHEREAS, the U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and</p> <p>WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 of the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register,</p> <p>NOW THEREFORE, it is hereby resolved as follows:</p> <p>1. The Esmeralda County Board of Commissioners urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see Attachments 1 and 2) and having a total area of approximately 127,000 acres</p> <p>2. The Esmeralda County Board of Commissioners urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U.S. mining laws, pursuant to Section 12 of the Act.</p>	<p>9010</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>26</p> <p>27</p> <p>28</p>
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9011

Resolution No. 97-02  
ECONOMIC DEVELOPMENT AUTHORITY  
ESMERALDA/NYE COUNTIES

EXECUTIVE BOARD OF THE ECONOMIC DEVELOPMENT AUTHORITY  
ESMERALDA/NYE COUNTIES (EDEN)

GE-1

Resolution urging the Secretary of Defense and the Secretary of the Interior to make certain areas of the Nellis Air Force Range available for use by the public

WHEREAS, the Nellis Air Force Range (Range) is located in south-central and southern Nevada, and it was established in 1940 on public land and originally called the Las Vegas Bombing and Gunnery Range; and

WHEREAS, soon after the creation of the Range its lands were made unavailable to the public for multiple use and were reserved exclusively for military use; and

WHEREAS, the Range currently consists of approximately 3,100,000 acres, and prior to the establishment of the Range its lands were used for various purposes, including prospecting, mining and recreation; and

WHEREAS, prospecting and mining within the area now known as the Range began in the late 1860s and continued until terminated by the federal government in the early 1940s; and

WHEREAS, evidence of prospecting and mining activities can be seen throughout the Range, and most mining taking place in the western and northern part of the area now known as the Range; and

WHEREAS, all or part of some 25 major mining districts are located in the western and northern part of the Range, and precious metals were mined in these districts, and

WHEREAS, pursuant to the Military Lands Withdrawal Act of 1986 (Public Law 99-606) a recent mineral resource assessment was conducted, and this assessment shows areas in the Range with good potential for precious metals development, particularly certain mining districts located on the western and northern boundaries of the Range; and

WHEREAS, the Military Lands Withdrawal Act of 1986 reserves the Range for only military purposes to the Year 2001, unless certain areas of the Range are found suitable for opening now to the operation of U.S. mining laws pursuant to Section 12 of the Act; and

WHEREAS, the communities adjacent to the Range suffer from poor economic conditions as


9010

3. The Esmeralda County Board of Commissioners urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities to support this resolution.


4. The Esmeralda County Clerk is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, each member of the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities.

DATED this 4th day of November 1997.

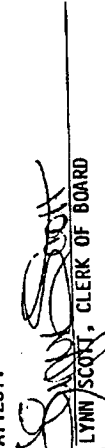
BOARD OF COUNTY COMMISSIONERS  
COUNTY OF ESMERALDA  
STATE OF NEVADA

BY:   
SUSAN M. DUDLEY, CHAIRMAN

BY:   
GARY O'RONNOR, VICE-CHAIRMAN

BY:   
BEN VILGOEN, MEMBER

ATTEST:

  
LYNN SCOTT, CLERK OF BOARD

9011

well as continuing to suffer the adverse economic impact caused by the Range, both of which would be partially offset by precious and industrial metal development; and

WHEREAS, the Department of Defense (U.S. Air Force) is currently preparing documents (e.g., the mineral resource assessment, draft environmental impact statement, etc.) To support a request to Congress to renew the withdrawal, in perpetuity, for all or most of the lands associated with the Range for one purpose, continued military activities; and

WHEREAS, the U.S. Air Force is aware of the significant non-military values of certain areas in the Range, and is considering relinquishing some of these areas back to the Department of the Interior for the purpose of opening them to the public for multiple use; and

WHEREAS, this relinquishment can occur by way of the anticipated Year 2001 Congressional order to renew the withdrawal of all or most of the lands in the Range for military purposes or pursuant to Section 12 of the Military Land Withdrawal Act of 1986, the Secretary of the Interior can determine, with the concurrence of the Secretary of the Air Force, which public lands in the Range are suitable for opening now to the operation of U.S. mining laws, subject to listing said lands in the Federal Register.

NOW THEREFORE, it is hereby resolved as follows:

1. The Economic Development Authority Nye/Esmeralda Counties urges the Secretary of Defense to release to the Department of the Interior, as soon as possible, those areas of the Range identified as having good potential for precious metals development located on the western and northern boundaries of the Range (see Attachments 1 and 2) and having a total area of approximately 127,000 acres.
2. The Economic Development Authority Nye/Esmeralda Counties urges the Secretary of the Interior to support this resolution and also make the determination that certain public lands in the Range are suitable for opening now to the operation of U.S. mining laws, pursuant to Section 12 of the Act.
3. The Economic Development Authority Nye/Esmeralda Counties urges each member of the Nevada Congressional Delegation, the Governor of the State of Nevada, the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities to support this resolution.
4. The Economic Development Authority Nye/Esmeralda Counties Staff is to prepare and transmit a copy of this resolution to the Secretary of Defense, the Secretary of the Interior, each member of the Nevada Congressional Delegation, Esmeralda and Nye County Commissions, the Governor of the State of Nevada, each member of the Nevada Legislature, the Nevada Association of Counties and the Nevada League of Cities.

9011

DATED this 20th day of November, 1997.

PROPOSED on the 20th day of November, 1997, by the Executive Board of the Economic Development Authority Esmeralda/Nye Counties.

VOTE: AYES: Schulz \_\_\_\_\_  
Perkins \_\_\_\_\_  
Greer \_\_\_\_\_  
Arre \_\_\_\_\_  
Britton \_\_\_\_\_  
Arrest \_\_\_\_\_  
Byrd \_\_\_\_\_  
Byrd \_\_\_\_\_

NAYS: None \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

ABSENT:

EFFECTIVE this 20th day of November, 1997.

EXECUTIVE BOARD OF THE ECONOMIC  
 DEVELOPMENT AUTHORITY  
 ESMERALDA/NYE COUNTIES

By: Virginia Redington  
 Executive Board Chairman

ATTEST:

[Signature]  
 K. R. "Sandy" Harmon, Executive Director

901.

DEC 30 1998

Board of County Commissioners  
Lincoln County, Nevada



COUNTY COMMISSIONERS  
PAUL CHRISTENSEN  
RY FLAKE  
DAN FREHNER  
JIM MANNER  
ED WRIGHT

PO. BOX 90, PIOCHIE, NEVADA 89043  
TELEPHONE (702) 962-5590  
FAX (702) 962-5180

DISTRICT ATTORNEY  
PHILIP H. DUNLEAVY

COUNTY CLERK  
CORRINE HOGAN

December 24, 1998

Nellis Air Force Range Renewal Office  
P. O. Box 9919  
Las Vegas, Nevada 89191

RE: Supplemental Comments to Draft Legislative Environmental Impact Statement (DLEIS) for Renewal of the Nellis Air Force Range (NAFR) Land Withdrawal, Nevada

GE-2

To Whom It May Concern:

Lincoln County is pleased to submit these supplemental comments to the Draft Legislative Environmental Impact Statement (DLEIS) for Renewal of the Nellis Air Force Range (NAFR) Land Withdrawal, Nevada. These written comments are intended to supplement verbal comments offered by Lincoln County at the November 11, 1998 hearing held in Caliente. Prior to publication of the Final LEIS, Lincoln County would appreciate the opportunity to meet with representatives of the Air Force to discuss the County's comments and Air Force responses thereto.

LU-2

Page 1-16, Figure 1-3- This figure does not depict all roads on NAFR. For example, roads leaving Rachel to the south and crossing the Range and accessing the Nevada Test Site (i.e. Valley Road south from Rachel across the Range through Gate 700 and onto the NTS accessing the Mercury Highway) are not shown. Such roads are clearly depicted on the Nellis AFB Range chart, produced by the Defense Mapping Agency in 1995 (see attached map).

LU-1

Page 3.10-11, Section 3.10.4-1 - This section fails to recognize that civilian employees of DOE and its contractors have been granted permission to cross the Nellis Range to access places of employment at DOE administered sites. Such access has proven to be a key mechanism to ensure that at least a minimal level of NTS/NAFR economic benefits accrue to Lincoln County residents. Access across the Range for members of the general public involved in DOE escorted tours of NTS has also been granted in the past. Such access has facilitated residents of Lincoln County to become better informed about the activities on NTS and their potential implications for public health and safety. Access across the Nellis Range into NTS, particularly from the Rachel area, should be recognized in the DLEIS and recommended for maintenance.

AF-2

Page 2  
December 23, 1998  
Lincoln County Comments to DLEIS

Pages 4.13-1 through 4.13-16 - The description of socioeconomic impacts contained within this section indicates that positive economic impacts from NAFR to Lincoln County are negligible while mining and agricultural production opportunities forgone may approach \$10 million annually. Despite the lack of economic benefit accruing to Lincoln County, a significant portion of the County's land area and virtually all of its airspace is encumbered by military operations. Section 4.13 of the DLEIS should be revised to address the lack of equity associated with Nellis activities. Lincoln County foregoes non-military economic benefit (i.e. mining and agriculture) and derives very little economic benefit from the military presence in the County. This disequity must be addressed through appropriate mitigation/compensation measures.

SE-1

SE-2

This section also assumes that resumption of mining on NAFR lands would most likely occur in NYE County. This is despite Table 3.5.1 which clearly shows that the majority of historic mining production prior to withdrawal of NAFR for public domain has occurred in Lincoln County. The DLEIS minimizes the economic potential for mining in Lincoln County and fails to adequately address associated lost economic opportunities foregone.

SE-3

Volume 2, Appendices, Page H-4, Figure H-1 - The footnote at the bottom of this page should refer to Figure 13.14-1, not 13.13-4.

ED-4

I and my fellow Commissioners look forward to working with the Air Force to address the concerns of Lincoln County regarding continued use of the Nellis Range to guarantee this Nation's strong national defense.

Sincerely,

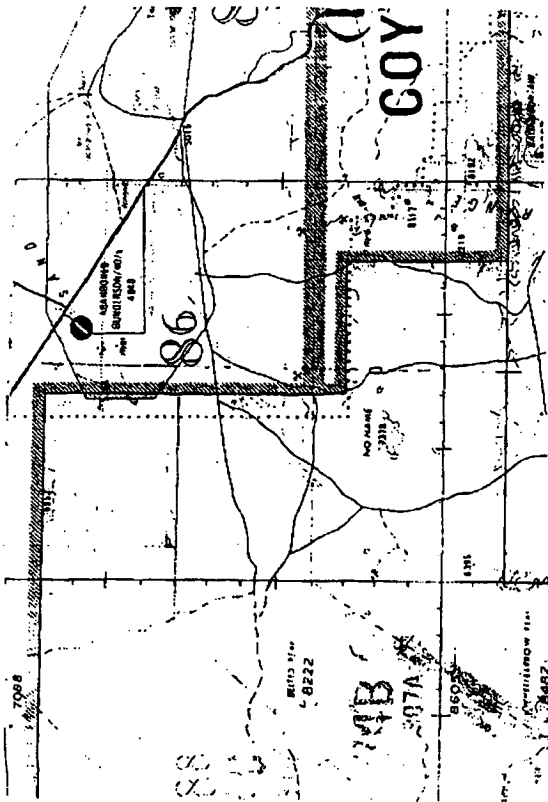
Edward E. Wright  
Chairman

EW/es

CC: Corrine Hogan, Lincoln County Clerk

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9012



9013



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION IX  
 75 Hawthorne Street  
 San Francisco, CA 94105

Nellis Air Force Range Renewal Office  
 PO Box 9919  
 Las Vegas, NV 89191  
 Attention: Kenneth Reinertson

GE-2 - Dear Mr. Reinertson:

The U.S. Environmental Protection Agency (EPA) has reviewed the U.S. Air Force's Draft Legislative Environmental Impact Statement (DLEIS) for *The Renewal of Nellis Air Force Range (NAFR) Land Withdrawal, Nevada*. Comments are provided under the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act and the Council on Environmental Quality's (CEQ) NEPA Implementing Regulations (40 CFR 1500-1508).

The DLEIS has five action alternatives. Alternative 1A would withdraw approximately 3 million acres from public use for an indefinite period of time. Reports to Congress regarding the need for the lands, resource management, and public informational programs would take place every 15 years. Resources would continue to be administered by the Air Force. Alternative 1B would withdraw approximately 2.9 million acres (less 38,400 acres along the western border of the range) for an indefinite period of time with reports to Congress every 15 years. Under 1B, land management for 127,620 acres at an area known as Pahute Mesa would be transferred to DOE; three areas (i.e., Mud Lake, Kawich Range, and EC South) would be available for short-term resource management. Native American religious or cultural, or recreational activities. A five-party agreement would continue to be used for natural and cultural resources management. Responsibilities of the Bureau of Land Management and U.S. Fish and Wildlife Service would be revised, and permitting by other agencies would be required on some lands. Alternative 2A would withdraw approximately 3 million acres for 25 years, otherwise this alternative is identical to 1A. Alternative 2B would be identical to 1B except that the duration would be 25 years. Under the No Action alternative, the majority of the land would return to the Bureau of Land Management (BLM), so ground-based military operations would cease and special use of air space would continue.

Because a preferred alternative was not identified in the DLEIS, EPA rated each alternative separately. All five alternatives are rated *EO-2 - Environmental Objections, Insufficient Information*. While we recognize the important role that a training range plays in the maintenance of national security, we object to the proposed indefinite and 25 year time periods between public reviews of the need for and effect of training at NAFR. The nature of the proposed 15 year congressional review is not described in the DLEIS, but we assume that it would not be more rigorous than the NEPA process. The Air Force has a land management agency role at NAFR, but the DLEIS lacks recognition of significant environmental impacts that are possible as a result of continuing military training activities (i.e., impacts associated with ground and surface water, hazardous materials and waste, chaff safety issues, and biological resources), and lacks detail on the land management practices that have been implemented to protect and maintain the natural resources. Given the large size of NAFR, the diversity of resources that can be impacted on the site, and the lack of detail on the Air Force's stewardship practices for the lands natural resources in the DLEIS, we have objections with the 25 year or indefinite withdrawal alternatives because we cannot determine the effectiveness of past management practices (i.e., over the last 15 years). The extension to

AF-30  
 AF-31  
 AF-32  
 AF-33

AF-34  
 AF-35

even a 25 year review for withdrawal period would detract from active public participation in the management process. We recommend a new alternative with the public review period reduced to every 10 years. Additional detail on potential impacts should be included in the FLEIS. Our objection to the No Action alternative is based on the Air Force's description of BLM's possible future management, and could change based on new information provided by the BLM. For additional information on EPA's review and our rating system, please refer to the attached detailed comments and to our rating summary.

Please send two copies of the Final Legislative Environmental Impact Statement to David Farel, Chief, Federal Activities Office (code: CMD-2) at the letterhead address at the same time that it is sent to EPA's Washington, D.C. office for filing. Please contact Rosalyn Johnson of my staff at (415) 744-1574 if you have questions regarding our comments. Also, we ask that you contact Rosalyn Johnson of my staff within two weeks of receiving this letter, since our recent attempts to contact the Air Force to discuss the DLEIS have met with only limited success.

Sincerely,

Deanna Wieman, Deputy Director  
 Cross-Media Division

Attachments (3):  
 EPA Ratings Summary  
 Detailed Comments  
 Sample Table from the DLEIS for the Renewal of the Barry M. Goldwater Range

cc: Mike Cox Nevada Division of Wildlife  
 Gregory Phillips CMD-3  
 Mitch Kaplan WST-5  
 Hillary Hecht WTR-9  
 Stephanie Wilson WTR-10  
 Robbye Smith SFD-8-1

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Draft Legislative Environmental Impact Statement for the Renewal of the Nellis Air Force Range Land Withdrawal EPA Comments, December 1998

General

The DLEIS does not provide the level of detail necessary for readers to understand the comparative impacts of continued military training versus the No Action alternative (i.e., BLM management of the lands). General information on the proposed activities and specific information on the impacts that result as well as ongoing Air Force mitigations should be included in the document. This is an important issue for this document considering the length of time that is being proposed between reviews of the military's need for the Nellis Air Force Range and the consequences of that use to the environment.

The DLEIS treats the land withdrawal alternatives as "continuing uses" of the area, with no new impacts because activities are ongoing. If continuing impacts and mitigations have been addressed in previous environmental documentation, then the responsibility still exists to properly reference and briefly describe them in the current document. References and brief descriptions should be included in the DLEIS, the goal being to display to the public, the decision maker, and interested agencies that the Air Force is aware of how training activity impacts the Nellis landscape and has adequately defined mitigations which would continue as a part of the proposed project. If impacts and mitigations have not been addressed in previous documentation, the analysis in the DLEIS should include them in keeping with CEQ's guidance in 40 CFR 1502.14. "[the alternatives section] should present the environmental impacts of the proposal and the alternatives in comparative form...." "[The agency shall] rigorously explore and objectively evaluate all reasonable alternatives... [and] devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits." [Italics added] The environmental consequences section would flow from that foundation, "forming] the scientific and analytic basis for the comparisons..." [of alternatives]" according to 40 CFR 1502.16.

Purpose and Need

The purpose and need statement should "specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 CFR 1502.13). The purpose and need statement in the DLEIS describes the necessity of military training and the types of activities and equipment that are used for training at NAFPR. With such a foundation, the alternatives would be expected to be more directly related to the training activities themselves rather than the time period between reviews. The Air Force's purpose and need should be more closely related to the alternatives presented (i.e., this section should answer the question of what is to be accomplished by increasing or reducing the time period between reviews). This section should also include a brief discussion on the need that is being addressed by changing the land management structure (e.g., not withdrawing a portion of the previously withdrawn area and providing for co-use on other areas).

Alternatives

The purpose and need for the land withdrawal renewal does not provide a rationale for a 25 year withdrawal and an indefinite withdrawal period as the only temporal options presented. EPA does not believe that public and agency review of ongoing military use of these lands should be limited to a minimum of 25 year intervals (unless the indefinite withdrawal's 15 year congressional review includes the NEPA process), especially considering the large size of the area, the diversity of natural and cultural resources that are present at the site, and the lack of detail in the DLEIS on the Air Force's management

AF-39

AF-40

PN-1

PN-2

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

\*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

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concentrations (page 3.6-7). On the contrary, it is also likely that heavy metals in soil runoff might be accumulated rather than dispersed by erosional processes. Although the contaminant concentrations may be reduced in the areas where they were/are deposited, the FLEIS should address the potential for accumulation of heavy metals in groundwater, and bioaccumulation studies of heavy metals in the organisms that inhabit the range (See Biological Resources). The DLEIS also indicates in Section 4.6.1.3 that "Risks associated with radioactive groundwater contamination are being evaluated on an ongoing basis by the DOE, including assessment of potential off-site migration of contaminant plumes to the south-southwest by deep, regional aquifers." Based on a preliminary consideration of groundwater vulnerability by the limited information available in the DLEIS, there is evidence that specific groundwater locations underlying NAFR are highly vulnerable to degradation by potentially contaminating activities. The significance of documented environmental contamination in NAFR is in demonstrating the vulnerability of the natural setting. The FLEIS should describe what is being done to mitigate radioactive and heavy metal contamination recognizing their threat to sensitive receptors.

Nevadans recognize the extreme scarcity and importance of drinking water to their states well being. Consequently, all groundwater in Nevada is considered a potential source of drinking water, and is protected to drinking water standards by the state. Potentially contaminating activities located in the alluvial and volcanic rock aquifer recharge areas could render groundwater sources dependent on this water particularly vulnerable. The same applies to potentially contaminating activities immediately proximal to groundwater sources, particularly if they are in flood plains. The location of flood plains in NAFR is also documented in the DLEIS. In order to protect these vulnerable groundwater sources, potentially contaminating activities in these areas should be located and management practices aggressively implemented. Any existing or planned efforts to this end should be documented in the FLEIS.

By identifying relationships between potential contaminating activities, locations of these activities, and the geologic medium through which contaminant transport could take place, conclusions can be drawn about the vulnerability of groundwater sources to potentially contaminating activities. The FLEIS should provide the additional information about these activities and vulnerability factors so that readers can fully understand the consequences of continued training activities at Nellis as well as those of management by the BLM. Mitigation measures adequate to protect existing water quality and beneficial uses, consistent with existing Arizona standards, should be described in the FLEIS and included in the NEPA Record of Decision.

Cultural Resources

Section 3.9.6.3 indicates that "Most target areas have not been surveyed for cultural resources." In Environmental Consequences the DLEIS states that the potential sources of impacts in areas that may have cultural resources are air and ground operations that have been ongoing since 1986 (Section 4.9.1.1), and that only previously approved actions are permitted (page 4.9-6). It is not clear how cultural sensitive cultural resources are being protected in areas that have not been surveyed but where air and ground operations are permitted. Avoidance measures, survey plans, survey results (if appropriate), and mitigation plans should be clearly stated in the FLEIS. Specifically, we suggest that targets in areas where cultural resources are expected or known should be shifted to a void impacts.

If surveys reveal damage to sensitive cultural resources from past ground disturbance activities, these impacts and appropriate mitigations should be addressed in the cumulative impacts section of the

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activities at NAFR. Management activities are described on a general level in Section 1.3.3, however the DLEIS text does not provide enough detail to indicate that existing management techniques provide adequate land stewardship and management of natural and cultural resources. We recommend:

- that a new alternative with a 10 year time interval between public environmental reviews under NEPA of the need for and consequences of continued military training at NAFR becomes the preferred alternative in the FLEIS, and
- that a more detailed description of training activities, impacts, and mitigations be incorporated into the environmental consequences section of the FLEIS.

These two actions would result in a document that would more readily inform non-military agencies and the public about the Air Force's continuing management of resources at Nellis. We believe that the 10 year time interval will enable the Air Force to better respond to changes in environmental regulations that could influence the dynamically-natured training missions that take place on the Nellis Range. For comparison, 10 years is the management review period used by BLM, the Forest Service, and the Department of Energy. Also, the new alternative should address land access and transfer of management as described in Alternatives 1B and 2B.

Hazardous Materials and Solid Waste Management

The DLEIS does not state whether the landfills located within NAFR are or could be regulated under the Resource Conservation and Recovery Act (RCRA) of 1976. There are a total of 98 Installation Restoration Program (IRP) sites located within the NAFR. The IRP was developed by DOD as a similar process to that of CERCLA (i.e., Superfund) for investigation and remediation of contaminated sites. 74 of these sites on NAFR have been recommended for no further action with 2 of the remaining 24 sites requiring remedial action under CERCLA. The FLEIS should describe whether any of the 98 sites are or could be RCRA-regulated. An RFA (RCRA Facility Assessment) under RCRA was conducted voluntarily in 1995 (no part B Permit). 272 Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) were evaluated, and 68 were recommended for further evaluation. Whether or not any of these sites are RCRA-regulated should be clarified in the FLEIS, as well as the Air Force's plans to further evaluate these sites.

The type of waste that is present at these sites should be briefly described, perhaps in a table. An appropriate model for presenting the information on SWMUs, AOCs, and IRP sites can be found in another Air Force DLEIS for the Renewal of the Barry M. Goldwater Range Land Withdrawal. See the attachment at the end of these comments.

If the No Action alternative is implemented, responsibility for remediation of any hazardous waste not handled by the Air Force could be transferred to BLM and/or the Nevada Department of Environmental Protection (NDEP). The FLEIS should address the likelihood of this scenario, and whether or not NDEP would be likely to have the resources to manage the additional sites.

Water

The DLEIS indicates that surface soils have been contaminated with heavy metals and that precipitation would tend to transport and disperse those contaminants, reducing the contaminant

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consistently followed up to determine whether...[questions of adverse impacts of chaff]... merit further action. A 1997 Air Force study referenced in the report cited the need for data and further research, including long-term studies on the impacts of chaff mostly related to aquatic environment. to the extent that this is an issue at NAFR, impacts of chaff on surface waters should be discussed in the FLEIS.

WR-6

Another military service, the U.S. Navy, is investigating the use of biodegradable chaff, including biodegradable end caps (see FEIS Withdrawal of Public Lands for Range Safety and Training Purposes, Naval Air Station Fallon, Nevada, May 1998). EPA recommends that the Air Force obtain the results of this study and use the Navy's recommendations if appropriate and feasible.

Cumulative Impacts

The cumulative impacts section should briefly discuss the Department of Energy's Yucca Mountain project (referred to in the DLEIS as Pahute Mesa) and how this project might add to environmental impacts, specifically from hazardous materials, radioactive wastes, and traffic in the vicinity of NAFR.

AF-45

Coordination with Native Americans

Section 9.0 on Consultations indicates that only one tribe, the Western Shoshone, were consulted in the environmental impact analysis process. However, Sections 3 and 4 do not refer to the Western Shoshone, but to the group called "The Consolidated Group of Tribes and Organizations." Section 9 of the FLEIS should include the list of the tribes and organizations that make up the membership of the consolidated group, and more detail about the process used to solicit participation in the consultation process (i.e., whether these consultations were undertaken in accord with the Presidential Memorandum of April 29, 1994 on government-to-government consultation with Federally-recognized tribes and with the DOD's October 1998 American Indian and Alaska Native Policy).

CR-7

CR-8

Table 3.1-1 lists the military training routes (MTRs) that utilize the NAFR. It is unclear if use of the MTRs could impact federally recognized tribal lands (e.g., noise impacts) between NAFR and other bases from which military personnel frequently fly. The DLEIS does not indicate if tribes and organizations located along the MTRs were included in the consultation process. We encourage the Air Force to include maps in the FLEIS that display reservation lands close to the NAFR and to MTRs, highlighting those included in the consultation process. Tribes that could be affected by activities based at NAFR should be added to the Air Force's consultation process if they are not already included.

CR-9

Pollution Prevention

The Council on Environmental Quality (CEQ) published a guidance memorandum for Federal agencies concerning the integration of pollution prevention techniques and mechanisms in NEPA documents (January 29, 1993 Federal Register, pp. 6478-6481). In this document, the CEQ encouraged agencies to incorporate pollution prevention principles, techniques and mechanisms in NEPA planning and decision-making. We encourage the Air Force to integrate feasible pollution prevention measures into continuing operations at NAFR. These measures could include implementing measures to reduce or avoid noise impacts to sensitive receptors (e.g., human and wildlife populations), solid waste recycling, hazardous waste minimization, and control of pollutants to waters of the United States.

AF-46

AF-47

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FLEIS. In addition, EPA would like the Air Force to consider any past damage to important and/or sacred Indian sites outside of the targeting areas in the cumulative impacts analysis. Cultural Resources that have been damaged in the past should be mitigated if it is determined that the impacts have been significant.

CR-14

Biological Resources

Avoidance of, or mitigations for impacts to wild horses, burros, and other large animals are not described in the DLEIS, though it goes into detail on protection of native resources (especially spring and seeps) from wild horses and burros, which is commendable. Figure 1-6 shows numerous target scattered through the Wild Horse Management Area, and across a large portion of the central range. The statement on page 4.8-4 on the Air Force's lack of data on wildlife use of range targets, raises concerns about possible risks to large, mobile species (not just horses and burros, but also bighorn sheep and antelope) that may move through target areas. The FLEIS should describe the level of threat to wildlife, horses, and burros from munitions and unexploded ordnance, and any other avoidance or mitigation procedures that are in place for their protection. In relation to this, the FLEIS should include information on the relative population health of antelope and bighorn sheep on NAFR and on adjacent lands which are managed by other agencies.

BI-1

BI-2

BI-3

BI-4

On page 4.8.6 the DLEIS states that "it is possible, however, that for brief periods of time and/or in the wettest years, flooded playas are used by migratory birds, most likely during spring, and that training activities at those times and locations could cause birds to leave and/or avoid target areas in favour of less disturbed sites." We suggest that the Air Force include more information on migratory bird use of regional water bodies in the FLEIS to help readers understand the relative levels of importance of the NAFR sites to migratory birds. If these any areas are considered important for migratory birds by the appropriate experts, the Air Force should commit to avoiding training exercises at those areas that consistently attract migratory birds during the appropriate seasons.

BI-5

AF-44

If appropriate, The FLEIS should describe mitigations that are in place for range fire impacts and associated non-native plant species invasion on native plant species.

BI-6

Though there is little risk, according to the document, to onsite workers or the public from surface soil contamination, the DLEIS does not discuss risks to wildlife that might accumulate heavy metals or other toxins in their systems. Also, the potential impacts of depleted uranium on the creatures that inhabit NAFR are not addressed. The FLEIS should briefly discuss and reference any ecological risk assessment studies that have been conducted by the Air Force in relation to onsite contamination on any appropriate sites mentioned in the Hazardous Material and Waste section of this letter.

HZ-11

HZ-10

HZ-6

Safety

The Air Force should include information that would allow the reader to become aware of the level of effectiveness of the continuing operations and maintenance activities that effect ground safety. For example, the FLEIS should describe whether dropped objects, fires, and sonic booms cause damage to human health, property, sensitive habitats, or sensitive species habitat.

SF-2

The GAO issued a letter report to Senator Harry Reid called "Environmental Protection: DOD Management Issues Related to Chaff" in September 1998. This report indicated that "DOD has not



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 FOM: Draft Legislative Environmental Impact Statement  
 for the Renewal of the Dwyer M. Goddard King Land  
 Withdrawal, US Air Force, September 1998.

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Location		Site Description	Site Number	Period of Operation	Suspected Contaminants and Background	Comments
Gila Bend AAF	Solvent disposal area	SD025	1983-1990	Petroleum hydrocarbons, VOCs, semi-VOCs, heavy metals	Only marginally exceeded background levels. No impact to groundwater. No remediation required.	None
	Fire training area	FT027	1970-1990	Petroleum hydrocarbons, organochlorine insecticides, herbicides, PCBs, VOCs, semi-VOCs, heavy metals	No BTEX detected so TRPH is not of concern. Manganese detected at low levels. Not of concern.	None
Ajo Radar Station	Incrator and propane AST	SD001	1958-1970	Petroleum hydrocarbons, organochlorine insecticides, PCBs, VOCs, semi-VOCs, heavy metals	None	None
	Oil/water sump and outfall	SD002	1958-1970	Petroleum hydrocarbons, organochlorine insecticides, PCBs, VOCs, semi-VOCs, heavy metals	Chloride and lead contamination at outfall area will be remediated in 1997.	TRPH*, lead, arsenic, chlordane, beryllium
Munitions burial area at Range I (representative site)	Suspected landfill	LF003	1958-1970	Petroleum hydrocarbons, organochlorine insecticides, herbicides, PCBs, VOCs, semi-VOCs, heavy metals	Geophysical testing concluded constituents were natural.	PAHs in one sample collected at 6-foot depth
	Septic tank and leach field	WP004	1958-1970	VOCs, semi-VOCs, heavy metals	Manganese in one sample exceeded PRG but average for area was less than PRG. No manganese background data available.	None
	Munitions burial area	DP044	1940-1993	Petroleum hydrocarbons, organochlorine insecticides, PCBs, VOCs, semi-VOCs, heavy metals	Background samples also exceeded PRGs.	Arsenic, Beryllium
U.S. Navy Sentinel Test Site	Trash dump	SS016	1948-1980	Petroleum hydrocarbons, organochlorine insecticides, PCBs, VOCs, semi-VOCs, heavy metals	Likely representative of true background, low solubility, relatively immobilized, not of concern.	Arsenic
	Suspected landfill	LF124	1945-1987	Petroleum hydrocarbons, organochlorine insecticides, herbicides, PCBs, VOCs, semi-VOCs, heavy metals	Not of concern. Likely representative of true background.	Beryllium

TABLE 3-23 SUMMARY OF SITE INSPECTION FINDINGS

9014

Colonel Michael Fukey  
December 31, 1998  
Page 2

Specifically, the thorough and extensive evaluations presented in the Special Nevada Report (SAIC, 1991) which was prepared in support of the Military Lands Withdrawal Act of 1986, has been largely ignored. Nye County notes that many of the evaluations in the Special Nevada Report are still fresh, and warrant direct inclusion by reference in the DLEIS.

AF-20

Our specific comments, concerns, and proposed mitigation measures are enclosed. We appreciate the opportunity to comment on the DLEIS, and look forward to discussing our comments in early January of 1999. If you have questions regarding our comments or desire additional information on this matter, please contact MaryEllen C. Giampaoli, at (702) 875-4594.

Very truly yours,  
NYE COUNTY, NEVADA

*Les Bradshaw*  
Les Bradshaw, Manager  
Department of Natural Resources and Federal Facilities

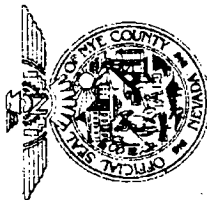
LWB/mel

Cc: Nye County Board of Commissioners  
Jerry McKnight, County Manager  
File

Bcc: Dr. James Marble  
Steve Bradhurst  
Planning Information Corporation  
Ginger Swartz  
Tom Buxco

9014

JAN 06 RECD



**NYE COUNTY**  
**DEPARTMENT OF NATURAL RESOURCES & FEDERAL FACILITIES**

1210 E. Basin Rd. Ste. #6 • Pahrump, Nevada 89048  
(702) 727-7727 • Fax (702) 727-7919

December 31, 1998

Sent Via Facsimile  
702/652-9838  
Attention: Mike Estrada

Colonel Michael Fukey  
Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, Nevada 89191

**Nye County Comments on the Renewal of the Nellis Air Force Range (Nellis Air Force Range) Land Withdrawal Draft Legislative Environmental Impact Statement (DLEIS)**

GE-2 Dear Colonel Fukey:

Nye County appreciates the opportunity to review and comment on the subject DLEIS, and regrets that the extension to the public comment period requested by the Nye County Board of Commissioners was not granted. Nonetheless, we are submitting our comments for your consideration in preparing the final EIS for presentation to the U.S. Congress.

As offered in our oral statement presented at the November 16, 1998 Public Hearing in Tonopah, Nevada, Nye County has several concerns regarding the presence of the range in Nye County. Our concerns focus on the various impacts suffered to date by Nye County that will likely continue to occur should NAFR operations continue in perpetuity, and the lack of mitigation measures that have been implemented to date.

In addition to the concerns regarding impacts and mitigations, Nye County has identified other aspects of the DLEIS to be unsatisfactory. Although the DLEIS is a substantial document, our review found that several elements that are required by the provisions of the National Environmental Policy Act, and its implementing regulations, have been overlooked. For example, the provisions of 40 CFR 1508.27(a) require that a NEPA analysis consider the significance of an action in several contexts. In the case of a site-specific action, such as the renewal of the NAFR land withdrawal, significance also relates to the effects in the locale, rather than solely to the affected region, or the nation as a whole. Such analyses, although present in some fashion in the DLEIS, fail to identify the full range of impacts to Nye County. Such omissions might have been avoided had Nye County had a more direct role, such as cooperating agency status, during DLEIS preparation.

AF-11

AF-37

Finally, we are concerned that the analyses included in the DLEIS do not fully utilize the existing technical reference base already prepared for the NAFR and surrounding areas.

AF-20

are currently working with us to build an equitable partnership, just as Nye County desires to have with the United States Air Force.

Several of our specific comments, identified below, were previously submitted during scoping but were not acknowledged or addressed within the DLEIS. They have been repeated here for the record, and with the expectation that they will be explicitly addressed within the FLEIS. The comments cover four basic areas:

- A fourth alternative for a 15-year renewal of NAFR land, as identified by Nye County during scoping;
- The economic and demographic impacts of the withdrawn NAFR lands and associated activities;
- The emergency response and management duties of Nye County;
- The direct, indirect and cumulative environmental impacts of NAFR and its activities on Nye County.

These four areas are discussed in detail in the sections that follow.

Nye County Specific Comments

This section presents Nye County's specific comments on the issues most affecting the County as discussed in the DLEIS. Except for the first topic, Alternatives Considered, each discussion identifies the impacts associated with hosting the NAFR, and follows with a brief list of a range of potential mitigation measures that Nye County intends to discuss and pursue with the USAF.

Renewal Alternatives Considered

During the scoping period, Nye County identified its concern with the renewal options proposed in the notice of intent and identified a withdrawal period of 15 years, rather than 25 years or "indefinite." The basis for our proposed withdrawal period is that it is similar to the provisions of the Military Lands Withdrawal Act of 1986, and would require the USAF to conduct a formal review of the NAFR withdrawal using the NEPA process. Such a process would provide an avenue for Nye County to voice its comments, suggestions, and concerns regarding the impacts of the NAFR on the county on a fifteen year cycle rather than a 25-year cycle. With the proposed action, Congressional reviews would occur every 15 years, but would likely be conducted by an ad hoc committee, and would likely not include Nye County. From the perspective of Nye County, its residents, and planners, the absence of a 15-year renewal alternative does not provide for reasonable opportunity for the County to voice concerns, and to engage in formal consultation as are appropriate for the host county. This comment, previously submitted by Nye County during the formal scoping period, was not acknowledged or addressed within the DLEIS. It is repeated here for the record, and for Air Force response. No mitigation, other than consideration of the alternative in the FEIS, is proposed.

Economic and Demographic Impacts of the Renewal

As the host county, Nye bears the inherent risk of the activities that occur on the NAFR. However, there is a wealth of data that indicates that the economic benefits accrue to Clark County. Chapter 2 of the 1991 Special Nevada Report documents studies conducted for 1988, and made forecasts for the year 2000, as to the level of economic stimulus that occurs in both Clark and Nye counties as a result of NAFR-related activities. In comparison to Clark County,

Nye County General Comments

The Las Vegas Bombing and Gunnery Range, now called the Nellis Air Force Range (NAFR), was established on October 29, 1940, by President Roosevelt. In total, the range comprises more than three million acres of land between Tonopah and Las Vegas. The range is the nation's premier combat flying training area and its mission is critical to national security. The current land withdrawal that was established by the Military Lands Withdrawal Act of 1986 ends on November 6, 2001. Because the NAFR is located within the boundaries of Nye County, and the activities conducted have a significant impact on the county, it is with great importance that Nye County submits these written comments on the DLEIS.

Nye County is the third largest county in the continental United States in terms of land area, encompassing 11,560,960 acres. Of the nearly 12 million acres of land in Nye County, only approximately 7 percent is privately owned. The federal government, including the 3 million acres withdrawn for Nellis, manages the other 93 percent of the land in Nye County. The very limited private land base leaves little in the way of available resources to support the County's future growth and development.

In addition to being one of the largest counties in the country, Nye is also one of the fastest growing. The population doubled between 1980 and 1990. Most of the population growth can be attributed to growth in towns such as Beatty, Amargosa Valley, and Pahrump. The growing populations in these communities make it especially important that Nye County continue in its mission to ensure that the necessary resources are available to support this continuing growth. Because such a large proportion of the County's natural resources, including land, minerals, water, and recreational opportunities, have been and will continue to be withdrawn from use by the public including Nye County and its residents, and are set aside for the exclusive use of the USAF at NAFR, Nye County's potential resource base is greatly diminished. Thus, the resources necessary to support continued growth, or even to sustain the current county and community economies, have been severely constrained by the presence of the NAFR. Nye County expects these impacts to be mitigated through the legislative process that will be used to extend the NAFR land withdrawal. Nye County has prepared a preliminary suite of potential mitigation measures that are included as an attachment to these comments. Nye County requests that the impacts identified in the attachment and the mitigation measures proposed be included in the Final LEIS.

Despite the tremendous federal presence in Nye County, relatively few jobs are provided for Nye County residents. Furthermore, the federal facilities located in Nye County, which also include the Nevada Test Site, and the Yucca Mountain nuclear waste repository site, procure only scarce amounts of goods and services in Nye County. In fact, less than 1 percent of the total procurement for these facilities accrues to Nye County. This situation results from the fact that the administrative facilities for USAF and DOE are located in the Las Vegas Valley. At the time the facilities were developed, Nye County did not have the population, infrastructure, or commercial base to support these facilities. Today, however, Nye County has the capability to be more economically and socially integrated with the federal facilities.

An important long-term goal for Nye County is to form a stronger partnership with NAFR, and all of the federal facilities, such that these installations make a greater contribution to the residents and the economy of the county, and lessen the impact of their presence. To this end, Nye County has established a Department of Natural Resources and Federal Facilities to facilitate local-to-federal government interactions, and to assist federal agencies in becoming more socially and economically integrated with the county and its plans for the future. Other federal agencies

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Thus, with respect to mining and other alternative uses of the NAFR lands that would provide a myriad of direct and indirect economic benefits, Nye County notes that the FEIS must clearly identify that the presence of the NAFR results in direct economic detriment to Nye County by virtue of the exclusive use granted to the USAF, and the removal of those lands from multiple public uses. As written, the DLEIS does not provide Congress and other decision-makers with an accurate portrayal and a clear understanding of the adverse economic impacts that are expected to continue to accrue in Nye County should the NAFR lands continue to be withdrawn.

SE-5

Not only is Nye's economy limited by the lack of economic activity on NAFR lands, the economic constraints extend to adjacent lands outside the boundaries of the land withdrawal. The Air Force has resisted the development of other economic activities on adjacent lands managed by the Bureau of Land Management (BLM). Some of Nevada's most prime soils are located on lands adjacent to NAFR. A plan to develop these lands for specialized farming, which included processing plants, was submitted to the BLM in 1991. This development, proposed to be centrally located in Tonopah, would have directly employed between 300 and 400 workers. However, the Air Force lobbied the BLM not to release the land for development because it might disrupt some of their operations. They cited the endangerment of public safety from the negative effects of low flying aircraft as the primary reason for their object to agricultural development of the land. Although the only population at the proposed site would have been the employees, they would have lived further away than the residents of the Tonopah Test Range man-camp and thus would have been presumably safer.

A final economic concern of Nye County is that contractors, with federal encouragement are not paying their possessory use tax liability. On a related basis, Nye County has been aware that NAFR has been the home to development of several new defense related projects. In an effort to keep these various programs secret, the contractors do not provide any information that can be used to assess their tax obligation to the county. Additionally, as these secret missions come and go, changes in work force levels cause a boom-bust phenomenon as the local community services and infrastructure necessary to accommodate them must be expanded (and then abandoned). Thus, the local communities must accommodate changes in workforce with no planning or mitigation assistance, and must foot the bill for the expansion of community infrastructure. The desire for government secrecy has unfortunately come at the expense of Nye County's economic well being, namely as increased costs for Nye County taxpayers.

In summary, Nye County values the presence of NAFR. However, the current economic relationship between Nellis and Nye County is unacceptable. The Nellis contribution to Nye's economy is minimal, especially when compared to the economic benefits that accrue to Clark County as a result of Nellis related activities. The issue is further complicated by the fact that Nye County could benefit if the withdrawn lands were used for other productive economic activities, especially mining. Finally, Nye County is disappointed by the federal encouragement of contractors to avoid paying their tax obligation to the county, and by efforts of the Air Force to discourage economic development on the land adjacent to NAFR.

Finally, Executive Order 12898, entitled Federal Action to Address Environmental Justice in Minority and Low Income Populations, requires that each federal agency analyze the human health, economic, and social effects of federal actions on minority and low income communities. As a low-income rural community where more than 10 percent of the population lives below the poverty level, Nye County falls under the requirements of this Executive Order. Nye County notes that unfortunately, the methods used in the DLEIS to examine environmental justice impacts attempt to minimize the adverse socioeconomic impacts realized by the County. That there is a significant adverse economic impact as a result of the NAFR presence is clear, even

EJ-4

EJ-3

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Nye County receives almost no indirect employment or additional indirect population as a result of Nellis-related activities. This indicates that Nellis employees are not eating at local restaurants, purchasing homes, buying local merchandise, or participating in recreational activities in Nye County. Additionally, the numbers indicate that in the future, economic benefits to Nye County from the NAFR will decline.

The low level of economic benefits that accrues to Nye County is disappointing in light of the fact that if the land that the NAFR currently occupies were used for other economic activities, Nye County would be far better off economically. Economic estimates for the year 2000 and beyond reveal that under higher land use scenarios, Nye County would benefit tremendously from the availability and alternative use of the lands withdrawn for use exclusively as NAFR. Increases in employment, gross regional product, and personal disposable income would greatly enhance the socioeconomic conditions (SAIC, 1991; page 2-56).

Currently all grazing and crop production is prohibited on NAFR. Therefore, the economic contribution of agriculture to Nye's economy would be greater if the withdrawn land were available for agricultural production. Similarly, all recreational activity is prohibited on the withdrawn NAFR land. Currently, hunting contributes approximately \$1.55 million annually to the Nye economy. The ban on recreational activities on withdrawn land impacts the ability for Nye to gain income from hunting. Additionally, the USAF exclusive use of the NAFR impacts the capability of the county to develop and promote other recreational and tourist activities that could occur on NAFR lands (SAIC, 1991; page 2-67).

The exclusion of mining from withdrawn lands has the biggest economic impact on Nye County. NAFR has, as stated in the DLEIS and its supporting documents, the Special Nevada Report, and other technical publications, the potential for extensive mining to be developed and provide valuable economic resources to the County. The Special Nevada Report concluded that, "the extent to which mining is constrained by the existence of NAFR is probably not offset by the economic contributions of Nellis-related activities to economic development in Nye County" (SAIC, 1991; page 2-68). A regional assessment of the NAFR withdrawn lands concluded that 45 percent of NAFR land has a moderate to high mineral potential. The Mineral and Energy Resource Assessment of the Nellis Range (USAFACC, 1997) corroborated the fact that the NAFR lands are mineral rich and would be obvious exploration targets, which if available for exploration, would require only minimal additional sampling and/or mapping to justify immediate detailed exploratory drilling programs. Included in this prime group are (1) the central Tolicha district, (2) parts of the Antelope Springs district, (3) the Mellan Mountain district, (4) the Black Muile area of the Silverbow district, (5) the central Jamestown district, (6) the Fairday Mine area in the Cactus Springs district, and (7) the extensive vein system within the Wilsons district. All of these high potential districts are within Nye County, yet unavailable for exploitation that would provide additional revenues to the County. Discussions of impacts resulting from the various action alternatives fail to identify the adverse economic effects of the presence of the range on the ability of the County to collect revenues from alternative uses of the withdrawn lands.

Alternatively, the economic analysis of the no Action alternative demonstrates that if the NAFR were eliminated, Nye County would gain jobs in the mining, agricultural, grazing and other sectors of the economy that would "offset the loss of the assumed 216 jobs provided by the NAFR." Thus, the beneficial economic impact eliminating the NAFR would be the creation of 720 mining jobs, 4.5 agricultural jobs, and 45.5 jobs in other economic sectors. Earning associated with the increased employment could be expected to reach \$65 million by 2015 (DLEIS, 1998; page 4.13-12).

SE-5

dangerously close to killing passengers on Nevada Route 160 en route from Pahrump to Las Vegas (Thurlow, 1992). In addition to the off-site crashes, involving Nellis aircraft, the existence of Nellis as an emergency landing area for commercial planes creates a potential public safety hazard. For example, in March of 1993, a Delta 737 lost an engine and had to make an emergency landing at the Tonopah airport, although, the plane could have just as easily landed at the Nellis range. Incidents such as this or any emergency-landing situation, on or off the range, necessitates a quick response from Nye County's emergency management team. Fuel storage and the storage of hazardous materials presents the possibility of leaks or spills that could endanger the public safety of the communities surrounding Nellis, especially those that are directly on the transportation route, notably the main streets of the communities of Beatty, Tonopah, and Amargosa Valley.

Potential danger exists from the dropping of explosive armaments and other objects dropped from aircraft at Nellis. The Special Nevada Report projected that by the year 2000, approximately 1 explosive armament will be dropped off-site every three years, and the average number of aircraft parts dropped off-site will be as many as 108 per year. Furthermore, there are potential hazards associated with the use of flares during training exercises. Fire is the primary danger associated with flare drops. In 1987, there were several fires associated with flare drops, the largest destroyed 35,000 acres of land. In 1988, there were 3 fires, in 1989 there were four fires linked to flare drops on the Nellis Range. In 1993, an off-site fire in the Humboldt Forest was attributed to flare drops on the Nellis Range (SAIC, 1991; pages 2-45, 2-50). Although the LDEIS identifies the risks associated with such activities, little, if any, discussion addresses how such incidents potentially impact Nye County and their ability to provide emergency response and management when such incidents occur outside the Range boundaries.

Finally, the physical presence of the NAFR in Nye County, with its associated security restriction, precludes the routing of hazardous shipments of waste and materials to and from the Nevada Test Site, and in the future, Yucca Mountain should the nuclear waste repository go forward. Such restrictions on routing and transportation result in the shipment of these hazardous materials over Nye County roads, increasing the probability of fatal accidents and placing responsibility for emergency response on Nye County for federally mandated shipments. Thus, the presence of the NAFR with its security restrictions contributes to the cumulative impacts to transportation on County roads.

**Potential Mitigation Measures:**

1. USAF would work with Nye County to enhance local emergency response agencies' capacity to respond to aircraft accidents. Enhanced capabilities could include (a) Nye County emergency communication system upgrades (or allowing Nye County to tie into NAFR communication system), (b) provision of specialized equipment (new or surplus) to deal with potential effects of aircraft crashes, and (c) ongoing mitigation payments to fund staff salaries and staff and volunteer training for the types of events which could occur.
2. Potential mitigation measure could include assisting Nye County to enhance its emergency response capabilities as described above, designating routes across the NAFR for the most hazardous of shipments, and upgrading existing transportation routes.

**Environmental Consequences**

Overall, Nye County found that the USAF treatment of environmental consequences, especially with respect to biodiversity issues, was adequate and thorough. However, Nye County found the analysis and evaluation of impacts to water resources to be superficial and narrowly focused. As

through the discussions of the DLEIS. To suggest, however, that the action proposal that significantly contributes to this economic impact is not disproportionately distributed to the low-income census tracts/BNAs in Nye County conflicts with the data graphically portrayed in Figure 3.14-1. Nye County strongly disagrees with the Air Force's methods and findings.

**Potential Mitigation Measures:**

1. The USAF would agree to refrain from protesting land disposal activities near NAFR boundaries. If USAF does not agree to refrain from protesting, then the Payments in Lieu of Taxes (PILT) for every successful protest of a land disposal action would be assessed.
2. The USAF would commit to hire Nye County residents and purchase from Nye County vendors.
3. USAF commitment to open additional areas for mining, grazing, agriculture, hunting and other forms of recreation. 3) Limit withdrawal renewal to 15 years. 4) USAF commitment to pay PILT funds to Nye County.
4. Given that certain USAF missions must remain classified, and that the USAF may not know today what classified missions will be located on NAFR in the future, the only way to avoid negative and significant economic and fiscal impacts for Nye County and its residents is for the USAF to work with Nye County to maintain a certain level of infrastructure in communities near areas which may be used for classified missions.

**Emergency Response**

The DLEIS fails to address emergency response and management responsibilities associated with local government. One of the primary responsibilities of local government is to protect the health and safety of its citizens, and the environment where they live. In order to meet this objective, Nye County has a prominent role and substantial capabilities for emergency preparedness, first on scene, first response and incident command in off-site incidents.

The overall safety record at NAFR involving off-site incidents has been good throughout the history of the Range. However, the potential exists for NAFR activities to endanger the safety of the public. The EIS fails to address two important issues related to emergency management and response. First, the potential impacts of Nellis-related activities on public safety must be examined further. Related to that, the EIS must include recommendations as to how the mitigate the potential dangers that result from the training exercises that occur at NAFR. Second, the EIS must acknowledge Nye County's role and capabilities for emergency preparedness, first on scene, first response and incident command in off-site incidents, and to consider and resolve the issues regarding mutual aid and cleanup responsibilities. Furthermore, the final LEIS must recognize the financial, health, and safety costs associated with Nye County's role as an emergency respondent. In analyzing these costs, special attention should be given to the costs and risks associated with Nye County's operation of outdated equipment.

Nye County's role as an emergency management and response provider is heightened by the high-risk activities that occur at the Nellis range. The risks include off-site aircraft mishaps, emergency landings for commercial airplanes, and storage and transportation of fuel and other hazardous materials, armament and object droppings from aircraft in flight, and flare drops.

Between 1980 and 1986, there were 11 off-site aircraft mishaps. More recently, there were two Nellis-related off-site crashes that occurred within 18 months of each other in 1991 and 1992. A crash of an A-10 attack fighter in December of 1992 not only killed the pilot, but also came

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noted in our cover letter, 40 CFR 1508 requires that the significance of an action be viewed in several contexts. Nye County notes that the proposed action of renewing the NAFR land withdrawal is a site-specific action that requires impacts to be identified at the local level. Although many of the direct and some of the indirect and cumulative impacts are identified in the DLEIS, many potentially significant impacts have been overlooked. These impacts, and some proposed mitigation measures as identified in the Special Nevada Report (SAIC, 1991), are presented below as comments to be addressed, as well as for consideration for inclusion in the final LEIS.

*Water Resources*

As the population growth in southern Nevada continues at a rapid pace, the demand for water resources to satisfy the area's water needs, will grow accordingly. The scarcity of water resources southern Nevada places special importance on the preservation and wise use of the water resources.

The impacts of Air Force Actions in Nye County on the water resources are primarily related to three factors. They are (1) the presence of exclusive use lands that are remain unavailable for water development, (2) the activities conducted on the withdrawn lands, and (3) the use of water by the Air Force (and others) on the withdrawn lands. In the following discussions, the impacts associated with each aspect of the water resources are defined.

WR-10

Impact of Mission Related Actions

Actions taken at the Nellis Air Force Range have resulted in: the dispersal of more than 40,000 tons of explosion debris, residues, and contamination (depleted uranium, beryllium, and explosive products) on alluvial fans and playas; the disposal of solid wastes, paint products, solvents, batteries, and petroleum products in landfills, pits, and explosive ordnance disposal pits; leaks from underground storage tanks; and the consumption of water in support of mission related activities.

The U.S. Air Force (October 1996) provides limited information on disposal sites and Installation Restoration Program (IRP) sites on Nellis Air Force Range (NAFR) including the Tonopah Test Range (TTR). There are about 50 landfills located on the TTR and NAFR. A total of 24 IRP sites have been defined in Nye County with formal Site Inspections having been conducted for 13 sites at TTR and an unknown number of sites on NAFR. Information presented in U.S. Air Force (October 1986 p. 3-17) indicates that remedial actions were not required by the Nevada Division of Environmental Protection at any of the IRP sites in Nye County.

HZ-3

According to the Special Nevada Report (SAIC, 1991, p. 2-119), the dispersion of explosion debris may have resulted in the contamination of groundwater; however, the amount of groundwater that may have been contaminated as a result of these by products is not known and cannot be estimated on the basis of existing studies. Similarly, insufficient studies have been done to allow the definition of contamination that may have resulted from land filling of wastes, the operation of explosive ordnance disposal facilities, or leaking tanks. According to the final contamination report for the proposed Nellis Land Withdrawal (U.S. Air Force, February 1997, Table 6-3), three sites in Nye County were found to have surficial soil contaminated with arsenic and beryllium. Subsequent evaluations reported by the U.S. Air Force (September 1998a, p. 3-6-15) indicate that contamination of surface soils is known to occur but the potential for groundwater contamination from this source is discounted because of the "low precipitation, high evaporation, generally low solubility of the contaminants of concern, and the considerable depth

HZ-7

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to groundwater across most of the range". This more recent study identified two categories of contamination on NAFR, ordnance residues and operations and maintenance spills and concluded that there was little potential for the contaminants to migrate vertically downward to an aquifer (U.S. Air Force, September 1998a, p. 3-6-14).

The indirect impact of U.S. Air Force mission-related actions in Nye County on the water resources is limited to an increase in the demand for water in the region. The indirect impacts on water resources have been, and are associated with employment at the Air Force facilities. Most range workers live off the facility, predominantly in Clark County, with a lesser number residing in Nye County. Thus worker employment on the NTS leads indirectly to an increased demand for water in Tonopah and metropolitan Las Vegas.

WR-11

Impacts from Land Withdrawal

There have been impacts associated with the withdrawal of the lands that now comprise the Nellis Air Force Range. These withdrawals have effectively removed large areas of Nye County from future development. There are areas on the range where groundwater resources could be developed however, their development is inconsistent with the mission of the facility and such development is considered at best to be highly unlikely. As a consequence, the water resources that would otherwise be available to Nye County have been withdrawn as well as the land. In the Special Nevada Report, the analysis of the effects of the land withdrawals noted that:

WR-12

"The withdrawal of land from public access and/or the purchase of water rights by DOD and DOE has the greatest potential for effects on Nevada. ... The water resources associated with these lands could, if they exist and were available, play an important role in the continued growth of southern Nevada." (SAIC, 1991 p. 8-97).

Possible mitigating measures identified in the Special Nevada Report included the provision of access for water resources evaluation and development (if possible and consistent with mission requirements); assistance in water resources evaluation on withdrawn lands; the provision of rights-of-way for water transmission facilities where such action would not limit, constrain, or deny the purpose of the withdrawal, and considering opportunities to cooperate with local agencies to enhance water supply sources and programs.

WR-13

Impacts from Water Appropriations and Use

The U.S. Air Force has 25 water rights in Nye County for springs and surface water sources totaling 485,07 acre feet (U.S. Air Force, September 1998b, pp. 26-30). The U.S. Air Force also has 15 groundwater appropriations in Nye County totaling 1,669.44 acre feet (U.S. Air Force, September 1998b, pp. 15-17). The appropriations associated with the U.S. Air Force-related water withdrawals reduce the legal availability of water in the basins and flow systems in which they occur, and are additive to the appropriations of all water right owners in the region of influence.

WR-14

Although the U.S. Air Force water right holdings in Nye County are appreciable, the actual quantity of water is small. Between 1995 and 1997, metered water use at seven water supply wells in Nye County ranged from 129.2 to 159.51 acre feet per year. The impacts of water use in support of U.S. Air Force actions are limited and include the localized effects of water withdrawals in the vicinity of water supply wells. The existing network of active wells are all situated in areas located north and northwest of the Nevada Test Site except for Strager's Well located west of Yucca Mountain. The effects of these water withdrawals likely include a

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**United States Department of the Interior**  
 Bureau of Land Management  
 Las Vegas Field Office  
 4765 Vegas Drive  
 Las Vegas, Nevada 89108

In Reply Refer To:  
 N-16095  
 2310 (NV-056)

**DEC 31 1998**

AF-50

localized lowering of water levels in the immediate vicinity of the supply wells. The direct localized impacts associated with U.S. Air Force water withdrawals would probably not be additive to those of other water users because of the distances between the individual water wells and the relatively minor quantities of water pumped.

Potential Mitigation Measures

1. Provide rights-of-way and access to locations on NAFR for the construction of water wells and conveyance pipelines and facilities.
2. If the granting of rights-of-way is inconsistent with mission requirements, assist Nye County in the appropriation and transfer of water rights from withdrawn lands to alternative points of diversion.
3. Provide assistance to Nye County in evaluating the water resources of withdrawn lands and areas that are proximal to withdrawn lands by utilizing the existing Air Force capability to drill and construct monitoring and test wells in southern Nye County.
4. Enter into cooperative agreements with the Nye County Department of Natural Resources and Federal Facilities to enhance water supply source and protection programs in Nye County.

References Cited

- Science Applications International Corporation (SAIC), September 23, 1991, Special Nevada Report, DE-AC08-88NV10715.
- Thurlow, Rich, 1992. "Thomasess horrified witnesses of Sunday's A-10 jet crash," Pahrump Valley Times, December 11.
- U.S. Air Force, September 1998a, Renewal of the Nellis Air Force Range Land Withdrawal, Department of the Air Force Draft Legislative Environmental Impact Statement, 2 Volumes.
- U.S. Air Force, September 1998b, Water Requirements Study of the Nellis Air Force Range, Nellis Air Force Range, Nevada.
- U.S. Air Force Air Combat Command (USAFACC), November 1997, Mineral and Energy Resource Assessment of the Nellis Air Force Range, Volumes 1 and 2.
- U.S. Air Force, February 1997, Contamination Report for the Nellis Air Force Range Land Withdrawal Environmental Impact Statement, Nellis Air Force Range, Nevada.
- U.S. Air Force, October 1996, Draft Land Use Study, Nellis Air Force Range, Nevada.

Nellis Air Force Range Renewal Office  
 Attn: Lt. Col. William Garner  
 P. O. Box 9919  
 Las Vegas, Nevada 89191

GE-2 Dear Lt. Col. Garner:

The Las Vegas and Ely Field Offices have reviewed the Draft Legislative Environmental Impact Statement for the Nellis Range Renewal and offer the following comments.

Under Chapter 3.0, Affected Environment:

1. Page 3.4.3.5 Spills and aircraft crashes.  
 The first sentence should read: "Spills are reported to the National Response Center and NDEM...", then have the first and second bullets. Next, state "Spills are reported to the NDEM...; then have the third and fourth bullets.
- HZ-2
2. This section should also reference the NAFB Contingency Plan for release of hazardous substances.
3. Page 3.8-5 As written, this portrays the historic situation not the current situation. Suggested changes would be:  
 Line 14: add "Historically" to the first sentence.  
 Line 17: after sentence ending "Air Force 1997g", add this sentence: "Current utilization levels are projected to be light to moderate (35% to 45%)."  
 Line 26: The sentence starting "Palatable shrubs..." should be deleted because there is no transect data to support that statement.  
 Replace with this sentence: "Plants outside the enclosures are smaller which is an indicator of less plant vigor resulting from heavy use versus no use inside the enclosure. However, with the utilization being reduced to a light or moderate rate full recovery of plant vigor and production is expected."  
 Line 23: The enclosure program applies to all the North Range including the 1962 MOU Herd Management Area. Delete this portion from the sentence: "that are outside

BI-7

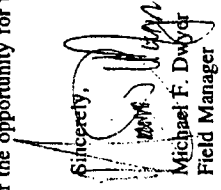
9015

- 4. **WI-2** the Wild Horse Management Area is in progress".  
Page 3.8-5: The document makes many references to feral horses. The BLM recognizes these animals as free-roaming wild horses as provided in Public Law 92-195, The Wild Free-Roaming Horse and Burro Act. Legally, they are not "feral horses". Please amend all references from "feral horses" and change to "wild horses".
  - 5. **WI-1** Page 3.8-6 The same comment is applicable to wild burros rather than "feral burros".
  - 6. **WI-1** Page 3.8-32  
This section portrays a historic situation not the present.  
Requested change:  
Line 31: Delete two sentences starting with "Since then, wild horse... ending on line 33 with expansion."
  - 7. **WI-1** Page 3.10-9, Section 3.10.2.2 Lands Under the Associated Air Space  
Line 7: "The BLM is preparing a Caliente MFP..." should read "The BLM is amending the Caliente MFP..."
  - 8. **WI-1** Page 3.11-2, Fig. 3.11-1: The depiction of the WSAs is misleading. The suitable as well as the non-suitable portions combined are WSAs and are managed equally under the Interim Management Policy for Lands Under Wilderness Review (IMP). The legend should be modified to show the overall WSA boundary and that suitable and non-suitable are portions of that WSA.
  - 9. **WI-1** Page 3.11-4, Table 3.11-1, Page 1 of 2, Column 1: Please change "Las Vegas" to "Ely" for all Wilderness Study Areas (WSAs). Management responsibilities for these WSA's have shifted from the Las Vegas Field Office to the Ely Field Office.
  - 10. **WI-1** Also, the WSAs should be identified on the map so the reader can relate them to Table 3.11-1.
  - 11. **WI-1** Page 3.11-4, Table 3.11-1: A column identifying the total acreage (suitable + non-suitable) of each WSA should be added.
  - 12. **WI-1** Page 3.11-5, Table 3.11-1, Page 2 of 2, column 1, Please change "Las Vegas" to "Ely" for the Evergreen ABC. See comment above.
  - 13. **WI-1** Page 3.11-7, Bureau of Land Management, paragraph 2: In the second sentence, the full title of the IMP should be changed to "Interim Management Policy for Lands Under Wilderness Review (H-8550-1)".
- Under Chapter 4, Environmental Consequences:
- 1. **WI-1** Page 4.11, Wilderness and Wilderness Study Areas:  
The impact analysis has been limited to overflights only. There should be a discussion of the impacts, on the ground, due to aircraft accidents, and falling debris such as

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- 1. **WI-2** munitions, chaff receptacles, flares, etc. What is the extent of recovery operations and what steps will be taken to ensure compliance with the IMP? The analysis should include, but is not limited to, a discussion of the potential for flare-caused wildfires within WSAs and the extent of surface disturbance that can be expected from aircraft recovery efforts.
  - 2. **WI-1** The analysis under this section should be similar to the discussion that appears in the Biological Resources section.
  - 3. **WI-1** Page 4.12-3, Kawich Range:  
The proposal to allow recreation activities such as hiking and nature viewing appears impractical unless participants are allowed access to the ridgeline. Hikers usually want to "reach the ridge" so they can glimpse what is on the other side. Enforcement of the recreation use as proposed would be difficult.
  - 4. **WI-1** Page 4.12-4, Recreation Use and Opportunities:  
This section basically discusses the impacts recreation might have on other resources and not the impact of the no-action alternative on recreation. It needs to be rewritten to identify impacts to recreation resulting from the no-action alternative. The impacts recreation might impose on other resources belongs under the sections discussing those resources.
  - 5. **WI-1** [Acreage figures as well as location descriptions should be included when discussing increased access to recreationists. Acreages should be identified in all alternatives so the reader can compare the alternatives.
- If you have any questions or need clarification to our comments, please contact Jacqueline Graton at (702) 647-5054. Thank you for the opportunity for us, as a cooperating agency, to review the DLEIS.

Sincerely,  
  
Michael F. Dwyer  
Field Manager

**ACTING FOR**



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State	WSA	EIS	Report Number	(Acres)	(Acres)	Nat	Sol	Rec	Spe	Wilderness Attributes (Suitable for Wilderness)
NV	Worthington	Study FEIS 1987	NV-040-242	26,587	21,046	G	G	O	O	
NV	Ely	Schell Resource Area	NV-040-246	50,499	10,638	O	O	G	O	
NV	South Pahroc Range	Study FEIS 1989	NV-050-132	28,395	205	C-O	O	O	O	
NV	<del>Las Vegas</del>	Clover Mountain	NV-050-139	84,875	60	O	O	O	O	
NV	Las Vegas	Meadow Valley Range	Study FEIS 1989	NV-050-156	97,180	88,564	O	O	O	
NV	Las Vegas	Mormon Mountains	Study FEIS 1989	NV-050-161	123,130	39,757	O	O	O	
NV	<del>Las Vegas</del>	Utah Smeadwid Wilderness Study FEIS (Cougar Canyon) 1990	NV-050-166/UT-040-123	6,408	9,560	G	O	G	G	
NV	<del>Las Vegas</del>	Delamar Mountains	Caliente Wilderness Study FEIS 1989	NV-050-177	126,257	G-L	G-L	G-L	G	
NV	Las Vegas	Fish & Wildlife 1	NV-050-201	11,090	0	G	L	L	G	
NV	Las Vegas	Fish & Wildlife 2	NV-050-216	17,242	0	G	L	L	G	
NV	Las Vegas	Fish & Wildlife 3	NV-050-217	22,002	0	G	L	L	G	

Table 3.11-1. Wilderness Recommendations for Wilderness Study Areas (Page 1 of 2)

3.11-4

United States Department of the Interior  
Bureau of Land Management  
Las Vegas Field Office  
4765 Vegas Drive  
Las Vegas, Nevada 89108

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In Reply Refer To:  
N-16095  
2310 (NV-056)

Nellis Air Force Range Renewal Office  
Attn: Lt. Col. William Garner  
P. O. Box 9919  
Las Vegas, Nevada 89191

JAN 06 1999

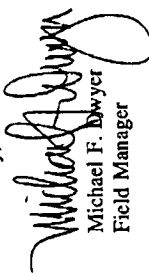
GE-1 Dear Lt. Col. Garner:

There are some corrections to our comment letter dated December 31, 1998 in our review of the Draft Legislative Environmental Impact Statement for the Nellis Range Renewal. We are sorry for this inconvenience, but feel that they are necessary.

- For item #9, the correction is:  
Page 3.11-4, Table 3.11-1, Page 1 of 2, Column 1: The management responsibilities have shifted for some of the WSAs. Please see the enclosed table corrected to show which WSAs are under the jurisdiction of the Las Vegas Field Station and which are under the Ely Field Station.
- For item #11, please delete #11, as it will be corrected by the above comment.

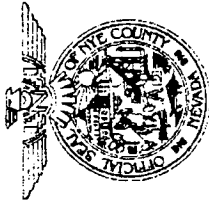
WI-1

We are enclosing copies of comment letters that our office received during the 90 - day public comment period. You will also be receiving additional comment letters which were sent to our Nevada State Office in Reno. If you have any questions, please contact Jacqueline Gratton, at (702) 647-5054. Thank you.

Sincerely,  
  
Michael F. Dwyer  
Field Manager

- Enclosures (4)
- Table (2 pgs)
- Letters (14 pgs)
- Nevada Wildlife Federation's Endangered Species Alliance dtd 12/8/98
- Esmeralda County Commissioners dtd 12/15/98
- Friends of Nevada Wilderness dtd 12/24/98
- Letter from BLM to AF dtd 12/31/98

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**NYE COUNTY**  
**DEPARTMENT OF NATURAL RESOURCES & FEDERAL FACILITIES**  
 1210 E. Basin Rd. Ste. #6 • Fahrump, Nevada 89048  
 (702) 727-7727 • Fax (702) 727-7919

January 11, 1999

Colonel Michael Fukey  
 Nellis Air Force Range Renewal Office  
 P.O. Box 9919  
 Las Vegas, Nevada 89191

**Nye County Supplemental Comments on the Renewal of the Nellis Air Force Range Land Withdrawal Draft Legislative Environmental Impact Statement (DLEIS)**

GE-1 Dear Colonel Fukey:

Nye County appreciates the opportunity to meet with you today to discuss and review our comments on the subject DLEIS. As discussed with Mr. James Campe of your staff, Nye County regrets that we were unable to submit complete comments on the DLEIS by December 31, 1998. At this time we are providing our final comments on the cumulative impacts related to local land use and water resources issues, as viewed from the local perspective. These comments are intended to supplement those previously submitted on December 31, 1998.

Thank you for this opportunity to comment on the DLEIS. We look forward to working with you in the resolution of our concerns and issues. If you have questions regarding our comments or desire additional information on this matter, please contact Mary/Ellen C. Giampaoli, at (702) 875-4594.

Very truly yours,  
 NYE COUNTY, NEVADA

*Les Bradshaw*  
 Les Bradshaw, Manager  
 Department of Natural Resources and Federal Facilities

LB/ml

Cc: Nye County Board of Commissioners  
 Jerry McKnight  
 File

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Table 3.11-1. Wilderness Recommendations for Wilderness Study Areas (Page 2 of 2)																	
Wilderness Attributes (Suitable for Wilderness)	Wilderness (Acre)	Wilderness (Acre)	Report Number	Clark County Study FEIS 1987	Nevada Condiguous Lands Study FEIS 1990	Tonopah Resource Area Study FEIS 1987	Tonopah Resource Area Study FEIS 1987	South Ravelle Tonopah Resource Area Study FEIS 1987	The Wall Tonopah Resource Area Study FEIS 1987	Mt. Shirling Clark County Study FEIS 1987	Grapevine Farralida-Southern Nye Study FEIS 1987	Resting Springs Nye Study FEIS 1987	Queer Mt. Nye Study FEIS 1987	Notes: O = Outstanding, G = Good, L = Low			Source: BLM 1991c
														Nat	Sol	Rec	
State	WSA	EIS															
District																	
Las Vegas	NV	Arrow Canyon Range	NV-050-215														
Las Vegas	NV	Evergreen ABC	NV-050-1R-16	0	2,694	G	L	L	L								
Battle Mtn.	NV	Kawich	NV-060-019	0	54,320	G											
Battle Mtn.	NV	Tonopah Resource Area Study FEIS 1987	NV-060-112	33,000	73,200	G											
Battle Mtn.	NV	The Wall Tonopah Resource Area Study FEIS 1987	NV-060-163	30,320	7,680	G											
Las Vegas	NV	Mt. Shirling Clark County Study FEIS 1987	NV-050-401	50,682	19,050	G											
Battle Mtn.	NV	Grapevine Farralida-Southern Nye Study FEIS 1987	NV-060-355	23,150	43,650	O											
Las Vegas	NV	Resting Springs Nye Study FEIS 1987	NV-050-460	0	3,850	G											
Battle Mtn.	NV	Queer Mt. Nye Study FEIS 1987	NV-060-354	46,650	38,900	O											

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withdrawals in Clark and Nye County; (3) the expected growth in Pahrump, Amargosa Valley, and Beatty; (4) the closure of the gold mine at Beatty; and (5) actions associated economic development at the Nevada Test Site under the auspices of the Nevada Test Site Development Corporation (NTSDC). Information concerning these actions and proposed actions was obtained from published feasibility studies, consultations with the proponents, town boards, regional planning commissions, and information concerning water right applications on file with the DWR.

Uncertainty exists with respect to predicting future growth in Nye County, or almost anywhere for that matter. As a consequence, assumptions must be made concerning growth rates and water consumption. For the purposes of this evaluation, the following assumptions are made:

Table 1. Reasonably Foreseeable Future Action Scenarios Use in NEPA Impact Evaluation

Proposed or Existing Action or Assumption	Reasonably Foreseeable Future Action Scenario		
	Scenario 1	Scenario 2	Scenario 3
Overdraft in Pahrump Valley and Amargosa Desert; Full use of perennial yield of Jackass Flat and Rock Valley	X	X	X
No future development in Mercury Valley	X	X	X
BLM - Resource Management Plans	X	X	X
Death Valley National Park General Management Plan	X	X	X
Nellis Land Withdrawal	X	X	X
U.S. Forest Service Plans	X	X	X
DOE-NTSER monitoring only	X	X	X
DOE-NTSER active groundwater controls			
Las Vegas Valley Water District Full Development of Groundwater Resources in Clark County			X
High-Level Waste Repository at Yucca Mountain		X	X

NOTES: DOE-NTSER - Department of Energy Nevada Test Site Environmental Remediation Program. Scenario 1 and 2 include only passive groundwater controls (monitoring and institutional controls). Scenario 3 includes active groundwater controls (pump and treat or hydraulic barriers coupled with institutional controls).

Assumption 1. Pahrump will experience a full build-out by the year 2050 and all water rights currently held within Pahrump Valley hydrographic basin will be put to beneficial use by that time. Based upon current Nye County projections, the total water demand in the year 2050 will be 84,000 acre feet per year, representing an overdraft of 65,000 acre feet per year on the groundwater resources of the basin. This assumption is included in the definition of all three scenarios.

Rationale Nye County projections indicate that the population of Pahrump will approach 150,000 people by the year 2050 with a corresponding demand of 84,000 acre feet per year (Buque, 1996). This projection was based upon a per capita consumption rate of 486 gallons per day and a reduction in agricultural water withdrawals of twenty per cent per decade. The projected demand of 84,000 acre-feet per year is more than four times the established perennial yield of the basin

Nye County Perspective of the Cumulative Effects on Water Resources

Probably the most important water resource issues related to the indirect impacts of Nellis Air Force Range land withdrawal renewal relate to the cumulative adverse impacts of past, present, and reasonably foreseeable future actions in Nye County on the present and future availability of water resources in the region. As a consequence, this discussion is related to the issue of cumulative impacts as a they apply to the supply of agricultural, mining, and quasi-municipal water supplies, and water needed to support wildlife and habitat.

Definition of Reasonably Foreseeable Future Action Scenarios

The "reasonably foreseeable future" is not defined in NEPA or in its implementing regulations. For the purposes of this evaluation, the reasonable foreseeable future is defined in accordance with the U.S. Bureau of Land Management (BLM) *Guidelines for Assessing and Documenting Cumulative Impacts* (April 1994). This guidance states:

"The reasonably foreseeable action is not a worst-case scenario but a rational projection that combines known action and reasoned, defensible assumptions about future events and developments. It is not necessary (or desirable) to project reasonably foreseeable future actions on maximum development; rather they should be based on what is reasonable, using available and anticipated future technology and defensible economic projections." (as cited, pp. 24-25)

The BLM guidance suggests that Reasonably Foreseeable Future Actions Scenarios (RFFAS) be developed for the purposes of estimating long-term cumulative impacts. The RFFAS, according to this guidance, should be based upon existing planned actions as set forth in Resource Management Plans, actions that are likely to occur on private, state and other federal land that may impact the same resources as the specific proposed action in question, and clearly documented assumptions. (as cited, pp. 25-26) Based upon the available information and the assumptions summarized and discussed below, three RFFAS were developed for cumulative impact evaluation. The proposed actions for each scenario are summarized in Table 1. For the purposes of this evaluation, the reasonably foreseeable future extends through the year 2050.

The Resource Management Plans, Environmental Impact Statements, and other NEPA documents that were used to define the planned federal actions that may impact water resources within the region of influence during the reasonably foreseeable future are listed in Table 2.

The proposed actions and management policies that have been adopted, or are proposed in these documents are considered in all three scenarios. It is assumed that withdrawals of National Park Service lands and military reservations, including the Nellis Air Force Range, will be maintained throughout the reasonably foreseeable future as will the lands under the stewardship of the Bureau of Land Management. Further, based upon consultations with the steward agencies, it is assumed that the resource management strategies set forth in the documents listed above will continue in the reasonably foreseeable future. The definition of the impacts upon water resources associated with these federal actions, policies, and management strategies are discussed in the section on the effects of past and present actions.

In addition to the federal actions defined and evaluated in these sources, there are a number of non-federal actions that must also be taken into account in evaluating the cumulative impacts on Nye County's water resources. These actions include: (1) Nye County's proposed Nevada Science and Technology Corridor; (2) the Las Vegas Valley Water District's proposed water

basin is driven largely by market factors and concerns over water right forfeitures. The development of large-scale dairy operations in the valley (Ponderosa Dairy) has provided a ready market for farmer's forage crops and increased the agricultural productivity of the area. Beginning in 1995, water right forfeiture proceedings spurred an increase in water use in the basin. As a consequence of the increased agricultural production and the threat of additional forfeitures, water withdrawals have increased dramatically over the last seven years. As of the summer of 1998, new areas in Amargosa Valley were being prepared for irrigation in 1999 (as observed during Nevada Test Site Citizens Advisory Board Tour of Amargosa Valley on October 7, 1998), thus the demand for water is expected to increase significantly over the short-term.

Residential and business development in Amargosa Valley is also occurring. A small but thriving hotel and casino, RV park, and golf course has opened in the south end of the community and new businesses have been established. Residential development is occurring and subdivision and parceling activities reported by the Nye County Department of Planning indicate that new quasi-municipal and domestic wells will be drilled as these new lots are developed.

Current and future trends in the parceling and subdividing of land suggest that the drilling of domestic wells will accelerate in the near future in Amargosa Valley. Water withdrawals from domestic wells do not require a water appropriation under Nevada Water Law. Therefore, future withdrawals for domestic purposes will be additive to those projected on the basis of current water rights. Further, even in basins such as Amargosa Valley that have been designated as closed to additional water right appropriations for irrigation, new water rights may be granted for quasi-municipal and commercial purposes. These water rights would also be additive to those currently appropriated within the basin. Therefore, an overdraft of the Amargosa Desert is to be expected within the reasonably foreseeable future. Because of planned federal land acquisitions and disposals, and actions relative to water rights in the basin, it is premature to predict the full growth potential of the community of Amargosa Valley and hence the magnitude of overdraft. However, it is considered reasonable to assume that an overdraft of at least 5,000 acre-feet per year will occur by the year 2050. This overdraft represents the full development of the 28,650 acre-feet of water rights that have been granted and the demand for a very conservative estimate of 350 additional domestic wells at one acre foot per year per well.

**Assumption 3.** Because of current and future overdraft of Pahrump Valley, projected future overdraft of Amargosa Desert, and planned and reasonably foreseeable actions related to the development of the Nevada Science and Technology Corridor and the NTSDC, the entire perennial yields of the Jackass Flat and Rock Valley hydrographic basins will be put to beneficial use by the year 2050. This assumption is included in the definition of all three scenarios.

**Rationale** With respect to the Nevada Science and Technology Corridor, the development of the proposed Nevada Science Museum and the Amargosa Valley Science and Technology Park are actions which are expected to occur in the reasonably foreseeable future. These actions will increase the demand for water in the hydrographic basins north of U.S. Highway 95 (Jackass Flats and Rock Valley). Minor increases in water demand that are already occurring as a result of NTSDC developments (e.g., Kistler Aerospace and Fluid Tech, Inc.) are expected to increase as future actions such as VentureStar, solar energy projects, and other developments occur. These basins are also under investigation as sources for supplemental water supplies to mitigate the projected overdrafts in Pahrump Valley and Amargosa Desert. Because of environmental concerns with respect to Mercury Valley and groundwater contamination from underground nuclear testing in Buckboard Mesa, Frenchman Flat, and Yucca Flat, the only two hydrographic basins in southern Nye County where unappropriated groundwater could be reasonably expected to be developed for supplemental supplies are Jackass Flats and Rock Valley. Therefore, it is

and is more than three times the steady-state pumping rate of 26,000 acre-feet per year. The steady-state pumping rate was calculated by Hamill (1986, pp. 47-48), and used by the Nevada Division of Water Resources to take into account return flows from agriculture, domestic use, and public-supply and commercial use (Nevada Division of Water Resources, Supplemental Ruling on Remand, In The Matter of Application 51632, June 2, 1989, Peter G. Morris, State Engineer, Finding of Fact VI).

Table 2. Federal Agency Documents Used In This Evaluation.

Agency	NEPA Documentation
U.S. Department of Interior Bureau of Land Management	Proposed Las Vegas Resource Management Plan and Final Environmental Impact Statement (May 1998), Record of Decision (October 1998), and Implementation Plan (in preparation) Topograph Resource Management Plan and Implementation Plan
U.S. Department of Interior National Park Service	Draft Environmental Impact Statement and General Management Plan, Death Valley National Park, California and Nevada (August, 1998)
U.S. Department of Energy Nevada Operations Office	Nevada Test Site, Resource Management Plan, Working Draft (May 21, 1998) Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada (August 1996) and Record of Decision (December 1996) Draft Intermodal Transportation Environmental Assessment (September 1998) Final Waste Management Programmatic EIS (1997) and Record of Decision (in preparation)
U.S. Air Force	Renewal of the Nellis Air Force Range: Land Withdrawal, Draft Legislative Environmental Impact Statement
U.S. Forest Service	Proposed Research Natural Area EA Roadless Area Plan and Forest Plan Revision

**Assumption 2.** Amargosa Valley will place all water rights currently held within the Amargosa Desert hydrographic basin to beneficial use by the year 2050. Based upon current Nye County projections, the total demand in the year 2050 will be at least 29,000 acre-feet per year, representing an overdraft of at least 5,000 acre feet per year on the groundwater resources of the basin. This assumption is included in the definition of all three scenarios.

**Rationale** It would be erroneous to assume that future water withdrawals in the region of influence will be limited to the published perennial yields or steady-state pumping rates of the source basins, as has been assumed by some investigators. The histories of water withdrawals in Pahrump Valley, Las Vegas Valley, and other basins in Nevada clearly demonstrate that water withdrawals within a given basin are not limited by the perennial yield. According to the estimates made by the Nevada Division of Water Resources, groundwater withdrawals in Pahrump Valley have exceeded the perennial yield of the basin every year since at least 1983. Water use in Pahrump is accelerating at present and the effects associated with full development of the existing water rights must be considered in a NEPA evaluation of the region of influence.

At present, the existing water rights in Amargosa Desert exceed the perennial yield of that basin. It is quite plausible that growth will accelerate and that all of these existing rights will be put to use within the next half-century. Agricultural production in the Amargosa Desert hydrographic

Agency or Sector	Actions	Direct Impacts	Indirect Impacts	Significance
Department of Energy	Nevada Test Site Operations Past Actions	Contamination of subsurface; Physical damage to aquifers; Water level perturbations; Increased recharge down chimneys	Contamination of recharge; Removal of contaminated areas from future water development;	Significant resource impacts and constraints on water development
U.S. Air Force	Nellis Air Force Range Operations Past Actions	Surface contamination; Water level perturbations	Increased water demand in employment centers;	Not significant
Bureau of Land Management	Past Actions Implement Resource Management Plan	Reduced water availability; Increased over appropriation of Amargosa Valley; Restricted area for development; Increased water demand	Decreased tax revenues; Decreased long-term productivity of private lands; Decreased tax base growth; Increased overdrift of Pahump Valley	Significant increased demand for water and overdrift in Pahump and Amargosa Valley.
National Park Service	Past Actions Implement General Management Plan	Reduced water availability; Increased over appropriation of Amargosa Valley; Restricted area for development; Increased appropriation cost; Increased water demand	Decreased tax revenues; Decreased long-term productivity of private lands; Decreased tax base growth; Increased overdrift of Pahump Valley	Significant losses of long- term productivity of private lands; increases in costs of obtaining water rights, and decrease in tax revenues to County.
U.S. Fish & Wildlife Service	Past Actions	Reduced water availability; Increased over appropriation of Amargosa Valley; Decreased long-term productivity	Increased water costs; Decreased tax revenues	Significant losses of long- term productivity and tax revenues to County.
Non-federal Sector	Past Actions RFFAs Scenario 1	Overdrift of Pahump Valley; Over appropriation of Amargosa Valley; Water levels declines; Increased appropriation time; Increased appropriation cost; Groundwater contamination	Increased water costs; Loss of habitat and species; Increased pumping lifts; Decline of spring discharges; Potential subsidence; Increased water speculation	Significant overdrift and loss of habitat and species in Pahump Valley. Significant potential for over appropriation of flow system.

Table 3. Cumulative Impacts From Mission Related Activities - Scenario 1 - Baseline Cumulative Impacts

assumed in this analysis that all of the legally available groundwater in these two basins will be appropriated and put to a beneficial use by the year 2050 in all scenarios.

Assumption 4. Because of growth in Clark County, all of the available water resources of the hydrographic basins in Clark County will be put to beneficial use by the year 2050. This assumption is included in the third scenario.

**Rationale** On a more regional scale, a rigorous NEPA evaluation must also consider trends in water development in Clark County and their implications with respect to future water use. To provide water for the continued growth of metropolitan Las Vegas, the Southern Nevada Water Authority and Las Vegas Valley Water District have filed water right applications in basins up gradient of Nye County. The District has filed water right applications in Three Lakes Valley (north and south hydrographic basins) and Tikapoo Valley (north and south hydrographic basins). The quantities of water filed for are in excess of the perennial yields of these basins. Recently (September 1998), the Nevada Division of Lands filed three water right applications in Three Lakes Valley for a new prison. Pending resolution of protests related to these applications, it is not possible to determine at this time what future water developments will occur in the valleys located hydraulically up gradient of Nye County. However, based upon the continued growth of metropolitan Las Vegas, it is considered reasonable to assume that all legally available water in Clark County will be appropriated and placed into beneficial use by the year 2050. However, as such development is not likely to occur until sometime after the year 2020, it is only included in one scenario.

Assumption 5. Because of wildlife concerns associated with Devils Hole and Ash Meadows, no additional significant water withdrawals beyond those of the DOE will occur in Mercury Valley or from the areas within the Amargosa Desert hydrographic basin that are situated hydraulically up gradient of these environmentally sensitive areas. This assumption is included in all three scenarios.

**Rationale** Previous attempts to increase agricultural productivity near Devils Hole resulted in a lowering of water levels in this feature that raised concerns about the continued existence of the Devils Hole pupfish. Planned conversion of these agricultural lands to residential uses was also considered by some to be an unacceptable threat to the aquatic species at Ash Meadows and led to the purchase of this land for preservation. Because of concern that increased water production from up gradient areas would adversely impact the habitat at Devils Hole and Ash Meadows, it is considered highly unlikely that significant water withdrawals in the area will be permitted by the Nevada Division of Water Resources. However, the small quantities of water presently used for domestic and quasi-municipal purposes will continue to occur and may increase slightly over the next 52 years. Should the demand for water increase for some unforeseen future development, it is likely that water would be imported to the reason to avoid adverse impacts on Devils Hole and Ash Meadows.

**Scenario 1. Baseline Cumulative Impacts**

The baseline cumulative direct and indirect impacts on water resources as a result of past, present, and reasonably foreseeable future actions in Table 3. Table 3 lists the cumulative impacts from mission related activities along with those from the non-federal sector. Table 4 lists the cumulative impacts from the land withdrawals and designations, and Table 5 lists the cumulative impacts from water appropriations, water right claims, and water use by the federal agencies and private sector. These impacts represent the expected cumulative impacts of past and present actions by both federal agencies and private enterprises. The cumulative impacts of these actions

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**Table 5. Cumulative Impacts From Groundwater Withdrawals - Scenario 1 - Baseline Cumulative Impacts**

Agency or Sector	Water Right Appropriations	Claimed Reserved Rights	Estimated Peak Water Use and Year	Significance
Department of Energy	353 acre feet	4,175 (interim claim per Draft Resource Management Plan)	4,175 (sum of 6 basins, peak years vary)	Claimed right exceeds perennial yield of Yucca Flat
U.S. Air Force	1,669.44 acre feet	None	159.51 acre feet	Not significant
Bureau of Land Management	Unknown	None	small	Not significant
National Park Service	none in Nye County	Claims unquantified federal reserved rights for all unappropriated water from any source on federal wilderness and/or park areas	Unknown, 2,470 acre feet average with 588 acre feet of federal use and 1,882 acre feet by non-federal users within Death Valley National Park	Unquantified claim for reserved rights may be significant, water use in National Park is not significant
U.S. Fish & Wildlife Service	12,576 acre feet	None	24,000 (each year through evapotranspiration)	Significant water rights (more than 50% of perennial yield).
Total federal	> 15,000 acre feet	Unknown, at least 4,175 acre feet in Nye County.	> 30,804 acre feet	Significant water use and reduced water availability for other uses.
Total non-federal	Approximately 96,000 acre feet (does not include domestic wells)	None	Approximately 45,000 acre feet	Significant overall of Pahrump Valley
Total Cumulative	> 111,000	Unknown, > 4,175 acre feet	Approximately 76,000 acre feet	Significant overall of Pahrump Valley

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**Table 4. Cumulative Impacts From Land Withdrawals and Designations - Scenario 1 - Baseline Cumulative Impacts**

Agency	Withdrawal or Designation	Direct Impacts	Indirect Impacts	Significance
Department of Energy	Nevada Test Site Land Withdrawal (864,000 acres ±)	Restricted area for development.	Reduced water availability.	Significant reduction in water availability.
U.S. Air Force	Nellis Air Force Range Withdrawal (290,000 acres ±)	Restricted area for development.	Reduced water costs.	Significant reduction in water availability.
Bureau of Land Management	46,444 acres designated for disposal (12,000+ acres in region of influence only; Ash Meadows National Wildlife Refuge does not include Railroad Valley Wildlife Management Area or co-use of Nellis Air Force Range lands)	Increased over appropriation of Amargosa and Pahrump Valleys.	Increased water costs.	Significant increased demand for water and overall in Pahrump and Amargosa Valley.
National Park Service	Death Valley National Park Land Withdrawals (106,961 acres)	Reduced water availability.	Increased water costs.	Significant losses of long-term productivity of private lands, and decreased tax revenues to County.
U.S. Fish & Wildlife Service	12,000+ acres in region of influence only; Ash Meadows National Wildlife Refuge does not include Railroad Valley Wildlife Management Area or co-use of Nellis Air Force Range lands)	Reduced water availability.	Increased water costs.	Significant losses of long-term productivity and tax revenues to County.
U.S. Department of Agriculture	Lands designated as National Forests (<1,000 acres in region of influence) (1,942,983 acres in all of Nye County)	None identified	None identified	Not significant
Total	Withdrawal of 2,261,000 acres ± for conservation, wildlife, or preservation. Designation of 59,000 acres ± for disposal of 46,444 acres for disposal.	Reduced water availability. Restricted areas for development. Amargosa and Pahrump Valleys. Increased water demand.	Reduced water availability. Increased water costs. Decreased long-term productivity of private lands. Decreased tax revenues.	Significant reduction in water availability. Increased demand for water and overall in Pahrump and Amargosa Valley, losses of long-term productivity of private lands, and decreased tax revenues to County.

Basin and Basin Number	Estimated Water Use and Year	Estimated Use - 2050	Significance
Lida Valley (144)	unknown	no projections	No significance
Storcell Flat (145)	none reported	no projections	No significance
Sarcobatus Flat (146)	25 acre feet (1997)	no projections	No significance
Gold Flat (147)	40 acre feet (1988)	25 acre feet	No significance
Cactus Flat (148)	107 acre feet (1997)	107 acre feet	No significance
Stone Cabin (149)	no data	no projections	No significance
Groom Lake Valley (158a)	no data	no projections	No significance
Papoose Lake Valley (158b)	no data	no projections	No significance
Yucca Flat (159)	194 acre feet (1996)	no projections	No significance
Frenchman Flat (160)	273 acre feet (1996)	no projections	No significance
Indian Springs Valley (161)	660 acre feet (1992)	725 acre feet	Exceeds perennial yield in 1992 and 2050
Pahrump Valley (162)	28,819 acre feet (1997)	84,000 acre feet	Exceeds perennial yield by >50% in 1992 and by > 440% in 2050
Three Lakes Valley South (211)	350 acre feet (1992)	9,000 acre feet	Equals perennial yield by 2050
Three Lakes Valley North (168)			
Micruvy Valley (225)	339 acre feet (1993)	no projections	No significance
Rock Valley (226)	None	8,000 acre feet	Equals perennial yield by 2050
Jacksass Flats (227a)	217 acre feet (1996)	4,000 acre feet	Equals perennial yield by 2050
Blackboard Mesa (227b)	248 acre feet (1996)	3,600 acre feet	Equals perennial yield by 2050
Oasis Valley (228)	718 acre feet (1996)	2,000 acre feet	Equals perennial yield by 2050
Crater Flat (229)	1,245 acre feet (1996)	900 acre feet	Exceeds perennial yield by 38% in 1992 but likely to decrease to perennial yield by 2050 with minor shut downs
Amargosa Desert (230)	26,478 acre feet (includes Fish & Wildlife appropriations)	29,000	Combined pumpage and evapotranspiration exceeds perennial yield by 58%
TOTAL	59,000 ± acre feet	141,000 ± acre feet	Resources over developed by 2050.

Table 6. Estimated 1997 Use and Projected 2050 Water Demand in of the Region of Influence.

have resulted in a number of significant cumulative impacts on water resources including injury through contamination, constraints on water development (both in terms of availability and the loss of locations for water wells), increased demands for water, overdraft, over appropriation, loss of long-term productivity, increases in the costs of water and water rights, loss of habitat, and decreases in tax revenues to the County.

Table 6 summarizes total water use in the region of influence and the predicted water use in the year 2050. According to the records of the Nevada Division of Water Resources, the combined pumping for agriculture, mining, and quasi-municipal purposes in Oasis Valley, Amargosa Desert, and Pahrump Valley now exceeds 40,000 acre-feet per year. With federal water uses added along with minor private uses in Indian Springs Valley, the total water use at present is approximately 59,000 acre-feet per year. Projections made by Nye County indicate that this demand in Oasis Valley, Amargosa Desert, and Pahrump Valley will grow to more than 100,000 acre-feet per year by the year 2050. Taking federal water use into account and the expected developments in Clark County, the projected total demand for water in the year 2050 is projected to be on the order of 141,000-acre feet. To accommodate this projected demand, it is considered very likely that every favorable location for obtaining potable groundwater in southern Nye County will be developed by the mid 21<sup>st</sup> century.

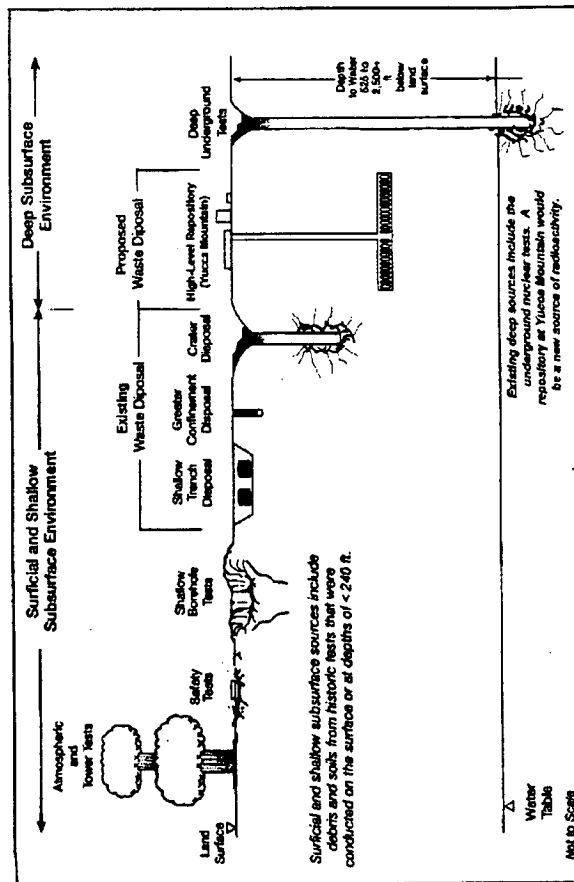
Scenario 2. Baseline Plus Yucca Mountain

The adverse impacts of the land withdrawal for the Yucca Mountain site will be additive to: 1) the radiological burden already imposed on Nye County from underground nuclear weapons testing, its related tests and experiments, and radioactive waste disposal; 2) the federal land withdrawals associated with the Nevada Test Site, the Nellis Air Force Range, and National Park lands; 3) the impacts that have resulted from federal policies aimed at preserving the environmentally sensitive areas at Devils Hole, Ash Meadows, and Death Valley National Park; and 4) the water resource use and management practices occurring on both public and private lands in Nye County

Any contaminant releases from a repository at Yucca Mountain will be additive to the contamination that already exists. The results of preliminary modeling efforts conducted by the Department of Energy indicate that a plume of contaminated groundwater may form under, and down gradient of, Yucca Mountain after closure. The leakage of radioactive contamination, as predicted by these models, indicates that further losses of water resources may occur. The predicted area of contamination from Yucca Mountain overlaps contaminant pathways and predicted contaminant plumes leading from underground nuclear weapons testing areas on the Nevada Test Site. The impacts of contaminant releases from Yucca Mountain will be additive to those from the underground nuclear weapons testing areas and to those from other contaminant sources including waste disposal facilities. Because the amount of existing contamination on the Nevada Test Site is unknown, it is difficult to determine the cumulative losses of natural resources that will occur as a result of the co-mingling of contaminant plumes from different sources. However, it is possible to determine the significance of the potential for such losses by evaluating the total contamination and contaminant sources in terms of their radioactivity.

The cumulative activity of existing and future radioactive wastes and contamination within the region of influence is summarized in Table 7 and portrayed graphically in Figure 1. As shown, the baseline activity that is already present in Nye County is on the order of 310 million curies. The disposal of wastes at Yucca Mountain would increase this activity by a considerable factor. Because of the decay rates of the specific radionuclides and their daughter isotopes and the uncertainty regarding when wastes would actually be entombed in the repository, it is not

Figure 1. Types and Depth Horizons of Radioactivity on the NTS and Yucca Mountain. Modified from US Department of Energy DOE/EIS 0243, August 1986, Environmental Impact Statement for the Nevada Test Site and Off Site Locations in the State of Nevada, Volume 1, page 4-7.



possible to accurately define the total radiological burden at this time. However, given that the wastes in their current form have a total activity on the order of 14 billion curies, the wastes proposed for disposal will significantly increase Nye County's radiological burden.

Only a portion of the Yucca Mountain land withdrawal will be additive to the other federal land withdrawals associated with the Nevada Test Site, Nellis Air Force Range, and National Park lands. About one-half of the land to be withdrawn for Yucca Mountain is already withdrawn for portions of the Nevada Test Site and Nellis Air Force Range. Of the total withdrawal of 4,244.50 acres, approximately 2,000 acre will be additive. This additive portion includes prime water well locations in Crater Flat. The cumulative impact of the Yucca Mountain land withdrawal will further reduce the areas in which water resources can be developed to meet the long-term water shortfalls projected for southern Nye County. The cumulative loss of the majority of the Jackass Flats hydrographic basin and the most productive portions of the Crater Flat basin represent significant constraints on the development of the County's water supplies.

The construction and operation of a repository at Yucca Mountain will result in impacts that are additive to those that have resulted from federal policies aimed at preserving the environmentally sensitive areas at Devils Hole, Ash Meadows, and Death Valley National Park. The community of Amargosa Valley is situated between the DOE-managed lands and those managed by the U.S. Fish and Wildlife Service and the National Park Service. In short, the federal government has adopted a policy of permissible pollution on the DOE lands up-gradient of Amargosa Valley and absolute preservation of federal lands down gradient of the community. The best areas for water development up-gradient from the Nevada Test Site are on the Nellis Range and thus are not available for development. Nye County is caught in the middle of these conflicting policies. The County is faced with the formidable challenge of providing potable water supplies and water for agriculture and mining without inducing the flow of contamination off of DOE lands while maintaining in perpetuity the wildlife, habitat, and cultural values associated with the Department of Interior lands. The cumulative impact of these policies is significant. It is considered very likely that Nye County may ultimately have to implement very costly water importation projects to provide its citizens with a safe supply of drinking water without adversely impacting areas designated for conservation or preservation.

Finally, the impacts of Yucca Mountain will be additive to the water resource use and management practices on both public and private lands in Nye County. Although the overall water use by Yucca Mountain is expected to be small (about 350 acre-feet per year), this demand will be additive to those of the federal government. The demand for water to support federal policies regarding federally owned or managed lands must be met from the shared water resources that are available. As a consequence, any water that is committed to a federal action is not available for private uses in Nye County. Thus, although the water demand of each individual federal action is not large, the demand for water to support all federal actions is large and the cumulative effect of the federal demand for water is significant.

Scenario 3. Baseline Plus Yucca Mountain Plus Large-Scale Water Development

Scenario 3 includes the impacts of Scenario 2 with the additive impacts of large-scale groundwater withdrawals as part of remediation of the contamination at the Nevada Test Site and interbasin water transfers to metropolitan Las Vegas. Although not being actively considered at this time, it may become necessary to implement active groundwater controls to remediate the spread of contamination at the underground nuclear weapons testing areas on the Nevada Test Site. Examples of active controls include pump and treat systems (where contaminated water is pumped to the surface and evaporated or treated) and the creation of groundwater barriers such as

Table 7. Summary of Radioactivity in Southern Nye County, Nevada. Modified from US Department of Energy EIS for the NTS and Offsite Locations in the State of Nevada, Volume 1, p. 4-6.

SOURCE OF RADIOACTIVITY	MAJOR KNOWN ISOTOPE OR WASTES	APPROXIMATE REMAINING ACTIVITY (curies)
Above Ground Tests	Americium, Cesium, Cobalt, Plutonium, Europium, Strontium	20
Safety Tests	Americium, Cesium, Cobalt, Plutonium, Strontium	35
Nuclear Rocket Tests	Cesium, Strontium	1
Shallow Borehole Tests	Americium, Cesium, Cobalt, Europium, Plutonium, Strontium	2,000 at land surface unknown at depth
Shallow Land Disposal	Dry Packaged Low-Level & Mixed Wastes	500,000*
Crater Disposal	Bulk Contaminated Solids & Equipment	1250*
Greater Confinement Disposal	Tritium, Americium	9.3 million*
U.S. Ecology Beauty LLW Facility	Cobalt, Cesium, Iron, Tritium	710,000*
Deep Underground Tests	Tritium; Fission & Activation Products	Greater than 300 million
High-Level Waste Repository	Cesium, Plutonium, Strontium, Americium	Greater than 14 billion*

\* Inventory at time of disposal (not corrected for decay). All other values are corrected for decay to January 1986.

\* Total curies as of Dec. 31, 1992 per James L. Grant & Associates, Inc. December 21, 1993

\* Summed from Simecock et al. (1987)



REFERENCES CITED

BLM, April 1994, Guidelines for Assessing and Documenting Cumulative Impacts, U.S. Department of Interior, Bureau of Land Management.

BLM, May 1998, Proposed Las Vegas Resource Management Plan and Final Environmental Impact Statement, U.S. Department of Interior, Bureau of Land Management, BLM/L V/PL-98/012-1791.

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DOE, May 1998, Working Draft - Nevada Test Site, Resource Management Plan.

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DOE, August 1996, Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada, DOE/EIS 0243.

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Schaefer and Harrill, 1995, Simulated Effects of Proposed Ground-Water Pumping in 17 Basins of East-Central and Southern Nevada, US Geological Survey Water Resources Investigation 95-4173

U.S. Air Force, September 1998a, Renewal of the Nellis Air Force Range Land Withdrawal, Department of the Air Force Draft Legislative Environmental Impact Statement, 2 Volumes.

U.S. Air Force, September 1998b, Water Requirements Study of the Nellis Air Force Range, Nellis Air Force Range, Nevada

U.S. Air Force, February 1997, Contamination Report for the Nellis Air Force Range Land Withdrawal Environmental Impact Statement, Nellis Air Force Range, Nevada

hydraulic divides. Such controls, if implemented, will have two significant additive impacts: 1) the water withdrawals used to control contamination will increase the demand on the resources and further limit the water available for other purposes; and 2) groundwater flow paths and travel times may be significantly altered in the region as a whole.

Future water development in the region for non-federal purposes may also alter groundwater flow paths and travel times and could induce the flow of contaminated groundwater toward municipal well fields. As previously discussed, the Las Vegas Valley Water District has filed applications to withdraw as much water as can be permitted from basins located hydraulically up gradient of Nye County. In 1995, the U.S. Geological Survey published the results of numerical simulations of the proposed water withdrawals from rural areas in Clark, Lincoln, Nye, and White Pine counties. Although the modeling approach used is open to question, the results suggest that these water withdrawals, should they go forward, can potentially alter the groundwater flow paths dramatically in the vicinity of Yucca Mountain. (See Schaefer and Harrill, 1995, US Geological Survey Water Resources Investigation 95-4173, pp. 26-27.) Even if the Southern Nevada Water Authority does not go forward with its proposed regional water withdrawals, it is likely that the remaining water resources of the region be developed within the next 50 years. Further, it is considered very likely that all of the remaining water in the region down gradient of Yucca Mountain will also be developed within the next 50 years.

Given the state-of-the-art of numerical modeling, it is not possible at this time to state what the cumulative impact of large-scale groundwater development for water supply and remediation would be. In other areas where such development has occurred (such as Pahump Valley and Las Vegas Valley) large-scale water withdrawals have resulted in significant impacts including the lowering of water levels, the loss of springs and their associated habitat and wildlife values, subsidence, and potential water quality degradation. The development of the remaining water resources in southern Nye County will have to be carefully planned to avoid exacerbating the spread of contamination from the Nevada Test Site and the additive contamination that could result from a release from a repository. It may prove necessary to import water to the region because of the cumulative limitations imposed by the operation of a repository at Yucca Mountain and policies and management practices aimed at the protection of sensitive species and wildlife habitat.

Finally, given that the results of the performance assessment for a repository at Yucca Mountain indicate that a plume of radioactive contamination may spread down gradient from the site, it is possible that active groundwater controls may have to be implemented to remediate the pollutant plume. If active groundwater controls are employed, the impacts would be as discussed for remediation on the Nevada Test Site. These impacts would be additive to the other impacts under Scenario 3.

BOB MILLER  
Governor

STATE OF NEVADA



DEPARTMENT OF ADMINISTRATION

209 E. Musser Street, Room 200  
Carson City, Nevada 89701-4298

Fax (775) 687-3983  
(775) 687-4065

JOHN P. CORNEAUX  
Director

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JAN 06 RECD

December 30, 1998

Mr. Kenneth L. Reinertson  
Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191

GE-2 Dear Mr. Reinertson:

This letter constitutes review and comment by the Nevada State Clearinghouse and constituent agencies, per Executive Order 12372, of the Draft Legislative Environmental Impact Statement (DLEIS) for Renewal of the Nellis Air Force Range (NAFR) Land Withdrawal in Nevada.

The State supports the continued withdrawal of the Nellis Air Force Range for United States Air Force training purposes. The site has a long history of such use, is critical for Air Force training purposes and is an important component of the well being of the United States. Personnel at Nellis Air Force Range have made a positive contribution to the community in southern Nevada and help support the economy of Clark County.

Several State agencies submitted comments regarding issues dealing with, and not necessarily specific to, stated alternatives. The State's primary concerns regard environmental issues. Currently, Nellis provides responsible stewardship of the land. We are concerned about the long term effects and the need for regular evaluation of the withdrawn lands under the National Environmental Policy Act process.

AF-57

To follow are a variety of specific concerns/questions regarding requests for clarity or further discussion:

- We support the continuation of the Five Party Agreement.
- If acreage along the western boundary were released for mineral exploration, it would be of benefit to the state's mining industry.

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- Appropriation and use of water in the State of Nevada are subject to Nevada Revised Statutes (NRS) Chapters 533 and 534, including the use of wells, which are subject to NRS Chapter 534 and the Nevada Administrative Code (NAC) Chapter 534.

AF-48 [ State-of-the-art scientific procedures exist for analyzing cumulative impacts which are not identified in the DEIS and would increase clarity if addressed and applied.

- For the safety of all of us, we would encourage continued compliance regarding treatment of hazardous materials.
- Co-use of some of the non-restricted airspace would be beneficial.

The State of Nevada and its agencies appreciate the opportunity to comment on the proposed withdrawal continuation. If you have any questions, please contact me at (775) 687-6367.

Sincerely,

Heather K. Elliott  
Nevada State Clearinghouse/SPOC

Cc: Governor Bob Miller  
Governor-Elect Kenny Guinn  
Senator Harry Reid  
Senator Richard H. Bryan  
Representative Jim Gibbons  
Representative John Ensign  
John P. Comeaux, Director, Department of Administration  
Maud Naroll, Chief Planner, Department of Administration  
Pam Wilcox, Administrator, Division of State Lands  
Ron James, Officer, Historic Preservation Office  
Joe Tingley, UNR, Bureau of Mines  
Michael Turnipseed, Engineer, Division of Water Resources  
Robert Loux, Agency for Nuclear Projects  
Thomas Stephens, Director, NDOT

9020



United States Department of the Interior

OFFICE OF THE SECRETARY  
Washington, D.C. 20240



FEB 1 1999

In Reply Refer To:  
ER 98/0620

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, Nevada 89191

GE-2 Dear Sir/Madam:

The Department of the Interior has reviewed the Draft Legislative Environmental Impact Statement (DLEIS) for Renewal of the Nellis Air Force Range (NAFR) Land Withdrawal, Nevada. The following general comments are provided for your information and use when preparing the Final Legislative Environmental Impact Statement (FLEIS). Specific/technical comments are included as an attachment.

GENERAL COMMENTS

The Department is concerned with the statement made on page 2-12 under Section 2.2.2: Alternative 1B, Indefinite Withdrawal/Modification of Lands and/or Administration, Land Administration. This section states that "Portions of the South Range actively used for air-to-ground activities could be exclusively withdrawn by the Air Force for military use." We have been unaware of this potential withdrawal. The FLEIS needs to clarify any change of administration relating to Desert National Wildlife Range (DNWR) and that the NAFR involves only the impact areas and not the overlay area. In addition, the FLEIS should clarify that if the Air Force is given primary jurisdiction of the impact areas, the Department's U. S. Fish and Wildlife Service (USFWS) would continue to maintain secondary jurisdiction of the impact areas and primary jurisdiction of the remaining overlay area.

Because there are Class I areas downwind of the NAFR and PM<sub>10</sub> emissions can and do affect air quality in Class I areas in this region, PM<sub>10</sub> monitoring stations along the eastern and southeastern border of the North and South Range could provide needed baseline data on the effects of present activities on the air quality. These data could then be used to help monitor mitigation efforts similar to those used on other military bases, such as scheduling dust-producing ground-based activities on days with low wind speeds.

Cumulative impacts from present incremental activities, especially cumulative impacts to regional physical resources such as air and water, could be significant. Cumulative impacts should be given more thorough consideration.

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Department of Energy

Nevada Operations Office  
P. O. Box 98518  
Las Vegas, NV 89193-8518

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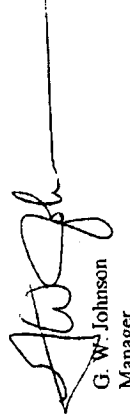
Nellis AFR Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191

GE-2 DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT (DLEIS) FOR THE RENEWAL OF THE NELLIS AIR FORCE RANGE (NAFR) LAND WITHDRAWAL, NEVADA

The U.S. Department of Energy, Nevada Operations Office (DOE/NV), reviewed the NAFR DLEIS, in particular, the sections describing our environmental restoration program and activities and sections describing the *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* dated August 1996 and determined that those descriptions are accurate.

DOE/NV believes it would be desirable that any realignment of jurisdictional responsibilities be for a duration that is consistent with the duration of the land withdrawals currently managed by the respective agency. Inclusion of the following language in Alternative 2B at the end of the last sentence on page ES-8 and in the language of Section 2.2.4 on page 2-12 would provide the flexibility to permit such an approach: "(exclusive of jurisdictional adjustment of Pahute Mesa where the withdrawal may be for a duration that is compatible with the duration of the land withdrawals for the remainder of the Nevada Test Site)."

DOE/NV appreciated the opportunity to participate in the development of this DLEIS and these comments will be of assistance to the U.S. Air Force in preparing the Final LEIS and Record of Decision.

  
G. W. Johnson  
Manager

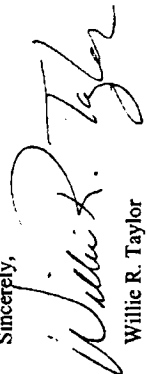
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We appreciate the opportunity to review and comment on this important DLEIS. We hope that our comments are useful and that they contribute favorably in your effort to prepare the FLEIS and we look forward to seeing it when it is published. If you have any questions regarding these comments, please contact Ken Havran in the Office of Environmental Policy and Compliance at (202) 208-7116.

Sincerely,  
  
 Willie R. Taylor  
 Director  
 Office of Environmental Policy  
 and Compliance

Attachment

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Attachment

SPECIFIC COMMENTS

Section 2.4, Page 2-24, Management Actions to Reduce the Potential for Environmental Impacts, Wilderness and Wilderness Study Areas The second sentence under the subsection Operational Action states: "The Air Force has an MOU with the USFWS that states aircraft operations, except for special training missions, will generally not go below 2,000 feet above ground-level (AGL) over the overlapping DNR and NAFR areas that met the wilderness recommendation criteria." However, R-4806W (Range 64) is restricted airspace, and many air-to-ground targets are located on the land below. Since areas being considered by Congress for inclusion in wilderness are routinely overflown by aircraft at and below 2,000 feet AGL during ingress and egress, the FLEIS should address this apparent non-compliance with the MOU.

AF-52

Section 3.1, Page 3.1-1, Airspace The following statement should be included in this section: "In the future, the Air Force will comply with the National Environmental Policy Act when considering changes to any airspace designations." This statement is needed to ensure that the USFWS is contacted about any change in airspace which can affect management activities.

AU-3

Section 3.2, Page 3.2-8, Flight Risks, Bird-Aircraft Strike Hazards In addition to addressing the effects of bird-aircraft strikes on people and equipment, the FLEIS needs also to address the effects on migratory bird resource and compliance with the Migratory Bird Treaty Act of 1918.

BI-12

Section 3.4.3.3, Page 3.4-11, Depleted Uranium (DU) Target Assessment The first sentence of the first paragraph states: "Results of the limited site assessment indicate that, at present, the DU on Range 63 does not appear to pose a hazard to public health." The DLEIS does not address disposal of existing DU-contaminated targets. The Air Force should not resume use of DU until short and long term effects of this added source of radioactive material on vegetation and wildlife, including micro and macro environments, are thoroughly evaluated. A complete plan for management and decontamination/disposal of existing targets should also be included in the FLEIS.

HZ-9

Section 3.5.2, Soils, Page 3.5-11 The alluvial soils that dominate the fans and basins in conjunction with the fine soil particles from lacustrine sources exacerbate the fugitive dust problem for the whole Range. When thrust up into the air stream, these fine materials can and do travel long distances before settling to the surface. The vulnerability of the Range soils to wind erosion, and therefore PM<sub>10</sub> emission, has not been adequately addressed in the DLEIS.

ER-3

AQ-2

Section 3.6, Water Resources, and Section 3.8, Biological Resources, Page 3.6-5, Figure 3.6-1b, Watershed Areas with Surface and Groundwater Locations for the South Range; Page 3.6-17, Table 3.6-3, Surface Water Sources and Appropriations on the Nellis Air Force Range; Page 3.8-12, Figure 3.8-1b, Surface Water Resources on the South Range; and Page 3.8-13, Table 3.8-1, Surface Water Resources on the Nellis Air Force Range The figures and tables identified are not accurate regarding surface water resources on the South Range. They should be corrected in the FLEIS to reflect the locations listed below. Credit should be given to the USFWS as a source of information.

ED-7

Features such as piggyback basins are typically associated with detachment systems. Therefore, the architecture of sediments in basins is more complex than the patterns seen at the surface, so groundwater flow and storage may be hard to predict.

Section 3.7.2.2, Page 3.7-2, Table 3.7-1, National and Nevada Ambient Air Quality Standards Monitoring data on PM<sub>10</sub> emissions could be used to establish attainment status of the National Ambient Air Quality Standards (NAAQS) for the Range.

Section 3.7.3.3, Climate, Page 3.7-3 As stated earlier in the DLEIS, the prevailing wind direction is from the west; however, significant storms also produce winds from the northwest and southwest. Wind directions in the area also depend on the topography of the site, with mountain ranges funneling wind mainly north and south. Monitoring of wind direction and speed, and appropriate scheduling of high-impact activities would help to minimize the air quality effects from fugitive dust and other emissions on the Range

Section 3.7.4, Regulatory Setting, Prevention of Significant Deterioration, Page 3.7-4 to 3.7-5 Data are needed on baseline air quality for the Range in order to establish any incremental deterioration of air quality in Class I areas on lands withdrawn for NAFR. Grand Canyon National Park should be included in this list of Class I areas. Lake Mead National Recreation Area should be included as a possible impacted area.

Section 3.7.4, Regulatory Setting, Visibility Impairment, Page 3.7-5 PM<sub>10</sub> should be included as a potential visibility impairment to Class I areas from dust emissions on the Range.

Section 3.7.4, Regulatory Setting, Federal Operating Permit (Title V), Page 3.7-5 to 3.7-6 Application for Title V permits could also include major bombing areas and areas of non-simulated truck convoys and tank battlefronts.

Section 3.7.5, Baseline Air Quality Emissions, Page 3.7-7, Figure 3.7-1 TPECR, Area 10, and TTR should be labeled on this map.

Section 3.7.5, Baseline Air Quality Emissions, Page 3.7-8, Table 3.7-3 What is the relation between tons/year of PM<sub>10</sub> emissions and NAAQS standards in µg/m<sup>3</sup>? PM<sub>10</sub> emissions from bombing and non-simulated tank battlefronts and truck convoys should be included in these calculations (Note: 4).

Section 3.8.1, Page 3.8-1, Biological Resources, Overview In the second paragraph, the term "pristine" overstates the condition of biological resources on the NAFR. The term "good" more accurately describes the condition of the biological resources outside (1) the North Range where wild horse populations have been better controlled and (2) outside the South Range on the DNWR where lands have not been subject to military ground exercises.

AQ-4

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AQ-8

AQ-9

AQ-10

BI-13

Basin Name	Common Name	Condition	Location
Indian Spring Valley	Spotted #1 Guzzler	Installed for wildlife	36°49.68 115°41.11
	Spotted #2 Guzzler	Installed for wildlife	36°50.34 115°39.63
	Foggy Guzzler	Installed for wildlife	36°48.25 115°40.33
	Patches Guzzler	Installed for wildlife	36°46.10 115°40.40
	Quartz Spring	Surface water present	36°59.23 115°36.45
	Gravel Cyn. Guzzler	Installed for wildlife	36°53.50 115°35.00
	DeJesus Spring	Surface water present	36°52.59 115°34.27
	Tim Spring	Surface water present	36°51.00 115°33.50
	Sand Spring	Surface water present	36°49.57 115°34.11
Three Lake Valley	Indian Canyon Guzzler	Installed for wildlife	36°56.50 115°32.50
	Dain Peak Guzzler	Installed for wildlife	36°42.00 115°32.00
	Heaven's Well Guzzler	Installed for wildlife	36°40.50 115°33.00
	Heaven's Well Tinaja	No surface water	36°40.15 115°32.50
West Face of Desert Mountains, south of Tikaboo Valley	Tommy Guzzler	Installed for wildlife	36°59.53 115°23.26
	Chuckwalla Guzzler	Installed for wildlife	36°56.05 115°20.64
	White Sage Guzzler	Installed for wildlife	36°43.29 115°22.16
	Blacktop Guzzler	Installed for wildlife	36°40.09 115°22.43

\* Note that Shalecut Spring and White Rock Spring are in the Sheep Mountains. Pintwater Spring and Warthog Spring are ephemeral sources near Tim Spring.

Section 3.6.2, Surface Water More information is needed on surface susceptibility to water and wind erosion. Soils compacted by wheels, foot traffic, or concentrated grazing are subject to enhanced water erosion and wind erosion. Wildfires and heavy grazing can contribute to decreased vegetation and greater susceptibility to erosion as well. An analysis of which soils are most susceptible to compaction or disturbance and their relation to erosion caused by military activities is needed. Also information on military activities that could result in a greater number of wildfires or different characteristics for wildfires should be included in the FLEIS.

Drainage diversions along roads and around areas with buildings or storage areas can enhance water erosion by disrupting the overland flow and creating gullies. Disruption of natural flow can also impact biological resources. Information on mitigation strategies to minimize water erosion impacts is needed.

Section 3.6.2, Page 3.6.4, Figure 3.6.1a. The architecture of valley fill deposits is probably much more complex than portrayed here. Although faulting has been ongoing for about 17 million years, as stated, this faulting has been episodic and has changed in location through time. The current mountains have not existed for more than five to seven million years, so modern sediment dispersal patterns cannot be extrapolated back for the full 17 million years. In addition, normal faults forming above low-angle (detachment) faults create mountain uplifts with distinctly different sedimentation and erosion patterns than those for simple or half grabens.

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Section 3.12.2. Visual Resources and Setting, Page 3.12-7 The FLEIS should address the visual impact of accumulated debris, e.g., towed target debris, which has been scattered for decades throughout the DNWR. Since much of the area needed for the NAFR will be within the actual/proposed Wilderness System with visual resource issues, the accumulated debris should be addressed in the FLEIS. In addition, the FLEIS should evaluate whether the environmental impacts to retrieve the accumulated debris may exceed the impacts to visual resources of leaving it in place.

Section 4.7.1.2. Operations, Page 4.7-1 Data are needed to substantiate the conclusion that operational impacts on air quality and visibility are insignificant.

Section 4.8. Biological Resources, Page 4.8-1. Each subpart of this section states that the NAFR land withdrawal has a beneficial effect by eliminating threats from mining, grazing and recreation/off-road driving. This statement is conjecture with regard to the North Range/Bureau of Land Management land and entirely false as it relates to the South Range/DNWR. The FLEIS should disclose that the portion of DNWR not overlain by the NAFR land withdrawal is also closed to mining, grazing and off-road driving, and is almost entirely free of human disturbance. Non-renewal would not result in the above activities occurring on that portion of NAFR managed by the DNWR.

Section 4.10.2.1. Land Status and Land Use Patterns, Page 4.10-2 The FLEIS should emphasize that exclusive NAFR use is not the same as exclusive NAFR jurisdiction. It should also state emphatically that USFWS would maintain secondary jurisdiction.

Section 4.10.2.3. Special Use Areas, Page 4.10-3 We are concerned with the second sentence in the first paragraph which states: "... the boundaries and management of the DNWR would be modified." This statement should be verified with respect to what has been previously discussed between USFWS and the Air Force.

Section 5.0. Irreversible/Irrecoverable Commitment of Resources and Cumulative Impacts, Introductory Page In the introduction to this section, it is stated: "For 50 years, biological and cultural resources have been protected by exclusive use of the NAFR." This statement is misleading because some resources have been protected and others have been disturbed or destroyed. For example, on the South Range, bighorn sheep water catchments and Native American rock art have been hit by errant Air Force ordinance. The FLEIS should accurately state the environmental protection afforded by the NAFR.

Section 5.2.3.6. Water Resources Analyses of cumulative impacts on water resources has overlooked the distinction between regional and local aquifers. If all wells are pumped from regional aquifers, then the conclusion that recharge far exceeds appropriation suffices. However, if some wells pump from local aquifers, such as shallow basin fill, the effects of continual pumpage may be relevant. If draw-down at some wells is occurring, the local water resource is gradually being depleted and the cumulative impact should be considered. Not only can water resources be depleted but ground subsidence can occur. The locations, total depths, and ground-

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Section 3.8.2. Page 3.8-2. Vegetation Additional references should include unpublished studies conducted by the USFWS (Thomas Ackerman, 1981). Mr. Ackerman's work in the late 1970s and early 1980s was the basis for many of the follow-up inventories conducted by The Nature Conservancy.

Section 3.8.3.1. Page 3.8-6. South Range The striped skunk (*Mephitis mephitis*) is listed as a common mammal. It should be listed as a rare mammal in the FLEIS

Section 3.8.3.1. Page 3.8-7. South Range Gambel's quail is not regularly present in creosote scrub within the South Range because water sources are not available in the low elevations. In addition, the FLEIS should note Scott's orioles are not regularly observed nesting in Joshua trees in the South Range.

Section 3.8.5.2. Fish and Wildlife, Page 3.8-25. Table 3.8-3. Special Status Wildlife Species Known or Likely to Occur on Nellis Air Force Range (NAFR) or Under Associated Airspace The scientific name for desert tortoise is spelled *Gopherus agassizii*. The name of the Pahrump killifish has been changed to Pahrump poolfish (*Empetrichthys latos latos*). These corrections should be made in the FLEIS.

Section 3.8.5.2. Fish and Wildlife, Page 3.8-31. Game Animals The last sentence in the second paragraph incorrectly states that bighorn sheep breed in October and November, and drop their young from April to June. The FLEIS should state that desert bighorn sheep generally breed in July and August, and the peak of lamb drop occurs in February and March.

Section 3.10.1.1. NAFR Lands (ROI Two), Page 3.10-5. The second sentence under "Wildlife Watering" should be changed to read as follows: "Seventeen wildlife water facilities are located within the joint-use area of the DNWR (depicted in Figure 3.10-1), and all are maintained by the USFWS."

Section 3.11.1. Wilderness and Wilderness Study Areas within ROI Three, Page 3.11-3. U.S. Fish and Wildlife Service The USFWS proposed the inclusion of 88 percent of the DNWR in the Wilderness Preservation system in 1975 and not 1988. The FLEIS should make the same date correction in the introduction of this section on the page facing 3.11-1 (which has no page number).

Section 3.11.2. Management Practices, Page 3.11-6. U.S. Fish and Wildlife Service The Air Force needs to include in this section a detailed account of how the environment would be restored following an aircraft crash on the DNWR. The FLEIS should provide a contingency plan for remediation of damaged natural resources in place.

Section 3.12.1. Recreational Opportunities, Page 3.12-3 The last part of the second sentence in the last paragraph reads: "... the area that overlaps the NAFR and DNWR." This statement should be stated in the FLEIS to read: "... the portion of the NAFR that overlaps DNWR."

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BI-15  
BI-16  
BI-17  
BI-18  
LU-1  
WI-1  
SF-9  
SF-10  
RV-5

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water levels for the 20 wells need to be included in the FLEIS. A chart of any changes in ground-water levels at the wells will establish whether draw-down is occurring.

CM-1

Appendix A: Section 2.1.2, Restricted Areas and Range Subsections, Page A-7. The FLEIS needs to clarify the second sentence under R-4806 (R-4806E and R-4806W) which states: "Targets are located within the central portion (Alamo Bravo) of R-4806E." No targets are known to exist in Alamo Bravo; however, if they do, they have not been authorized under the MOU.

OP-5

Appendix C: Relevant Federal, State, and Local Statutes, Regulations, Agreements, and Guidelines, Page C-10. The synopsis of the MBTA should clarify in the FLEIS that all "... migratory ..." birds, including (but not limited to) hawks, eagles, falcons, shorebirds, wading birds, owls, waterfowl, and songbirds, are federally protected.

AF-53

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**Responses to Comments on the Draft Legislative  
Environmental Impact Statement**



Comment #	Response #	Response
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*General*

- |      |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GE-1 | <p>The Air Force appreciates your input during the public comment period on the Draft LEIS. Public involvement is a vital part of the NEPA process. All comments received during this comment period have become part of the LEIS, which will be forwarded to Congress for consideration in drafting legislation for the withdrawal renewal.</p>                                                                         |
| GE-2 | <p>The Air Force appreciates your input during the public comment period on the Draft LEIS. Public involvement is a vital part of the NEPA process. All comments received during this comment period have become part of the LEIS, which will be forwarded to Congress for consideration in drafting legislation for the withdrawal renewal. Specific responses to your environmental questions are presented below.</p> |

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<i>Editorial</i>		
0002	ED-1	"Uninhabited" changed to "Unmanned" in section 1.6.2.
6001	ED-2	The suggested revision has been incorporated into the document. Please see section 1.2.3.2.
0011	ED-3	The suggested revision has been made to Appendix K.
9012	ED-4	The suggested revision was made to Figure H-1.
9019	ED-5	Through further discussions with DOE (February 1999) the text will remain as written in the Draft LEIS.
6000	ED-6	The suggested text has been added to the LEIS section 3.10.
9020	ED-7	As suggested, revisions have been made to Figures 3.6.-5, 3.6-1b, Table 3.6-3 , Figure 3.8-1b, and Table 3.8-1.

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*Purpose and Need*

9013

PN-1

The underlying purpose and need for NAFR is for the Air Force to have a safe and secure location to continue to meet its national defense responsibilities. The proposed renewal of the land withdrawal and the alternatives (described in Chapter 2.0) include temporal management and geographic components proposed within the context of the purpose and need of the Air Force as an agency.

The LEIS section 1.5.2 describes the military testing, training, and tactics development that has been performed over NAFR for the past 50 years. These military operations require isolation of sensitive military activities to limit exposure to classified and essential defense elements by unauthorized individuals. NAFR provides buffers to protect national assets from access by individuals or nations seeking to obtain electronic, visual, or related information.

Military testing and training operations have been adjusted for the past 50 years to fit within the boundaries of NAFR. Current and new weapons that require testing and training could benefit from additional distances, but as described in section 2.3, expansion of NAFR was not carried forward as an alternative.

The alternatives presented in Chapter 2.0 of the LEIS take testing and training as well as security and public safety into consideration. The LEIS alternatives contain varying geographic areas defined for potential co-use or possible non-renewal. These alternatives are designed to meet the foreseeable military test and training requirements within the operational constraints necessary for safety and security.

The purpose and need for renewal of the NAFR land withdrawal as described in Chapter 1.0 can be accomplished through any of the alternatives presented in Chapter 2.0 except the No-Action Alternative. Chapter 2.0 describes what is to be accomplished by the different management, time period, and geographic alternatives. The primary environmental difference between Alternative 1 and Alternative 2 would be in the allocation of resources as summarized in Chapter 2.0.

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*Purpose and Need*

	PN-1	<p>Chapter 2.0 also describes the differences in land management between the A and B alternatives. These differences are in direct response to the public and agency requests that the Air Force (1) identify areas that could be returned to BLM, (2) identify areas for joint or co-use that would not include consumptive uses, and (3) realign management responsibilities for withdrawn military areas so that the agency using a specific geographic area is directly responsible for that area. The Air Force has determined that any of the 1A, 1B, 2A, or 2B alternatives would not significantly constrain military test and training missions for which the Air Force is responsible within safety and security requirements.</p>
9013	PN-2	<p>The purpose and need for NAFR as a safe and secure test and training area for military personnel and equipment is expected to continue for the indefinite future. During that time the Air Force proposes to continue NAFR stewardship with increased exchange of views and information through the Five-Party Cooperative Agreement.</p> <p>Extensive details regarding land use, minerals, water, and other environmental resources are included as FLPMA referenced documents prepared in conjunction with this LEIS. These documents demonstrate that, for essentially the past 50 years, the Air Force has managed NAFR to perform testing and training while producing "an ecological island that provides refuge-like conditions for animals, plants, and natural communities indigenous to the Great Basin and Mojave ecoregions (Keystone Dialogue on Nellis Air Force Range Stewardship Final Report)." The proposed indefinite renewal could require the continuation of that stewardship under Congressional and public scrutiny. The 25 year withdrawal could allocate resources from stewardship to process.</p> <p>The Air Force proposes that national purposes can best be served through (1) an indefinite renewal of the NAFR land withdrawal for military test and training, (2) continuing management of the environmental resources through the INRMP, (3) continuing NEPA analyses for specific projects using NAFR, and (4) annual public participation in the Five-Party Cooperative Agreement to address Nellis environmental resource management.</p>

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0001 0010 0012 0014 8700	AF-1	<p>NAFR lands have been administered by the Air Force since the 1940s and are designated for military use. The 2.2 million acres of withdrawn land, which are not part of DNWR were evaluated for wilderness characteristics in the <i>Nellis Air Force Range Resource Plan and Record of Decision</i> (1992). As a part of that study, the BLM determined that none of the 2.2 million acres contained any land that met the minimum criteria for consideration as a WSA. The USFWS has proposed approximately 88 percent of the DNWR for Congressional evaluation as a WSA.</p> <p>Under Alternative 1 or Alternative 2, the non-renewal area and the co-use areas of NAFR may be inventoried by the BLM in order to evaluate their wilderness suitability (personal communication, Siebert 1999). Wilderness suitability evaluation considers several factors including naturalness, solitude, manageability, ability to support primitive and unconfined recreation, energy and mineral resource values, impact on other resources, and local social and economic considerations. Under the No-Action Alternative, the BLM will perform an inventory of NAFR lands under its administration for roadless and/or wilderness characteristics.</p>
0002 9012	AF-2	<p>This LEIS includes a classified annex that addresses classified activities within the proposed area of withdrawal. All public comments related to classified activities within this LEIS proposed area of withdrawal will be addressed in this classified annex. The classified annex will be made available to persons with the appropriate security clearances and a need to know, and in accordance with 40 CFR 1507.3.</p>
7001	AF-3	<p>In the interest of U.S. military preparedness, allied forces are invited to participate in training at NAFR (see section 1.1). The impacts of these activities are included in the impacts analysis of the LEIS.</p>
0002	AF-4	<p>The correct term is unmanned aerial vehicles that function like aircraft. The text in the LEIS has been corrected.</p>
0010 7700	AF-5	<p>Public oversight of ongoing environmental management activities on the NAFR is provided through each of the applicable regulations and policies (i.e. NEPA, Integrated Natural Resource</p>

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Management Program, RCRA).		
Further, the Air Force, DOE, BLM, USFWS, and State of Nevada have also established the Five-Party Cooperative Agreement, which has been expanded to include public participation for purposes of exchanging views and information. Please see section 1.3.3 for further information.		
0011	AF-6	The military has a continuing operational need for the area described.
0012 8600 8700	AF-7	Environmental impacts are not be expected to be substantially different from the withdrawal durations described in the LEIS action alternatives. Impacts would not be substantially different if the duration was set for 15 years. The Air Force has not requested a permanent withdrawal. Please see section 2.2.
0018 8100	AF-8	Figure 1-12 is representative of the ideal air to ground safety requirement. To ensure public safety, the Air Force restricts hazardous military operations that require ground safety zones' the NAFR. These restrictions reduce potentially hazardous operations and activities over lands not withdrawn by NAFR. The Air Force restricts activities to ensure that safety buffers remain within areas of currently withdrawn land.
6000 8200	AF-9	It is outside the purview of the Air Force and beyond the scope of this LEIS to address the legal interpretation of treaties.  The U.S. Government and the Air Force will comply with the Supreme Court ruling made on this subject.
6000	AF-10	Nellis AFB has addressed government-to-government relations via the NAIP and in conducting inventory surveys by the Nellis Archaeologist and contracting archaeologists. Please see Chapter 9.0 for specific information on the NAIP.
9014	AF-11	The socioeconomic analysis adequately responds to the counties' concerns, via the geographic scope, on the basis of a county by county analysis.
6000	AF-12	As a response to this concern, as of January 11, 1999,

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8700		representatives of the CGTO have been invited to attend all Five-Party Cooperative Agreement meetings.
8300	AF-13	<p>NEPA requires that past, present, and reasonably foreseeable actions are addressed in the Cumulative Impacts section of the LEIS. We have included each of these projects in the cumulative analysis. The cumulative impact analysis does address the impacts of the characterization activities associated with the Yucca Mountain Project. The DOE, Office of Civilian Radioactive Waste Management, is currently evaluating whether Yucca Mountain should be recommended as a site for a potential repository for spent nuclear fuel and high-level radioactive waste. DOE is currently preparing an EIS as part of this evaluation. At this time, neither the EIS nor its associated technical studies have been completed or are available for review. Therefore, the analyses and plans for such a repository are not yet sufficiently developed to allow for inclusion in the NAFR LEIS.</p> <p>Please see Chapter 5.0. Please see also response DOE-3.</p>
8600	AF-14	Land withdrawal regulations dictate the process for segregation and release of withdrawn lands. Should Congress not renew the withdrawal of any NAFR lands, those lands would be returned to the DOI.
8600 8700 9002 9003	AF-15	<p>Lands are withdrawn for the NAFR to meet the requirements of national security, public safety, and military operations. Additional land non-renewal would adversely constrain military operations or unacceptably compromise national security or public safety.</p> <p>All of the lands requested for renewal are required for some of the mission requirements supported by NAFR. Lands identified for co-use may be available under certain conditions of use and time.</p>
8600	AF-16	Lands within the mining districts are required to comply with the requirements of the NAFR mission. Mining investigations or operations on NAFR lands would not be compatible with the safe and secure nature of testing and training with live munitions and electronic combat performed at NAFR. Additional land non-

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		renewal would adversely constrain military operations or unacceptably compromise both national security and public safety.
8600 9001	AF-17	<p>The economic analysis contained in the Special Nevada Report is similar to the economic analysis presented in the No-Action Alternative of this LEIS. The economic analysis from the Special Nevada Report is, therefore, updated by the LEIS.</p> <p>The LEIS socioeconomic sections quantify the economic consequences of actions conducted under each of the LEIS alternatives. The consequences of non-renewal of NAFR addressed in the No-Action Alternative update the economic information provided in the Special Nevada Report. Sentences have been added to the economic consequences section to refer the reader to the No-Action discussion for an explanation of social and economic consequences that hypothetically could occur if the NAFR land withdrawal were not renewed.</p>
8300 8600 8700 9002 9006	AF-18	<p>The Air Force and DOD position of not allowing any transportation route through the NAFR has remained unchanged over the years. Any transportation route through the range would seriously impact sensitive/classified programs and flight operations. Restrictions or other impacts on classified national security activities would severely degrade our ability to test existing and evolving weapons systems as well as train U.S. and allied aircrews. In addition, any transportation route constructed near the range boundary should not result in overflight restrictions to the departure/arrival corridors for the range/base. Overflight restrictions would significantly impact critical testing and training missions, requiring cancellations and/or rescheduling. Please see also response DOE-5.</p>
8700	AF-19	<p>The LEIS comment period expanded from the normal 45-day comment period to 90 days in order to allow for an adequate review period for the LEIS and to match the FLPMA requirements for the withdrawal application. The Air Force responded to all comments received through February 1999.</p>
6000	AF-20	<p>The Air Force has forwarded your request to the USFWS.</p>



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8700	AF-21	<p>A national needs assessment is beyond the scope of the LEIS. The Air Force has documented a continuing need for NAFR for safe and secure military testing and training into the indefinite future.</p> <p>The Air Force has not proposed or evaluated an alternative for permanent land withdrawal.</p>
6000 8700	AF-22	<p>An environmental assessment for the resumption of use of DU on Target 63-10 was completed June 1998. The Air Force will not resume the use of DU until the DU Management Plan and Air Force Policy are finalized.</p>
8700	AF-23	<p>Section 5 of PL 99-606 delineates the requirements for preparing an EIS for the NAFR. A programmatic EIS is beyond the scope of this LEIS.</p>
8700	AF-24	<p>It is expected that Congress will retain the ability to review the withdrawal at their discretion any time during its duration. The Air Force will comply with NEPA during the duration of the withdrawal by completing project-specific evaluations of proposals that would use NAFR resources or lands.</p> <p>It is important to note that this LEIS for renewal addresses environmental consequences of the NAFR land withdrawal. If the land is renewed for safe and secure military test and training missions, those missions will continue to be independently addressed under NEPA. This mission-specific addressing of environmental consequences has been an integral part of Air Force operations at NAFR since NEPA became law. For example, the Air Force is currently addressing a series of Air Force discussions under NEPA regarding the use of NAFR, including use of the range for F-22 operational testing and potential renewal of the use of DU on Target 63-10.</p>
8700	AF-25	<p>The description of the No-Action Alternative in this LEIS is different than that in a development project and, therefore, has different environmental impacts than would typically occur in a proposed action. Under this continuing action (renewal) proposal, the No-Action Alternative would change the management objectives of the NAFR lands. This potential change in management objectives (from primary military use to multiple</p>

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		use) may result in environmental consequences that would not occur under the action alternatives.
8700	AF-26	Under the current legislation there is a five-year review period for compatibility of military activities on NAFR and mining. Congress will decide what requirement will be included in any new legislation.
8700	AF-27	Lands are withdrawn for the NAFR to meet the requirements of national security, public safety, and military operations. Additional land non-renewal would adversely constrain military operations or unacceptably compromise national security or public safety.  All of the lands requested for renewal are required for some of the mission requirements supported by NAFR. Lands identified for co-use may be available under certain conditions of use and time.
9001	AF-28	Addressing the tax obligation of contractors to Nye County is beyond the scope of this LEIS.
9002	AF-29	Addressing civilian employment opportunities, procurement of vendors, and compensation for emergency services is beyond the scope of this LEIS. However, as a result of this EIAP, a dialogue between Nellis AFB and Nye and Esmeralda counties is ongoing to address some of these concerns.
9013	AF-30	The Air Force envisions that Congress would define the nature and extent of the periodic reviews.  It is expected that Congress will retain the ability to review the withdrawal at their discretion any time during its duration. The Air Force will comply with NEPA during the duration of the withdrawal by completing project-specific evaluations of proposals that would use NAFR resources or lands.  It is important to note that this LEIS for renewal addresses environmental consequences of the NAFR land withdrawal. If the land is renewed for safe and secure military test and training missions, those missions will continue to be independently addressed under NEPA. This mission-specific addressing of

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environmental consequences has been an integral part of Air Force operations at NAFR since NEPA became law.

For example, the Air Force is currently addressing a series of Air Force discussions under NEPA regarding the use of NAFR, including use of the range for F-22 operational testing and potential renewal of the use of DU on Target 63-10.

9013	AF-31	<p>The environmental consequences described in Chapter 4.0 are a result of continued military testing and training activities. These consequences include all those listed in Table 2-5. Ongoing Air Force management actions to reduce these impacts are described in section 2.4. Descriptions of impacts have been clarified. Please see section 4.6 for discussions on water resources, section 4.4 for discussions on hazardous materials and wastes, section 4.3 for discussions on safety and chaff, and section 4.8 for discussion on biological resources.</p>
9013	AF-32	<p>Land management practices for the protection of natural resources are described in the NAFR INRMP required under AFI 32-7064. The INRMP is a compilation of management policies and goals, guidance documents and data regarding the management of natural resources on the NAFR. The INRMP is a guidance document that allows for the modification and continuous review of the operational practices used to manage NAFR natural resources. Please see the revisions to section 1.3.3 and section 2.4 for further descriptions of this Plan and associated guidance activities.</p>
9013	AF-33	<p>Existing management practices have been found to be effective in limiting new impacts and mitigating past impacts. Although not specifically prepared for this purpose, the Keystone Dialogue on NAFR stewardship brought together multiple agencies and individuals interested in the NAFR.</p> <p>This dialogue states that "Many areas on NAFR are in a relatively pristine ecological condition," (pg. 1, pp3). This is an independent evaluation of the effectiveness of the past and current management practices implemented by the Air Force on NAFR. The Air Force will maintain these stewardship practices in compliance with existing state and federal laws and</p>

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		regulations as well as Air Force Instructions. A revision to section 3.8.1 has been made to clarify this statement.
9013	AF-34	Public oversight of ongoing environmental management activities on the NAFR is provided in each of the applicable laws, regulations and policies (i.e. NEPA, Integrated Natural Resource Management Program, RCRA). The Air Force, in cooperation with the DOE, BLM, USFWS, and State of Nevada have also established the Five-Party Cooperative Agreement which includes public oversight opportunities. The Five-Party Cooperative Agreement was used for purposes of exchanging ideas and information.
9013	AF-35	Potential future Air Force management actions and Air Force response to permit applications following non-renewal of NAFR would follow existing BLM and DOI policy and the requirements of FLPMA. Although not specified in detail in the LEIS, the BLM and DOI policies and regulations are included in section 1.2.
8600 9001	AF-36	The commentor is correct. Under any alternative, Congress could conduct its review using any structure or process of its choice. In any case, environmental impacts would be as described in the LEIS.
9001 9014	AF-37	In lieu of a formal "cooperating agency" designation, the Air Force and Nye County entered into an agreement via an MOU regarding the sharing of information with regard to the NAFR LEIS in 1997. In an effort to ensure that the LEIS has the best available data, representatives from Nye County and the Air Force re-confirmed this cooperative agreement during their meeting of January 11, 1999. Subsequent technical meetings followed this meeting that provided input to the LEIS and the FLPMA economic impact report.
9001 9002	AF-38	The Air Force considered past history of NAFR and all scoping comments in the development of alternatives. Since environmental stewardship and compliance activities have adequately protected resources on the NAFR (see also AF-27/8700-20), environmental impacts were not expected to substantially vary over the 25-year withdrawal duration.

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Therefore, 15-year impacts are evaluated within the 25-year duration.

It is expected that Congress will retain the ability to review the withdrawal at their discretion any time during its duration.

The Air Force will comply with NEPA during the duration of the withdrawal by completing project-specific evaluations of proposals that would use NAFR resources or lands.

9013

AF-39

Details on the exact management actions, proposed development, impacts, and mitigations that could result following a No-Action decision by Congress are not available at this time. Further, postulating these actions, developments, impacts, and mitigations would be highly speculative. Similar examples of the long-term effects of multiple use of lands in the region were used to broadly describe the types of impacts and environmental consequences that may result following a No-Action determination. No greater detail is available or warranted. Existing DOI regulations and policies would balance resource preservation and human use of those resources.

9013

AF-40

Existing management practices have been found to be effective in limiting new impacts and mitigating past impacts. (Please see section 2.4.)

This dialogue states that "Many areas on NAFR are in a relatively pristine ecological condition," (pg. 1, pp3). This is an independent evaluation of the effectiveness of the past and current management practices implemented by the Air Force on NAFR. The Air Force will maintain these stewardship practices in compliance with existing state and federal laws and regulations as well as AFI.

Project specific potential environmental consequences of new development or new use of the NAFR would be evaluated in project-specific NEPA evaluations. Examples of NEPA compliance documents included in section 5.2 that evaluate and display to the public how training activity impacts are adequately defined and mitigated are discussed in Chapter 5.0.

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9013	AF-41	<p>Land management practices for the protection of natural resources are described in the NAFR INRMP required under AFI 32-7064.</p> <p>Management practices for the protection of cultural resources are described in the NAFR CRMP required under AFI 32-7065. Section 1.3.3 and section 2.4 have been revised to include details on the existing management objective and techniques to provide adequate land stewardship and management.</p>
9013	AF-42	<p>Environmental impacts would not be expected to substantially vary between the withdrawal durations described in the LEIS alternatives. Impacts would not be substantially different if the duration was set for ten years. Public oversight of ongoing environmental management activities on the NAFR is provided in each of the applicable regulations and policies (i.e., NEPA, Integrated Natural Resource Management Program, RCRA). The Air Force, in cooperation with the DOE, BLM, USFWS, and State of Nevada have also established the Five-Party Cooperative Agreement which includes public oversight opportunities. Please see section 1.3.3 for further information.</p> <p>Section 1.3.3 and section 2.4 have been revised to include details on the existing management objective and techniques to provide adequate land stewardship and management. As a result of the clarifications provided in responses to comment AF-41 and revisions to the text, the 10-year alternative does not appear to be warranted.</p>
9013	AF-43	<p>In an effort to quantify the potential impacts of approximately fifty years of testing and training activities on NAFR with regard to potential water and geologic media contaminating activities, the Air Force prepared a <i>Contamination Report</i>. This report details, from the sampling of representative target sites, the levels of contamination (explosives, metals, and other organic residues) found on the NAFR.</p> <p>The study confirmed that bombing targets contain concentrations of inorganic and explosive constituents in excess of background concentrations. Semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs) were generally</p>

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absent from the target areas. The inorganic concentrations were generally less than the USEPA Preliminary Remediation Goals (PRGs).

However, certain explosives frequently exceeded the risk-based PRGs. The primary inorganic constituents detected on the Range included cadmium, chromium, copper, nickel, zinc, cyanide, and to a lesser degree lead and suppressed pH. Additional information from this report is summarized in section 3.4.3.4.

Based on the relatively low concentrations and distributed nature of the contamination, the report found that there was little risk to on-site workers or the public from residual contamination.

Section 3.6.4 summarizes the existing conditions (and impacts of continuing operations) with regard to source water quality based on the information contained in the *Contamination Report*. The contaminants are generally not expected to migrate vertically downward to an aquifer because the evaporation rate (58 to 69 inches/year) greatly exceeds the precipitation rate (4 inches/year in the valley floors to 16 inches/year in the highest mountains) and groundwater is generally very deep (i.e., generally in excess of 200 feet). Detection of significant groundwater contamination is limited to underground testing areas on Pahute Mesa. Additionally, surface water runoff during flood events generally flows toward areas having no outlet off NAFR.

Details on the exact management actions, proposed development, impacts, and mitigations that could result following a No-Action decision by Congress are not available at this time. Further, postulating these actions, developments, impacts and mitigations would be highly speculative. Existing DOI regulations and policies would balance resource preservation and human use of those resources.

9013

AF-44

The dry lakes or playas located on the South Range are dry most of the time and provide little resources for most wildlife species. Infrequently, during periods of high, localized precipitation these areas contain water and, for a short period of time, may support limited food resources for small numbers of migratory waterfowl and shorebirds. Areas that routinely attract migratory birds are

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		<p>avoided by Air Force testing and training activities during these periods to limit the risks of bird-aircraft strike hazards.</p> <p>Please refer to section 3.3.2, Bird-Aircraft Strike Hazard.</p>
9013	AF-45	<p>DOE's Yucca Mountain Project is proposed to be located on the southern end of EC south. Pahute Mesa is located approximately 25 miles north of the northwestern corner of the NTS.</p> <p>The cumulative impact analysis does address the impacts of the characterization activities associated with the Yucca Mountain Project. The DOE, Office of Civilian Radioactive Waste Management, is currently evaluating whether Yucca Mountain should be recommended as a site for a potential repository for spent nuclear fuel and high-level radioactive waste. DOE is currently preparing an EIS as part of this evaluation. At this time, neither the EIS nor its associated technical studies have been completed or available for review. Therefore, the analyses and plans for such a repository are not yet sufficiently developed to allow for inclusion in the NAFR LEIS. Also please see response DOE-3.</p>
9013	AF-46	<p>As discussed in section 3.4.1, the Air Force has implemented an extensive program that integrates pollution prevention measures into the operations of the NAFR in compliance with AFI 32-7080 and other applicable AFIs and regulations. These include elimination and recycling of hazardous materials from all vehicles used as simulated targets, materials recycling and use of non-toxic materials (concrete block) to simulate targets. The great majority of the non-weapon hazardous materials used by Air Force and contractor personnel on the range are controlled through an Air Force pollution prevention process called HAZMART. This process provides management for the procurement, handling, storage, and issuing of hazardous materials and the turn-in, recovery, reuse, recycling, or disposal of hazardous wastes.</p>
9013	AF-47	<p>In addition to the pollution prevention measures outlined in response to comment AF-46, the Air Force has implemented a stringent noise pollution abatement system, which include the avoidance of noise-sensitive receptors adjacent to the NAFR.</p>



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		<p>The avoidance areas defined in the Federal Aviation Regulation (FAR) Part 91, section 91.119 are: over congested areas, an aircraft may be operated no lower than 1,000 feet above the highest obstruction within 2,000 feet of the aircraft; and over non-congested areas, an aircraft may be operated no closer than 500 feet to a person, vessel, vehicle, or structure. These are depicted in the LEIS in Figure 3.10-3.</p>
9018	AF-48	<p>The Air Force used available interdisciplinary analytical methods to evaluate cumulative impacts.</p>
9014	AF-49	<p>The Air Force considered all comments including Nye County comments in developing alternatives. Environmental impacts would not be expected to substantially vary between the withdrawal durations described in the LEIS alternatives. Impacts would not be substantially different if the duration were to be set for 15 years.</p>
9014	AF-50	<p>The Air Force recognizes the concerns of Nye County; however, the suggested mitigation measures are not relevant to impacts from the land withdrawal renewal. The Air Force is committed to continue working with the affected communities.</p>
9020	AF-51	<p>The Air Force is not proposing a change in administration of the South Range. Text changes have been incorporated into section 2.2.2.</p>
9020	AF-52	<p>There are various documents that describe and direct Air Force operations over lands withdrawn for the DNWR. The primary direction to Air Force pilots is listed in the Nellis Supplement 1, Volume 2 to AFI 13-212 (Section 1.30). The primary policy document is the MOU between the USFWS and the Air Force (most recently revised in December 1997, see Chapter 9.0) This document states that aircraft using the airspace above the DNWR are to remain above 2,000 feet AGL except when required to meet the mission requirements.</p>
		<p>The primary mission requirement includes the use of ground targets in Range 63, 64, and 65, delineated in the MOU. The AFI and MOU specifically restrict the unauthorized low overflight of</p>

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		the portions of DNWR under consideration by Congress for wilderness.
9020	AF-53	The commentor is correct. The text has been revised to reflect the suggested revision. Please see Appendix C, <i>Migratory Bird Treaty Act of 1918</i> .
8300	AF-54	The Air Force understands the importance of public participation during this LEIS process and, therefore, made every effort to advertise the public hearings in advance in using various forms of communication. Fliers were delivered and posted at local post offices and at community centers in Caliente, Pioche, Alamo, Rachel, Pahrump, Beatty, Indian Springs, Hiko, and Goldfield. Advertisements were printed in the <i>Las Vegas Review-Journal</i> , <i>Ely Daily Times</i> , <i>Pahrump Valley Gazette</i> , <i>Tonopah Times</i> , and <i>Gazette Journal</i> . Radio ads were run on KMZQ FM and KKOH 780 AM. A news release was sent to both the print and electronic media, including radio and television stations in the communities surrounding NAFR, and the October 1998 NAFR newsletter included a timeline of the hearings.
9020	AF-55	The commentor is correct. The text has been modified to more accurately reflect the current situation. Please see Chapter 5.0.
8300	AF-56	The Air Force understands the importance of making available to the public the Draft LEIS regarding the NAFR land withdrawal renewal. Copies of the document were, therefore, distributed to various repositories and libraries throughout Nevada prior to the October 2, 1998 public comment period start date. These locations included Beatty Library; Caliente Library; Carson City Library; Indian Springs Library; Las Vegas Clark County Library; Lincoln Library; Pahrump Library; Reno Library; BLM, Reno; Tonopah Commissioner's Office; University of Nevada Las Vegas Library; and University of Nevada Reno Library.
9018	AF-57	This LEIS includes a classified annex that addresses classified activities within the proposed area of withdrawal. All public comments related to classified activities within this LEIS proposed area of withdrawal will be addressed in this classified annex.

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The classified annex will be made available to persons with the appropriate security clearances and a need to know, and in accordance with 40 CFR 1507.3.

Public oversight of ongoing environmental management activities on the NAFR is provided through each of the applicable regulations and policies (i.e., NEPA, Integrated Natural Resource Management Program, RCRA). Further, the Air Force, DOE, BLM, USFWS, and State of Nevada have also established the Five-Party Cooperative Agreement, which has been expanded to include public participation for purposes of exchanging views and information. Please see section 1.3.3 for further information.

Existing management practices have been found to be effective in limiting new impacts and mitigating past impacts (see section 2.4).

This dialogue states that "Many areas on NAFR are in a relatively pristine ecological condition," (pg. 1, pp3). This is an independent evaluation of the effectiveness of the past and current management practices implemented by the Air Force on NAFR. The Air Force will maintain these stewardship practices in compliance with existing state and federal laws and regulations as well as AFIs.

Project-specific potential environmental consequences of new development or new use of the NAFR would be evaluated in project-specific NEPA evaluations. These are examples of NEPA compliance documents included in section 5.2 that evaluate and display to the public how training activity impacts are adequately defined and mitigated are discussed in Chapter 5.0.

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<i>Operations</i>		
0002	OP-1	The location of that facility has not yet been determined. A separate environmental analysis in accordance with NEPA will be prepared prior to a program decision.
0002	OP-2	This new test mission is described in Appendix A.3, Defense Threat Reduction Agency (DTRA). This, or any other future activities on the NAFR will be the subject of project-specific NEPA compliance analyses.
8600	OP-3	<p>Co-use of NAFR withdrawn lands would be for nonconsumptive use, for a specified time, and activity that would not conflict with the safety, security, or mission requirements of the NAFR. The requirements of national security, public safety, or military operations vary depending on threats to our security and the characteristics of the weapons and tactics employed to ensure that security.</p> <p>Co-use permits would be expected to define activities and use periods that are compatible with the Air Force mission.</p>
8700	OP-4	<p>The long-term withdrawal of NAFR does not deviate or dissolve any proposed major federal action from compliance with the requirements for NEPA. The Air Force does not anticipate a change in need for lands requested for the withdrawal.</p> <p>It is expected that Congress will retain the ability to review the withdrawal at their discretion any time during its duration. The Air Force will comply with NEPA during the duration of the withdrawal by completing project-specific evaluations of proposals that would use NAFR resources or lands.</p>
9020	OP-5	The commentor is correct. The text has been revised to incorporate the comment (Appendix A, section 2.1.2). Please also see the revision to Figure 2.1 in Appendix A.
8700	OP-6	Natural resource management strategies may vary depending on the mission requirements and directives of the land management agencies. The strategies for lands designated for multiple uses such as mining prioritization or timber harvest would be different from strategies for dispersed recreation or wildlife preservation. Lands and natural resources within the NAFR are managed with

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*Operations*

		the requirements for military operations, public safety, and national security.
8700	OP-7	The requirement for Air Force testing and training on NAFR are different from the Navy's requirements for NAS Fallon, as referenced in section 2.3.
		National security requirements dictate that visual proximity be limited to the NAFR. The training activities supported at Naval Air Station Fallon do not generally have the same sensitivity as both testing and training requirements supported on NAFR.
0002	OP-8	Aircraft operations above NAFR and within the NRC vary from year-to-year, depending on a variety of factors. The historic and reasonably foreseeable sortie operations range (200,000 to 300,000 in the NRC) was based on the historical data of the past 5-10 years' expenditure (see Appendix A). This range of sortie operations was used in this LEIS analysis to account for annual variations in the requirements and funding levels. This range of 200,000 to 300,000 sorties accounts for any reasonably foreseeable activities on NAFR.
0002	OP-9	F-117 sorties within the NRC declined when the 37 Fighter Wing was relocated to Holloman AFB. However, as demonstrated in Appendix A-9, NRC overall sortie-operations continued to be within the 15-year historic range. The Air Force endeavors to efficiently use all resources and facilities under its control, including the facilities previously used by the F-117 at TTR.

Comment	Response #	Response
<i>DOE</i>		
0002	DOE-1	<p>See section 4.1.1.1, Public Land Orders and Withdrawals, Vol. 1, Chapter 4.0, of <i>Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada</i> (DOE 1996a).</p> <p>Under Public Land Order 1662 (June 20, 1958), 38,400 acres were reserved for the use of the Atomic Energy Commission in connection with the NTS. The lands described under this Public Land Order are not considered in any alternative use by the DOE and are, therefore, not addressed in this EIS.</p>
0002	DOE-2	<p>Both the DOE and the Air Force conduct classified activities on the NTS and the NAFR. Both agencies have prepared a classified NEPA analysis of such activities on the land areas they each use. These documents, although part of their respective EISs, are not available to the public. DOE made the following statement in its <i>Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada</i> (DOE 1996a), section 1.1, "Organization of This Environmental Impact Statement":</p> <p>The classified appendix was completed concurrently with the unclassified portion of this NTS EIS (DOE 1996a). It discusses the potential for adverse impacts to the environment under routine operating conditions during experiments with special nuclear material at the Lyner Complex. The classified appendix contains information on material quantities and design concepts that are classified by the DOE for nonproliferation and national security reasons. The environmental impacts and public safety and health risks associated with these experiments are not classified and are included in Chapter 5.0, Environmental Consequences, under Defense Program activities.</p>
7003	DOE-3	<p>A summary of transportation issues and past studies is given in Appendix I, "Transportation Study," of the <i>Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada</i> (DOE 1996a).</p>

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*DOE*

Only existing highways and railroads were considered for transporting low-level radioactive waste to the NTS.

The DOE issued a NOI to prepare an EIS on the *Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Waste at Yucca Mountain in August* in August 1995. For transportation within Nevada, three options will be evaluated: (1) construction and use of a rail corridor from existing main-line railroads to Yucca Mountain; (2) transfer of spent nuclear fuel and high-level radioactive waste from existing rail lines to heavy-haul trucks which would complete the journey to Yucca Mountain on existing, new, or improved roads; and (3) use of legal-weight truck shipments directly to the repository.

The Air Force states in its Draft LEIS, section 5.2.3.10, that "the DOE Cross NAFR Transportation Alternative is not considered compatible with Air Force test and training."

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DOE-4

See Nellis LEIS, section 5.2, Cumulative Impacts.

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9014

DOE-5

The transportation of radioactive waste to the NTS is beyond the scope of this environmental analysis and is not one of the reasons for which the Nellis range lands were withdrawn. The Air Force stated in its Draft LEIS, section 5.2.3.10, that "the DOE Cross NAFR Transportation Alternative is not considered compatible with Air Force test and training." See also response DOE-3.

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DOE-6

Section 3.4.4 of the Draft LEIS described environmental restoration activities being undertaken on NAFR land by the DOE. There is no "nuclear waste" other than the contaminated soil being removed from certain sites used in the past for nuclear weapons safety shots and from target areas at which depleted uranium rounds were fired. All soil removed by DOE's environmental restoration program has been or will be hauled to the NTS for disposal.

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DOE-7

See section 3.4.4, Department of Energy Environmental Restoration Program, Underground Test Areas, where information provided by the DOE summarizes the situation at Pahute Mesa.

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*DOE*

0013	DOE-8	<p>The Air Force has referenced the <i>Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada</i> (DOE 1996a) where the DOE describes extensively the Pahute Mesa lands in Chapter 4.0, and the facilities and activities, both past and present, in Chapter 5.0, parts 5.1 and 5.3.</p> <p>See section 3.4.4, "Department of Energy Environmental Restoration Program, Underground Test Areas," where information provided by the DOE summarizes the situation at Pahute Mesa. The DOE is studying the groundwater in these areas, as stated in their ROD and Mitigation Action Plan.</p> <p>The Air Force has referenced the <i>Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada</i> (DOE 1996a) where the DOE describes extensively the Pahute Mesa lands in Chapter 4.0, and the facilities and activities, both past and present, in Chapter 5.0, parts 5.1 and 5.3.</p>
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*BLM*

0010	BLM-1	<p>Current and future operation of the NAFR is directed by the mission requirements, the need to protect national security, and public safety requirements. However, the Air Force would consider requests for access to NAFR land for such range research, routed through the BLM. Access would only be possible within the confines of the mission, national security, and public safety.</p> <p>Should Congress decide to not renew the lands described in Alternative 1B and 2B, shown in Figure 2-2, the lands would be managed (and analyzed) in accordance with FLPMA, NEPA, and other applicable regulations by BLM to an appropriate level of management. The various values of these lands would be analyzed prior to the BLM determination of the appropriate level of management.</p>
0021	BLM-2	<p>If any current NAFR lands are not renewed, the lands would be managed in accordance with FLPMA, NEPA, and other applicable regulations by BLM or USFWS to an appropriate level of management.</p>

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*Biodiversity*

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0015

BD-1

Biodiversity on NAFR was addressed in the Keystone Dialogue that was initiated in early 1997 and resulted in a final report in June 1998. The dialogue report recognizes that the Air Force Stewardship of NAFR has resulted in pristine conditions on NAFR that serve to provide connectivity, or a linkage of habitats, species, communities, and ecological processes, on a landscape scale. Although NAFR and adjacent areas are affected to some degree by military operations, NAFR was found to provide a valuable public benefit. NAFR sustains viable populations of animals and plants that are affected by human activities elsewhere in the Mojave and Great Basin ecoregions.

*As stated in the Memorandum for Keystone Dialogue Participants from Thomas W.L. McCall, Jr. Deputy Assistant Secretary of the Air Force, dated June 11, 1997, even though the LEIS process and the Keystone Dialogue were concurrent, the two were separate and distinct activities. The LEIS process focused on the renewal extension decision by Congress, while the Keystone Dialogue focused on the participation of knowledgeable, affected parties in the development of practical approaches to long-term ecosystem management in an operational military setting. Results from the Keystone Dialogue were used in sections of the LEIS and in response to comments on the LEIS.*

0010

BD-2

The Keystone Dialogue on Nellis Air Force Range Stewardship Final Report, June 1998, is an independent source document that was used and referenced in the preparation of this Renewal of the NAFR Land Withdrawal LEIS.

The recommendations from the Dialogue on Stewardship are grouped into three sections in the Final Report: 1) Use and Management; 2) Stewardship; and 3) Monitoring, Inventory, and Research.

Some recommendations have already been implemented, such as the INRMP and public participation in specific Five-Party Cooperative Agreement meetings. The potential implementation of other recommendations within mission, safety, and security requirements of NAFR testing and training will depend upon funding and scheduling.

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*Biodiversity*

0010	BD-3	<p>Information from the Keystone Dialogue on NAFR Stewardship has been incorporated into sections 3.8 and 4.8, Biological Resources. The Air Force, in the LEIS, explained the value of NAFR to biodiversity and ecosystem functions in the transition between the Mojave and Great Basin ecoregions. The two ecoregions are separately characterized, as is the valuable transition area between the ecoregions contained within NAFR. The LEIS recognizes that "the biotic communities encountered on NAFR consist of some typical Mojave or Great Basin Desert associations, but others are mixed, transitional, or widely distributed, and best described simply in terms of their constituent species (section 3.8.1)."</p>
0012 0014	BD-4	<p>Biodiversity on the NAFR was addressed in the Keystone Dialogue on NAFR Stewardship that was initiated in early 1997 and resulted in a final report in June 1998. The dialogue report recognizes that the Air Force Stewardship of NAFR has resulted in pristine conditions on NAFR that serve to provide connectivity, or a linkage of habitats, species, communities, and ecological processes, on a landscape scale. Although NAFR and adjacent areas are affected to some degree by military aircraft operations, NAFR was found to provide a valuable public benefit. NAFR sustains viable populations of animals and plants that are affected by human activities elsewhere in the Mojave and Great Basin ecoregions.</p> <p>The Keystone Dialogue on Nellis Air Force Range Stewardship Final Report, June 1998, is an independent source document that was used and referenced in the preparation of this Renewal of the NAFR Land Withdrawal LEIS.</p>
0023	BD-5	<p>The Keystone Dialogue on Nellis Air Force Range Stewardship Final Report, June 1998, is an independent source document that was used and referenced in the preparation of this Renewal of the NAFR Land Withdrawal LEIS.</p> <p>As stated in the <i>Memorandum for Keystone Dialogue Participants</i> from Thomas W.L. McCall, Jr. Deputy Assistant Secretary of the Air Force, dated June 11, 1997, the LEIS process and the Keystone Dialogue were concurrent, the two were separate and distinct activities. The LEIS process focused on the renewal extension</p>

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*Biodiversity*

decision by Congress, while the Keystone Dialogue focused on the participation of knowledgeable, affected parties in the development of practical approaches to long-term biodiversity management in an operational military setting.

The Keystone Dialogue recognizes that the Air Force Stewardship of NAFR has resulted in pristine conditions on NAFR that serve to provide connectivity, or a linkage of habitats, species, communities, and ecological processes, on a landscape scale. Although NAFR and adjacent areas are affected to some degree by military aircraft operations, NAFR was found to provide a valuable public benefit. NAFR sustains viable populations of animals and plants that are affected by human activities elsewhere in the Mojave and Great Basin ecoregions.

Your recommendation that roadless inventories previously conducted on the range be updated to help ecosystem management continue to protect the biodiversity of NAFR has been forwarded to Congressional decisionmakers as part of the comments on this LEIS.

8700

BD-6

The Keystone Dialogue on NAFR Stewardship was identified by the commentor as a positive experience and the Air Force was requested to follow through with it.

The recommendations from the Dialogue on Stewardship are grouped into three sections in the Final Report: (1) Use and Management; (2) Stewardship; and (3) Monitoring, Inventory, and Research. The potential implementation of recommendations within mission, safety, and security requirements of NAFR testing and training will depend upon missions, funding, and scheduling.

The Air Force has taken steps to invite annual public participation in the Five-Party Cooperative Agreement meetings and to provide the INRMP for agency and public review. These steps are in direct response to the Air Force's desire to continue environmentally sound management of the valuable national resources on NAFR in a way that is consistent with safety and security requirements and of the Air Force test and training mission.

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*Biodiversity*

8700	BD-7	<p>The Keystone Dialogue on NAFR Stewardship Final Report, June 1998, was prepared as result of input from approximately 65 diverse, interested, and knowledgeable people. These individuals sought to provide NAFR and other land managers with input about how to manage and protect the natural heritage of NAFR, while ensuring that the Air Force meets its test and training mission goals. The NAFR Stewardship Final Report is not part of the LEIS.</p> <p>The Mineral Resources Assessment of NAFR was prepared to meet a specific requirement in FLPMA that the potential energy and mineral resources within NAFR be identified for Congressional decisionmakers.</p>
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Comment #	Response #	Response
<i>Airspace</i>		
8700	AU-1	The statement cited in this comment is located in section 4.1.3.1 under the No-Action Alternative. The discussion addresses a scenario where all five MTRs may not all be required if range withdrawal is not renewed. Under current conditions and the proposed action, continued retention of these MTRs is warranted.
0002	AU-2	The description of restricted areas in section 3.1.1 was revised to reflect the more current information provided in the comment.
9020	AU-3	The FAA is the federal agency with primary responsibility for all airspace use and designation. The Air Force has, and will continue to apply to the FAA for any changes in airspace designations. Prior to granting such applications the FAA, in cooperation with the Air Force will complete an appropriate NEPA compliance evaluation and will notify potentially affected agencies (i.e., USFWS regarding DNWR).

Comment #	Response #	Response
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*Noise*

8100	NS-1	<p>The procedures used to assess aircraft noise exposure and its effects represent best available technology. Subsonic noise was computed using the most current MR_NMAP software. MR_NMAP uses the same physical principles used for aircraft noise analysis throughout the world, and was specifically validated for military airspace operations. Noise measurements were made at numerous locations where precision instrumentation validated noise from flight patterns under varied conditions. Sonic boom modeling used methodologies based on several long-term monitoring and analysis projects in military supersonic airspace. Similarly, the impact models are based on data that are widely accepted by the scientific community.</p>
9002	NS-2	<p>The LEIS acknowledges that noise is unwanted sound, and that annoyance is the usual human reaction to exposure to noise (section 4.2.1). Furthermore, public concern with sonic booms (and other impulsive noise events) was noted in section 4.2.4.2. Environmental consequences of sonic booms and other impulsive noise events are quantified by cumulative effect over time, and are best represented by the average values presented. As reflected in section 4.2, the majority of sonic booms are anticipated to occur in the central and eastern portions of the NRC. Other areas experience lower levels. Impulsive noise resulting from high explosives is discussed in section 3.2.3.3. As indicated in the example, at a distance of 6.3 miles from a high explosive blast, sound exposure is 38.7 dB on the C-Weighted scale. At greater distances, exposure would be proportionately less.</p>

Comment #	Response #	Response
<i>Safety</i>		
8100	SF-1	Air Force frequency managers attempt to select transmission frequencies to preclude interference with publicly available electronics. If some specific communications equipment is experiencing interference, the base public affairs office should be contacted. Issues associated with radiofrequency emissions are discussed in section 3.3.1.
9013	SF-2	Section 3.3 of the LEIS discusses ground, flight, and explosive safety considerations associated with current operations. Statistical and historic data presented as part of the discussions indicate relatively low risk associated with ongoing activities.
9014	SF-3	As indicated in sections 3.3 and 3.4 of the LEIS, safety risks associated with on-going activities on NAFR are low. Furthermore, restricting access to areas of the range that support intense training activities minimizes the potential that the public would be exposed to risk.
0018	SF-4	As stated in Appendix J, the calculated risk factors are dependent on the assumptions stated. Varying the assumptions would vary the calculated risk. However, the risk of any one occurrence is so small that changing the assumptions would not be expected to indicate a significantly heightened risk. Although some specific geographic areas may be periodically overflown, the brief amount of exposure of any one area during any specific sortie-operation further lessens the risk.
8600 9001 9014	SF-5	The Air Force is aware of local jurisdictional emergency response requirements, and will coordinate with them. Various Nevada regulations describe the emergency response requirements of local jurisdictions. Because of the safety and security requirements, emergency response on NAFR lands is provided by federal agencies, principally the Air Force. Local emergency response resources may initially respond to incidents involving military vehicles and personnel off the NAFR.
8600 9014	SF-6	The Air Force is aware of local jurisdictional emergency response requirements, and will coordinate with them. However, it should be noted that in the case of an aircraft accident, when the commander of the Air Force response team arrives at an accident site, a National Defense Perimeter is established around the site.



Comment #	Response #	Response
<i>Safety</i>		
		The purpose of establishing this perimeter is to ensure continued protection to the public and private property, as well as to protect national security interests.
9014	SF-7	The Air Force recognizes local jurisdictional responsibilities and will work closely with applicable agencies to ensure effective coordination and communications exist.
9020	SF-8	As stated in section 4.3.1.1 of the LEIS, operations and maintenance activities on NAFR would be unchanged from current levels. Planned disaster response activities and range fire suppression capabilities would also continue as under on-going operations. There is no anticipated increase in fire risk.
9020	SF-9	As discussed in section 3.3.2 of the LEIS, the risk of an aircraft accident anywhere on the NAFR is low. Risk associated with the DNWR is even further reduced due to Air Force agreements with DOI that place some restrictions on military operations conducted over these lands. Nevertheless, as stated, should an accident occur, the Air Force would perform all restoration requirements prescribed by law, and, during response, would take all steps practicable to minimize direct damage to the environment, and any resultant evidence of intrusiveness in consultation with appropriate land managers.
9020	SF-10	As discussed in section 3.3.2 of the LEIS, it is impossible to predict the precise location of an aircraft accident, and the type and extent of resultant damage. This is influenced by many factors, which are variable due to topography, climate, and the season of the year. Depending on the type and extent of damage resulting from an accident, the Air Force will perform all restorative actions required by law and in consultation with appropriate land managers.

Comment #	Response #	Response
<i>Hazardous Materials and Solid Waste</i>		
6000	HZ-1	While we appreciate American Indian concerns regarding transportation, the affirmative responsibility to coordinate Native American policies lies under the Department of Transportation that develops these policies.
9013 9015	HZ-2	Two permitted landfills are located on NAFR, one Class II (nonhazardous solid waste) and one Class III (solid construction debris). These landfills are operated in compliance with the Nevada Administrative Code (NAC 444.570 to NAC 444.748); the CFR (40 CFR parts 240, 241, 243); and the AFI (AFI 32-7042, Solid and Hazardous Waste Compliance, and ACC Solid Waste Program Management Guidance, dated October 5, 1994). All IRP sites on NAFR were addressed in a manner consistent with CERCLA NCP. Decision documents for no-further action have been accepted and signed by the Nevada Division of Environmental Protection for 96 of the 98 sites. Long-term monitoring is being conducted at two landfills at ISAFAF. Suggested revisions have been made to section 3.4.
9013 9014	HZ-3	None of these 98 sites are RCRA regulated. Section 3.4.3.1 has been edited to reflect this. Whether these sites could be RCRA regulated is beyond the scope of this LEIS and would have no effect on the environmental analysis.
9013	HZ-4	Although the assessment is referred to as a RCRA Facility Assessment, it was, in fact, a release assessment of a number of non-regulated sites. All 68 of the sites have been reevaluated and sampled, as appropriate, in accordance with the recommendations. Section 3.4.3.2 has been modified to reflect that none of these sites are subject to RCRA corrective action. No further actions or evaluations are planned at this time. A draft final report that summaries all the information is anticipated in early 1999.
9013	HZ-5	Table 3.4-1 has been added to describe the types of waste present at these sites.
9013	HZ-6	Ecological risk assessment studies have not been done on any of the sites mentioned in section 3.4. The area has been used for many years as a range, no new areas are to be used as a range, some of the sites have been cleaned up, and target areas are

Comment #	Response #	Response
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*Hazardous Materials and Solid Waste*

cleared during Coronet Clean once every twelve months. Since clean-up operations occurred, the ecological risk at these sites is considered to be low. Rationale for this approach is explained in the *Contamination Report*.

9014

HZ-7

None of these 98 sites are RCRA regulated. Section 3.4.3.1 has been edited to reflect this. Whether these sites could be RCRA regulated is beyond the scope of this LEIS and would have no effect on the environmental analysis.

Although the assessment is referred to as a RCRA Facility Assessment, it was, in fact, a release assessment of a number of non-regulated sites. All 68 of the sites have been reevaluated and sampled, as appropriate, in accordance with the recommendations. Section 3.4.3.2 has been modified to reflect that none of these sites are subject to RCRA corrective action. No further actions or evaluations are planned at this time. A draft final report that summaries all the information is anticipated in early 1999.

Given the need for weapons training and the unavoidable presence of explosives and metals in weaponry, NAFR provides an ideal environment from the standpoint of confining these by-products of weapons training to the immediate area of the targets. As discussed in section 3.4 of the LEIS, soil sampling conducted at 10 targets revealed highly localized increases in metal concentrations above local and regional baseline levels. There is, however, no evidence of significant off-site transport. Owing to the extreme aridity of the desert environment and the fact that targets are sited in low-lying areas to lessen the extent of ground disturbance, there is little or no runoff from target areas. Metals are generally insoluble under neutral to basic conditions, and become tightly bound to fine particles in the soil. The prevalence of alkaline clay soils in valley bottoms where targets are concentrated thus ensures that metals are unlikely to be mobilized or become bioavailable in solution during episodes of flooding. Finally, the target areas where contamination exists are relatively barren and do not provide significant food or habitat resources for wildlife. Accordingly, the potential for bioaccumulation is minimized, and the risks to desert wildlife

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*Hazardous Materials and Solid Waste*

		populations are considered less than significant.
9013	HZ-8	If, and when, land transfers take place, a policy to manage the sites would have to be developed by the interested parties and be implemented. The NDEP did not challenge the statements in the Draft LEIS. However, the availability of NDEP resources to manage the sites at some point in the future is difficult, if not impossible, to determine at the present time.
9020	HZ-9	<p>An environmental assessment for the resumption of use of DU on Target 63-10 was completed June 1998. The Air Force will not resume the use of DU until the Management Plan/ Air Force Policy are finalized.</p> <p>It is anticipated that the long- and short-term radiological effects of DU on the environment will be a primary consideration in the development of the DU Management Plan.</p>
9013	HZ-10	A USFWS study of Target 63-10 in 1994 determined that there were too few small mammals to conduct radionuclide level or histological testing on resident animals. ("Biological Opinion on the Reinitiation of Formal Consultation for Continuing Current Weapons Training and Training on U.S. Department of the Air Force's Weapons and Tactics Center Range Complex." Letter, USFWS to Donegan, File Nos. 1-5-96-F-278R and 1-5-94-F-162.AMD3.)
9013	HZ-11	Section 3.4.3.4 has been expanded to include a discussion of ecological risks at NAFR target areas.

Comment #	Response #	Response
<i>Earth Resources</i>		
0010	ER-1	Figures 3.5-8 through 3.5-11 have been revised to differentiate between areas of moderate and high potential for mineral resources.
0011	ER-2	The areas of gold and silver potential shown on Figure 3.5-8 were defined by stream sampling. This fact was inadvertently omitted from the figure. Therefore, Figure 3.5-8 (and Figures 3.5-9, 3.5-10, and 3.5-11, for consistency) have been revised to reflect the basis of the mineral resource potential mapping. Note that Figure 3.5-12 indicates moderate and high potential (as defined by mines, prospects, alteration, and rock chemistry) for the Eastern Goldfield Mining District, which corresponds to the information in Table 3.5-2.
9020	ER-3	As indicated in section 3.5.2, detailed soil surveys have not been completed at NAFR. However, section 3.5.2 of the text has been changed to include generalized information pertaining to potential wind erosion.
J20	ER-4	As indicated in section 3.5.2, detailed soil surveys have not been completed at NAFR. In addition, as indicated in section 3.6.2, limited regional and no site-specific water quality data is available for the surface waters of NAFR. However, sections 3.5.2, 3.6.2, 4.5.2.3, 4.5.4.3, and 4.5.5.3 of the text have been changed to include generalized information pertaining to potentially accelerated erosion associated with disturbed soil areas.
9020	ER-5	Figure 3.6-1a on page 3.6.4 of section 3.6.2 does not pertain to faulting. Assuming the comment was referring to page 3.5-9, section 3.5.1 of the Draft LEIS, the text has been edited to reflect the comment.

Comment #	Response #	Response
<i>Water Resources</i>		
6000	WR-1	Available water quality data for the two wells on the ISAFAF indicate that drinking water standards are being met. Available data do not indicate that groundwater in the area of Indian Springs is contaminated.
9002	WR-2	Available data do not indicate that significant numbers of wildlife from the test range cross into Esmeralda County. The amount of surface water consumed by wildlife that do cross into Esmeralda County has not been estimated but is considered insignificant.
9020	WR-3	The effects of roads, buildings, and storage areas on natural drainage courses have not been documented or inventoried as part of the LEIS. NEPA analysis of individual projects include the aspect of stormwater analysis and permitting when required. Mitigation strategies for erosion control around existing structures and facilities include the use of riprap or small check dams in eroded channels, provision of additional culverts to minimize or avoid concentration of runoff caused by roadways, and the limited use of pavement or gravel around structures, along with the construction of small catchment ponds to encourage percolation or evaporation to deal with runoff from buildings or storage areas.
9002	WR-4	The available data are contained in the LEIS section 3.5 and Appendix F.
9013	WR-5	Given the need for weapons training and the unavoidable presence of explosives and metals in weaponry, NAFR provides an ideal environment from the standpoint of confining these by-products of weapons training to the immediate area of the targets. As discussed in section 3.4 of the LEIS, soil sampling conducted at 10 targets revealed highly localized increases in metal concentrations above local and regional baseline levels. There is, however, no evidence of significant off-site transport. Owing to the extreme aridity of the desert environment and the fact that targets are sited in low-lying areas to lessen the extent of ground disturbance, there is little or no runoff from target areas. Metals are generally insoluble under neutral to basic conditions, and become tightly bound to fine particles in the soil. The prevalence of alkaline clay soils in valley bottoms where targets are concentrated thus ensures that metals are unlikely to be

Comment #	Response #	Response
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*Water Resources*

mobilized or become bioavailable in solution during episodes of flooding. Finally, the target areas where contamination exists are relatively barren and do not provide significant food or habitat resources for wildlife. Accordingly, the potential for bioaccumulation is minimized, and the risks to desert wildlife populations are considered less than significant.

8100	WR-6	The available information is contained in Table 3.6-5 of the LEIS. Reference numbers 9 and 10 on Figure 3.6-1b show the two NAFR wells in the vicinity of Indian Springs. Data are not available to estimate the effect of current withdrawals but it is considered insignificant relative to the estimated amount of groundwater in storage and estimated annual recharge. The effects of withdrawing the full amount of the appropriation have not been evaluated. The Air Force would not oppose the establishment of a backup water system on private wells near Indian Springs.
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9013	WR-7	Mitigation of subsurface radioactive and heavy metal concentrations is described in sections 3.4 and 4.4, Hazardous Materials and Solid Waste Management.
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9013	WR-8	The 1998 GAO Report, <i>Environmental Protection, DOD Management Issues Related to Chaff</i> , identified and reviewed studies by DOD and others to evaluate the environmental consequences of chaff. None of the studies were found to demonstrate significant operational or environmental effects of chaff.
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Studies to establish the weathering rates and chemical fate of metal coating in soils, fresh water, and marine waters were prepared as part of the Air Force 1997 report entitled *Environmental Effects of Self Protection Chaff and Flares*. There were no significant environmental consequences of long-term chaff use.

The Air Force has initiated action to insure removal from the inventory all lead-based chaff. In addition, the Air Force Deputy Assistant Secretary for Environmental and Safety has initiated active participation in the formation of a committee that includes broad expertise on the scientific, environmental, operational, and economic aspects of chaff used by the Armed Services. This

Comment #	Response #	Response
<i>Water Resources</i>		
		<p>committee will conduct a study to review the body of knowledge on environmental effect of chaff and to develop new chaff systems. The study will build upon public and agency review comments to identify any important gaps in the body of knowledge that leave open the questions of military efforts to conduct operations and training that rely on the use of chaff in an environmentally sound and cost effective manner. The committee will recommend options to bridge any gaps in knowledge that are identified.</p>
		<p>The Air Force is continuing to address the question on environmental effects of chaff including how does chaff breakdown in the environment, and what is the uptake path of any chemical constituents including identification of any potential long-term effects. Multiple studies and analyses prepared to date have identified no environmental risks to biological systems from breakdown of training and military chaff currently being used.</p>
9014	WR-9	<p>The analysis and evaluation of impacts on water resources were based on utilization of existing data and reports.</p>
9014	WR-10	<p>Water development by outside agencies on NAFR lands withdrawn for military use could conflict with mission requirements.</p> <p>This LEIS addresses the ongoing water quality-monitoring program to develop data regarding possible groundwater contamination by activities on the NAFR. The LEIS also addresses the quantities of water used by the NAFR, which are insignificant when compared to the estimated total amount of groundwater in storage.</p>
9014	WR-11	<p>The current and anticipated water requirements of activities on NAFR would not be expected to adversely affect the availability of water in nearby communities. Further, it is anticipated that Congress would continue to not reserve or restrict any water or water rights on NAFR lands should an action alternative be selected (See Section 10 of PL 99-606).</p>
9014	WR-12	<p>Water development by non-Air Force agencies on NAFR lands withdrawn for military use could conflict with mission</p>



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*Water Resources*

9014	WR-13	<p>requirements.</p> <p>The current and anticipated water requirements of activities on NAFR would not be expected to adversely affect the availability of water in nearby communities. Further, it is anticipated that Congress would continue to not reserve or restrict any water or water rights on NAFR lands should an action alternative be selected (See Section 10 of PL 99-606). However, the No-Action Alternative includes a discussion of the use of groundwater for intensive agriculture.</p>
9014	WR-14	<p>The amount of water that could be actually developed to meet the water demands of a particular development on a long-term basis is less because of the daily variation in available water supply. The appropriate right to use groundwater is insignificant when compared to the vast amount of water in the underlying aquifers.</p> <p>This LEIS addresses ongoing water quality monitoring programs to develop data regarding possible groundwater contamination by activities on the NAFR. The LEIS also addresses the quantities of water used by NAFR, which are insignificant when compared with the estimated total amount of groundwater in storage. Water development on NAFR lands withdrawn for military use could conflict with mission requirements.</p>

Comment #	Response #	Response
<i>Air Quality</i>		
9020	AQ-1	Although it is highly unlikely that NAFR-based, ground-level PM <sub>10</sub> emissions could impact Class I areas in the region (see section 4.7.1), air monitoring stations could provide additional baseline data. Since no long-term impacts have been identified in the LEIS, no mitigation efforts are required.
9020	AQ-2	Fine soils particles are identified as an existing and future emission source for PM <sub>10</sub> on the NAFR. Section 3.7.5 summarizes the existing and future emissions associated with the renewal of the NAFR. Section 4.7.1 describes the anticipated impacts of these emissions. Based on the temporal and geographic distribution of the emissions, air pollutant concentrations at the NAFR boundary would not be large enough in a localized area to cause any exceedance of an ambient air quality standard.
9020	AQ-3	A description of soil characteristics on the NAFR is located in section 3.5.2. The NAFR contains several general soil associations. Their susceptibility to water erosion is frequently limited since surface water resources are scarce (see section 3.6.2). Disturbed soils may be susceptible to wind erosion when suspended by vehicles or by other testing and training activities. The susceptibility of soil on the NAFR to wind erosion is highly site-specific, since the soil characteristics vary greatly from location-to-location. Since grazing is restricted on the NAFR, it is not an enhancing factor in regard to wind erosion of soils.
9020	AQ-4	The commentor is correct. Monitoring data is frequently used to determine attainment status of the NAAQS of a particular location.
9020	AQ-5	The commentor is correct. Wind direction and strength are as described in the comment. The Air Force frequently limits activities during periods of high winds. This enhances safety on the NAFR and also limits the potential for air quality emissions.
9020	AQ-6	The text has been modified to include these areas. However, the distances between the identified Class I areas and potential emissions sources on NAFR are too great to be considered for incremental deterioration of air quality in these areas.
9020	AQ-7	As a result of the direction of prevailing winds and the distance:

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*Air Quality*

9020	AQ-8	<p>between ground activities on the NAFR and Class I areas in the region, it is highly unlikely that PM<sub>10</sub>-producing activities on the NAFR would have the potential to impact these areas. Aircraft emissions in the NRC are the only reasonable air emission source that could impact the Class I areas.</p> <p>The commentor is correct. The Title V permit could include fugitive dust sources and combustion emission sources in the Title V permit inventory.</p>
9020	AQ-9	<p>The referenced Figure 3.7-1 has been modified in response to other comments. However, this figure is intended to highlight the location of the non-attainment area for CO and PM<sub>10</sub> south and east of the NAFR and not the location of NAFR facilities in the North Range.</p>
9020	AQ-10	<p>There is no direct relationship between the tons/year emissions and air quality concentrations unless one is dealing with a stationary source with fixed emission characteristics and static atmospheric conditions. Emission concentrations vary depending upon the source characteristics such as rate of release, height of release, temperature of release, and type of source (stationary, mobile, volume, or area source). Concentrations also vary depending upon atmospheric conditions such as wind speed, wind direction, temperature, stability class, and height of the mixing layer.</p> <p>Emissions from truck convoys were included as part of the vehicle and vehicle-miles-traveled calculations. Sufficient data were not available to allow reasonable calculation of emissions from bombing and non-simulated tank battlefronts. Emissions from target bombing areas (as a result of military training or testing) are highly irregular both in their timing and their specific emissions/event.</p>
9020	AQ-11	<p>It would be extremely difficult to perform tracer studies or provide monitors in locations that would produce meaningful results to definitively substantiate the conclusion of insignificant impact. Emissions associated with the NAFR and NRC airspace are dispersed over approximately 10 million acres of surface area and are generated large distances from any Class I area that could</p>

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*Air Quality*

experience visibility degradation. The conclusion of insignificant impact is reasonable based on existing evidence.

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*Biological Resources*

9013	BI-1	As the comment notes, the Air Force avoids impacts on habitats and resources that are of high value to wildlife. The Air Force's participation in the management of horses and burros under the Wild Free-Roaming Horse and Burro Act of 1971 is described at the end of section 3.8.5.2. Additional impact avoidance measures are not being implemented and do not appear necessary at this time.
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9013	BI-2	As the cited discussion in section 4.8.1.2 indicates, range targets represent relatively small, widely scattered areas that are chronically disturbed and are of little value to wildlife. Although one can never rule out the possibility of risk to wild animals that may move through these areas, there is no reason to suspect any significant effect on populations of large mammals on NAFR.
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9013	BI-3	The Air Force avoids impacts on habitats and resources that are of high value to wildlife. The Air Force's participation in the management of horses and burros under the Wild Free-Roaming Horse and Burro Act of 1971 is described at the end of section 3.8 of the LEIS. Additional impact avoidance measures are not being implemented and do not appear necessary at this time.
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As the cited discussion in section 4.8.1.2 indicates, range targets represent relatively small, widely scattered areas that are disturbed and are of little value to wildlife. Although one can never rule out the possibility of risk to wild animals that may move through these areas, there is no reason to suspect any significant effect on populations of large mammals on NAFR.

The threat to wildlife from munitions and unexploded ordnance is minimal because the areas of concentrated weapons training are not in areas subject to heavy use by wildlife, especially for wild horses, burros, antelope, and bighorn sheep.

9013	BI-4	The available information on populations of these animals on NAFR is presented in the LEIS. Increasing information may be developed in the future through implementation of the INRMP (Air Force 1997g). Information on populations outside of NAFR is available from state and federal wildlife agencies, but has not been compiled for the LEIS because any comparisons between on- and off-range populations would be confounded by innumerable
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<i>Biological Resources</i>		
		differences in landforms, vegetation, water availability, land use, and human activity. By design, NAFR is located in an area of scarce resources for people, as well as most types of wildlife.
9013	BI-5	Although data are not available on migratory bird use of playas on NAFR, there is no reason to suspect that these typically dry lakebeds, which are less predictably flooded than playas elsewhere in the Intermountain West, are used to any significant degree. This is in contrast, for example, to the Carson Sink wetlands to the north, Pahrnaghat Valley to the east, and Ash Meadows to the west, all of which are predictably flooded and heavily used.
9013	BI-6	Section 3.3.1 of the LEIS describes fire management on NAFR. No special mitigations appear to be warranted at this time. Long-term management measures would be developed through the INRMP (Air Force 1997g).
9015	BI-7	The editorial suggestions provided in these comments have been followed. See corresponding text in the LEIS.
0010	BI-8	As cited in the revised discussion in section 3.8.1, roadlessness results in high continuity between habitats, with minimal disruption of plant dispersal and wildlife migration.
0010	BI-9	NAFR is a regionally ecological important area as explained in section 3.8.1. As noted in the Keystone Dialogue on NAFR Stewardship Final Report, "NAFR serves as an ecological island that provides refuge-like conditions for animals, plants, and natural communities indigenous to the Great Basin and Mojave ecoregions". This importance of NAFR is noted throughout section 3.8 and 4.8.
0010	BI-10	The commentor is correct. Section 3.8.5.2, <i>Game Animals</i> , of the Draft LEIS shows Tolicha Peak as an area that could be expected to support bighorn sheep.
8700	BI-11	We acknowledge that little or no data are available on the abundance of game birds, furbearers, and most game animals on NAFR. Future wildlife management efforts undertaken as part of the INRMP (Air Force 1997g) may yield increasing information

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*Biological Resources*

		on wildlife populations that are of general interest on NAFR.
9020	BI-12	Migratory bird resources would not be affected by the continuing use of NAFR because of the general lack of habitat for migratory birds on NAFR and location-specific operational restrictions placed on aircrews utilizing the NRC airspace. Potential habitat for migratory birds on NAFR is briefly described in section 3.8. Potential migratory waterfowl habitat is generally limited to infrequently inundated valley-bottom playas and man-made sewage treatment ponds within the cantonment areas near Indian Springs and TTR. See also response AF-44 and section 3.3.8 (Bird-Aircraft Strike Hazards).
9020	BI-13	The commentor is correct. The suggested revision of "relatively pristine" to "good" has been made in section 3.8.1 of the LEIS.
9020	BI-14	The Ackerman 1981 reference has been added to the document section 3.8.2.
920	BI-15	The commentor is correct. The striped skunk is not common on South Range. This species has been deleted from the list of common mammals.
9020	BI-16	The commentor is correct. Suggested revisions have been incorporated in section 3.8.3.1 of the LEIS.
9020	BI-17	The commentor is correct. These corrections have been incorporated into the LEIS. Please see Table 3.8-3.
9020	BI-18	The commentor is correct. The LEIS has been edited consistent with the comment. Please see section 3.8.5.2, <i>Game Animals</i> .
9020	BI-19	The commentor is correct. The LEIS has been edited to clarify that these types of impacts would not occur on DNWR lands administered by USFWS. Please see sections 4.8.1.1, 4.8.1.2, 4.8.1.4, and 4.8.5.

Comment #	Response #	Response
<i>Cultural Resources</i>		
6000	CR-1	Efforts have been and continue to be taken to address the requirements of EOs, Memoranda, and Laws that reference Native American concerns. Additional details of American Indian consultations are contained in section 3.9 and have been added to Chapter 9.0.
6000	CR-2	The NAIP is, in terms of the planning and funding process, part of the institutional process of the Air Force. It is the intent of the Air Force to maintain this process.
6000 6001	CR-3	The CGTO prepared a document titled "American Indian Perspective to the Legislative Environmental Impact Statement for the NAFR Renewal, Nevada" that has been used as a reference document throughout the LEIS. American Indian issues concerning each of the environmental resources are presented in the appropriate resource subsection in Chapter 4.0 of the LEIS. Chapter 9.0 has been revised to include the CGTO on the list of consultations.
6000	CR-4	The LEIS evaluates impacts of proposed actions and alternatives and does not include descriptions of individual projects. However, ethnographic studies will be performed as part of the NAIP.
6000	CR-5	Under government-to-government relationships the Air Force is taking efforts to meet with Native American individuals and tribes to discuss continuing operations. The NAIP is part of this ongoing government-to-government dialogue.
6000	CR-6	No option for acquisition or distribution of land by individuals or groups exists under the scope of the LEIS.
9013	CR-7	The note that Chapter 9.0 lists only one tribe and other sections fail to list other tribes is acknowledged, but the list of the CGTO in section 3.9 lists each of the 18 tribes with ancestral ties to the NAFR. It is noted that not all tribes participated or attended any or all meetings, however, all are kept informed concerning the process of the NAIP and the LEIS. The CGTO has been added to the list of consultations in the LEIS (Chapter 9.0).



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*Cultural Resources*

9013                      CR-8                      The Air Force continues to support the requirements of EOs, Memoranda, and Laws that address Native American concerns. The process of involving Native Americans in the NEPA process included notifying Native Americans during scoping, presenting a separate meeting explaining the EIAP, contracting the CGTO to write a reference document, involving representatives in the NAIP that discussed the progress, and sending information to Tribes and individuals approximately every six months. A meeting to hear CGTO and Tribes' comments on the LEIS was held in November 1998. Please see Chapter 9.0.

9013                      CR-9                      There are no MTRs that are directly tied to the NAFR that could impact federally recognized tribal lands. The discussion efforts taken by Nellis AFB included the issues of NAFR directly associated with MTRs.

9013                      CR-10                      Most target areas were created before implementation of the NHPA, which mandated survey prior to surface disturbance.

Until an area has been surveyed, the presence or absence of sensitive cultural resources is a matter of assumption, based in part on what is known of the specific area's sensitivity for the presence of this resource type. In compliance with Section 106, the Air Force does not permit actions to occur in previously undisturbed areas that have not been surveyed. However, some areas, including targets, have been in use for 40 or more years, predating the NRHP. Not only is there a high probability that any cultural resources that may have been present have been adversely affected to the extent they are no longer eligible for the National Register, but some of these areas may also be too hazardous to survey.

The Draft Nellis AFB CRMP (1997), the technical document included by reference in the LEIS, details the avoidance measures, survey plans, and mitigation procedure followed by the Air Force. The Air Force complies with the NHPA's Section 106 process for new undertakings. Mitigation plans are developed in response to the specific requirements of the resource, in consultation with the Nevada SHPO and American Indians, depending on the resource type.

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*Cultural Resources*

		Surveys required by Section 110 (inventory requirements) are ongoing. Sites that have been impacted, whether by Air Force or other actions, would have the same mitigation requirements as sites discovered through the Section 106 process.
6000	CR-11	All applicable American Indian government treaties have been considered during the LEIS process.
6000	CR-12	Section 1.2.3.1 of the LEIS states that "public and agency scoping comments and American Indian perspectives were incorporated into the LEIS and led to the development of two of the four alternatives".
9013	CR-13	Target use has greatly disturbed the ground surface, and thus would have had an adverse impact on any significant cultural resources that might have been present. If the Air Force re-sited a target, this could have the result of impacting additional cultural resources. Compliance with Section 106 of NHPA would require the Air Force to mitigate those impacts, probably either through avoidance or data recovery.
9013	CR-14	The Draft Nellis AFB CRMP (1997) discusses procedures for mitigating impacts to all cultural resources once past damage to significant cultural resources is identified. These procedures include development of a research design to identify the significance criteria met, and a plan for data recovery, developed in consultation with the SHPO. American Indians will be included in the consultation to develop the plans if the cultural resource is a TCP, an American Indian site, or if it is deemed appropriate for treatment.
6001	CR-15	The commentor is correct. The text has been revised to state, "... who worked with the Mojave, the Chemehuevi, the Southern Paiute, the Western Shoshone, and the Owens Valley Paiute and Shoshones."
6001	CR-16	The statement in section 3.9.4.1 has been clarified to indicate that the sensitive area for sites is along the margins of playas or lakes, not in the dry lakebed itself.
6001	CR-17	The commentor is correct. "Shoshonean" was changed to

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*Cultural Resources*

		"Numic". Please see section 3.9.6.1.
6001	CR-18	The recommended change was inserted in the following paragraph, where the Southern Paiute are discussed, rather than the suggested paragraph, which discusses the Mojave.
6001	CR-19	A new paragraph was added to incorporate the recommended information about both the Mojave people and the Mohave people. The Mojave people now live primarily in two areas along the Colorado River and have adopted different spellings of their tribal name. The Mojave people are located at Fort Mojave Reservation in the Mohave Valley, and the Mohave people are located at the Colorado River Reservation farther south (Stewart 1983).
6001	CR-20	The commentor is correct. A revision has been made to state that the Chemehuevi now reside on the Colorado River Reservation near Parker, Arizona, as members of the Colorado River Indian Tribes, and on the Chemehuevi Valley Reservation at Lake Havasu (see section 3.9.4.2).

Comment #	Response #	Response
<i>Land Use</i>		
6001 9012 9015 9020	LU-1	Document has been modified to address your concerns. Please see Figure 3.10-1, sections 3.10.4.1, 3.10.2.2, and 3.10.1.1, respectively.
9012	LU-2	The figure has been modified. The principle roads are depicted on the figure; however, the roads and trails on NAFR are too numerous to depict on this type of figure.
9020	LU-3	Appropriate sections of Chapter 2.0, 3.0, and 4.0 have been modified to reflect the commentors recommendation regarding the difference between land administration. In all action alternatives considered in this LEIS, lands used by both NAFR and DNWR that are not part of the target areas identified in the USFWS and Air Force MOU are jointly managed.

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*Wilderness and Wilderness Study Areas*

9015 9016 9020	WI-1	The document has been modified to address the concerns expressed in this comment. Please see Figure 3.11-1; Table 3.11-1; section 3.11.2; and section 4.11.1.
9015	WI-2	Should an accident occur, the Air Force would perform all restoration requirements prescribed by law, and, during response, would take all possible steps to minimize direct damage to the environment. Any resultant evidence of intrusiveness would be coordinated in conjunction with the appropriate land managers.

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*Recreation and Visual Resources*

9015	RV-1	Although hiking and nature viewing would not be quite as alluring without the views from the ridgeline, they would still be possible recreation experiences. Other types of recreation activities, such as hunting and trapping, also could occur on these lands. Management for hunting and trapping would have to be coordinated with Nevada Fish and Game.
9015	RV-2	Section 4.12.5.1 has been revised to more fully identify potential impacts of the No-Action Alternative on recreation.
9015	RV-3	Section 4.12 has been expanded to include the acreage available for recreation.
8700	RV-4	<p>The Executive Summary mentions recreation, mining, and grazing and other activities as examples of multiple uses of the land that could adversely impact the environment without proper management.</p> <p>Intensity of use of an area over time could impact the area regardless of the specific type of recreation. The LEIS does not judge which types of activities are better for the environment, rather the LEIS explains that some environmental consequences could occur as a result of increased intensity of use. The resource and ability to manage an area that is subject to intensified use can contribute to the extent of environmental impacts.</p>
9020	RV-5	Commentor is correct, the document has been revised to incorporate suggested revision. Please see section 3.12.1.
9020	RV-6	The Air Force has specific regulations that describe the requirements for cleanup of NAFR. In addition, the Air Force has an MOU with USFWS to clean up target debris, training ordnance, etc. from military training activities (refer to section 3.12.2).

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*Socioeconomics*

9012	SE-1	The comment describes material presented in section 4.13.4.1 of the LEIS. No response or change to the text is required
9012 9001	SE-2	The topic of "equity" is addressed, where appropriate, in Environmental Justice (section 4.14). The question of equity requires, among other things, a consideration of geographical scale. What may be an equitable distribution of resources at the state level may not be so when considered at a county level.
9012	SE-3	<p>Section 4.13.4.1 (Economic Consequences) has been expanded in response to this comment. The following addition has been made to the text: "Field studies and sampling results reported in the "Mineral and Energy Resource Assessment of the Nellis Air Force Range" published in 1996 by the Nevada Bureau of Mines and Geology suggests that, other than sand and gravel, hypothetical mines on former NAFR lands would be limited to precious metals. The report does not, however, address the economic feasibility of such mining activity. The analysis here assumes that mining activity will be primarily focused on gold with silver recovered as a by-product. Details of the analysis are contained in the <i>Economic Impact Report</i>.</p> <p>It is not possible to predict precisely where in Lincoln or Nye counties potential future mining operations may occur. However, for purposes of analysis it is assumed that total employment will peak at about 720 mining operation jobs over a 25-year period. If future employment in mining were based on that evident in 1995, all mining activity would occur in Nye County (the position taken here). The result would be identical if the share were based on historical quantities of gold with silver as a by-product recovered historically as described in 3.5 Earth Resources, Table 3.5-1. The historic record of silver mining demonstrates an almost equal share between Lincoln and Nye counties.</p>
9002	SE-4	Section 4.13 includes Goldfield as one of the communities that could receive economic benefits from the No-Action Alternative. Since it is not possible to determine if or when potential mines would be located, it is not possible to quantify any economic stimulation.

Comment #	Response #	Response
<i>Socioeconomics</i>		
9014	SE-5	<p>During the public hearing for the LEIS, Lincoln, Nye, and Esmeralda counties expressed concern that 50 years of use of NAFR for military activities has restricted economic activity in the three counties and benefited Clark County. Specific rural county concerns focused on job opportunities and costs of services.</p> <p>In general, the three rural counties sought access to large areas of NAFR for agriculture, recreation, and mining. The counties and individuals expressed the opinion that the use of NAFR produced lost economic opportunities and should be defined as an economic (or environmental) impact to the counties.</p> <p>The No-Action Alternative presents the economic consequences of terminating NAFR and turning what was NAFR back to DOI. The potential economic effects of increased access are addressed in section 4.13.4.</p>
9014	SE-6	<p>Under all project alternatives except the No-Action Alternative, existing conditions would, ostensibly, remain as they currently exist. Under the No-Action Alternative, the reliance on Nye County services would be eliminated.</p>
9014	SE-7	<p>In the absence of significant impacts on local emergency services, mitigation measures are not required.</p>
8500	SE-8	<p>The nature of the economic base is addressed in section 3.13 of the LEIS.</p>
8600	SE-9	<p>The socioeconomic section of this LEIS uses data series that are as current as possible and also compatible across all appropriate geographical areas for which impacts assessment is conducted. The most recent period for which employment and earnings data is available is 1995. This is also the date chosen as the baseline year for purposes of analysis.</p>
9014	SE-10	<p>The information presented for employment in the document is a series developed by the BEA and is based on data provided by the State of Nevada. This data reflects all employees in the state who are covered by unemployment insurance. This does not include unpaid family workers, migrant farm workers, and sorr</p>



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*Socioeconomics*

		railroad employees. American Indians employed on and off reservation lands who work for employers required to pay unemployment insurance are reflected in this data.
6001	SE-11	Suggested revisions have been made to text. Please see sections 3.13.9; 3.13.4; 3.13.7.1; 3.13.7.2; 3.13.7.3; and 3.13.9.
6001	SE-12	The information presented for employment in the document is a series developed by the BEA and is based on data provided by the State of Nevada. This data reflects all employees in the state who are covered by unemployment insurance. This does not include unpaid family workers, migrant farm workers, and some railroad employees. American Indians employed on and off reservation lands who work for employers required to pay unemployment insurance are reflected in this data.

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*Environmental Justice*

6001	EJ-1	In accordance with this comment, "Las Vegas Colony" has been changed to "Las Vegas Paiute Tribe" in section 3.14.2.
6001	EJ-2	<p>The Yomba Reservation in northwestern Nye County and the Duckwater Reservation in northeastern Nye County are discussed on page 3.14-2, including their location, land area, population, number of housing units, and percent of persons living in poverty. The percent in poverty on each reservation exceeds that for the three-county area: 24.5 percent for the Duckwater Reservation and 39.4 percent for the Yomba Reservation, compared to 10.4 percent for the three-county area. The percent minority on each reservation exceeds that for the three-county area also: 90.1 percent for the Duckwater Reservation and 96.2 percent for the Yomba Reservation, compared to 24.1 percent for the three-county area.</p> <p>Both the Yomba Reservation and the Duckwater Reservation are located in BNA 9801 on Figure 3.14-1. The map does not show information for smaller geographic areas within each BNA, some of which would have higher percentages than the BNA as a whole. Including both those persons living on reservation land and in other locations in BNA 9801, the percentage of minority persons comprises 18.2 percent of the total population in the BNA, and the percentage of persons living below the poverty level is 5.9 percent, neither of which exceed the comparable percentages for the three-county total. Therefore, BNA 9801 is not shaded on the map.</p>
8600 9001 9014	EJ-3	<p>The comment addresses the methodology used in the LEIS to identify whether there would be disproportionately high economic impacts on low-income persons in Nye County from the proposed renewal of the NAFR land withdrawal. The LEIS identifies that the renewal of the range would continue to restrict economic opportunities in Nye County such as agriculture and mining. In addition, the environmental justice analysis identifies that 10.3 percent of the population of Nye County is living below the poverty level. The range renewal would continue to restrict economic activity in Nye County, which could affect individual residents of the county, including low-income residents and others. However, the potential for a disproportionate effect on</p>

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*Environmental Justice*

low-income persons in Nye County is partly based on whether the percentage of persons in poverty would be measurably higher than the general population. Nye County's level of poverty, 10.3 percent, is less than the general population in the three-county Region of Comparison (10.4 percent). It is also less than Lincoln County (13.1 percent), the same as Clark County (10.3 percent), and virtually the same as the State of Nevada (10.2). Therefore, while Nye County and its residents would potentially experience economic effects from the renewal or non-renewal of the range, it does not appear that the effect on low-income persons would be disproportionate. This conclusion can be further supported by the various comparisons shown above, and does not rely solely on the methodology used.

8600  
9001  
9014

EJ-4

Neither EO 12898 nor the Air Force's Environmental Justice Guidelines identify a specific threshold percentage of low-income persons above which a community or area should receive consideration under the EO. The Air Force methodology used in the LEIS to identify concentrations of low-income persons is based on comparison of smaller areas with a surrounding region of comparison and is consistent with the general approaches suggested in the EO and guidelines. It also provides the types of demographic data needed to identify whether low-income persons would experience disproportionately high and adverse health and environmental effects.

9014

EJ-5

The diagonal patterned areas in Figure 3.14-1 show existing population characteristics in the areas potentially affected by the project but do not indicate the location, type, or severity of impacts for the project alternatives. Figure 3.14-1 shows that BNAs 9803 and 9804 have a population living below the poverty level that is greater than 10.4 percent, which is the average for the general population in the 3 county region of comparison. (BNAs are defined by the Bureau of the Census for rural areas such as Nye County.) The area for which an economic impact has been identified is Nye County as a whole, not a particular sub-area of the county, and the impact was determined to be less than significant (see section 4.13). Overall, 10.3 percent of Nye County's population is classified as being below the poverty level, which is less than the 10.4 percent poverty level for the "general population" living in the three county region.

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*Environmental Justice*

Therefore, there would not be a disproportionately high and adverse impact on low-income persons living in Nye County from the potential economic impacts.

Comment #	Response #	Response
<i>Cumulative Impacts</i>		
9020	CM-1	The approximate regional groundwater level is shown in Figure 3.6-3. Wells and surface water locations are shown in Figures 3.6-1a and b. The wells managed by the Air Force have not experienced well drawdown since they are sufficiently geographically separated from other wells.
9020	CM-2	Please see additional text in section 5.2.3.6.
9020	CM-3	The level-of-consideration given cumulative impacts was cooperatively developed by the Air Force, BLM, USFWS, and DOE. It included potential impacts from past, present, and reasonably foreseeable activities in the same ROI. Cumulative impacts were presented for each specific resources. For example, given the average annual recharge of the potentially affected groundwater basins, the wide distribution of wells, the limited amount of surface waters, and the total water use on and adjacent to the NAFR, it is unlikely that there would be a cumulative impact to water resource availability. Likewise, total air emissions associated with the NAFR are widely distributed within the potentially affected airspace (above approximately 12,000 square miles of land).

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**Comments Submitted to the Bureau of Land Management  
on the NAFR Withdrawal Renewal Application**

## BLM APPLICATION LETTERS

The Air Force submitted an application to renew the NAFR land withdrawal on September 16, 1998 in compliance with PL 99-606 and the Federal Land Policy and Management Act (43 CFR 2310.1-2). The state office of the BLM published an announcement of this application and an opportunity to comment on the application in the *Federal Register* on October 2, 1998. The following letters were received by the BLM within the 90-day public comment period in compliance with 43 CFR 2310.2-1(b)(2)(iv).

Although not responded to as part of the LEIS, these letters will become part of the BLM case file.



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25 November 1998

Nellis Air Force Range Renewal Office  
PO Box 9919  
Las Vegas, NV 89191-0919

Dear Nellis Air Force Range Renewal Personnel,

I'm writing to comment on the draft legislative EIS regarding the withdrawal of BLM land for use in the Nellis Air Range. Since so little of the area being considered is actively used for bombing, and since so much of it is roadless, I want to strongly encourage you to adopt a final EIS and plan that will do everything possible to protect the biodiversity and environmental health of these lands.

In particular, I urge you to inventory the roadless areas within the considered area, thereby gathering information that can help us all to make good decisions about which parts of the range might best be used for which purposes. In order to ensure maximum protection of biodiversity in this area, I believe that the findings of the "Keystone" report be incorporated into the revised EIS.

I also feel strongly that a permanent withdrawal of the area is a most undesirable approach. While the 25-year renewal option is preferable to permanent withdrawal, I hope very much that the public will be given the opportunity to re-consider this important decision every fifteen years.

Finally, I strongly support the subalternative that would release land on the west side and open to public access several of the northern areas.

My thanks to you for carefully considering public input when making a decision that is so important to so many Nevadans. I hope very much that the revised EIS and subsequent plan will do everything possible to protect the biodiversity of the range.

Sincerely,



Michael P. Branch  
Associate Professor  
Department of English/098  
University of Nevada, Reno  
Reno, NV 89557

TO: Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

Nov 17, 1998

Nevada State Director - BLM  
1340 Financial Blvd.  
Reno, NV 89520

REFERENCE: Draft LEIS and Withdrawal Renewal Application

Dear Sir/Madame:

Last evening it was my pleasure to attend a public hearing on subject matters at Tonopah's Convention Center. The Air Force presentation was very good, and the public comments were very interesting. It seems that no matter what decisions are made about the future of the ranges, some will be happy, and some will not. I wish you Solomon's wisdom in sorting it all out!

I went to the hearing to listen. The moderator said written comments will have the same weight as the verbal ones. Here is my input.

I am a civilian contractor for the Air Force at the Tonopah Test Range. I'm also a citizen, Air Force Viet Nam-era veteran, husband, father, grandfather, pilot and patriot.

1. I am in favor of the ongoing, indefinite-length withdrawal of the land for military purposes. The Air Force must have the benefit of our national interests, and in terms of our nation's families of men and women in arms.
2. Some of the public commenters want less federal ownership of Nye County, and more private development for mining and other money-making pursuits. While the area is not booming economically, it is my view that the value of the ranges for military use is also worth considering. It occurs to me that public calls for more roads and mines and grazing land can only be made and heard when the nation enjoys peace. Testing and training is what prevents war, maintains the peace.
3. From an environmental standpoint, it is my view from experience on the ranges that the Air Force and other agencies treat the natural and cultural resources on the ranges with the utmost respect and consideration. As a taxpayer, I am concerned that the Air Force goes too far with frequent inspections, painstaking reporting, constant monitoring of water, waste, storm run-off, use of chemicals/pesticides, detailed attention to permit processes for water/waste/air pollution, etc. The residents of Nye County would be proud and satisfied if they knew the great lengths to which the Air Force goes to be kind to the environment and cultural resources on the ranges.
4. There should be more structured dialog between the DOD/DOE users of the ranges and the local governmental and developmental agencies of Nye and Esmeralda counties. For example, there could be Air Force scheduled visits to town board meetings. A wide range of issues could be discussed, from noise and hunting, to temporary mining explorations and jobs. Maybe more locals could be hired to do civil engineering work, and unskilled work like maids, janitors, cooks, and similar, rather than importing this labor from other markets.

RECEIVED  
 Back-land Management

8:00 NOV 5 1998  
 A.M.

NEVADA STATE OFFICE  
 RENO, NEVADA

Nevada State Director, BLM  
 1340 Financial Blvd.  
 P.O. Box 12000  
 Reno, Nevada 89520

Sir:

It has been brought to my attention that the U.S. Air Force is attempting to make permanent its questionable previous acquisition of public lands adjacent to the portion of Nellis Air Force Base, generally known as Area 51, or the Groom Lake Site.

The U.S. Air Force has not acknowledged the existence of a facility or operations in the Groom Lake area over a period of many years, until members of the public began observations of the area and began questioning the activities there.

Also, the public land in question is well removed from the operations area ( runways and hangars ), of the Groom Lake Base. The area which has been used as a weapons test range has been in operation for several decades without a single member of the public being harmed. The present attempt is an obvious ploy by the Air Force to acquire public land without proper justification.

In an era of base closings and military outbacks ( and peacetime, it hardly needs to be pointed out ), the virtual stealing of public lands to protect the public from activities on a base which officially does not exist, seems questionable from the standpoint of safety for the public. Rather, it seems more likely it is the desire by the Air Force for safety from public oversight which drives this latest request.

The more important question to be considered is the safety of the employees who work at the facility, and the long - term health of the public from alleged illegal disposal of toxic materials at the site, with resulting permanent adverse health problems occurring among some of the civilian workers. Various allegations by workers and former workers about illegal waste disposal activity and injury to workers as a result, plus the denial by the Air Force and refusal by them to assist injured workers ( because that would constitute admission of guilt ), have been coming from the Groom Lake Facility for the past several years, to my knowledge.

Because of possible pollution of the environment and injury to civilian employees, both of which are denied by the Air Force, any request for acquisition of public land should be denied until there is effective public oversight of activities at this facility. Until the Air Force is proved to be acting responsibly toward its civilian employees and the environment, any request to further enlarge the Groom Lake Facility should not be allowed without extensive review by the public.

Illegal fouling of the environment and permanent injury to workers in the name of military secrecy have no place in this enlightened age of environmental and social awareness, especially in peacetime. The possible attempt to acquire public land which would effectively isolate the Groom Lake Facility from public scrutiny makes it more imperative to deny the request.

Thank you for your attention in this matter.

*W.R. Freeman*

W. Richard Freeman

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As a student of history, I call on the public and the legislators to remember that we are at the end of a century which experienced unparalleled devastation from war. Upwards of 150,000,000 people died in the great conflicts of the twentieth century. Less important, there were untold billions of dollars lost from injury and destruction, disease and environmental devastation in these wars.

If the nation maintains and improves the world's most powerful air force, then maybe it will be possible to see the next century with warfare much more under control. Maybe my grandsons, and the grandsons of the public commentators, will never have to be casualties of war. What price tag would we put on saving their lives, and on preserving the blessings of peace?

Preserve the ranges for their highest use and benefit to all the people of the nation -- not just the local residents - keep it as a military test and training resource.

Thank you for considering my comments in this matter.

Sincerely,

*Carl VanderVeen*

Carl VanderVeen  
 P.O. Box 708  
 Tonopah, NV 89049

Nellis Air Range Renewal DLEIS

Congressional review and voting is essential because they would be able to review the geopolitical situation and assess the need for continued withdrawal. We do not argue with the need for the range in the current geopolitical environment, but no one can forecast the future.

Twenty-five years is objectionable because it is too long. The Air Force loses institutional memory in that time frame because it is longer than the career of many officers. If there is a problem with land management, twenty-five years is too long to wait to correct them if an EIS is required. The fifteen year renewal period is analogous to the time period the Forest Service uses on forest planning and the BLM uses on resource management plan revisions. This will help to provide accountability of the Air Force to the public.

We also support the b alternative. Allowing public access when possible to several areas is desirable. However, please remember that the Kawich region you have included in the co-use zones adjoins a wilderness study area. Please do not make motorized access to this area easier. In fact, the proposed co-use recreational zones should be limited to non-motorized recreation. If the region shown on Figure 2-2 is not necessary to NAFR, it should be returned to the public. The BLM should immediately perform a wilderness review and a grazing suitability analysis.

**Wilderness**

Wilderness is a place that remains in almost pristine condition little affected by the activities of man. That is the basic legal definition of wilderness. More importantly, wilderness is a natural self-organizing ecosystem. It is a place where natural processes, including evolution is allowed to continue. It is in wilderness that the primary nonmilitary value of this area exists.

We believe that the BLM and the Air Force have been negligent in surveying for wilderness study areas on the NAFR outside of the Desert Wildlife Refuge (DWR). There is nothing in public law 99-606 that exempts the range from wilderness surveys that were mandated by the Federal Lands Policy and Management Act (FLPMA). In fact, 99-606 requires that the land be managed and inventoried consistent with FLPMA.

It is possible that an inventory would conclude that none of the lands in the NAFR qualify for wilderness based on the overflights decreasing the solitude values required in wilderness. Based on the fact that the Fish and Wildlife Service (FWS) recommended that 88% of the land under joint withdrawal in the DWR be designated wilderness, the overflight issue would seem to be moot. One BLM wilderness study area, the Kawich Range, bounds the NAFR, it is hard to believe that wilderness qualities on the ground end at the range boundary. It is likely that similar amounts of NAFR land would be found to qualify for wilderness.

*Friends of Nevada Wilderness* requests that the Air Force inventory its roadless areas and assess the impacts of range renewal and the No Action alternative on these roadless areas. (Note

**Keep It Wild!**

DEC 30 REC'D

**Friends of Nevada Wilderness**

*Keep it Wild!*

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Conservation Director

Eryn Hoagland  
Intern

Kirk Peterson  
Web Page Intern

December 24, 1998

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

Re: Range Renewal EIS

Dear Renewal Officer:

Thank you for this opportunity to comment on the Draft Legislative Environmental Impact Statement (DLEIS) for the renewal of the Nellis AF Range (NAFR). This DLEIS considers the continuing renewal of the NAFR and compares these scenarios with a No Action alternative of returning the land to Bureau of Land Management (BLM) multiple use management. This is perhaps the first EIS I have ever reviewed in which the impacts of the No Action alternative exceed the impacts of the action alternative.

*Friends of Nevada Wilderness* is a statewide public lands conservation organization whose primary objective is the protection and preservation of public land as wilderness. The NAFR contains many areas which, with the exception of overflight noise and some unexploded ordnance, are protected as default wilderness. Only about 3% of the range is actively impacted by bombing activities.

Our comments are broken into several subject headings. We did not have time to fully review all subjects.

**Alternatives**

Neither alternative has an appropriate renewal length. We support a 15-year renewal. A fifteen year renewal is superior because it requires Congress to revisit the issue every 15 years rather than just reviewing the issue (as called for with the indefinite renewal). With a review, Congress would be able to essentially ignore the report; with a renewal required, Congress would be required to review the pertinent issues and vote on a renewal.

200 Barlett St., Reno, NV 89512  
Reno - (702) 348-1759  
fax - (702) 348-1986  
tom@black-rock.reno.nv.us  
www.nevadawilderness.org

Nellis Air Range Renewal DLEIS

**Grazing Resources**

Although not directly discussed in the document, the withdrawal has also created the largest livestock free zone in the Great Basin and Mojave Desert. It would be a disaster to allow livestock grazing to begin with the end of the withdrawal. You should better emphasize the positive impacts of NAFR as a remnant of livestock free management.

With respect to grazing, we encourage the Air Force to allow access to range researchers to compare livestock free areas with lands heavily grazed by livestock for years. In the region propose to be returned to the public in alternative b, shown in Figure 2-2, the BLM should perform a grazing suitability analysis. Do the values associated with it being livestock free exceed the marginal values of grazing it? Because there are so few areas without livestock, this could become a baseline the BLM could use to compare with grazed areas. That would increase its values. Also, there may be potential for bighorn sheep introductions around Tolicha Peak.

**General Land Management**

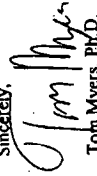
Friends of Nevada Wilderness served on the Keystone run Nellis Stewardship Committee during 1997 and 98. The AF should include that report as an appendix to the LEIS. They should also summarize the recommendations and indicate how they will be implemented should the renewal be granted

A major topic of the Keystone committee was accountability. How does the public oversee the activities of the Air Force on the range? That is the reason the fifteen year renewal, rather than a longer renewal is necessary.

In summary, we support a 15-year renewal with the b alternative. The AF should express better the value of the range to biodiversity and ecosystem function in the transition between the Mojave and Great Basin ecoregions. The AF should also commit to inventorying and protecting it roadless areas to help maintain the ecosystem process.

Thank you for considering our comments.

Sincerely,



Tom Myers, Ph.D.  
Conservation Director

*Keep It Wild!*

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3

Nellis Air Range Renewal DLEIS

that we are not requesting formal WSA status.) A potential impact of the renewal is that the AF will build facilities in roadless areas. A potential impact of No Action is that the BLM will allow activities to occur within these roadless areas without inventorying them for wilderness attributes. A preliminary map based on vectorized roads from a 1:100,000 scale map of the range shows 19 areas totaling 2107.48 square miles or 1,348,787 acres (this map is enclosed). This and the road map in Figure 1-3 could be a starting point for a roadless area survey.

Then, we ask that the Air Force limit new facility construction to areas outside of these identified roadless areas. This will protect the existing wilderness and biodiversity values of the area. Then, if the range is ever returned to public use, this survey and the protection will provide a start for the BLM in its required role of assessing the wilderness values the area.

When this range is returned to the public for multiple use, FLPMA requires the BLM to perform a wilderness survey. Also, the land returned to the public shown in Figure 2-2 must be surveyed for wilderness qualities. These surveys should consider that land remaining within NAFR are roadless. Referring to our enclosed map, the returned land will include portions of our recommended Stonewall Mountain and Tolicha Peak wilderness units.

**Biological Resources**

The DLEIS does a good job of listing plants and animals found in the NAFR. It also discusses how the roadless nature of the area maintains connectivity between areas. But it misses the opportunity to explain why that is important.

The NAFR lies at the transition from the Mojave and Great Basin ecoregions. The north-south trending ranges and valleys provide migratory routes for plants and animals moving either seasonally or due to changing climates. Because of degraded habitat to the west and southeast, Nellis plays an important role in the regional ecosystem. The final LEIS should emphasize this.

**Mineral Resources**

The DLEIS does a good job of inventorying the potential mineral resources of NAFR. But you should change the gold/silver and copper/molybdenum potential maps (Figures 3.5-8 and 3.5-9) so that moderate and high potential are not grouped in the same shading. It is very misleading. Much of Nevada has moderate potential and mining companies do not clamor to get to it. But high potential attracts much interest. Thus, these maps send a confusing message.

It is with respect to mineral resources that the No Action alternative would potentially lead to major environmental impacts. Currently, there is no mineral development. Without the renewal, much of the land would become subject to the antiquated General Mining Law of 1872.

*Keep It Wild!*

http://www.utormind.com/place/us/nv/nellis/renewal/campbell

JAN 06 1998

# Comments on the Draft Legislative Environmental Impact Statement for the Renewal of the Nellis Air Force Range

Submitted By  
Glenn Campbell  
6425 Meadowlark Ln.  
Las Vegas, NV 89103  
702-251-3445

December 1998

As a Nevada resident, I am submitting the following comments on the Draft Legislative Environmental Impact Statement for the Renewal of the Nellis Air Force Range, which was released in September 1998.

Since my comments are quite lengthy, I have divided this document into three parts: In Part I, I summarize my comments and the philosophy behind them. In Part II, I list specific inadequacies I see in the Draft LEIS, moving sequentially through the pages of the report. Finally, in Part III, I offer some general conclusions and recommendations.

## Part I: Summary of Comments

Most of my comments are relevant only to Alternatives 1B and 2B in the report. This is the proposal for "administrative realignment" of certain areas, in addition to the renewal of the Nellis Range as it now exists. In Alternatives 1B and 2B, some lands currently under Department of Energy control would be transferred to the Air Force, while some lands under Air Force control would be transferred to DOE.

Specifically, DOE would obtain control of the Pahute Mesa area, which it is currently using, while the Air Force would obtain control of the lands currently withdrawn by DOE under Public Land Order 1662 (PLO 1662). These latter lands, popularly known as "Area 51", are the site of a classified Air Force facility at Groom Dry Lake.

My primary criticism throughout this report is that virtually no environmental information has been provided for the PLO-1662 lands, and that this omission threatens the integrity of the rest of the report as well.

I understand from reading local newspapers that under a recent federal court ruling (in Frost vs. Perry) and an annual exemption from the President, that the Air Force may be entitled to withhold from the public certain environmental data about the Groom Lake base which is deemed a risk to national security. If this is true, I believe that the report should state this explicitly, specifying the general parameters of what is being withheld and the legal authority for doing so.

/www.utormind.com/place/us/nv/n

Page: 1

Wednesday, December 30, 1998

Nevada Wildlife Federation's Endangered Species Alliance  
P.O. Box 71238, Reno, NV 89570  
Phone: (702) 885-0405  
Fax: (702) 885-0405 \*51

December 8, 1998

Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

To Whom It May Concern:

The Air Force should protect the biodiversity of 3.1 million acres of BLM land north of Las Vegas that has been withdrawn as part of the Nellis Air Range and we request that the Air Force incorporate the Keystone Center's report into its final EIS.

As much as 90% of this land is roadless and the biodiversity of the region is tremendous with several endemic plants and north-south trending ridges and valleys providing essential travel conduits for migrating species.

A concern surrounding the withdrawal of the 3.1 million acres is that current roadless areas could be developed in the future. The Air Force should inventory these areas following BLM procedures and make a commitment to not build structures or roads.

You are requested to amend your withdrawal application for a period of 15 years rather than a permanent withdrawal. A less attractive but marginally acceptable alternative would be 25 years. Significant valuable natural resources are in decline, particularly outside the Nellis Air Force Range. Because many of these high value natural resources are extant on the Range, there is an overriding public interest in having a detailed public and political review on a reasonable periodic basis of Air Force management of these resources, and of the continued need for the withdrawal.

To be consistent with national policy, the Air Force should recognize the rights and needs of Native Americans, allowing Native Americans to access sacred sites existing on the Nellis Range. The Air Force should also identify and avoid these sacred sites when planning new buildings and bombing missions.

Finally, we recommend that whatever alternative is selected, the Air Force should choose the "b" subalternative. This would release about 30,000 acres on the west of the range and allow public access on a few small areas to the north, including an area adjoining the Kawitich Range Wilderness Study Area.

Thanks for considering these requests.

Sincerely,

Julie Dudley  
Chair

<http://www.ufomind.com/place/us/nv/nellis/renewal/campbell/>

to the original statement. (E.g. "This data is being withheld under Presidential exemption, see Section XX.")

Further suggestions are provided in Part III.

**Part II: Specific Inadequacies**

In this section, I will go through the Draft LEIS page-by-page to point out inadequacies I see in the report. Most of these objections concern the omitted data problems I have described above, and most would be rendered moot if Alternatives 1B and 2B were not included in the Air Force proposal.

Many of the comments I make on the Executive Summary also apply to the corresponding sections of the main report.

**Executive Summary: Page ES-3.**

The report states:

Lands within PLO 1662, adjacent to the South Range, are withdrawn for the Nevada Test Site by DOE and used through a Memorandum of Agreement with the Air Force.

Consistent with the descriptions of the North and South Ranges in the same section, a short description of activities and facilities on the PLO 1662 lands should be given, even if to simply state that they are classified.

Also, more information should be given on the Memorandum of Agreement, which is not further specified anywhere else in the document. At least the date or document number should be given to allow this Memorandum to be located or referred to. Unlike Public Land Orders and Public Laws, internal memoranda like this are not easily located without more specific information. If the Memorandum of Agreement is classified, this should be stated, as it frees researchers such as myself from filing repeated FOIA requests for it. (My own FOIA requests to Nellis and DOE have failed to produce the document or any useful information about it.)

**Executive Summary: Page ES-3.**

The report states:

The North Ranges includes Pahute Mesa and other areas, which are used by DOE through mutual agreement.

Consistent with the descriptions of the North and South Ranges in the same section, a short description of DOE activities and facilities on Pahute Mesa lands should be given. Even if DOE controls those facilities, they will remain part of the Nellis Range under Alternatives 1A and 2A, so it would be useful to know what is there.

**Executive Summary: Page ES-4.**

[/www.ufomind.com/place/us/nv/n](http://www.ufomind.com/place/us/nv/n)

Page: 3

Wednesday, December 30, 1998

<http://www.ufomind.com/place/us/nv/nellis/renewal/campbell/>

As it stands, the Draft LEIS omits most data regarding the PLO-1662 land, with no mention of what is being omitted or why. This, I believe, jeopardizes the integrity of the entire report, since the reader cannot distinguish between "Negative Data," "No Research," "Classified Data" or "Overlooked Data."

To take a simple example, Figure 3.5-5 on Page 3.5-8 of the Draft LEIS provides a map of earthquake faults throughout the Nellis Range, the Nevada Test Site and surrounding areas. There are no earthquake faults shown within the block of land defined by PLO-1662. This strikes me as curious, because faults are often associated with mountain ranges, and a portion of one small range, the Papoose Range, is located within the PLO-1662 lands; yet, the map shows no faults associated with these mountains. Knowing that other environmental data on PLO-1662 has been withheld, the reader is left in the dark about what the absence of data means. He must choose between these possible alternatives:

1. Geological surveys have been conducted within the PLO-1662 lands, and no faults have been found. (Negative Data.)
2. No faults have been found because no survey has been conducted within this area. (No Research.)
3. Faults have been identified, but information about them has been deemed a risk to National Security and thus has been withheld. (Classified Data.)
4. Faults have been identified, but information about them has been omitted due to an administrative error. (Overlooked Data.)

The fact that the authors of the report chose to include the fault map implies that this kind of data could conceivably have an impact on the environmental process. The fact the most faults in this area seem benign does not remove the need for complete data. If one is going to create such a map, it should be reliable, and the absence of data on PLO-1662 lands elsewhere in the report leaves the reader questioning the map. If we look at another portion of the map where there are no faults shown, we must ask the same question: Is this no fault, a classified fault, or a "fault" in the report itself?

Likewise, on page 1-16 of the Draft LEIS, a map of area roads omits all roads within PLO 1662 land. In addition, it omits several prominent roads in the NAFR that lead to PLO 1662 land. If even omits the extensions of these roads into public land and the Nevada Test Site. If facilities within PLO 1662 land are kept secret through a special exemption, the reader is left to wonder where this exemption ends. Does it end at the boundaries defined by PLO 1662, or does it include wide portions of the current NAFR, public land and the NTS as well? As a citizen who might have some valid environmental issues to raise, I cannot comment intelligently on any omission anywhere in the report so long as undefined parts of the data are withheld without notation.

In the specific case of the fault map, the ambiguity would easily be resolved by a simple statement in the text like this: "Complete surveys have identified no faults within the lands described by PLO-1662."

Similarly, most of the other objections I raise in Part II would be resolved by a statement at the beginning of the report saying what kind of data is being withheld and under what authority. Later in the report as specific environmental issues are reviewed, one-sentence statements can refer back to the report so long as undefined parts of the data are withheld without notation.

[/www.ufomind.com/place/us/nv/n](http://www.ufomind.com/place/us/nv/n)

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Wednesday, December 30, 1998

<http://www.ufomind.com/place/us/nv/nellis/renewal/campbell/>

The report states:

The process for receiving input includes the following:

- Six public scoping meetings in communities surrounding NAFR.

A note should be added here that although these meetings were indeed held, the public was given no information at the time that PLO 1662 lands would be included in the renewal. The Notice of Intent which announced the scoping meetings (Federal Register: May 30, 1996) mentioned only PL 99-606 and the alternatives given did not include any administrative realignment. Since the public was not told of possible administrative realignment of PLO 1662 (or of any other land), the public could not offer any meaningful input, and the scoping process was effectively bypassed for this part of the current Air Force proposal.

I personally was lead to believe that PLO 1662 was not involved in the Range Renewal. Several days before the scoping meeting in Las Vegas on June 20, 1996, I contacted the Nellis Public Affairs officer, Capt. Andrew Bourland, and requested a township/range description of the lands affected by the Range Renewal. I told him that I could not offer meaningful comment unless I knew what lands I was commenting on. Upon my arrival at the scoping meeting I was given a township/range list similar to that found in Appendix A.10 of the draft LEIS. I determined that PLO 1662 lands were not included on that list, and on this basis I declined comment. Indeed, if I had commented, these comments would not have been relevant because they were not part of the published purpose of the meeting as defined in the Notice of Intent. Because PLO 1662 lands were never mentioned, I and any other citizen interested specifically in these lands were effectively excluded from the scoping process -- even if we attended the meetings -- and our potential concerns could not have been addressed in the Draft LEIS.

**Executive Summary: Page ES-5.**

The report provides a list of issues and concerns raised at the scoping meetings.

Again, a notation should be added here that these issues and concerns do not include PLO 1662 lands, which the public was not given the opportunity to comment on.

**Executive Summary: Page ES-7.**

Regarding Alternative 1A, the report states:

Overlapping withdrawals of NAFR and DNWR lands would remain.

For clarity, it should also be stated here that the PLO 1662 lands would remain under DOE control.

**Executive Summary: Page ES-11.**

Regarding the section "Hazardous Materials and Solid Waste Management"...

Although information is provided about contaminated sites on the existing NAFR land, none is provided for PLO 1662 lands. The same information that is provided for NAFR should also be provided for PLO 1662 lands.

[/www.ufomind.com/place/us/nv/n](http://www.ufomind.com/place/us/nv/n)

Page: 4

Wednesday, December 30, 1998

<http://www.ufomind.com/place/us/nv/nellis/renewal/campbell/>

If this information is classified, the LEIS should say so, and there would seem no national security risk in at least stating the number of contaminated sites within PLO 1662.

It should also be stated who will be responsible for environmental cleanup in PLO 1662 lands under Alternatives 1B and 2B, and under what program the sites are currently being identified and cleaned up (for example, FFACO or IRP, as is listed for DOE and NAFR lands).

**Executive Summary: Page ES-12.**

Regarding the section "Earth Resources"...

Information on prior mining should be given for PLO 1662 lands, as it has for NAFR lands. (If it is the same as NAFR lands, this should be stated.) I am particularly interested in knowing in what year commercial mining stopped in this area.

In addition, there should be a statement as to whether any mining or tunnelling has taken place in NAFR or PLO 1662 lands since they were withdrawn from public use.

**Executive Summary: Page ES-13.**

Regarding the section "Water Resources" ...

Information on water resources should be given for PLO 1662 lands, as it has for NAFR lands.

**Executive Summary: Page ES-13.**

Regarding the section "Biological Resources" ...

Information on biological resources should be given for PLO 1662 lands, as it has for NAFR lands, even to simply state that they are the same as NAFR.

**Executive Summary: Page ES-14.**

Regarding the section "Cultural Resources" ...

Information on cultural resources should be given for PLO 1662 lands, as it has for NAFR lands. The number of identified cultural resources on these lands should be stated.

Since access to PLO 1662 lands has been highly restricted, I would like to know to what extent surveys have been conducted to identify cultural resources. Is the cultural survey of this area considered complete, or has national security hindered it?

**Purpose and Need for the Proposed Action: Page 1-9.**

In the text section "Overview and History of NAFR" ...

A brief history of the PLO 1662 lands should be provided, as it is for the NAFR.

**Purpose and Need for the Proposed Action: Page 1-11.**

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topographic map above or USGS Landsat imagery of the area.

**Purpose and Need for the Proposed Action: Page 1-24.**

In the section entitled "NAFR Environmental Programs," the report states:

Within the bounds of available funding, each of these programs has been, or is being, completed on the NAFR.

It should also be stated whether the environmental programs have been completed in the PLO 1662 lands as well.

The same information provided for NAFR in that paragraph (beginning with the quote above) should also be provided for PLO 1662. Does the Air Force maintain environmental compliance within the PLO 1662 lands?

**Purpose and Need for the Proposed Action: Page 1-30 and 1-31.**

Two tables are provided to specify the minimum and maximum projected sortie-operations for various aircraft in the North Range, South Range and MOA. The same information should also be provided for sorties from the PLO 1662 land or R-4808W. If this information is classified, the report should say so.

**Description of Alternatives: Page 2-1.**

In the section entitled "Process for Identification of Alternatives," the report repeats and expands upon the corresponding sections in the Executive Summary, pages ES-4 and ES-5. My comments on those pages (above) also apply here (that PLO 1662 lands were excluded from the scoping process).

Other comments I made on the Executive Summary (pages ES-4 and ES-5) also apply to the corresponding sections of this "Description of Alternatives" chapter (that issues could not have been contributed from the public regarding PLO 1662).

**Affected Environment: Airspace. Page 3-1-4**

In the section regarding airspace "R-4808 (R-4808N and R-4808S)," the report says that that portions of this airspace "are used for military aircraft transit to and from R-4807 A/B. The report fails to indicate that the airspace also supports aircraft whose final destination is R-4808 (the base at Groom Lake). These flights includes frequent weekday passenger service between McCarran Airport and Las Vegas, which can be seen landing at the base from public vantage points.

Aircraft that land present a different environmental profile than those that merely transit an airspace at altitude, so both kinds of flights should be mentioned in this section.

**Affected Environment: Hazardous Materials and Solid Waste. (Section 3.4)**

This comment applies to this entire chapter (pages 3.4-1 to 3.4-17)...

Information on hazardous materials and solid waste sites within PLO 1662 land is completely

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Regarding the table entitled "NAFR History" ...

A list of land transactions for PLO 1662 should be provided as an additional table. PLO 1662 itself should be listed here, along with the Memorandum of Agreement between DOE and Air Force, and any other transactions affecting this land.

**Purpose and Need for the Proposed Action: Page 1-15.**

Regarding the map entitled "NAFR Supporting Airfields and Facilities" ...

This map should include the airfield adjacent to Groom Dry Lake, as seen in unclassified satellite images. Although these facilities are not currently part of the NAFR, they would be under Alternatives 1B and 2B.

**Purpose and Need for the Proposed Action: Page 1-16.**

Regarding the map entitled "Roads on the Nellis Air Force Range" ...

A number of prominent, well-maintained roads are missing from this map, both inside the PLO 1662 land and leading to it through the current NAFR. These missing roads can be plainly seen in published U.S. Geological Survey topographic maps and unclassified satellite images.

Within the current NAFR, at least three actively-maintained, two-lane, all-weather access roads are missing from the map. As a former resident of Rachel, Nevada, I am aware of two major access roads leading into the range from Highway 375 but not appearing on the map beyond the NAFR border. As a past visitor to the Nevada Test Site, I am aware of a third major road leading into the range from the northeastern corner of the NTS, also not shown on the map. Here is an approximate description of these roads based on the map on page 1-16...

- One road starts from State Route 375, about halfway between Rachel and the Lincoln/Nye county line and heads south through NAFR to the vicinity of PLO 1662 and the northeastern corner of the NTS. Even portions of this road on public land north of the NAFR border are omitted, as is another heavily used road that feeds into this one from Route 375 just southeast of Rachel.
- One road starts at the southernmost point on State Route 375 and follows a route west-southwest as shown on the map. On the map, this highway ends when it reaches the NAFR boundary. In truth, that road continues in the same general heading through the NAFR until it intersects the PLO1662 land.
- One road starts at the northeastern corner of the road network shown within the NTS. It heads northeast into the NAFR, then continues east to intersect with the PLO 1662 land. (In the NTS, this is known as the northern part of the Mercury Highway.)

For further information on these roads, one can consult the USGS 1:100,000 scale topographic map entitled "Pahrangat Range, Nevada" (1985) and other current topographic maps of the area. For the Mercury Highway leading northeast out of the NTS and into the NAFR, one can consult any published DOE map of the Nevada Test Site.

Inside the PLO 1662 land, there are dozens of major roads not given on the map. Consult the

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absent from this chapter. The same information that is provided for NAFR should also be provided here for PLO 1662 land.

The details of certain sites within PLO 1662 land may be classified, but that should not prevent the report from listing the number of identified sites and whether they are in compliance with environmental regulations.

The report should also state who is currently responsible for hazardous materials cleanup in PLO 1662 land -- Air Force or DOE -- and who will be responsible if Alternative 1B or 2B takes effect.

**Affected Environment: Earth Resources. (Section 3.6)**

As in the preceding chapter, the text of this chapter provides no information on the geology of PLO 1662 land. If the geology in this area is the same as that of NAFR, the report should say so.

The maps in this chapter show a confusing combination of inclusions and omissions for PLO 1662 land. The Physiographic Map (Page 3.5-3) appears to be complete for PLO 1662 land, but the General Geology map (Page 3.5-5) omits data for this land (as do the maps on page 3.5-31 and 3.5-40). The Mineral Potential on pages 3.5-16 through 3.5-18 both include and omit data for PLO 1662 land, showing some mineral potentials but obviously excluding others.

Other maps within this chapter are ambiguous. (See page 3.5-7, 3.5-8, 3.5-20, 3.5-21, 3.5-27, 3.5-29, 3.5-30, 3.5-32, 3.5-33, 3.5-34, 3.5-35.) As discussed in Part I, it is not clear whether the blank space for PLO 1662 land reflects "Negative Data," "No Research," "Classified Data," or "Overlooked Data."

**Affected Environment: Water Resources. (Section 3.6)**

As in the preceding "Earth Resources" chapter, this chapter on water resources includes a confusing mix of included, omitted and ambiguous data regarding PLO 1662. For example, the maps on pages 3.6-4 and 3.6-5, omit data for PLO 1662 land, while the map of page 3.6-8 seems to include it. The text seems to refer only to NAFR, and makes no mention of PLO 1662 land.

The same information provided for NAFR in this chapter should also be provided for PLO 1662 land.

**Affected Environment: Air Quality. Section 3.7.**

This chapter makes no mention of "exotic" air pollutants that might result from the testing of weapons systems in the NAFR and PLO 1662 land. Instead, this chapter seems to focus only on pollution from the burning of conventional hydrocarbon fuels and the explosion of conventional ordnance. A new kind of aircraft, weapons system or weapon component, such as Stealth aircraft or its radar absorbant covering, might produce a different class of pollutants from conventional military hardware.

Have other air pollutants been identified emanating from either NAFR or PLO 1662 land? The report should summarize the surveys made for exotic pollutants and the available data. (If the data is classified, the report should say so.) This is important for distinguishing between the Action and No Action alternatives, at least in regards to emissions from weapons testing in the current NAFR (which would presumably end under the No Action alternative).

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**Affected Environment: Air Quality. Page 3.7-8.**

The report provides a table of Baseline Ground-based and Airspace Emissions.

Any facility within PLO 1662 should be included in this list. (If this data is classified, the report should say so.)

**Affected Environment: Biological Resources. (Section 3.8)**

This chapter appears to omit all biological data for PLO 1662 land. The same information that is provided for NAFR should also be provided for PLO 1662 lands.

**Affected Environment: Cultural Resources. (Section 3.9)**

This chapter appears to omit all data for PLO 1662 land. The same information that is provided for NAFR should also be provided for PLO 1662 lands.

**Affected Environment: Land Use. (Section 3.10)**

This chapter appears to omit all data for PLO 1662 land. If there is no civilian land use within PLO 1662 land (as seems likely), the report should simply say so.

**Affected Environment: Wilderness and Wilderness Study Areas. (Section 3.11)**

This chapter appears to omit all data for PLO 1662 land. If there are no wilderness designations within PLO 1662 land, the report should say so. The report should indicate whether (a) complete wilderness surveys have been conducted with no appropriate lands identified, or (b) complete wilderness studies have not been conducted. (There should be nothing classified in whether a survey has been conducted.)

**Appendix A.10: Land Description (Volume 2)**

This appendix should include a township/range description of PLO 1662 lands (as has already been provided for PLO 7131 lands on page A.10-4).

The table on Page A.10-5 should include land disturbance information of PLO 1662 land.

**Appendix C: Relevant Federal, State, and Local Statutes, Regulations, Agreement, and Guidelines (Volume 2)**

This section fails to include Presidential Determinations 95-45, 96-54, 97-35, and subsequent annual determinations which exempt the Air Force's Groom Lake operating location from certain environmental reporting. It is important that these documents be listed, especially if they are being used as a legal basis for withholding information about PLO 1662 land.

**Appendix F: Water Analysis (Volume 2)**

Table E.J (Page F-1): This table on dry lakes fails to include any data on Groom Lake, even the portion which is within the current NAFR. This dry lake should be listed. If necessary, the table

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"operating location near Groom Lake, Nevada." We don't know if it includes only areas immediately adjacent to the base, the entire extent of PLO 1662 lands, or lands extending far into the existing Nellis Range and NTS. Judging from the omission of roads on Page 1-16 of the LEIS (as mentioned in Part II), the exemption seems to cover hundreds of square miles of the existing Nellis Range, the NTS and even portions of public land.

Another weakness is that the President provides no guidance on what "would require the disclosure of classified information" about the facility. Would the release of information about flora, fauna and geology require the disclosure of classified information? I am sure that certain conservative military managers would interpret it that way (and evidently they have prevailed in the preparation of this LEIS). By the same reasoning, though, one could argue that acknowledging the existence of the state of Nevada might, in some obscure way, reveal classified information about the Groom Lake facility. The fact is, the state of Nevada does exist, as a matter of public record, as do the roads, wildlife and water resources of the PLO 1662 lands. Withholding this kind of routine information may protect the Air Force politically, but it fails the test of reasonableness for the disclosure of classified information.

Without a geographic definition and without any guidance as to interpretation of the Presidential Determination, there are effectively no boundaries for the exemption, and the Air Force is free to apply it arbitrarily to any area within its control, inside or outside of the PLO 1662 land. An arbitrary exemption means that the entire LEIS is meaningless, because any environmental data anywhere in the report can be omitted without notice. The bureaucratic risk is that the only information appearing in the LEIS might be that which is supportive of the sponsor's political agenda.

**Recommendations**

To preserve the integrity of the LEIS, I see two possible alternatives. One is to entirely remove PLO 1662 lands from the proposals for Alternatives 1B and 2B. The realignment of those lands can then be handled by some other petition to Congress which is specifically designed for the special circumstances of this operating location.

The other alternative is to provide clear statements in the LEIS about what data is classified and withheld from the public. As mentioned in Part I, the Air Force could provide a statement at the beginning of the LEIS outlining what kind of data is classified and under what authority it is being withheld. Then, elsewhere in the report where classified information is omitted, a single sentence can be inserted referring readers back to the original statement.

If the Air Force feels that it is not legally required to provide environmental data to Congress about PLO 1662, then it should say so in the beginning of the report. Likewise, if the Air Force chooses instead to prepare a classified supplement for the PLO 1662 land, at least its existence should be mentioned in the public report. Making these statements explicitly, with clear definitions of what kind of data is withheld and within what geographic area, protects the reliability of the rest of the LEIS.

Unfortunately, a classified supplement also presents some problems. One of these is that most members of Congress will not have adequate clearances to read it. However, they will be able to read the rest of the LEIS with the confidence that nothing is being silently omitted.

Another problem with a classified supplement is determining what kind of data belongs in it. For

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can distinguish between the portion of Groom Lake which is within the NAFR and the portion that is within PLO 1662 land.

Table F-2 (Page F-3): The sequentially numbered Collector Watershed Designations for Emigrant Valley appears to omit "L-2". The data for this area should be included in the table.

Table F-3 (Page F-5): The sequentially numbered Alluvial Fan Designations for Emigrant Valley appears to omit "L-F2", "L-F3" and "L-F4". The data for these areas should be included in the table.

**Appendix G: Biological Resources Data (Volume 2)**

Appendices G-1 and G-2 fail to include any resource data for PLO 1662 land. If similar studies have been conducted for PLO 1662 land, they should be included here. If no such studies have been conducted, the report should state this.

**Part III: Conclusions and Recommendations**

The renewal of the Nellis Air Force Range, as its borders now exist, is a relatively straightforward and non-controversial action. Matters are greatly complicated by the inclusion of Alternatives 1B and 2B, which attempt to merge a highly secretive facility into a relatively open one. While some activities on the existing Nellis Range may be classified, basic geographic and environmental data is not. In the case of PLO 1662 and the facilities located there, the Air Force is attempting to withhold nearly all geographic and environmental information, even that which is available from open sources and that could have no possible bearing on national security.

In a series of annual Presidential Determinations (95-45, etc.), President Clinton has exempted the Air Force from certain environmental reporting requirements which all other military facilities, classified or unclassified, must obey. The President states:

I hereby exempt the Air Force's operating location near Groom Lake, Nevada from any Federal, State, interstate or local provision respecting control and abatement of solid waste or hazardous waste disposal that would require the disclosure of classified information concerning that operating location to any unauthorized person.

It is plausible that certain environmental data concerning hazardous waste disposal could pose a risk to national security. For example, if a hostile foreign power had access to the exact composition of soil samples from a classified location, it might be able to deduce something about the secret weaponry tested there. There is no need, however, for the Air Force to provide that kind of detailed data in the LEIS. The LEIS is mainly a broad summary of environmental data and compliance. It is not necessary that the Air Force reveal the activities at a classified location, but it should be able to state that it is in compliance with environmental regulations there. It should also be able to provide routine information about the natural environment and manmade artifacts (such as roads) that are plainly visible. Congress and the public may not need to know the exact nature of a certain hazardous waste site, but they should be informed that sites have been identified and be told how environmental clean-up will be affected by each of the proposed alternatives.

One weakness of the Presidential Determination is that it provides no geographic definition of the

Wednesday, December 30, 1998

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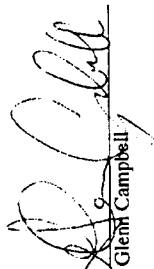
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renewal/campbell/

example, should information on area roads be withheld from the open LEIS, even if they appear on USGS topographic maps? Should the classified supplement include inherently unclassified data such as natural and cultural resources on PLO 1662 land, or should this data be provided in the public LEIS?

The Air Force has never had to deal with these problems because it has never said more than a few sentences publically about anything within the PLO 1662 land. About all it has acknowledged is that it "does have facilities at Groom Dry Lake." This longstanding silence about the area presents a "Catch-22" to the Air Force, because a generation of secretive behavior and protocols must now be modified. If the Air Force acknowledges that roads exist, then can employees reveal that they use the roads? If a survey has been conducted of natural resources, can the person who conducted it come forward to acknowledge his role?

For years, the official policy about the base at Groom Lake is that it "doesn't exist," and personnel who work at the facility or who are professionally aware of it are instructed to say nothing at all. Now, somebody must say something, at least to define what is classified, or the LEIS will be an ineffective document.

  
Glenn Campbell

12-30-96  
Date

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Wednesday, December 30, 1998

Victoria N. Hoover  
735 Geary Street, Number 501  
San Francisco, CA 94109

JAN 06 1999

December 28, 1998

To: Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

Re: Proposed Renewal of Withdrawal of Nellis Air Force Base lands from public domain

As a citizen who enjoys frequent journeys into the neighboring state of Nevada to explore some of its many mountain ranges, I would like to offer a comment on the current Draft Legislative EIS for the Air Force has prepared for Nellis Air Force Base.

1. Timing: It is reasonable to renew the withdrawal, which is due for reconsideration in 2001, but it should be withdrawn for not more than 15 years. The rapid pace of technology advance, the change in world events likely within a decade, all leave in doubt whether the withdrawal would still be needed in the same form after 10 or 15 years. It is imperative to allow further assessment of the needs of our military establishment in 15 years or less by another EIS rather than to lock in the withdrawal for a longer period of time or for an indefinite time.

2. Potential impacts on the lands involved: It is only in the last dozen years or so that the science of conservation biology has been born and blossomed and has offered considerable scientific knowledge on how large undisturbed tracts of wild land can preserve and enhance the biological diversity of an area. The land contained within the Nellis Air Force Base, of which only a small percentage (maybe as little as three percent) has been disturbed and altered by bombing exercises) offers a remarkable sample of the biological diversity of the biological and geological basin and range province. It is the responsibility of the Air Force, acting as steward of these lands in lieu of the Bureau of Land Management, due to the withdrawal, to guard the preservation of such biodiversity to the extent possible. To that effect, the Air Force should commit to constructing no roads within the considerable roadless areas on the base. Road construction has been shown to be a principal cause of loss of habitat, air pollution, and other significant disturbances to wildlife, both permanent residents and migrating species. In addition to such direct damaging effects of roads, it is also notable that, as our country gradually but steadily increases in population and in developed areas, the remaining, increasingly scarce roadless areas, become a resource of ever-increasing value. The expansion of human intrusions around the metropolis of Las Vegas is a prime example of this loss of habitat and loss of biodiversity through rampant sprawl-type development. The Air Force has the power to guard against needless intrusion effects at Nellis. The final LEIS should reflect clearly the vigorous intent of the Air Force to protect the biological diversity of the range, especially by avoiding road construction. I urge that the Keystone Report prepared by the Keystone Center-facilitated stewardship committee for Nellis, be incorporated into the final EIS.

While of course we still have and will always have gaps in our knowledge of conservation biology, that should not deter our land management agencies (the Air Force in this case) from vigorous action to protect biodiversity, using the best available science. In cases of uncertainty, the Air Force should allow a margin for uncertainty by setting protection standards that err on the side of caution.

4. Native American concerns: I ask that the Air Force act diligently to protect the rights and needs of Native Americans, guaranteeing them access whenever feasible to sacred sites that may exist in the Nellis territory. Such special sites should also be avoided when new structures are put in place and when bombing missions are designed.

5. I urge the Air Force to include in its final LEIS the release of approximately 30,000 acres near the west edge of Nellis (as outlined in subalternative 'b') in order to allow public access to several areas of interest, including an important area to lovers of wild lands that borders on the Kawich Range Wilderness Study Area, a WSA included in wilderness proposals by Friends of Nevada Wilderness and others.

Thank you for the opportunity to present these comments.

Sincerely,

*Victoria Hoover*  
Victoria Hoover  
(415)977-5527

cc. Nevada State Director, BLM

Michelle Satterlee  
822 W. First #1  
Reno, NV 89503  
michells@unr.edu

January 6th, 1999  
Nellis Air Force Range Renewal Office  
P.O. Box 9919  
Las Vegas, NV 89191-0919

To Whom It May Concern:

I am writing you today to stress the importance of maintaining biodiversity in the Nellis Air Range by protecting a significant portion of the area from development and test bombing. Please incorporate the Keystone Report in the final Draft Legislative EIS and inventory your roadless areas in accordance with BLM procedures. To maintain the unique biodiversity of this area, I encourage you to not build any structures or roads within the current roadless areas of the Range. It's also important that you recognize Native American rights and allow access to sacred sites existing on the range. Whichever alternative you select, I encourage you to choose the ObO subalternative which would release 30,000 acres and allow public access. Thank you for considering my opinions.

Sincerely,

*Michelle Satterlee*  
Michelle Satterlee

JAN 06 1998

12/28/98

Nellis Air Force Range Renewal Office  
Bx 9919  
Las Vegas, NV 89191-0919

BLM Nevada State Director  
Bx 12000  
Reno, NV 89520-0006

Dear Sir:  
These comments are in reference to the Nellis Air Force Range Legislative Environmental Impact Statement, Nov. 19, 1998.  
To me, the most important thing to remember is that these lands belong to all of the people of the United States. Although we have given temporary use of these lands to the Air Force for certain activities, we still own them. We have not only the right but the obligation to see that our land is treated as well as it can be, and to preserve as much access as possible to our land given the mission of the Air Force.  
Therefore, I believe that the biodiversity of the range should be protected to the greatest extent possible. The Keystone Report should be made a part of the final EIS. Roadless areas should be inventoried following BLM procedures, and there should be a requirement that these areas be protected by not building roads or structures in them, since these areas possess great values as natural areas. The Air Force can perform its mission while still protecting our land, and the EIS should make this clear.

Also, since this is our land, the renewal should be for a maximum of 15 years, so we can review the stewardship of the Air Force and take appropriate action if our land is being abused. Under no circumstances should a permanent withdrawal be authorized. Access by Native Americans should be permitted when possible, since these are some of their sacred lands. Also, Native American sacred sites should be respected and protected. Finally, to provide more access to our land, subalternative B should be selected regardless of which alternative is selected so that 30,000 acres could be released and better access to the Kawitch Range WSA could be provided.

Thank you for the opportunity to make these comments, and please keep my name on the mailing list.

Sincerely,

*Stan Hays*  
Stan Hays  
230 Larkspur St.  
Ridgecrest, CA 93555

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RECEIVED  
BUREAU OF LAND MANAGEMENT  
NEVADA STATE OFFICE  
59 DEC 29 AM 8:00

December 23, 1998

Nevada State Director  
Bureau of Land Management  
1340 Financial Blvd.  
PO Box 12000  
Reno, Nevada 89520

I am writing to protest the application of the Department of the Air Force seeking to extend the withdrawal of 3,038,698 acres of public land for the Nellis Air Force Range. At a time when the US Congress and the Department of Defense have recognized the need for military base closures, it is ludicrous to consider a request that would continue to remove so vast a quantity of land from public use.

I find it hard to believe that the Air Force can justify the need to hold over 3 million acres of Nevada wilderness for their exclusive use. Exactly how much of the land has actually been impacted by weapons testing and training? What amount of the 3 million acres is virtually untouched and merely being hoarded for future use? Such questions need to be answered before continued withdrawal is allowed. If only 1 million acres are in current use, then perhaps the application should be reduced to this number and all untouched, surplus land returned to the American public.

The Cold War is over. Across the country military bases are closing and land is being returned for conversion to peacetime uses. Even within the framework of active military training, weapons and their systems of delivery are changing to the point that the manned bomber will soon be a thing of the past. It is time to remove yet one more outdated vestige of military excess by forcing them to take only what they actually use.

I ask that you reject the application of the Department of the Air Force and instead begin a process of identifying surplus land for immediate return to public use. There is no justification for the continued withdrawal by the military of over 3 million acres of Nevada wilderness.

Please keep me informed of your decision in this matter. I will also be contacting my Congressional representatives to alert them to your pending action, and to request their support in denying the military's withdrawal extension.

Sincerely,

*Janet H. Johnson*  
Janet H. Johnson  
1224A Excelsior Avenue  
Oakland, California 94610

RECEIVED  
Bur. of Land Management  
8:00 A.M. DEC 23 1998

NEVADA STATE OFFICE  
RENO, NEVADA

Nevada State Director  
Bureau of Land Management  
1340 Financial Blvd.  
PO Box 12000  
Reno, NV 89520

2043 Berryman Street  
Berkeley, CA 94709  
December 18, 1998

RECEIVED  
DEC 31 7 33 AM '98

BUREAU OF LAND MANAGEMENT  
U.S. DEPARTMENT OF THE INTERIOR

SUBJECT: Extension of Land Withdrawal for Nellis AFB

Dear Director:

The BLM, as the ultimate custodian of the public lands, even those withdrawn for military purposes, retains at least a moral, if not a legal, obligation see that irrevocable and irreversible damage to these lands is avoided. In this regard, with respect Nellis AFB, the BLM should work with the US Air Force, and Congress, to achieve the following:

1. The extension of the land withdrawal should ideally be no longer than 15 years. At regular intervals the USAF should be required to justify the continued withdrawal of these lands from the public domain. Under no circumstances should the BLM support a "permanent withdrawal". Such a permanent withdrawal would give the military a blank check to destroy the land without regard to its ultimate return to the public domain.
2. Activities of the USAF at Nellis should be conducted with the knowledge, indeed, with the expectation, that significant portions of the base will one day be returned to the public domain, for the purposes of resource extraction or recreation.
3. Activities that disturb the landscape should be limited to areas already disturbed.
4. Undisturbed lands at Nellis should remain undisturbed.
5. The USAF should be required to prepare and submit a plan that describes how the withdrawn lands will be managed in order to protect the maximum acreage for eventual return to the public domain. While it is recognized that some areas, for whatever reason, would be dangerous and remain permanently closed, there are also large areas that could, if properly managed now, ultimately be returned to the public.

Thank you for considering my views.

*Dave Halligan*  
Dave Halligan



NTS Development Corporation

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
98 NOV 27 AM 8:00

November 24, 1998

Nevada State Director  
Bureau of Land Management  
1340 Financial Blvd.  
P.O. Box 12000  
Reno, NV 89520

Dear Director:

The Air Force has contributed much to support the growth of science and technology in the State of Nevada. The Nellis Air Force Range activities have also had a great deal of influence on Nevada's economy. These activities are important to Nevada and are those for which all Nevadan's should be proud.

The Range provides a safe and secure area to test and train for military operations; to protect and preserve the national security; and to ensure public safety. From our respective point of view in the community, we feel it is important that the Air Force continue to support the above. We believe it is also important for the Air Force to support other economic development activities that will contribute to the economic diversification of our State.

In this regard, the NTS Development Corporation (NTSDC), a private non-profit organization who works in partnership with the Department of Energy to promote the growth of science and technology in Nevada, needs the support of the Air Force to help us develop aerospace programs such as Kistler Aerospace's reusable K-1 launch vehicle and VentureStar, NASA's replacement for the space shuttle. These activities are complementary to activities pursued by the Air Force and should be considered as we look to the future of the Nellis Range.

There are also other uses that could be considered for Nellis Range land that is not being used. This should be pursued in a proactive partnership arrangement that could prove beneficial for all. The land, when needed by Nellis, would then be available for maintaining national security and training purposes.

2100 Paseo Del Prado, Suite C-101  
Las Vegas, NV 89101  
(702) 857-7900 Fax (702) 257-7999

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 1340 Financial Blvd.  
 Reno, NV 89502  
 December 30, 1998  
 98 DEC 31 AM 8:00

Topic: Public comments concerning the proposed extension of withdrawal of 3,038,698 acres or public land for the Nellis Air Force Range in the State of Nevada.

Dear Director:

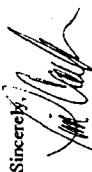
Thank you for this opportunity to comment on the proposed extension of withdrawal of approximately three million acres of public land for the Nellis Air Force Range in the State of Nevada. I trust that my verbatim comments will be conveyed to the members of Congress who will play a key role in deciding on this military land withdrawal issue. The following comments are in regards to the "Draft Legislative Environmental Impact Statement: Renewal of the Nellis Air Force Range Land Withdrawal" (DLEIS).

The Notice of Intent to prepare a Legislative Environmental Impact Statement for Nellis Air Force Range (NAFR) Renewal was published on page 27054-27055 of the May 30, 1996 edition of the Federal Register. Since that time the Air Force has crafted numerous changes in its proposed alternatives. The Air Force claims, in the DLEIS, that these changes reflect the public's desires. I believe that present selection of alternatives are mostly a product of closed door negotiations and strongly reflect the desires of the lead agency, the U.S. Air Force.

Section 1502.14(e) of the Council on Environmental Quality regulations (40 CFR 1502.14(e)) indicates that the agency's preferred alternative or alternatives should be identified. The draft document fails to do this but it appears that the Air Force would prefer that Alternative 1A be the foundation upon which the withdrawal legislation be prepared. The DLEIS indicates that there are now four action alternatives along with the No-Action Alternative. The action alternatives are listed as Alternative 1A, 1B, 2A and 2B. Under Alternatives 1A the Air Force is proposing the withdrawal of approximately 3,035,642 acres of public land be extended for an indefinite period of time. This essentially means forever. Under Alternative 1A the Air Force has proposed that it would periodically report "(e.g., every 15 years)" to Congress regarding its needs for the public land. It claims this process would reduce the administrative cost of following the regulatory provisions of the Federal Land Policy and Management Act (FLPMA) and the preparation of a LEIS. FLPMA and the LEIS process were created, partly due to the military's past record of taking and hoarding of public lands which were supposed to be under the administrative control of the U.S. Department of the Interior's Bureau of Land Management (BLM). The Air Force reports to Congress would, naturally, be biased in its favor. The holdings of such vast resources tends to be utilized, by the military, to serve as a justification for its traditional funding levels in its annual budget request to Congress. I suggest that

Nevada State Director  
 November 24, 1998  
 Page two

We firmly believe the Air Force should have access to the land for training and other national security purposes. We do, however, endorse a periodic review of activities that are in the best interest of all.

Sincerely,  
  
 Tim Carlson  
 President & CEO

TC/jw



Military Lands Withdrawal Act of 1986 (MLWA) (Pub. L. 99-606 §§ 1 to 15, Nov. 6, 1986). Apparently, when the 99 Congress passed the MLWA it did so out of ignorance that a large portion of the land that was being withdrawn was in fact under the administrative control of the DOE, rather than the Air Force. For 35 years the AEC/DOE has referred to the Pahute Mesa portion of the NAFR as part of its Nevada Test Site (NTS). Tons of official DOE documents, delivered to the public and to Congress, have consistently indicated that all of Pahute Mesa is part of the DOE's underground nuclear explosion test range. Approximately 80% of the nuclear explosion tests conducted in the NTS Areas 19 and 20 were actually conducted beneath lands which DOI has assigned to the Air Force for uses involving the surface and surrounding airspace. In 1986 Congress formalized the use of the land with the passage of the MLWA. That withdrawal decision was based upon the BLM records which failed to indicate that the Air Force and the DOE had engaged, decades ago in some back-door dealings involving the trading of uses of adjacent land parcels. Apparently these non-public, behind the scenes, dealings were conducted as if they were private contracts between two federal agencies. Now, under Alternatives 1B and 2B, the Air Force and the DOE hopes the Congress will bail them out of this little back room folly.

Since this LEIS process is supposed to deal with the environment rather than fixing past administrative follies I shall now address some of the environmental aspects of this little trade of uses for the Pahute Mesa region of the MLWA. The DLEIS provides little quantitative details concerning the existing environment of Pahute Mesa. Mostly the DLEIS simply indicates that DOE is handling the contamination situation and the DLEIS suggest that solutions are close-at-hand with the help of State of Nevada involvement in the Federal Facility Agreement and Consent Order (FFACO). Apparently the Air Force has little interest in exposing the real story.

The Operators of the Nevada Test Site, the DOE's Nevada Operations Office in North Las Vegas, Nevada, requisitioned the use of Pahute Mesa, from the Air Force, specifically to conduct deep, high-yield nuclear explosions. Sixty two of the explosions were conducted either below the water table or within 100 meters of it. Most of the radioactive debris, left by those "above water table" detonations, ended up below the water table. The average energy yield of these nuclear detonations far exceeded the yield of the bombs dropped on Hiroshima and Nagasaki, Japan.

Each nuclear explosion is, effectively, equivalent to the explosion of a nuclear reactor. The result is that the spent nuclear fuel and the unfissioned portion of the plutonium cores ends up being deposited in thousands of tons of rock and in subsurface fractures. The containment standards for this nuclear wastes does not even approach the strict EPA standards which are supposed to be applied to the nearby Yucca Mountain nuclear waste study site. That site is supposed to be able to contain spent nuclear fuel in multiple layers of carefully engineered barriers which are supposed to never be exposed to groundwater. What we have at Pahute Mesa is effectively scores of buried Chernobyl accidents.

Sincerely,

Vernon Brechin

255 S. Rengstorff Ave. #49  
Mountain View, CA 94040  
650/961-5123

Attachments: TABLE 1  
TABLE 2

CC: Ron Wyden - U.S. Senator, Oregon  
Frankie Sue Del Papa - Attorney General, Nevada  
Bob Miller - Governor, Nevada  
Lonnie Hammargren - Lt. Governor,  
Kenny Guinn - Governor Elect, Nevada  
Richard Bryan - U.S. Senator, Nevada  
Harry Reid - U.S. Senator, Nevada  
John Ensign - U.S. Representative, Nevada, District 1  
Jim Gibbons - U.S. Representative, Nevada, District 2  
Jeff Denison - (BWM) Nevada Div. of Environmental Protection  
Julie Butler - Nevada State Clearinghouse  
Heather Elliot - Nevada State Clearinghouse  
L.H. Dodgion - P.E. Admin. NV Div. of Env. Protection  
John Walker - Nevada Agency of Nuclear Projects  
Kenneth Reim - NTS-CAB  
Marry Manning - Las Vegas Sun, Las Vegas  
Pat Quinn-Davis - Nevada Appeal, Carson City  
Grace Potorti - Director, RAMA  
Rick Nielson - Director, Citizen Alert  
Lisa D. Shultz - Defense Expansion Oversight Network

TABLE 2  
Estimated Total Quantities of Radioactive Isotopes and Lead  
Left Deposited Below the Portion of Pahute Mesa  
That Lies Within the Nellis Air Force Range (NAFR)

Radioisotope	Half-life (years)	Radioactivity level (Curies)	Mass
Tritium (H-3)	12.32	58,000,000	5.6 kg
Cesium-137 (Cs-137)	30.7	1,300,000	14 kg
Strontium-90 (Sr-90)	28.78	950,000	7.1 kg
Technetium-99 (Tc-99)	213,000	250	15 kg
Iodine-129 (I-129)	15,700,000	0.78	15 kg
Plutonium (all isotopes)	~ 24,100	100,000	280 kg
Americium-241 (Am-241)	375,000	3,900	37 g
Neptunium-237 (Np-237)	2,140,000	30	43 kg
Curium-244 (Cm-244)	18.1	2,500	30 g
Carbon-14 (C-14)	5,715	460	100 g

Notes

The total level of radioactivity for all buried isotopes as of January 1, 1994 was approximately 60 million Curies with most of this being due to tritium which can flow freely with the groundwater.

In addition, there is likely to be over a thousand tons of lead buried under Pahute Mesa. The lead and radionuclides are dispersed into millions of tons of rock with some of the material having entered the groundwater. Some of the waste could be categorized as mixed transuranic waste and as such it would have to be dealt with according to various EPA regulations.

Not a single Curie, of the underground explosive debris, shows up in DOE's official listing of the radioactive waste materials it is responsible for. One reason for this is that the DOE has never bothered to define this buried nuclear debris as nuclear waste.

The NTS was evaluated for possible listing as a Superfund site but despite the presence of over 1,000 nuclear detonations it failed to make the grade. I have discovered that Navajo sheep dip troughs stand a better chance of being listed as Superfund sites.

(Refer to § 1(b) (2) and § 2(a))

Underground Nuclear Explosion Shots Conducted Below and Near the Groundwater Table, that also fall within the boundaries of the Land Covered by the Military Lands Withdrawal Act of 1986 (Pub.L. 99-606 §§ 1 to 15, Nov. 6, 1986)

TABLE 1

TABLE 1 is continued on the reverse side.

No.	Test Name	Drill Hole	Test Date	Test Depth (ft)	Yield (kt)	Location (geographic coordinates)	Water Test center relative to water table (feet below surface)
01.	Amirillo		06/27/89	2,100	29	37° 16' 32" N / 116° 21' 13" W	2,129
02.	Belmont		10/16/86	1,985	120	37° 13' 13" N / 116° 27' 42" W	2,013
03.	Benham		02/19/68	4,600	1,150x	37° 13' 53" N / 116° 28' 25" W	2,097
04.	Bexar		04/04/91	2,065	120	37° 17' 46" N / 116° 18' 46" W	2,152
05.	Boxcar		02/26/68	3,825	1,300x	37° 17' 44" N / 116° 24' 42" W	2,172
06.	Bodie		12/13/86	2,083	120	37° 15' 47" N / 116° 24' 42" W	2,172
07.	Bullion		06/13/90	2,211	150	37° 15' 42" N / 116° 25' 17" W	2,038
08.	Cabra		03/26/83	1,780	51	37° 18' 02" N / 116° 27' 36" W	1,926
09.	Camembert		06/26/75	4,300	750	37° 16' 44" N / 116° 22' 07" W	2,183
10.	Chancellor		09/01/83	2,051	143x	37° 16' 22" N / 116° 21' 18" W	2,102
11.	Charleau		05/06/66	2,188	73x	37° 20' 53" N / 116° 19' 58" W	2,178
12.	Chateaugay		06/28/68	1,992	51	37° 14' 44" N / 116° 28' 58" W	2,061
13.	Colby		03/14/76	4,178	1,000	37° 18' 22" N / 116° 28' 17" W	1,951
14.	Constock		06/02/88	2,035	73	37° 15' 36" N / 116° 26' 28" W	2,046
15.	Contact		06/22/89	1,785	58	37° 16' 58" N / 116° 24' 44" W	2,086
16.	Cybar		07/17/86	2,060	119x	37° 16' 43" N / 116° 21' 20" W	2,119
17.	Darwin		06/25/86	1,801	89	37° 15' 53" N / 116° 30' 04" W	1,975
18.	Delamar		04/18/87	1,785	89	37° 14' 52" N / 116° 30' 33" W	2,045
19.	Edmont		12/09/84	1,791	90	37° 16' 12" N / 116° 29' 51" W	1,949
20.	Emmenthal		11/02/78	1,890	3	37° 17' 17" N / 116° 17' 51" W	2,188
21.	Sacuary		03/09/76	2,848	360	37° 18' 36" N / 116° 21' 51" W	2,064
22.	Farm		02/16/78	2,261	120	37° 16' 24" N / 116° 34' 37" W	2,125
23.	Fonduta		04/11/78	2,077	67	37° 17' 59" N / 116° 14' 36" W	2,200
24.	Poncha		02/12/76	3,999	940	37° 16' 17" N / 116° 17" N	2,069

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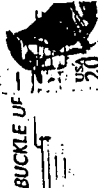
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Please don't let the Airforce take more land, if you do you will allow them to suppress and control what the people have a right to know. People have a right to know what their tax dollars are being used for. The Government is using the American people's tax dollars to run this installation and fund their expanding. We have a right to know what is being done up there because it's our money they are doing it with. Also the freedom of information act gives us the right to request information on such matters. If you allow the U.S. Airforce to take more land, you are allowing them to take the rights away from American citizens and ~~Barry~~ the trust.

*A. Gutierrez*  
*Widgen*  
*Daniel Dufrenoy*



Flying planes, Michigan. Member exposed to the...  
Consistency identify and develop protection plans to...  
save many of these species. Photo by Bobi Corbett

Dear Director,  
I ask that the public land withdrawn for Nellis Air Force base be returned promptly when the existing agreement expires in 2001. Three million acres for their destructive use is excessive.

Sincerely,  
Rodger Silbers  
3325 Los Prados St, #3  
San Mateo, CA 94403-3036

Nevada State Director  
Bureau of Land Management  
1340 Financial Blvd.  
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**ALAN SIRACO**  
 Attorney at Law  
 370 Grand Avenue, Suite 5  
 Oakland, California 94610  
 (510) 836-2574

December 30, 1998

Nevada State Director  
 Bureau of Land Management  
 1340 Financial Boulevard  
 P.O. Box 12000  
 Reno, Nevada 89520

Re: **UNITED STATES AIR FORCE APPLICATION TO EXTEND THE WITHDRAWAL OF LAND FOR THE NELLIS AIR FORCE RANGE**

**DESERT SURVIVORS' INTEREST IN THIS MATTER**

Desert Survivors is a non-profit organization of approximately 1,000 members, which has been dedicated for more than a decade to the exploration and protection of desert lands in the western United States. Our members are avid desert hikers many of whom frequently backpack into the lesser known areas of the Nevada and California deserts. We have conducted hiking trips in the lands around the Nellis Air Force Range, and the Nevada Test Site. We regularly participate in volunteer service projects to remedy degradation to desert areas with high wilderness value, and provide public comments on a wide range of private and public projects affecting the desert. We are very concerned about the United States Air Force's request to perpetuate the withdrawal of over 3 million acres of land for its Nellis training range. We recently provided comment regarding the USAF's intention to resume use of depleted uranium ordnance in its air-to-ground training and testing exercises at Nellis Air Force Base Target 63-10 which is included within the proposed withdrawal. It is our opinion that the request to close this tract of largely pristine land to all but military use is unnecessary and unwise.

We thank the BLM for the opportunity to comment on the proposed withdrawal and Legislative Environmental Impact Statement (LEIS). Our main concerns are discussed here. Should you have any questions, or wish further information on any point, do not hesitate to contact the undersigned.

Page 1 of 4

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**WE REQUEST A COPY OF THE LEIS AND ADDITIONAL TIME TO REVIEW IT**

First, we must request an extension of time to provide more complete comments and analysis of the LEIS. On December 2, 1998, the undersigned telephoned Dennis J. Samuelson as advised in the Notice of Proposed Extension of Withdrawal (63 FR at pp. 53096-53097, October 2, 1998) and left a message requesting that Mr. Samuelson either mail a copy of the LEIS or provide instruction as to where a copy might be obtained. I left my telephone number and mailing address. I never receive either a copy of the LEIS or a return telephone call. Thus, we have been unable to review the LEIS firsthand, and must rely for our comments on the assessments made by other organizations. Therefore, we are requesting here that a copy of the LEIS be provided to us and that we be given two weeks from the time we receive it to provide additional comment.

Without waiving that request, we are providing the following comments regarding the provisions of the withdrawal as we understand them.

**WE ARE OPPOSED TO THE GRANT OF A 3 MILLION ACRE WITHDRAWAL**

First, we are opposed to the withdrawal of over 3 million acres of largely pristine land. According to Friends of the Nevada Wilderness (FNW), only 3% of the acreage is actually used for bomber training missions. Up to 90% of the land is roadless and may be eligible for wilderness status. The vast majority of the uncontaminated land should be immediately returned to the American people as public land. While the military should provide stewardship over the land it occupies, it should not become a surrogate agency for the preservation of wilderness. Assuming for the sake of argument that some land is necessary for the purpose of training pilots, the USAF should be required to demonstrate the need of every one of the 3 million acres it is requesting to accommodate that purpose.

Assuming Congress insists on granting a withdrawal, we join FNW in requesting that subalternative "b" be chosen. According to FNW, the LEIS provides that subalternative "b" will release approximately 30,000 acres on the west side of the propose withdrawal and allow access to some areas in the north side, including an area adjoining the Kawich Range WSA. Desert Survivors believes this is too small an amount of land to be returned to public land use, but if it is at all possible, at least this acreage should be returned.

**WE ARE OPPOSED TO A PERMANENT WITHDRAWAL**

Assuming the withdrawal of any amount of land from public use is to be

Page 2 of 4

accomplished, it must not be withdrawn in perpetuity. The LEIS proposes a permanent withdrawal, with a 25-year withdrawal as an alternative. There is a growing consensus on behalf of environmental groups, Nevada state government and its elected federal representatives, with which we agree, that any withdrawal should not be for more than 15 years. First, by requiring an application to renew in 15 years, an assessment can be made regarding the USAF's stewardship performance. Second, the technology which the USAF wishes to test on this land is rapidly becoming of questionable value. As demonstrated by the current bombing of Iraq, the trend in warfare is toward more remote control of ordnance deliver bombs to their targets. Thus, the purpose and need of the withdrawal will likely change in less than 15 years. If the USAF disputes this, they should be required to provide information demonstrating the purpose and need for a permanent withdrawal. That is, they should be required to provide information as to what they will do the 3 million acres forever.

**ASSUMING A WITHDRAWAL IS GRANTED, IT MUST BE CONDITIONED ON THE USAF PROTECTING THE WILDERNESS AND INDIGENOUS CULTURAL VALUES OF THE LAND.**

Desert Survivors also supports the recognition of the value of western desert lands to the native American tribes which have lived here. The USAF should inventory culturally sensitive sites, and should identify sites still important to native Americans. Any degradation of these sites should be avoided, and native Americans engaged in ritual should be permitted access to the sites important to their culture.

Under no circumstance must a withdrawal provide license to degrade the pristine lands within the withdraw acreage. As condition for any withdrawal of currently roadless areas, the USAF should be required to inventory their roadless areas, and manage the land with the goal of preserving wilderness values; they must be maintained for biological diversity, undeveloped and roadless. We recommend that the USAF incorporate the Keystone report into the LEIS.

Finally, any withdrawal should be conditioned on the USAF's concrete plans for restoring the land they have degraded to its original condition. We must believe that there will be a time when weapons of violence will no longer be used in political contexts. When that time comes, the enormous acreage which the USAF wishes to withdraw must be as healthy as possible. The USAF should be required now to provide a promise and a plan for cleaning up the bombing ranges with a view toward returning them to public use when they are no longer needed.


**CONCLUSION**

We hope these comments have been helpful, and we reiterate our request for a copy of the LEIS and an opportunity to provide further comment.

Sincerely,



Alan Siraco  
 General Counsel  
 Desert Survivors  
 P.O. Box 20991  
 Oakland, California 94620-0991  
 510-768-1706



**BOARD OF COUNTY COMMISSIONERS**  
**ESMERALDA COUNTY, NEVADA**

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 (702) 485-3406

DEC 30 RECD

December 15, 1998

Nellis Air Force Range Renewal Office  
 P.O. Box 9919  
 Las Vegas, Nevada 89191-0919

Nevada State Director  
 Bureau of Land Management  
 1340 Financial Blvd.  
 Reno, Nevada 89520

**RE: DRAFT LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT  
 RENEWAL OF THE NELLIS AIR FORCE RANGE LAND  
 WITHDRAWAL.**

Dear Sirs:

Esmeralda County has reviewed the Draft Legislative Environmental Impact Statement - Renewal of The Nellis Air Force Range Land Withdrawal (LEIS) and provide the following comments.

We are appreciative of the opportunity to review and comment on the LEIS. We welcome this opportunity to realign our relationship with the Air Force.

Esmeralda County supports the military use of the land and agrees with the necessity of the continued use. After considering all of the factors, Esmeralda County supports Alternative 2B with the following variations to said Alternative.

- 1) Range Renewal of 15 years instead of 25 years. We feel the Air Force should be held accountable to the public for the use of public land and a shorter renewal period would give all interested parties better opportunity review the accountability.

COURTHOUSE, P. O. BOX 617, GOLDFIELD, NEVADA 89018

Page Two  
 December 15, 1998  
 RE: Comments LEIS Esmeralda County

- 2) Alternative 2B is requesting the withdrawal of approximately 2,911 million acres as opposed to 3,035 million acres currently withdrawn. Esmeralda County requests the additional withdrawal of the Eastern Goldfield Mining District, as defined on Figure 3.5-7 in the LEIS, comprising approximately 15,000 acres. We would further request the withdrawal of the Stonewall and Wagner Mining Districts also defined on Figure 3.5-7.

The Eastern Goldfield Mining District and Stonewall Mining District have resource potential in gold and silver, as defined on Table 3.5-2 in the LEIS, high to moderate. These districts contain proven reserves of precious minerals and have been actively worked prior to the district being withdrawn for federal use. Opening of this land to mineral exploration and development with today's modern recovery technique for mineral deposits would result in considerable improvement the Esmeralda County's economy. The enhanced economy would greatly offset the adverse impacts of the Nellis Air Force Range (NAFR) to Esmeralda County.

Nevada has led the nation in gold and silver production since prior to the turn of the century. In 1994 over 3 billion dollars in mineral resources were produced. Nevada produces 67% of our nation's gold and approximately one-third of the world's gold output. Mining contributes over 90 million dollars annually in State and Local taxes, including 40 million dollars in net proceeds of mine tax. Additionally, the highest paid sector of Nevada's population is employed by the mining industry, with an average annual salary of \$43,000.00. Mining directly employs approximately 12,500 people with an additional 30,000 people dependent on the industry for their livelihoods. As ore reserves are depleted statewide, new ones must be found.

The West side of the Nellis Air Force Range contains the above-referenced mining districts that would directly impact the economy of Esmeralda County. Esmeralda County firmly believes the return of this resource is not an unreasonable request and would compensate the County for the acres of public land in the proximate area to Esmeralda County controlled by the Nellis Air Force Range. Seventeen mining districts and parts of many others occur within the Nellis Air Force Range.

Nellis Air Force Range has had a devastating effect on the economy of Esmeralda County as well as a restrictive effect on mineral development in Nevada. Had this public land been open for exploration for the past 50 years, it is impossible to predict how many

Page Three  
 December 15, 1998  
 RE: LEIS Comments Esmeralda County

mines might be in operation or how large they might be today. Had these districts been open to exploration the deposits would likely have been developed in the 1970's and be profitable operations today.

Since World War II, the military's effect on the economy of Central Nevada has been disastrous. During World War II all mines and mills were shut down by the Special War Powers Act, Bill 208. With the mines shut down, the railroads fell upon hard times and were requisitioned by the war department, then scrapped to aid in the war effort. NAFR made mineral exploration and ranching east of Goldfield impossible. For the past 50 years Esmeralda County's population has been declining due to the above. The tax base as a result has eroded. After the war the U.S. Government rebuilt Japan and Germany but in Central Nevada the bombs are still falling, livestock stampeding, windows still rattle and new cracks are still showing up in the Historical Goldfield Courthouse. NAFR has been anything but a good neighbor.

Esmeralda County residents' quality of life, particularly in Goldfield, is affected by the activities on the NAFR. Some of the negative impacts are defined below and are not adequately addressed in the LEIS.

SONIC BOOMS - This is a major concern of the residents of Esmeralda County.

HIGH EXPLOSIVE NOISE - Is another concern of the Esmeralda County residents.

RESTRICTION TO MINING AND GRAZING. Esmeralda County comprises approximately 3,460 square miles, of which 98% is public land. Our survival depends on generating a greater economic base and opening of lands within 3 to 4 miles of Goldfield for the purposes of mining and grazing would help accomplish our goal.

SURFACE WATER - The concern of wildlife from the test range crossing into Esmeralda County if the surface water from which they drink is not completely safe, what affect would they have on Esmeralda County.

GROUND WATER - The Clean Water Action Plan (CWAP) was sent to the Vice President on February 14, 1998. It is a new initiative to focus new money and resources

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on the nation's most problematic watersheds. The Nevada Division of Environmental Protection and the U.S.D.A. Natural Resources Conservation Service was given the task to rank each of Nevada's 72 eight digit hydrologic units into one of four categories. Category 2 is defined as watersheds meeting goals, but needing action to sustain water quality. Category 4 is defined as watersheds where more data is needed to assess the condition. These watersheds lack data, critical data elements, or the data density to make a reasonable assessment at this time.

As shown of Figure 1 and Table 2 from the CWAP report, copies of which are attached, Hydrologic Units 1606003 - Southern Big Smokey Valley is defined as a Category 2 and 16060011 - Ralston-Stone Cabin Valley, is defined as a Category 4. Both of these Hydrologic Units are within the boundaries of the NAFR and Esmeralda County. Hydrologic Unit - 1606003 involves the source of the drinking water supply to the Town of Goldfield. It is important to Esmeralda County to have the Air Force share data relative to these units with the County, NDEP and NRCS.

The Counties in which the range is located receive P.L.T payments and the impacts on their counties are addressed in the LEIS. Esmeralda County, Goldfield in particular, is located very close to the NAFR and does not realize benefits commiserate with the land. We believe we should accrue some benefits in exchange for the negative effects on the community. As good will the Air Force should share more economic opportunity with Esmeralda County. The Air Force should consider the creation of jobs and economic stimulants for Esmeralda County.

The Air Force should set aside a portion of civilian employment opportunities at the Air Force facility to Esmeralda County residents.

The Air Force should set aside procurement for goods and services for vendors located within Esmeralda County as well as support vendors supplying goods and services to the Air Force to locate in Esmeralda County.

The Air Force should consider working with Esmeralda County Law Enforcement and Emergency Services for first responder preparedness. Esmeralda County desires entering into mutual aide agreements.

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The Air Force should agree to provide a safe secure corridor for rail and highway shipments of low-level radioactive waste, spent nuclear fuel, and other high-level radioactive waste through the NAFR, perhaps along the Valley Road and through Gate 700.

Even as Congress plans to trim U.S. Forces, close bases and cut the budget, the military is expanding bombing and training ranges in Nevada. For example, the Groom Range, the designation of the Navy's 5,500 square miles Supersonic Operations Area (SOA), the buyout of Dixie Valley, designation of the Hart Military Operations Area, as well as the bombing and contamination of 35,000 acres of public lands surrounding Fallon. At present over 4,145,039 acres of public lands are withdrawn for military use in Nevada. The Fallon Air Station plans to withdraw from public domain another 391,000 acres for bombing and electronic warfare ranges.

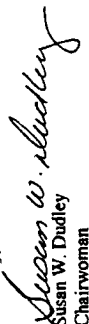
The State has continued to suggest that the Department of Defense provide compensation in the form of acre-for-acre land trade or exchange for any public land withdrawn for military use. Senator Richard Bryan has gone on record in favor of the acre-for-acre compensation. A letter to the Deputy Secretary of Defense John Deutch regarding the land withdrawal at Groom Range, Senator Bryan wrote: "I feel it would greatly benefit the continued public relationship if a comparable area of unneeded Department of Defense Land in Nevada could be made available for Public Use".

In conclusion Esmeralda County would like the Department of Defense to change its position on the closed door policy to County environmental, public safety and economic development concerns and work with the State and Local government on mitigation measures. If the closed door policy remains unchanged the DOD will remain out of touch with Esmeralda County's concerns and will reinforce our need to ensure the NAFR be held accountable to the State and residents of Esmeralda County.

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Thank you again for the opportunity to review and comment on the LEIS. We look forward to continue working with the Air Force on these issues. We encourage you to give serious consideration to these comment in preparing the Final LEIS.

Sincerely,

  
Susan W. Dudley  
Chairwoman

  
Gary O'Connor  
Vice Chair


  
Benjamin Viljoen  
Commissioner



Table 2. Continued

HUC #	Waterbody Name	Category	Priority
16050302	West Walker	1	16
16050303	Walker	1	9
16050304	Walker Lake	1	7
16060001	Dixie Valley	4	
16060002	Gabbs Valley	4	
16060004	Northern Big Smoky Valley	2	
16060005	Diamond-Monitor Valley	2	
16060006	Little Smoky-Newark Valley	4	
16060007	Long-Ruby Valleys	2	
16060008	Spring-Shapee Valleys	2	
16060009	Dry Lake Valley	4	
16060010	Fish Lake-Soda Springs Valley	4	
16060012	Hot Creek-Rainbow Valleys	2	
16060013	Cactus-Sarcobatus Valleys	4	
16060014	Sand Spring-Tharboon Valleys	4	
16060015	Ivampah-Palump Valleys	2	
17040211	Goose	2	
17040213	Salmon Falls	1	21
17050102	Brunson	1	17
17050104	Upper Owyhee	1	25
17050105	South Fork Owyhee	1	27
17050106	East Little Owyhee	4	
17120007	Warner Lakes	2	
17120008	Guano	4	
17120009	Alford Lake	2	
18080001	Surprise Valley	2	
18080002	Madeline Plains	2	
18080003	Honey-Eagle Lakes	2	
18090101	Mono Lake	2	
18090102	Crowley Lake	2	
18090201	Eureka-Saline Valleys	4	
18090202	Upper Amargosa	2	
18090203	Death Valley-Lower Amargosa	2	

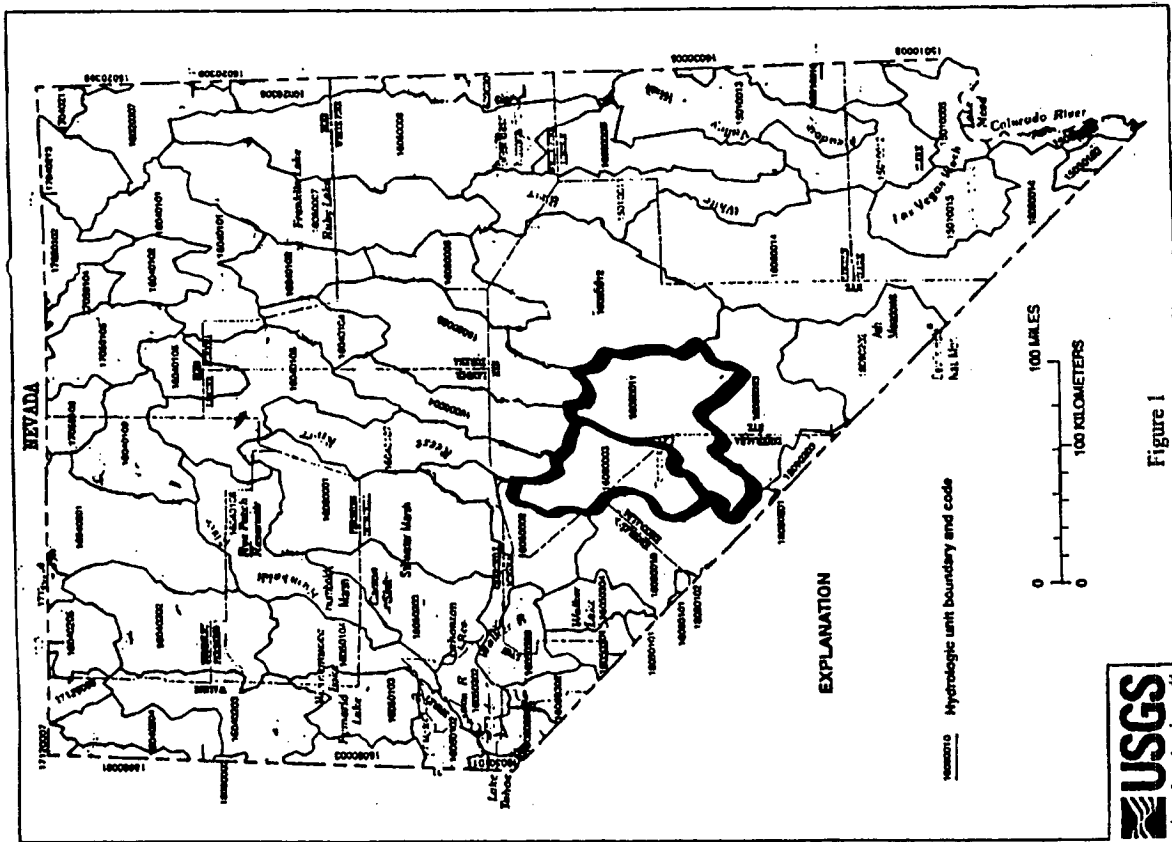


Figure 1

**NELLIS WITHDRAWAL WRITTEN COMMENTS - PAGE TWO**

that 15,360 acres comprising the Eastern Goldfield district be returned to local control, benefitting the town of Goldfield which has been the recipient of many adverse economic impacts over the years.

We also urge the release of land comprising the following mining districts:

- Reveille Valley - 2,560 acres
- Corral Springs - 5120 acres
- Silverbow - 7680 acres
- Cactus Flat - 30,720 acres
- Cactus Peak - 22,400 acres
- South of Mud Lake - 7,680 acres
- Gold Crater - 3,840 acres
- Thirsty Canyon - 16,640 acres
- Transvaal - 6,400 acres

These districts contain proven reserves of precious and industrial minerals and have been actively worked prior to their being withdrawn by federal edict. Today's modern recovery techniques for these previously worked mineral deposits would result in considerable improvement to our economy.


Of notable concern is the proposed indefinite withdrawal contained in this alternative. We agree completely with local and county government that withdrawals of land in our area should be authorized for periods of no more than 15 years. Additionally, the proposed areas of co-use would allow certain activities for periods of only one year. It is our desire to see much longer guarantees of public access to these areas.

Language proposing co-use includes the term "non-consumptive" which we read to mean that the land would be open for nothing more than hiking or birding. We contend that a sufficient number of wilderness areas have already been withdrawn from productive use and propose that these areas be opened to wood gathering (where practical and ecologically sound) and hunting, among other possible 'consumptive' uses.

Alternative 2B is nearly identical to 1B with the exception being a proposed withdrawal authorization of 25 years. As noted in our comments on 1B, we recommend that the withdrawal be authorized for no period longer than 15 years. The balance of this proposal is addressed by our comments under item 1B.

We respectfully request that the Department of the Air Force appreciate the depressed economic conditions of Nye and Esmeralda counties as set forth in this document as well as in resolutions regarding same which are attached. We urge the drafters of the final proposal to take into account the conditions and suggestions made herein and include them in said final proposal for acceptance by the United States Congress.

Respectfully submitted,



Sandy Harmon  
Executive Director

att: 5 resolutions

NAFR Renewal Office  
P. O. Box 9919  
Las Vegas, NV 89191-0919

November 3, 1998

Sirs:

As the economic development authority charged with improving the job base, tax base and quality of life for the county of Nye which contains a large portion of and has been impacted by the Nellis Air Force Range, and the county of Esmeralda which abuts and is impacted by this same federal reservation, I wish to address our concerns related to the renewal of the withdrawal of these lands and proposed alternatives thereto.

Nye and Esmeralda counties have borne the brunt of various federal programs over the years. Nye county is better than 93% federally owned, Esmeralda in excess of 97% federally owned. A sizeable portion of this land has been used for testing and training which involves nuclear and conventional arms and munitions, along with the use of many toxic chemicals. As a result, much of our land has been rendered dangerous, deadly to man, useless and non-productive for countless generations to come. The economic benefit of various federal projects on this land over the years has been received primarily the urban area to the south and outside of Nye and Esmeralda counties. Local benefits have been minimal and cyclic in nature. Our very survival depends on generating a diversified economic base which is not dependent on federal activities. This diversification mandates that land be available for the various industries attracted to our area, especially mining.

We find alternatives 1A and 2A as offering no relief from current conditions and are therefore unacceptable.

The 'no action' alternative may appear palatable to many local residents and businesses at first glance. However, the adverse impact on training missions which affect national security are worthy of careful consideration. The residents of this area are well known for their sacrifices and support of the defense of our country. Further, concern over whether or not that land which is safe for use by the public would be returned to the state and/or situs counties makes this a less than desirable alternative without considerable public input and guarantees. The loss of our few local jobs related to NAFR occurring under this scenario is of concern as well.

We believe that only two alternatives contain some benefits for our area and are worthy of further consideration and discussion, namely 1B and 2B.

Alternative 1B offers the release of 30,000 to 35,000 acres from military use, with no designation as to any planned recipient(s) but which we hope would be returned to the state or county (preferably) for disposal to the private sector for consumptive and other uses. Not only do we request that this land be returned formally to local government for beneficial use but believe that the acreage be increased beyond the Wagner and Clarkdale districts. It is our desire



- Sandy Harmon, Executive Director
- Lynn Johnson, Administrative Assistant
- Board of Directors
- B.L.M. Cameron, CF.M.
- Mike Brown
- Mike Chier
- Mike Barton
- Lewis Bonner
- Sue Boyer
- Harmon Fryer
- Ron Hunsinger
- Michelle Porteous
- Bob Rowen
- Tony Valle
- Mary Ball
- Mike Cerve
- Jim "Red" Copan
- Debbie Hittish
- Norman Peyton
- Ralph Box
- George Taylor
- Steve Bantel
- BLM's Communications
- Clay County Title Co.
- Dr. Robert Myers
- Oadfield
- Chamber of Commerce
- Langston / Sava Fe
- Subson / Blinc Club
- Nevada
- Business Services
- Jimmy Casale
- Nevada Pacific
- Nevada Mountain Gold Corp.
- Nevada Pacific Development Corporation
- Gold Benefactor
- Nevada State Bank
- Phoenix Benefactors
- Realty 500 - Tripp Rappin, Inc
- Sierra Pacific Power Co.

We're tempting!  
P. O. Box 153, Tonopah, NV 89049 / PHONE (702) 462-8139 / FAX (702) 462-7360  
e-mail: incident@blm.gov | home page: www.blm.gov/nv/ncf/ncf.html



**Appendix A**  
**TECHNICAL SUPPORT DOCUMENT**

**APPENDIX A**

**TECHNICAL SUPPORT DOCUMENT**

**NELLIS AIR FORCE RANGE**

**DESCRIPTION AND USE DATA**

**FOR**

**LAND WITHDRAWAL RENEWAL**

**LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT**

## APPENDIX A CONTENTS

Chapter 1.0	Describes baseline and alternatives relative to airspace use and operations.
Chapter 2.0	Provides detailed descriptions of the NAFR airspace and range areas as may be needed for relating this use to the different resource areas.
Chapter 3.0	Describes Nellis AFB and NAFR aircraft missions.
Appendix A.1	Provides NAFR, Indian Springs, and Tonopah Test Range flight profile information for different types of aircraft using NAFR.
Appendix A.2	Provides MTR sortie data and description of each route as contained in the <i>Flight Information Publication AP/1B</i> .
Appendix A.3	Provides detailed mission descriptions for each type aircraft.
Appendix A.4	Provides munitions data for NAFR and Silver Flag Alpha.
Appendix A.5	Provides total numbers of personnel trained on NAFR and at Silver Flag Alpha.
Appendix A.6	Provides information on NAFR ground activities such as vehicle use, threat emitters, radars, road miles, etc.
Appendix A.7	Provides list of sensitive and avoidance locations on NAFR.
Appendix A.8	No-Action Scenario Force Assumptions.
Appendix A.9	Provides an analysis of historical aircraft sortie data and the projection of a range of future aircraft operations at the Nellis Range Complex.
Appendix A.10	Provides land descriptions for the NAFR land renewal alternatives.

# 1.0 INTRODUCTION

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This Technical Support Document (TSD) was developed primarily to provide detailed information on airspace use and aircraft operations (sorties) for describing baseline conditions and assessing each of the alternatives for the Nellis Air Force Range (NAFR) land withdrawal renewal LEIS. It is also intended to serve as a "living document" for consolidating and maintaining consistency of other quantitative data for analyses. It is important that the same data be used by all analysts for consistency and credibility in the LEIS. The TSD supplements information that has been described in Chapters 1.0 and 2.0 of Volume 1 of the LEIS.

The airspace/operational data in this document consolidates airspace/range descriptions, sortie data, mission descriptions, and other data contained in the Air Force Description of Proposed Action and Alternatives (DOPAA), AFI 13-212 (NAFR Range Description and Capabilities), and other sources provided by Nellis AFB. This data should provide most of the operational detail needed to develop and model analyses for noise, air quality, flight safety, and airspace use.

## 1.1 DESCRIPTION OF BASELINE AND ALTERNATIVES

### 1.1.1 Baseline

The baseline for the TSD reflects the current use of withdrawn lands and associated special use airspace required to support ongoing tactical training operations conducted on NAFR. A wide spectrum of training capabilities, including scorable bombing and gunnery ranges, air-to-air ranges, and simulated electronic combat threat emitters, are available on NAFR to provide a realistic combat training environment. The special use airspace (military operations areas [MOAs] and restricted areas) also provides an ideal environment for air-to-air combat tactics and the Air Combat Maneuvering Instrumentation (ACMI) arena that provides real-time monitoring of these training activities. Training missions accomplished include air-to-air, tactical air-to-ground weapons delivery, ground based threat countermeasures, and conventional weapons delivery. Test and evaluation of tactics and weapons systems in a safe and secure environment dependent on NAFR.

### 1.1.2 Alternatives 1A & 1B — Indefinite Withdrawal

As described in Chapter 2.0 of the LEIS, Alternatives 1A and 1B address the renewed withdrawal of currently withdrawn lands for an indefinite period with periodic reports to Congress regarding the need for the lands and stewardship and informational programs. None of the action alternatives would involve any modifications to the existing airspace configuration or use. The current level of military activity on the NAFR is proposed to remain approximately the same for the future anticipating no significant change to current national policy. Some proposed changes to missions and aircraft are anticipated. The F-111 and EF-111 are scheduled to leave the Air Force inventory before this land renewal would take effect in the year 2001. It is expected that the F-22 and other not-yet-defined weapons systems may begin

using the NAFR prior to this land use renewal and would continue for the foreseeable future. Proposed F-22 testing, evaluation, and weapons school operations at NAFR will be assessed in a separate study. Other environmental mission changes include the addition of an Unmanned Aerial Vehicle Squadron at Indian Springs Air Force Auxiliary Field (ISAFAF) and a new test mission to be performed by the Defense Threat Reduction Agency.

### **1.1.3 Alternatives 2A & 2B**

Alternatives 2A and 2B are the same as Alternatives 1A and 1B except that the withdrawal period would be 25 years rather than indefinite. This alternative also has no airspace or operational changes associated with either Scenario A or B.

### **1.1.4 No-Action Alternative**

The No-Action Alternative entails not renewing the current NAFR withdrawn lands; therefore management of these lands would be turned over to appropriate public land management agencies. The military could no longer deliver any type of ordnance or operate ground facilities on the former withdrawn lands. The airspace over the formerly withdrawn NAFR would still exist. This airspace would be expected to be changed to a minimum altitude of 100 feet above ground level (AGL) to remain as restricted airspace or revert to MOAs, as coordinated with and agreed upon by the FAA. MOA airspace would not offer the same level of safety as restricted airspace.

NAFR closure would be expected to result in immediate reductions in aircraft activity and facilities operations. Uncontaminated lands would be returned to the BLM for administration and multiple use. Target sites and other ground facilities (including major facilities at Tonopah Test Range (TTR), Tolicha Peak EC Range (TPECR), and ISAFAF and smaller facilities throughout NAFR ) would be returned following appropriate actions for national security and decontamination to meet applicable standards and regulatory schedules.

For the purposes of the LEIS, an activity reduction scenario has been prepared. This scenario would reduce the staffing of Nellis AFB and activities over what was NAFR by approximately 50 percent. Detailed reductions in force assumptions (by Air Force Unit) are presented in Appendix A.8.

## **1.2 SORTIE DEFINITION/ASSUMPTIONS**

Sortie information contained in this document was provided by Nellis AFB and extracted from the NAFR Utilization Report database. In this database a "range sortie" or "sortie-operation" is counted each time an aircraft flies in or through a numbered range, electronic combat range, or military operations area. As an example, an F-16 taking off from Nellis AFB on a Red Flag flight will typically fly through 10 to 12 different airspace/range subsections before returning to land at the base. For large composite forces flying on the NAFR, the daily schedule reserves the airspace for one aircraft because it is not known until a day prior how many aircraft will be participating in the exercise package. Range Operations is informed of this number of aircraft

on the day of the occurrence. This number of aircraft then represents the number taking off from Nellis AFB and is used to estimate range sorties or sortie-operations.

Day sorties are from 6:00 A.M. to 10:00 P.M. Night sorties are those that occur after 10:00 P.M. Few night sorties are flown on the NAFR Nellis AFB due to noise abatement procedures. "Night" Red Flags are expected to be completed by 10:00 P.M.

### **1.3 DOCUMENT ORGANIZATION**

Chapter 2.0 describes all airspace/range elements and operations associated with NAFR mission activities. Chapter 3.0 describes the types of flight missions conducted. Appendices contain all the sortie data, specific aircraft mission descriptions, munitions use, and other data provided by the Air Force.



## 2.0 NELLIS AIR FORCE RANGE (NAFR) AIRSPACE AND RANGE DESCRIPTIONS

---

This Chapter describes the different types of airspace and most common transition corridors established for the NAFR to protect flight operations and land-based activities associated with Air Force test and training mission requirements. Also described are other airspace areas associated with NAFR flight operations, to include the Low Altitude Tactical Navigation (LATN) areas, the ISAFAF Class D airspace, and the Las Vegas Class B airspace. Published avoidance areas for towns, residences, farms, mines, wildlife management areas, etc. are also listed in Appendix A.7.

### 2.1 NAFR AND NEVADA TEST SITE (NTS) AIRSPACE

The NAFR Complex is composed of the Desert and Reville MOAs with overlying Air Traffic Control Assigned Airspace (ATCAA) and five restricted areas: R-4806E, R-4806W, R-4807A, R-4807B, and R-4809 (not including R-4809A) as shown in Figure 2-1. The NTS, operated by the Department of Energy (DOE) and located southwest of and adjacent to the NAFR, is protected by restricted areas R-4808N and R-4808S. The TTR, operated by Sandia National Laboratories for the DOE is protected by restricted area R-4809A. The Defense Mapping Agency Nellis AFB Range Chart NRCXX01, Edition 4, dated 9/95 provides more specific detail in correlating designated airspace areas to withdrawn land topography and uses. Each airspace area/subsection and their uses as they relate to NAFR operations are described in more detail below. Sortie data for each range subarea and flight profile information for each aircraft type using the NAFR are provided in Appendix A.1.

#### 2.1.1 Military Operations Areas (MOAs)

By definition, a MOA is airspace established to separate or segregate certain nonhazardous military activities from instrument flight rules air traffic and to identify for visual flight rules traffic where these activities are conducted. The Desert and Reville MOAs are used for conducting air-to-air intercept training which consists of high speed operations, abrupt maneuvers, and supersonic flight at and above 5,000 feet AGL. The base of the MOAs is 100 feet AGL. Since the ceiling MOA altitude is limited by federal ruling up to, but not including, 18,000 feet above mean sea level (MSL), ATCAA is provided on an as needed basis by the FAA to extend airspace from 18,000 feet MSL to the higher altitudes needed to accommodate the flight training requirements. ATCAAs are only activated for use while scheduled aircraft operations are being conducted within the higher altitudes above the MOAs. Specific information for each MOA and associated subsection follows:

- **Reville MOA.** This airspace comprises the northern portion of the NAFR and is normally controlled by the Federal Aviation Administration's (FAA) Salt Lake Air Route Traffic

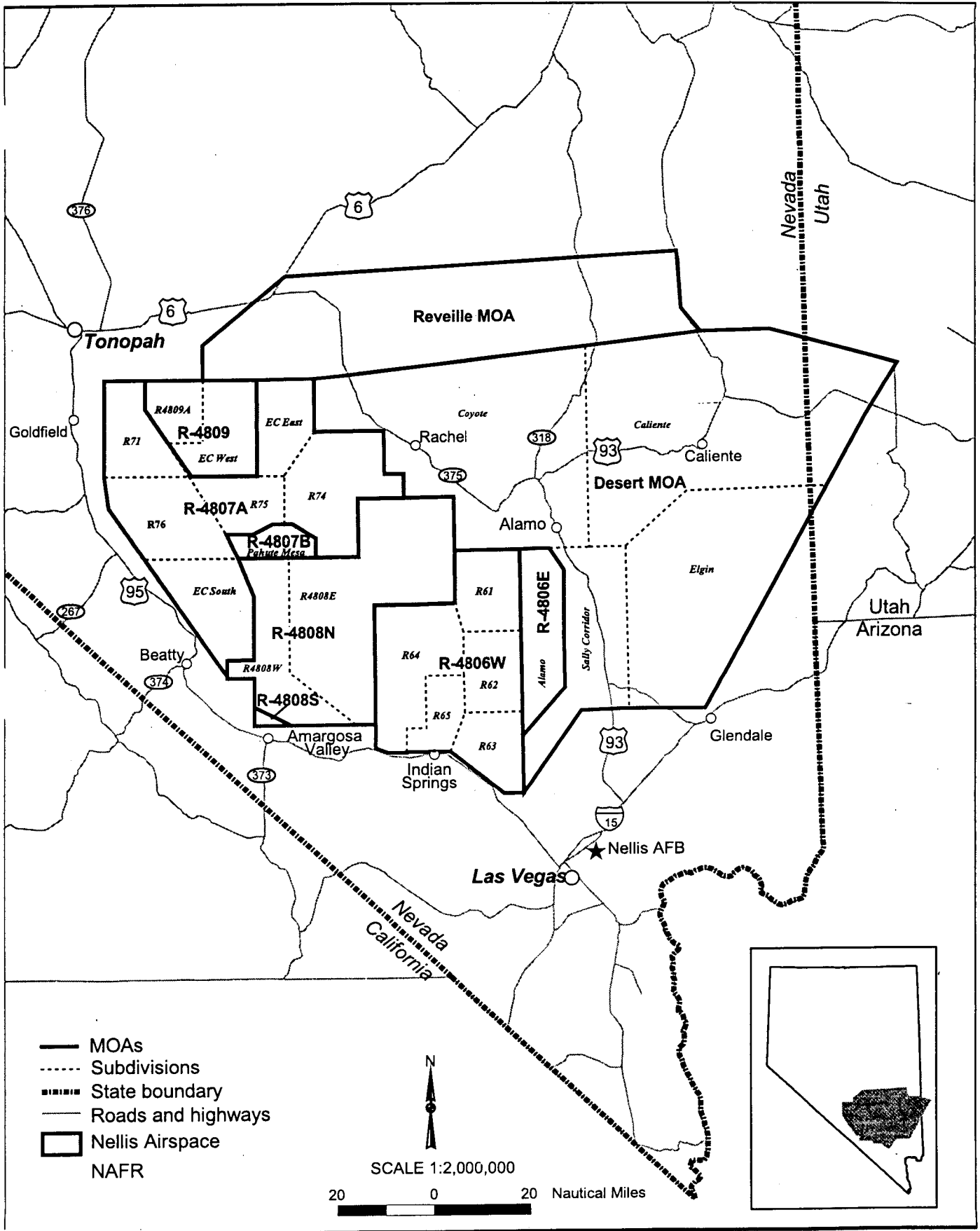


Figure 2-1. Nellis Air Force Range Airspace

Control Center (ARTCC). Since a jet route used for east-west transit of civil air traffic is situated within the Reveille MOA, Nellis must schedule use of this airspace in advance.

- **Desert MOA.** The Desert MOA comprises the eastern half of the NRC and is active daylight hours Monday through Saturday and by Notice to Airmen (NOTAM) during other hours. It is divided into five subsections: Alamo (Alpha, Charlie, and Bravo), Elgin, Caliente (East and West), Coyote (Alpha, Bravo, and Charlie), and the Sally Corridor. With the exception of the Sally Corridor, these MOA subsections begin at 100 feet AGL.
  - ◆ *Alamo (Alpha, Bravo and Charlie).* This section is an air-to-air training area. (These subsections are the same as restricted area R-4806E and become part of the Desert MOA when hazardous activities are not scheduled for R-4806E). R-4806E is published as active from 0500-2000 hours (0600-2100 DT) Monday through Saturday or as otherwise issued by a NOTAM. Alamo is entered/exited from the Sally Corridor.
  - ◆ *Elgin.* This section is the primary air-to-air training area and contains the ACMI range. Aircrews normally enter/exit this area via the Sally Corridor.
  - ◆ *Caliente (East and West).* Also an air-to-air training area, Caliente is normally scheduled as a whole but can be divided into the east and west subsections. Aircrews will normally enter/exit Caliente West via the north end of the Sally Corridor and Caliente East via designated Military Training Routes (MTR) or along a line running from the north end of the Sally Corridor to the southwestern corner of Caliente West.
  - ◆ *Coyote (Alpha, Bravo, and Charlie).* Coyote provides airspace for tactical training maneuvers while en route to R-4807 (70 series ranges and electronic combat ranges).
  - ◆ *Sally Corridor.* The Sally Corridor is the transition route between Nellis AFB and portions of the Nellis Range Complex (NRC). This corridor begins at 9,700 feet MSL.

### 2.1.2 Restricted Areas and Range Subsections

By definition, a restricted area is airspace within which the flight of aircraft, while not wholly prohibited, is subject to restriction during scheduled periods when hazardous activities are being performed. Restricted airspace may be designated as joint use, whereas non-participating civil or military aircraft may be routed through this airspace by air traffic control when activities are not scheduled. Some restricted areas are not designated for joint use, therefore use by non-participating aircraft is normally not permitted at any time. Within NAFR/NTS complex, restricted areas R-4806 and R-4807 are joint use which means that non-participating aircraft may be cleared through these areas by air traffic control when they are not in use; R-4808 and R-4809 are not joint use due to the continuous nature of hazardous activities, therefore, they are always unavailable to non-participating aircraft. Specific descriptions of each restricted area and their subsections follow:

- **Class A.** A Class A range is staffed, has a scoring capability from the ground, and has a (certified) Range Control Officer (RCO) on the ground who controls aircraft using the range.
- **Class B.** A Class B range is either staffed or unstaffed, has a scoring capability from the ground, but does not have a RCO on the ground controlling aircraft. The flight lead, forward air controller (FAC), or other person, as briefed, will have RCO responsibilities.
- **Class C.** A Class C range is not staffed, and has no scoring or aircraft control from the ground. The RCO function may be performed by the flight lead, FAC, or other person as briefed.
- **R-4806 (R-4806E and R-4806W).** R-4806E becomes restricted airspace when Alamo Alpha, Bravo, and Charlie are not used as part of the Desert MOA. Targets are located within the central portion (Alamo Bravo) of R-4806E. R-4806W is divided into 11 different subsections (61, 62B & C, 63 & 63A, 64A-D, and 65N & S) that are used for conventional bombing and gunnery testing and training as specified below.
  - ◆ *Range 61.* This unmanned range contains one anti-personnel interdiction target utilized by helicopters. Part of the Dart East air-to-air gunnery range is located within R-61.
  - ◆ *Range 62B/C.* These ranges contain targets primarily in and around the Dogbone Lake that consist of an airfield, bomb circles, supply area, convoys, and AAA /SAM sites. All targets are TOSS scorable except for a Cluster Bomb Unit target. Portions of the Dart East and South air-to-air gunnery ranges are located within R-62.
  - ◆ *Ranges 63/63A and 65N/S.* These are manned bombing ranges that contain numerous scorable targets. Ranges 63/63A are used primarily for Operational Test and Evaluation missions and night conventional weapons training and as a backup day conventional weapons delivery range. They can accommodate live or inert or conventional training air-to-ground deliveries with Televised Optical Scanning System (TOSS) scoring and Kineto Tracking Mounts. These ranges are also used for small arms live-fire training. On the northern border of R-63 extending into the southern border of R-62 is the manned communications threat site (63BB). Ranges 65N/S are used primarily for day conventional weapons delivery training. Several tactical targets are included. Portions of the Dart West and Dart South air-to-air gunnery ranges are located within R-65.
  - ◆ *Ranges 64A/B/C/D.* R-64A and D are used primarily as training areas for helicopter operations and transition area for aircraft going into R-65. No ordinance is authorized in R-64A. R-64B/C contain tactical targets such as tanks, convoys, and simulated AAA/ missile sites. Portions of the Dart West and South air-to-air gunnery ranges are located within R-64.
  - ◆ Except for the extreme northern portion of this restricted area, all of R-4806E/W lies within the Desert National Wildlife Range (DNWR). For that reason, aircraft are to remain above 2,000 feet AGL unless mission accomplishment requires lower altitudes

and air-to-air gunnery operations are conducted above 10,000 feet MSL. Also, there is an 8,000 feet MSL restriction within 2 nautical miles (NM) of the U.S. Fish and Wildlife Corn Creek Station, which is located in the southeast corner of R-63.

- **R-4807 (R-4807A and R-4807B).** R-4807A is subdivided into several subsections that include 71N/S, 74A/B/C, 75E/W, 76/76A, Electronic Combat (EC) South, TPECR, the Tonopah EC Range (TECR) which is made up of EC East and EC West, and the Cactus EC Range (not depicted on map). R-4807B is subdivided into Pahute Alpha and Pahute Bravo. These subranges are described in more detail as follows:
  - ◆ *Ranges 71N/S.* These unmanned ranges are Class B for TOSS scored targets and Class C for all others.
  - ◆ *Ranges 74A/B/C.* R-74A contains no targets; R-74B/C contain numerous tactical targets that include a simulated oil field, bomb circles, tank convoys, an airfield, industrial complex, tank company/elements, munitions storage,, missiles sites, regimental/battery headquarters, etc. No TOSS is available on R-74.
  - ◆ *Range 75E/W.* R-75E/W is Class B for TOSS scored targets and Class C for all other targets. R-75W consists of missile sites, convoys, signal platoons, air defense artillery units, infrared targets, and other target arrays.
  - ◆ *Range 76/76A.* R-76/76A is a Class B range for TOSS scored targets and a Class C for all other targets. Target arrays consist of airfields, missile sites, industrial areas, a railroad complex, convoys, command and control centers, and tank arrays designed for infrared training. Live ordnance is allowed on some targets; inert training ordnance is allowed on all targets. Two areas, FAC Alpha and FAC Bravo, located within R76 are designated ground party safety zones when scheduled for use. Manned threat emitters are sometimes located in these zones.
  - ◆ *TPECR.* This is a manned electronic combat threat simulator range. There are no bombable targets on this range and no ordnance is expended on the TPECR.
  - ◆ *TECR (EC East and EC West).* TECR is a manned electronic combat threat simulator range containing no bombable targets. Aircrews are prohibited from expending ordnance anywhere within the TECR complex. Note: EC West is that portion of R-4809 that excludes R-4809A.
  - ◆ *EC South.* EC South is divided into eastern (Alpha) and western (Bravo) areas and is a manned electronic combat threat simulator range containing no bombable targets. Aircrews are prohibited from expending ordnance anywhere within EC South. Note: EC South Alpha extends from the surface to 13,000 feet MSL to allow an overlying corridor (Caesar Corridor) above 14,000 feet MSL to transition aircraft from the northern ranges for recovery to Nellis AFB.

- ◆ *Cactus EC Range*. This is a small manned electronic combat range located in the east side of R-71. Cactus EC Range is an extension of EC West.
- ◆ *R-4807B (Pahute Mesa)*. R-4807B land area is used by the DOE as an annex to the NTS and the Air Force uses the airspace for overflights.
- **R-4808 (R-4808N/S/E/W)**. R-4808 is controlled by the DOE for NTS activities. R-4808S is used jointly by the NTS, Nellis AFB, and the FAA Los Angeles ARTCC to accommodate DOE activities and permit aircraft to overfly the southwest corner of R-4808. R-4808N is divided into R-4808 E and R-4808W for air traffic purposes. R-4808E is not used for NAFR flight training operations and any overflight is restricted to emergency aircraft and other DOE approved missions subject to restrictions. R-4808W is used for limited overflight of NAFR aircraft while following locally published departure and recovery routes. Altitude restrictions apply over DOE activities associated with the Yucca Mountain Site Characterization Project within this restricted area.
- **R-4809 (R-4809A and R-4809B)**. Portions of R-4809 are established for joint use by the DOE and Air Force. R-4809A extends from the surface to unlimited and is not available to NAFR users; however, the TTR Airfield, located within R-4809A can be used as a divert base for in-flight emergencies. Other portions of R-4809, including R-4809B comprise EC West, an electronic combat range discussed above.

### **2.1.3 Supersonic Training Area**

Supersonic flight is approved within the Desert MOA, ATCAAs, and R-4806E from 5,000 feet AGL to infinity except for the restrictions in Appendix A.7 from AFI 13-212, Vol 2, Nellis AFB Supplement 1.

## **2.2 NAFR SUPPORTING AIRSPACE AREAS**

Several airspace areas, such as LATN areas, MTRs, and air refueling tracks, are established within or adjacent to the NAFR to support flight training operations, as described in this section.

### **2.2.1 Low Altitude Training Navigation (LATN) Areas**

LATNs are unrestricted airspace areas established on the east and west sides of the NAFR for A-10s to practice random selection of navigation points and low altitude tactical formations between 100 and 1,500 feet AGL. These areas are normally used when no airspace is available for this type of training within the NAFR complex. While operating in these areas, aircraft must remain clear of residential, populated, and noise sensitive areas. LATNs are not depicted on aeronautical charts however local airports and aviation groups have been advised of their existence and associated operations.

## 2.2.2 Military Training Routes (MTRs)

Twenty-one different MTRs are located adjacent to or within the NAFR Airspace Complex. These routes permit operations at airspeeds in excess of 250 knots while providing training in low altitude tactics and navigation. MTRs are established as instrument routes (IRs) or visual routes (VRs). Five of these routes enter restricted air space within the NAFR or terminate at the NAFR boundary. Some of the 21 routes may be used when ingressing/egressing NAFR range target areas, during both routine training and exercise. The various alternatives addressed in the LEIS would not be expected to result in the establishment or elimination of any of the MTRs near the NAFR. It is assumed that the No Action Alternative would result in a 50 percent reduction in use of four of the MTRs that enter or abut the NAFR. Specific locations, altitude information, and operational restrictions for each route can be found in the DOD Flight Information Publication Area Planning AP/1B (Appendix A.2) and associated Chart for the Western United States. A table showing currently available sortie and operational data for each MTR is also included in Appendix A.2. Most of these MTRs were excluded from detailed project-specific analysis because they are not used in conjunction with NAFR and would not be modified under the No Action Alternative.

## 2.2.3 Air Refueling (AR) Routes

ARs consist of rectangular blocks of airspace that are used to refuel aircraft. Those ARs within or immediately adjacent to the NAFR complex used to sustain aircraft operations during training activities/exercises are as follows:

- **AR-625.** Located adjacent to the northwest corner of the NAFR complex; has low (FL180-210) and high (FL230-250) tracks that may be used simultaneously.
- **AR-641A.** Located within Caliente and Cedar portion of the Desert MOA and ATCAA; published altitudes are 12,000 MSL-FL230.
- **AR-641B.** Located in Caliente, Cedar, Reveille ATCAAs and Salt Lake City ARTCC Class A airspace adjacent to and within the northeast corner of the NAFR complex; published altitudes are FL190-FL230.

Two other ARs, AR-624 and AR-635 located, respectively, 50 NM southeast and 25 NM north of the NAFR complex, also support NAFR operations, as necessary.

## 2.3 AIRPORT, TRANSITIONAL, & AVOIDANCE AIRSPACE AREAS

Airspace areas are established around airfields and, in some cases, along transition routes to help identify areas of high density aircraft operations and to protect all military and civil aircraft operating within these areas. Additionally, some flight restrictions are imposed locally around land use areas that may be adversely affected by low level aircraft operations. The following sections describe each of these areas as they relate to Nellis AFB and NAFR aircraft operations.

### **2.3.1 Indian Springs Air Force Auxiliary Field (ISAFAF)**

ISAFAF, located on the southern boundary of R-65S, provides basing for unmanned aerial vehicle (UAV) operations, aircraft staging support, and emergency/divert recovery for NAFR operations. It is also the primary training location for the Thunderbirds Air Demonstration Squadron. The Indian Springs control tower provides air traffic control services within this area any time NAFR or ISAFAF has flying operations scheduled for the local area. Aircraft operational data for ISAFAF is contained in Appendix A.1.

### **2.3.2 Tonopah Test Range (TTR) Airfield**

The TTR Airfield is located within R-4809A and is available to NAFR aircraft operations for emergency landings only. Operational data for Tonopah is contained in Appendix A.1.

### **2.3.3 Nellis AFB**

Nellis AFB and McCarran International Airport are surrounded by the Las Vegas airspace, which is a class of airspace that is characteristic of any airport environment having a high volume of air traffic. This irregular shaped airspace extends from 20-25 nautical miles (NM) south and east of Las Vegas/Nellis AFB to the southern boundary of the Desert MOA (Sally Corridor). All aircraft entering or transiting through this charted airspace must be in contact with and under the positive control of either the Nellis or McCarran radar approach control facilities, depending on their point of entry. The positive, protective nature of this airspace enhances flight safety for military aircraft operating between Nellis AFB and the NAFR, as well as civil aviation transiting through this high air traffic density area. Aircraft operational data for Nellis AFB is contained in Appendix A.1.

### **2.3.4 Alert Area A-481**

An Alert Area is, by definition, an area established and charted on aeronautical maps to inform pilots of a specific area wherein a high volume of pilot training or an unusual type of aeronautical activity is conducted. Alert Area A-481 is established from Nellis AFB westward to alert civil aviation of high-density military aircraft operations transiting between the base and the western portion of the NAFR. A-481 begins at 7,000 feet MSL and extends to a ceiling of 17,000 feet MSL.

### **2.3.5 Range Transition Corridors**

Two corridors are used primarily to transition aircraft between Nellis AFB and the NAFR. As discussed in section 2.1.1, the Sally Corridor portion of the Desert MOA is used for transit to and from the Desert and Reville MOAs and the 60 and 70 series ranges. The Lee Corridor, which runs south of the NAFR between Nellis AFB and entry/exit points of R-4808S and R-4807, can also be used for transition to and from the 60 and 70 series ranges.



### **2.3.6 Low-Level Avoidance and Noise Sensitive Areas**

Low-level avoidance and noise sensitive areas have been identified for various locations within and around the NAFR. These locations must be avoided by established horizontal and vertical distances for flight safety, noise sensitivity, and environmental sensitivity. A list of low-level avoidance and noise sensitive areas for the NAFR area, as published in AFI-250 (NAFB supplement) are contained in Appendix A.7. Temporary flight restrictions are also occasionally established within NAFR, such as for periods when the Bureau of Land Management (BLM) is conducting fire fighting activities.

## **3.0 CURRENT NELLIS AIR FORCE RANGE MISSIONS**

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This chapter describes the different types of missions currently conducted on the NAFR, those portions of the NAFR airspace used to conduct these missions, and the standard routes normally flown during these missions when transiting between Nellis AFB and the NAFR. Detailed descriptions of each aircraft mission are provided in Appendix A.3.

### **3.1 TRAINING MISSION DESCRIPTIONS**

#### **3.1.1 Aircraft/Organization Missions**

Flying training at NAFR includes these basic levels of training: upgrade, requalification, continuation, weapons instructor, and composite force. Mission profiles describe how flights are conducted and are denoted by the types of training missions to be accomplished as follows: air-to-air training, tactical air-to-ground weapons delivery training, ground based threat countermeasures training, and conventional weapons delivery training. The four general airspace areas that support these training missions on the NAFR are the MOAs, 70 series ranges (R-4807), Electronic Combat Ranges, and the 60 series ranges (R-4806). Table 3.1 summarizes (1) the types of flying training missions normally conducted on the NAFR by the different aircraft types assigned to Nellis AFB and (2) those airspace/range areas where these missions are conducted, and the average amount of time (minutes) in the airspace. Specific details of each mission type is included in Appendix A.2. These missions also generally reflect those performed by transient aircraft conducting non-Flag training on the NAFR.

Missions currently performed by other organizations at Nellis AFB include the following:

Air Force Air Demonstration Squadron – Practices conducted at ISAFAF within R-65 and occasionally at Nellis AFB.

11th and 15th Reconnaissance Squadrons – UAVs will operate primarily in R-63, R-64, and R-65. Other ranges may be used for target acquisition practice.

Sandia National Laboratories – Test operations in the TTR (R-4809A).

Desert Warfare Training Center – Silver Flag Alpha small arms live fire and tactics in portion of R-63.

**Table 3.1 Aircraft Missions and Airspace Performed**  
(page 1 of 2)

Aircraft	Type of Mission	Airspace Used (Avg. Time-Min.)
F-15C	Aircraft Handling Characteristics	MOAs (30)
	Basic Fighter Maneuvers	MOAs (30)
	Air Combat Maneuvers	MOAs, or 60 series and Alamo (30)
	Step down training	MOAs or Alamo and 60 series, or 70 series and ECRs (50)
	Tactical Intercepts	MOAs, 70 series and ECRs (45)
	Night	70 series, ECRs, and MOAs (30)
	Dissimilar Air Combat Tactics	MOAs and 70 series (45)
	Mission Employment	MOAs, 70 series, and ECRs (90)
F-15E	Advanced Handling Characteristics	MOAs (45)
	Basic Fighter Maneuvers	MOAs ((30)
	Tactical Intercepts	MOAs and 70 series (60)
	Air Combat Maneuvering/Tactics	MOAs, 70 series, and ECRs (45)
	Surface Attack	60 or 70 series (60)
	Surface Attack Tactics	70 series and ECRs (45)
	Weapons	60 or 70 series (45)
	Mission Employment	MOAs, 70 series, ECRs (20)
F-16	Advanced Handling Characteristics	60 series and MOAs (30)
	Basic Fighter Maneuvers	MOAs (30)
	Tactical Intercepts/Air Combat Maneuvering	MOAs (45)
	Air Combat Tactics	MOAs (40)
	Surface Attack	60 series or 70 series and ECRs (40)
	Surface Attack Tactics	60 series or 70 series and ECRs (40)
	Close Air Support	60 series (40)
	Weapons	70 series (40)
	Night	60 or 70 series (40)
	Mission Employment	70 series and ECRs (40)
A/OA-10	Advanced Handling Characteristics	Alamo, 60 series (60-90)
	Basic Fighter Maneuver	Alamo, 60 series (60-90)
	Surface Attack	60 series, 70 series, ECRs (60-90)
	Weapons Employment	60 series or 70 series and ECRs (60-75)
	Combat Search and Rescue	60 series, 70 series, ECRs (60-90)
	Night	60 series (60-120)
	Dissimilar Air Combat Tactics/Defensive Low Altitude Air-to-Air Training	MOAs or 60 series (60-75)
	Mission Employment	MOAs, 70 series and ECRs (10-15)

**Table 3.1 Aircraft Missions and Airspace Performed  
(page 2 of 2)**

Aircraft	Type of Mission	Airspace Used (Avg. Time-Min.)
F-16C 414 CTS	Local Area Orientation	70 series, MOAs (30)
	Single Air Combat	MOAs (30)
	Element Air Combat	MOAs (30)
	Low Altitude Step Down Training	MOAs (30)
	Element Combat Tactics	MOAs (30)
422 Test & Eval F-15C, F-15E, F-16C, A-10, HH-60	Same mission types as shown for same aircraft in this table.	Same airspace as shown for mission types in this table.
USAFWS HH-60G	Day/Night Familiarization	60 series and Indian Springs (90)
	Navigation Systems Operations	60 series (90)
	Basic Helicopter Maneuvers	60 series (90)
	Defensive Maneuvering, Ground	70 series (90)
	Defensive Maneuvering, Air	60 series, MOAs (120)
	Combat Search and Rescue Task Force Scenario	60 series and Alamo (90)
	Mission Employment	70 series and ECRs (150)
66 Rescue HH-60G	Air-to Ground	60 series (60-90)
	Electronic Combat	70 series and ECRs (150)
	Low-level Navigation Training	MOAs (120)
	Air Refueling Training	Mormon Mesa AR Track (120)

### 3.1.2 Composite Force Training (Flag Exercises)

Flag exercises bring together all of the mission tasks and orchestrate a simulated combat scenario that employs and integrates all the capabilities of each mission element. Scenarios vary with each exercise to test and train the different tactics that can be used against adversary offensive and defensive forces. Generally the same range airspace elements are used for Flags which include the Desert and Reveille MOAs, overlying ATCAAs, 70 series ranges, electronic combat ranges, MTRs, and AR tracks. Although some Flags are conducted in the evening, they are normally completed prior to 10:00 P.M. for noise abatement at NAFB.

### 3.2 Flight Profiles

Flight profiles describe the routes most commonly flown between Nellis AFB and different portions of the NAFR complex, as follows:

*Weapons delivery and threat countermeasures training (70 series and ECRs).* The two most common routes available are (1) depart Nellis AFB to the west flying a canned instrument route that transits the Lee Corridor, and enters EC South from the southwest and (2) depart Nellis AFB to the north flying a canned route through the Sally Corridor and Coyote MOAs, entering EC East/R-74 from the east. After passing through the Sally Corridor, aircraft may fly one of the MTRs that transits the Desert MOA and enters the ECR/70 series ranges from the east. MTRs may also be flown from the departure to the west that enter the R-71 or R-76 ranges from the western side of the NAFR.

*Air-to-air training.* Aircraft normally depart Nellis AFB to the north, transit the Sally Corridor, and enter the assigned portion of the Desert MOA.

*Flag exercises and USAF Weapons School Mission Employment phases.* The majority of exercise offensive aircraft depart Nellis AFB to the north through the Sally Corridor and hold or refuel, as necessary, within Caliente/Cedar airspace (remaining east of the 115 degree longitude) while marshaling the Red Flag offensive aircraft package. This package may include aircraft from other bases that have entered the NAFR from the east and refueled, as necessary. Following marshaling, the package ingresses west to the target areas within the 70 series/EC ranges. Adversary aircraft (defensive forces) fly the Nellis AFB western departure route and enter the 70 series/EC ranges from the west.

## 3.3 OTHER NAFR USE DATA

Appendices A.4, A.5, and A.6 contain information on munitions use, Silver Flag Alpha use, and ground activity.

**APPENDIX A.1**

**AIRCRAFT**

**FLIGHT PROFILE INFORMATION**

## APPENDIX A.1

### FLIGHT PROFILE INFORMATION

The following data sheets, Table A.1-1, include detailed information describing the profiles of aircraft flown at NRC. Twenty different types of aircraft are included. Each numbered range and MOA were broken into six different altitude bands and then pilots were interviewed to gather their estimates of the time, speed, altitude, and power settings used while on a typical mission. The data for F-15C and F-15E are shown for each model but in the tables reflecting levels of sortie operations only generic F-15 sortie data are provided. A 50:50 split for these sorties should be used when correlating sorties to altitude and speed. Helicopter data shown reflect H-60 information only.

Table A.1-2, covers ISAFAF flying activities, including aircraft located at Indian Springs, aircraft having an in-flight emergency (IFE), aircraft landing because of low fuel, or aircraft diverted from Nellis AFB for various reasons. Normal flying data was available from 1990 to 1995 but IFEs and divers were only available from 1991 to 1995.

UAVs will be flown from ISAFAF for the foreseeable future. Sortie predictions would be as described in the 11th Reconnaissance Squadron Activation Environmental Assessment.

The total numbers of IFEs and divers indicates the number of aircraft that could have been potentially lost if ISAFAF had not been available. Obviously, other alternative airfields do exist which would be available to recover aircraft experiencing an emergency. However, some aircraft can be counted as "saved" because ISAFAF was the nearest suitable field and the aircraft would not have made it any farther.

**Table A.1-1 Mission Profile Data Sheets**  
**Ranges**

Aircraft:	R61 100-300	R61 300-500	R61 500-1K	R61 1K-5K	R61 5K-20K	R61 20K-50K	R62 100-300	R62 300-500	R62 500-1K	R62 1K-5K	R62 5K-20K	R62 20K-50K	R63 100-300	R63 300-500	R63 500-1K	R63 1K-5K	R63 5K-20K	R63 20K-50K	R64 100-300
<b>AV-8</b>																			
Time (Min)	1	1	2	1	10		1	1	2	1	10						10		1
Power (RPM)	93	93	93	97	75		93	93	93	97	75						75		93
Normal Speed (TAS)	480	480	470	450	300		480	480	470	450	300						300		480
<b>A-10</b>																			
Time (Min)	1	1					3	3	3	3	8		1	1					3
Power (RPM)	90	90					90	90	90	90	90		90	90					90
Normal Speed (TAS)	300	300					300	300	300	300	275		300	300					300
<b>B-1</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
Supersonic Speed/Time																			
<b>B-2</b>																			
Time (Min)				5															
Power (RPM)				88															
Normal Speed (TAS)				420															
<b>B-52</b>																			
Time (Min)		5						15											
Power (RPM)		92						92											
Normal Speed (TAS)		380						380											
<b>C-130</b>																			
Time (Min)		5						10											
Power (% of Torque)		75						75											
Normal Speed (TAS)		250						250											
<b>F-14</b>																			
Time (Min)					2														
Power (RPM)					90														
Normal Speed (TAS)					480														
Supersonic Speed/Time																			
<b>F-15C</b>																			
Time (Min)		1	1	1	5			1	1	1	5								
Power (RPM)		95	95	95	95+AB			95	95	95	95+AB								
Normal Speed (TAS)		480	480	480	480			480	480	480	480								
Supersonic Speed/Time					700/2			700/2	700/2	700/2	700/2								
<b>F-15C</b>																			
Time (Min)		1	1	1	5			1	1	1	5								
Power (RPM)		95	95	95	95+AB			95	95	95	95+AB								
Normal Speed (TAS)		480	480	480	480			480	480	480	480								
Supersonic Speed/Time					700/2			700/2	700/2	700/2	700/2								

Note: Altitude blocks below 20K are considered to be AGL



Air . . .:	R61 100-300	R61 300-500	R61 500-1K	R61 1K-5K	R61 5K-20K	R61 20K-50K	R62 100-300	R62 300-500	R62 500-1K	R62 1K-5K	R62 5K-20K	R62 20K-50K	R63 100-300	R63 300-500	R63 500-1K	R63 1K-5K	R63 5K-20K	R63q 20K-50K	R64 100-300	
<b>F-15E</b>																				
Time (Min)	2	2	1	1	5	5	2	2	2	1	5	5	2	2	2	1	5	5	5	2
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time																				
<b>F-16</b>																				
Time (Min)	1	1	1	1	5	5	1	1	1	1	5	5	1	1	1	1	5	5	5	2
Power (RPM)	95	95	95	95	95+AB	95+AB	95	95	95	95	95+AB	95+AB	95	95	95	95	95+AB	95+AB	95+AB	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time					700/2	700/2					700/2	700/2					700/2	700/2	700/2	700/2
<b>F-18</b>																				
Time (Min)	1	1	1	1	5	5	1	1	1	1	5	5	1	1	1	1	5	5	5	2
Power (RPM)	95	95	95	95	95+AB	95+AB	95	95	95	95	95+AB	95+AB	95	95	95	95	95+AB	95+AB	95+AB	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time					700/2	700/2					700/2	700/2					700/2	700/2	700/2	700/2
<b>F-111</b>																				
Time (Min)	1	1	1	1	5	5	1	1	1	1	5	5	1	1	1	1	5	5	5	2
Power (RPM)	100	100	100	100	95	95+AB	100	100	100	100	95	95+AB	100	100	100	100	95	95+AB	95+AB	100
Normal Speed (TAS)	540	540	540	540	480	480	540	540	540	540	480	480	540	540	540	540	480	480	480	540
Supersonic Speed/Time					700/2	700/2					700/2	700/2					700/2	700/2	700/2	700/2
<b>F-117</b>																				
Time (Min)					10	10					10	10					10	10	10	2
Power (RPM)					90	90					90	94					90	94	90	100
Normal Speed (TAS)					480	480					500	500				500	500	500	500	540
<b>TORNADO</b>																				
Time (Min)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Power (RPM)	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Normal Speed (TAS)	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
Supersonic Speed/Time																				
<b>Other</b>																				
Time (Min)				3													4	5	5	2
Power (RPM)				75													75	88	88	90
Normal Speed (TAS)				200													200	250	250	250
<b>HELLOs</b>																				
Time (Min)	30						45						15							15
Power (% of Torque)	75						75						75							75
Normal Speed (TAS)	100						100						100							100

**Table A.1-1 Misson Profile Data Sheets**  
**Ranges**

Aircraft:	R64 300-500	R64 500-1K	R64 1K-5K	R64 5K-20K	R64 20K-50K	R65 100-300	R65 300-500	R65 500-1K	R65 1K-5K	R65 5K-20K	R65 20K-50K	ALAMO 500-1K	ALAMO 1K-5K	ALAMO 5K-20K	ALAMO 20K-50K	R71 100-300	R71 300-500
<b>AV-8</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	10	75	300	
Time (Min)	93	97	450			93	480										
Power (RPM)	480					480											
Normal Speed (TAS)																	
<b>A-10</b>	3	3	3	8	2	2	2	2	2	2	2	1	1	1	1	1	2
Time (Min)	90	90	90	90	90	90	90	90	90	93	275	90	90	300	300	300	90
Power (RPM)	300	300	300	275	300	300	300	300	300	275		300	300				300
Normal Speed (TAS)																	
<b>B-1</b>																	
Time (Min)																	2
Power (RPM)																	95
Normal Speed (TAS)																	550
Supersonic Speed/Time																	
<b>B-2</b>																	
Time (Min)			10						10					6			
Power (RPM)			88						88					88			
Normal Speed (TAS)			420						420					420			
<b>B-52</b>	15					15										3	2
Time (Min)	92					92										92	92
Power (RPM)	380					380										380	380
Normal Speed (TAS)																	
<b>C-130</b>	10					10										5	5
Time (Min)	75					75										75	75
Power (% of Torque)	250					250										250	250
Normal Speed (TAS)																	
<b>EF-111</b>																	
Time (Min)																	1
Power (RPM)																	100
Normal Speed (TAS)																	540
Supersonic Speed/Time																	
<b>F-14</b>																	
Time (Min)				10						10				3			
Power (RPM)				90						90				90			
Normal Speed (TAS)				480						480				480			
Supersonic Speed/Time																	
<b>F-15C</b>	1	1	1	5	5	1	1	1	1	5	5	1	1	1	3	3	2
Time (Min)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95+AB	5	95
Power (RPM)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Normal Speed (TAS)																	
Supersonic Speed/Time																	

Note: Altitude blocks below 20K are considered to be AGL

Aircraft:	R64 300-500	R64 500-1K	R64 1K-5K	R64 5K-20K	R64 20K-50K	R65 100-300	R65 300-500	R65 500-1K	R65 1K-5K	R65 5K-20K	R65 20K-50K	ALAMO 100-300	ALAMO 300-500	ALAMO 500-1K	ALAMO 1K-5K	ALAMO 5K-20K	ALAMO 20K-50K	R71 100-300	R71 300-500
<b>F-15E</b>																			
Time (Min)	2	2	1	5	5	2	2	2	1	5	5	2	2	2	1	5	5	2	2
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time																			
<b>F-16</b>																			
Time (Min)	1	1	1	5	5	1	1	1	1	5	5	1	1	1	1	3	3	3	2
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95+AB	5	5	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time																700/2	700/2		
<b>F-18</b>																			
Time (Min)	1	1	1	5	5	1	1	1	1	5	5	1	1	1	1	3	3	3	2
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95+AB	5	5	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time																700/2	700/2		
<b>F-111</b>																			
Time (Min)	3	3	3	3	3	2	3	3	3	3	3	2	3	3	3	3	3	1	1
Power (RPM)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Normal Speed (TAS)	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540
Supersonic Speed/Time																			
<b>F-117</b>																			
Time (Min)				10						10									
Power (RPM)				90						90									
Normal Speed (TAS)				480						480									
<b>TORNADO</b>																			
Time (Min)	2	2	2	2	8	8	8	8	8	8	8	2	2	2	2	2	2	2	2
Power (RPM)	90	90	90	90	85	85	85	85	85	85	85	90	90	90	90	90	90	90	90
Normal Speed (TAS)	450	450	450	450	350	350	350	350	350	350	350	450	450	450	450	450	450	450	450
Supersonic Speed/Time	700/1	700/1	700/1	700/1															
<b>Other</b>																			
Time (Min)				5					5										
Power (RPM)				88					75	88									
Normal Speed (TAS)				250					200	250									
<b>HELOS</b>																			
Time (Min)				15								30	20	10				20	
Power (% of Torque)				75								75	75	75				75	
Normal Speed (TAS)				100					100	100		100	100	100				100	

**Table A.1-1 Mission Profile Data Sheets**  
**Ranges**

Aircraft:	R71 500-1K	R71 1K-5K	R71 5K-20K	R71 20K-50K	R74 100-300	R74 300-500	R74 500-1K	R74 1K-5K	R74 5K-20K	R74 20K-50K	R75 100-300	R75 300-500	R75 500-1K	R75 1K-5K	R75 5K-20K	R75 20K-50K	R76 100-300	R76 300-500	R76 500-1K	
<b>AV-8</b>																				
Time (Min)					2	4	1	1	1	1	1	1								
Power (RPM)					93	93	97	97	60	97	97	97								
Normal Speed (TAS)					480	480	480	450	300	480	480	480								
<b>A-10</b>																				
Time (Min)	5	1	1				2	2	2					3	3					
Power (RPM)	90	90	93				90	93	93					90	93					
Normal Speed (TAS)	300	300	275				300	275	275					300	275					
<b>B-1</b>																				
Time (Min)	9					3	2	3	3					3	3					2
Power (RPM)	95					95	95	A/B	A/B					95	A/B					95
Normal Speed (TAS)	550					550	550	700/3	700/3					550	550					550
Supersonic Speed/Time															700/3					
<b>B-2</b>																				
Time (Min)		5							8											
Power (RPM)		88							88											
Normal Speed (TAS)		420							420											
<b>B-52</b>																				
Time (Min)						8								6						8
Power (RPM)						95			94					94						94
Normal Speed (TAS)						420			420					420						420
<b>C-130</b>																				
Time (Min)						10								10						10
Power (% of Torque)						75								75						75
Normal Speed (TAS)						250								250						250
<b>EF-111</b>																				
Time (Min)	2	2				7								2						2
Power (RPM)	100	100				100/AB								100						100/AB
Normal Speed (TAS)	540	540				540								540						540
Supersonic Speed/Time						700/2								700/2						700/2
<b>F-4</b>																				
Time (Min)	1	1	1				1	1	1					2						2
Power (RPM)	95	96	96				95	96	96					95						95
Normal Speed (TAS)	180	180	180				180	180	180					180						180
Supersonic Speed/Time																				
<b>F-14</b>																				
Time (Min)							10	5						5						5
Power (RPM)							100/AB	100/AB						100/AB						100/AB
Normal Speed (TAS)							600	600						600						600
Supersonic Speed/Time							700/1	700/1						700/1						700/1

Note: Altitude blocks below 20K are considered to be AGL

Aircraft:	R64 300-500	R64 500-1K	R64 1K-5K	R64 5K-20K	R64 20K-50K	R65 100-300	R65 300-500	R65 500-1K	R65 1K-5K	R65 5K-20K	R65 20K-50K	ALAMO 100-300	ALAMO 300-500	ALAMO 500-1K	ALAMO 1K-5K	ALAMO 5K-20K	ALAMO 20K-50K	R71 100-300	R71 300-500
<b>F-15C</b>																			
Time (Min)	2	5	5	5	3	3	3	2	6	4	4	3	3	2	6	4		3	3
Power (RPM)	95	96	95	95	95	95	95	95	95	95	95	95	95	95	95	95		95	95
Normal Speed (TAS)	480	480	480	520	480	480	480	480	480	520	520	480	480	480	480	520		480	480
Supersonic Speed/Time			700/2	700/2					700/2	700/2					700/2	700/2			
<b>F-15E</b>																			
Time (Min)	2	1	5	5	2	2	2	1	5	5	2	2	2	1	5	5	2	2	2
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95		95	95
Normal Speed (TAS)	480	480	480	510	480	480	480	480	480	510	480	480	480	480	480	510		480	480
Supersonic Speed/Time																			
<b>F-16</b>																			
Time (Min)	2	5	5	5	3	3	3	2	6	4	4	3	3	2	6	4		3	3
Power (RPM)	95	96	95	95	95	95	95	95	95	95	95	95	95	95	95	95		95	95
Normal Speed (TAS)	480	480	480	520	480	480	480	480	480	520	520	480	480	480	480	520		480	480
Supersonic Speed/Time			700/2	700/2					700/2	700/2					700/2	700/2			
<b>F-18</b>																			
Time (Min)	2	5	5	5	3	3	3	2	6	4	4	3	3	2	6	4		3	3
Power (RPM)	95	96	95	95	95	95	95	95	95	95	95	95	95	95	95	95		95	95
Normal Speed (TAS)	480	480	480	520	480	480	480	480	480	520	520	480	480	480	480	520		480	480
Supersonic Speed/Time			700/2	700/2					700/2	700/2					700/2	700/2			
<b>F-111</b>																			
Time (Min)	1																		
Power (RPM)	100																		
Normal Speed (TAS)	540																		
Supersonic Speed/Time																			
<b>F-117</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
<b>TORNADO</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
Supersonic Speed/Time																			
<b>Other</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
<b>HELOS</b>																			
Time (Min)																			
Power (% of Torque)																			
Normal Speed (TAS)																			

**Table A.1-1 Mission Profile Data Sheets**

**Ranges**

Aircraft:	R76 1K-5K	R76 5K-20K	R76 20K-50K	R4808W 1K-5K	R4808W 5K-20K	R4808W 20K-50K	R4809A 100-300	R4809A 300-500	R4809A 500-1K	R4809A 1K-5K	R4809A 5K-20K	R4809A 20K-50K	ECE 100-300	ECE 300-500	ECE 500-1K	ECE 1K-5K	ECE 5K-20K	ECE 20K-50K	ECW 100-300
<b>AV-8</b>					8 75 300								1 93 480	1 93 480					
Time (Min)					8								1	1					
Power (RPM)					75								93	93					
Normal Speed (TAS)					300								480	480					
<b>A-10</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
<b>B-1</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
Supersonic Speed/Time																			
<b>B-2</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
<b>B-52</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
<b>C-130</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
<b>EF-111</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
<b>F-4</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
Supersonic Speed/Time																			
<b>F-14</b>																			
Time (Min)																			
Power (RPM)																			
Normal Speed (TAS)																			
Supersonic Speed/Time																			

Note: Altitude blocks below 20K are considered to be AGL

Air.	R76 1K-5K	R76 5K-20K	R76 20K-50K	R480BW 1K-5K	R480BW 5K-20K	R480BW 20K-50K	R4809A 100-300	R4L 300-500	R4809A 500-1K	R4809A 1K-5K	R4809A 5K-20K	R4809A 20K-50K	ECE 100-300	ECE 500-1K	ECE 1K-5K	E. 5K-20K	ECE 20K-50K	ECW 100-300
<b>F-15C</b>																		
Time (Min)	2	6	4			4					2	2	3	3			3	3
Power (RPM)	95	95	95			85					95	95	95	95			95/AB	95/AB
Normal Speed (TAS)	480	480	520			350					480	480	480	480			480	520
Supersonic Speed/Time		700/2	700/2														700/2	700/2
<b>F-15E</b>																		
Time (Min)	1	5	5			4					2	2	2	2			2	2
Power (RPM)	95	95	95			85					95	95	95	95			95	95
Normal Speed (TAS)	480	480	510			350					480	480	480	480			480	480
Supersonic Speed/Time																		
<b>F-16</b>																		
Time (Min)	2	6	4			4					2	2	3	3			3	3
Power (RPM)	95	95	95			85					95	95	95	95			95/AB	95/AB
Normal Speed (TAS)	480	480	520			350					480	480	480	480			480	520
Supersonic Speed/Time		700/2	700/2														700/2	700/2
<b>F-18</b>																		
Time (Min)	2	6	4			4					2	2	3	3			3	3
Power (RPM)	95	95	95			85					95	95	95	95			95/AB	95/AB
Normal Speed (TAS)	480	480	520			350					480	480	480	480			480	520
Supersonic Speed/Time		700/2	700/2														700/2	700/2
<b>F-111</b>																		
Time (Min)	3	4				5							1	1			3	4
Power (RPM)	100/AB	100/AB				90							100	100			100	100
Normal Speed (TAS)	540	480				350							540	540			480	480
Supersonic Speed/Time		700/2	700/2														700/2	700/2
<b>F-117</b>																		
Time (Min)		5															5	
Power (RPM)		98															98	
Normal Speed (TAS)		540															540	
<b>TORNADO</b>																		
Time (Min)	10	10											1	25				
Power (RPM)	90	90											90	85				
Normal Speed (TAS)	450	450											450	300				
Supersonic Speed/Time		700/3	700/3															
<b>Other</b>																		
Time (Min)	10					5											3	
Power (RPM)	88					92											75	
Normal Speed (TAS)	250					300											200	
<b>HELLOS</b>																		
Time (Min)						20											30	
Power (% of Torque)						75											75	
Normal Speed (TAS)						100											100	

**Table A.1-1 Mission Profile Data Sheets  
Ranges**

Aircraft:	ECW 300-500	ECW 500-1K	ECW 1K-5K	ECW 5K-20K	ECW 20K-50K	ECS 100-300	ECS 300-500	ECS 500-1K	ECS 1K-5K	ECS 5K-20K	ECS 20K-50K	PAHUTE 1K-5K	PAHUTE 5K-20K	PAHUTE 20K-50K	COY 100-300	COY 300-500	COY 500-1K	COY 1K-5K	COY 5K-20K	
<b>AV-8</b>																				
Time (Min)												1			7	7				4
Power (RPM)												93			93	93				93
Normal Speed (TAS)												480			480	480				400
<b>A-10</b>																				
Time (Min)												2	2							10
Power (RPM)												90	93							90
Normal Speed (TAS)												300	275							300
<b>B-1</b>																				
Time (Min)												2								4
Power (RPM)												95								95
Normal Speed (TAS)												550								550
Supersonic Speed/Time												700/3								700/3
<b>B-2</b>																				
Time (Min)																				10
Power (RPM)																				88
Normal Speed (TAS)												420								420
<b>B-52</b>																				
Time (Min)																				15
Power (RPM)																				92
Normal Speed (TAS)												400								400
<b>C-130</b>																				
Time (Min)																				40
Power (% of Torque)																				75
Normal Speed (TAS)																				250
<b>EF-111</b>																				
Time (Min)																				5
Power (RPM)																				100
Normal Speed (TAS)																				540
Supersonic Speed/Time																				540
<b>F-4</b>																				
Time (Min)																				3
Power (RPM)																				95
Normal Speed (TAS)																				180
Supersonic Speed/Time																				180
<b>F-14</b>																				
Time (Min)																				5
Power (RPM)																				95
Normal Speed (TAS)																				450
Supersonic Speed/Time																				450
<b>F-15</b>																				
Time (Min)																				10
Power (RPM)																				100
Normal Speed (TAS)																				600
Supersonic Speed/Time																				600
<b>F-16</b>																				
Time (Min)																				100
Power (RPM)																				100
Normal Speed (TAS)																				600
Supersonic Speed/Time																				600

Note: Altitude blocks below 20K are considered to be AGL



Aircraft:	ECW 300-500	ECW 500-1K	ECW 1K-5K	ECW 5K-20K	ECW 20K-50K	ECS 100-300	ECS 300-500	ECS 500-1K	ECS 1K-5K	ECS 5K-20K	ECS 20K-50K	PAHUTE 1K-5K	PAHUTE 5K-20K	PAHUTE 20K-50K	COY 100-300	COY 300-500	COY 500-1K	COY 1K-5K	COY 5K-20K	
<b>F-15C</b>																				
Time (Min)	3	3	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	3	3	10
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time										700/2	700/2									700/2
<b>F-15E</b>																				
Time (Min)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	5	5	5	5	5	5
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time																				
<b>F-16</b>																				
Time (Min)	3	3	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	3	3	10
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time										700/2	700/2									700/2
<b>F-18</b>																				
Time (Min)	3	3	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	3	3	10
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Normal Speed (TAS)	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time										700/2	700/2									700/2
<b>F-111</b>																				
Time (Min)	1	1	3	4					2	2	2	1	2	2	2	2	2	2	2	3
Power (RPM)	100	100	100	100					90	90	95	95	95	95	100	100	100	100	100	100
Normal Speed (TAS)	540	540	540	480					400	350	480	480	480	480	480	480	480	480	480	480
Supersonic Speed/Time															700/1	700/1	700/1	700/1	700/1	700/1
<b>F-117</b>																				
Time (Min)				5									3							15
Power (RPM)				98									98							90
Normal Speed (TAS)				540									540							500
<b>TORNADO</b>																				
Time (Min)	10				8															
Power (RPM)	85				85															
Normal Speed (TAS)	350				350															
Supersonic Speed/Time																				
<b>Other</b>																				
Time (Min)			7							5	5	3	3	3						10
Power (RPM)			85							75	92	75	92	75						75
Normal Speed (TAS)			220							200	300	200	300	200						200
<b>HELLOS</b>																				
Time (Min)						20														60
Power (% of Torque)						75														80
Normal Speed (TAS)						100														120

**Table A.1-1 Mission Profile Data Sheets**  
**Ranges**

<b>Aircraft:</b>	COY 20K-50K	REV 100-300	REV 300-500	REV 500-1K	REV 1K-5K	REV 5K-20K	CAL 100-300	CAL 300-500	CAL 500-1K	CAL 1K-5K	CAL 5K-20K	CAL 20K-50K	ELGIN 100-300	ELGIN 300-500	ELGIN 500-1K	ELGIN 1K-5K	ELGIN 5K-20K	ELKGIN 20K-50K	SALLY 500-1K	
<b>AV-8</b>		2	2								20									
Time (Min)		93	93								75									
Power (RPM)		480	480								300									
Normal Speed (TAS)																				
<b>A-10</b>																				
Time (Min)			20																	
Power (RPM)			90																	
Normal Speed (TAS)			300																	
<b>B-1</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
Supersonic Speed/Time																				
<b>B-2</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
<b>B-52</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
<b>C-130</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
<b>EF-111</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
<b>F-4</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
Supersonic Speed/Time																				
<b>F-14</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
Supersonic Speed/Time																				
<b>F-16</b>																				
Time (Min)																				
Power (RPM)																				
Normal Speed (TAS)																				
Supersonic Speed/Time																				

Note: Altitude blocks below 20K are considered to be AGL

Aircraft:	COY 20K-50K	REV 100-300	REV 300-500	REV 500-1K	REV 1K-5K	REV 5K-20K	CAL 100-300	CAL 300-500	CAL 500-1K	CAL 1K-5K	CAL 5K-20K	CAL 20K-50K	ELGIN 100-300	ELGIN 300-500	ELGIN 500-1K	ELGIN 1K-5K	ELGIN 5K-20K	ELKGIN 20K-50K	SALLY 500-1K	
<b>F-15C</b>																				
Time (Min)	5		3	3	3	7		5	10	5	10	10		5	10	5	10	10		
Power (RPM)	95		95	95	95	95		95	95	95	95	95		95	95	95	95	95		
Normal Speed (TAS)	520		480	480	480	480		480	480	480	480	520		480	480	480	480	520		
Supersonic Speed/Time	700/2				700/2				700/2	700/2		700/2					700/2	700/2		
<b>F-15E</b>																				
Time (Min)	5	8	8	8	8	8	1	1	5	5	20	20	1	1	5	5	20	20		
Power (RPM)	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95		
Normal Speed (TAS)	510	480	480	480	480	510	480	480	480	480	550	550	480	480	480	480	550	550		
Supersonic Speed/Time						700/2			700/1	700/1		700/1					700/1	700/1		
<b>F-16</b>																				
Time (Min)	5		3	3	3	7		5	10	5	10	10		5	10	5	10	10		
Power (RPM)	95		95	95	95	95		95	95	95	95	95		95	95	95	95	95		
Normal Speed (TAS)	520		480	480	480	480		480	480	480	480	520		480	480	480	480	520		
Supersonic Speed/Time	700/2				700/2				700/2	700/2		700/2					700/2	700/2		
<b>F-18</b>																				
Time (Min)	5		3	3	3	7		5	10	5	10	10		5	10	5	10	10		
Power (RPM)	95		95	95	95	95		95	95	95	95	95		95	95	95	95	95		
Normal Speed (TAS)	520		480	480	480	480		480	480	480	480	520		480	480	480	480	520		
Supersonic Speed/Time	700/2				700/2				700/2	700/2		700/2					700/2	700/2		
<b>F-111</b>																				
Time (Min)		4	4	7	7	7				20										
Power (RPM)		100	100	100	100	100				85										
Normal Speed (TAS)		480	480	480	480	480				350										
Supersonic Speed/Time		700/1	700/1	700/1	700/1	700/1				700/2										
<b>F-117</b>																				
Time (Min)						15				15										
Power (RPM)						90				90										
Normal Speed (TAS)						500				500										
<b>Other</b>																				
Time (Min)						10				10										
Power (% of Torque)						75				75										
Normal Speed (TAS)						200				200										
<b>HELLOS</b>																				
Time (Min)							60	30					60							30
Power (% of Torque)							80	80					80							80
Normal Speed (TAS)							120	120					120							120

**Table A.1-1 Mission Profile Data Sheets  
Ranges**

Aircraft:	SALLY 1K-10K	SALLY 10K-20K	R4806E
<b>AV-8</b>			
Time (Min)	16		
Power (RPM)	75		
Normal Speed (TAS)	300		
<b>A-10</b>			
Time (Min)	15		
Power (RPM)	90		
Normal Speed (TAS)	300		
<b>B-1</b>			
Time (Min)	20		
Power (RPM)	85		
Normal Speed (TAS)	300		
Supersonic Speed/Time			
<b>B-2</b>			
Time (Min)	20		
Power (RPM)	88		
Normal Speed (TAS)	420		
<b>B-52</b>			
Time (Min)	10	15	
Power (RPM)	80	92	
Normal Speed (TAS)	300	400	
<b>C-130</b>			
Time (Min)	20		
Power (% of Torque)	60		
Normal Speed (TAS)	200		
<b>F-14</b>			
Time (Min)	6		
Power (RPM)	90		
Normal Speed (TAS)	400		
Supersonic Speed/Time			
<b>F-15C</b>			
Time (Min)	8		
Power (RPM)	85		
Normal Speed (TAS)	350		
Supersonic Speed/Time			
<b>F-15E</b>			
Time (Min)	8		
Power (RPM)	85		
Normal Speed (TAS)	350		
Supersonic Speed/Time			
<b>F-16</b>			
Time (Min)	8		
Power (RPM)	85		
Normal Speed (TAS)	350		
Supersonic Speed/Time			
<b>F-18</b>			
Time (Min)	8		
Power (RPM)	85		
Normal Speed (TAS)	350		
Supersonic Speed/Time			
<b>F-111</b>			
Time (Min)	8		
Power (RPM)	90		
Normal Speed (TAS)	350		
Supersonic Speed/Time			
<b>F-117</b>			
Time (Min)	10	20	
Power (RPM)	85	90	
Normal Speed (TAS)	350	480	
<b>Other</b>			
Time (Min)	10	7	
Power (% of Torque)	75	70	
Normal Speed (TAS)	200	180	

Note: Altitude blocks below 20K are considered to be AGL

Table A.1-2 ISAF/AF Flight Activity

INDIAN SPRINGS FLYING													
	A-6	A-7	AV-8	A-10	C-5	C-9	C-12	C-130	C-141	F-4	F-14	F-15	F-16
1990	7	10	32	12	2	11	44	14	2	8	11	69	
1991	1		42	11	9	3	16	3	1		24	29	
1992			10	11	19	8	36	52		2	13	58	
1993	2			11	1	2	26	7	11	5	14	38	
1994	1		2	13		21	6	4	12	7	8	53	
1995			302	11	1	1	37	4	16	4	12	62	
<b>TOTAL</b>	11	10	388	69	32	34	44	84	42	26	82	309	
	F-18	F-111	KC-10	KC-135	Light A/C	T-37	T-38	T-45	Tornado	HELO	U-21	Other	Totals
1990	15	1			37	72	1			237	9	35	629
1991	1		6		24	80	5			115	4	15	399
1992	33	5		3	27	75	26			241	7	31	670
1993	6	5		4	16		1		2	78		19	251
1994	10	6		12	22	2	1		2	105	6	14	342
1995	4	10		4	24	2	3	3	28	392		43	963
<b>TOTAL</b>	69	27	6	23	150	231	37	3	32	1168	26	157	3254
	IFEs Divers												
1991	9												
1992	9												
1993	13												
1994	25												
1995	24												
<b>Total</b>	80												

Table A.1-3 below covers the activities at TTR since 1986. The number of sorties are averaged for the period 1986-1992 and then there is a dramatic drop in 1993 when the 37th Tactical Fighter Wing moved from Tonopah to Holloman AFB, New Mexico.

<b>Table A.1-3. Tonopah Test Range Activities</b>			
	<i>Aircraft Sorties</i>	<i>Aircraft IFEs</i>	<i>TDY Personnel</i>
1986	9,250	96	2,500
1987	9,250	96	2,500
1988	9,250	96	2,500
1989	9,250	96	2,500
1990	9,250	96	2,500
1991	9,250	96	2,500
1992	9,250	96	2,500
1993	2,450	9	275
1994	2,391	9	275
1995	2,386	7	275

## **APPENDIX A.2**

### **MTR USE AND DESCRIPTIONS**

**Appendix A.2 MTR Use and Descriptions (page 1 of 2)**

<i>Route</i>	<i>#/Year</i>	<i>Acft Type</i>	<i>Scheduling Agency</i>
IR 286	4	F-4	99 RANG  All tactical spread, 95% thrust, 500-1000/ AGL
	2	F-15E	
	4	HELO	
VR 222	2	F-16	99 RANG  All tactical spread, 95% thrust, 500-1,000/ AGL
	3	F-15E	
	3	F-18	
	4	T-38	
VR 1406	2	F-15E	99 RANG
IR 234	None		Edwards
IR 235	None		Edwards
IR 237	None		Edwards
IR 238	None		Edwards
IR 425	3	B-52	Edwards
	2	B-1	
VR 1214	5	EA-6	Edwards  Centerline, all 95% thrust (avg.), 500-1,000 AGL       All tactical spread, 95% thrust, 500-1,000 AGL
	61	B-1	
	50	B-2	
	50	F-16	
	1	F-14	
	6	MC-130	
	6	F-15	
	32	F-16	
	41	F-18	
	49	F-4	
IR 279	26	B-1	MASMS
IR 282	12	F-16	Mountain Home
VR 1252	66	F-18	NAS Lemoore Due 23 Aug 96
VR 1253	15	F-18	NAS Lemoore All tactical spread, 200-100 AGL, 95
VR 1259	113	F-18	NAS Lemoore
VR 1260	7	F-18	NAS Lemoore
VR 208	441	F-18	NAS Lemoore
V209	79	F-18	NAS Lemoore
IR 200	2	B-1	Point Mugu  Centerline, all 95% thrust (avg.), 500-1,000AGL
	2	B-52	
	19	A-6	
	19	F-4	
	19	P-3	
	19	F-14	
	19	CALCM	



Appendix A.2 MTR Use and Descriptions (page 2 of 2)

<i>Route</i>	<i>#/Year</i>	<i>Acft Type</i>	<i>Scheduling Agency</i>
IR 206	1	A-6	Point Mugu
	1	F-4	
	1	P-3	Centerline, all 95% thrust (avg.), 500-1,000 AGL
	1	F-14	
	1	CALCM	

**APPENDIX A.3**

**AIRCRAFT MISSION DESCRIPTIONS**

## APPENDIX A.3

### MISSION DESCRIPTIONS

#### **F-15C Eagles**

*Aircraft Handling Characteristics/Local Area Orientation (AHC)* – 0.8 hr, two-ship, MOAs. Mission objective: demonstrate instructor level aircraft handling skills. Mission tasks include: G-awareness exercise, energy maneuverability profile, break turn, high angle of attack maneuvering, stall approaches and recoveries, power comparison/vertical turning exercise, acceleration maneuver and comparison, gun tracking exercise, offensive and defensive perches (6,000 feet slant range), simulated minimum fuel recovery. Altitudes in the area vary from 5,000 AGL to 30,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.0. Cruise and maneuvering power settings vary from 78 percent to military power with as much as 5 minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: 1 AIS pod.

*Basic Fighter Maneuvers (BFM)* – 0.8 hr, two-ship, MOAs. Mission objectives: employ infrared (IR) and gun ordnance from an offensive position. Maneuver from a defensive position to deny weapons employment. Instruct proper offensive and defensive BFM techniques and fly both in an instructor role. Demonstrate the ability to recognize and defeat all-aspect weapons employment. Recognize all-aspect weapons parameters from both an offensive and defensive perspective. Demonstrate the ability to maneuver from a defensive position to deny all-aspect weapon employment. Mission tasks include: G-awareness exercise, offensive and defensive maneuvering from visual perch setups, offensive and defensive maneuvering from visual perch setups using all-aspect weapons, visual high-aspect BFM, visual missile defense exercise to high-aspect BFM, beyond visual range (BVR) missile defense exercise to high-aspect BFM. Altitudes in the area vary from 10,000 AGL to 30,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.0. Cruise and maneuvering power settings vary from 78 percent to military with as much as 15 minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configurations: 1 AIS pod, 1 AIM-9M PTM, and chaff and flares.

*Air Combat Maneuvers (ACM)* – 1.0 to 1.2 hrs, two/four/six-ship, four/six/eight/ten adversaries – MOAs or 60 series and Alamo. Mission objectives include: demonstrate ability to fulfill all wingman responsibilities in an element and four-ship intercept against various formations and tactics. Instruct and employ in a four-ship and six-ship area defense and employ ordnance in a tactically sound manner. Mission tasks include: systems check, G-awareness exercise, 2v4 and 4v6 intercepts, establish a four- and six-ship Combat Air Patrol (CAP) for a 15 minute vulnerability period and defend a sector from a composite force attack, intercept and destroy bomber aircraft while attempting to avoid engagements with fighter escorts. Altitudes in the area vary from 10,000 AGL to 50,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.1. Cruise and maneuvering power settings vary from 78 percent to military with as much as 10 minutes use of afterburner. Time in the operating area is approximately 30

minutes. Configurations include: 1 AIM-9M PTM, 1 AIS pod, chaff and flares, and centerline tank.

*Step Down Training* – 1.3 hrs, two ship, up to four adversaries – Elgin and Caliente MOAs or Alamo and 60 series, or 70 series ranges. Mission objectives include: demonstrate proficiency in basic single- and two-ship tasks at low altitude, down to 300 AGL. Demonstrate proficiency in low altitude offensive (500 AGL minimum) and defensive (300 AGL minimum) tasks. Instruct sound two-ship low altitude CAP employment against four adversaries and employ ordnance in a tactically sound manner. Mission tasks include: G-awareness exercise, low altitude handling characteristics, low altitude turns, low altitude tactical formation, low altitude navigation, vertical awareness exercises, ridge crossings, low altitude threat assessment exercise, surface-to-air threat awareness training, high-to-low and low-to-high intercepts, defensive response exercise, low altitude radar missile defense exercise, terrain masking, low altitude offensive pursuit, low altitude weapons employment, CAP against low or medium altitude adversaries, low-to-high and high-to-low intercepts. Altitudes in the area vary from 300 AGL to 20,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.0. Cruise and maneuvering power settings vary from 78 percent to military with as much as 5 minutes use of afterburner. Time in the operating area is approximately 50 minutes. Configurations include: 1 AIM-9M PTM, 1 AIS pod, and chaff and flares.

*Tactical Intercepts* – 1.2 hrs, two- or four-ship, four to six adversaries – MOAs, 70 series and ECRs. Mission objectives include: demonstrate the ability to fulfill all wingman responsibilities in a two-ship, four-ship intercept mission against various formations and tactics. Demonstrate instructional level skills in briefing, leading, and debriefing two- and four-ship missions against various formations and tactics. Mission tasks include: G-awareness exercise, 2 v 4 and 4 v 6 intercepts, 2 v 4 and 4 v 6 intercepts using electronic countermeasures (ECM). Altitudes in the area vary from 300 AGL to 50,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.5. Cruise and maneuvering power settings vary from 78 percent to military with as much as 10 minutes use of afterburner. Time in the operating area is approximately 45 minutes. Configurations include: 1 AIM-9M PTM, 1 AIS pod, and chaff and flares.

*Air-to-Air Weapons Employment* – not accomplished on the NAFR

*Night* – 1.2 hrs, four-ship, four adversaries – 70 series, ECRs, and MOAs. Mission objectives include: Perform as a viable wingman and instruct in a four-ship night area defense and employ ordnance in a tactically sound manner. Mission tasks include: 4v4 intercepts in the area defense role. Altitudes in the area vary from 10,000 AGL to 50,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.5. Cruise and maneuvering power settings vary from 78 percent to military with as much as 5 minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configurations include: 1 AIM-9M PTM, 1 AIS pod, and chaff and flares.

*Dissimilar Air Combat Tactics* – 1.0 hrs, two/four/six-ship, two/four/six/eight adversaries. MOAs and 70 series ranges. Mission objectives include: perform as a viable wingman in a two-ship point defense scenario, four-ship area defense scenario, and force protection role. Instruct

and employ sound four-ship sweep concepts. Employ ordnance in a tactically sound manner. Mission tasks include: Systems check, G-awareness exercise, establish a two- and four-ship CAP for a 15-minute vulnerability period and defend a sector from a composite force attack, intercept and destroy bomber aircraft while attempting to avoid engagements with fighter escorts, rendezvous with a strike force and provide protection for a strike mission, intercept and engage an all-aspect adversary of numerical superiority. Altitudes in the area vary from 300 AGL to 50,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.5. Cruise and maneuvering power settings vary from 78 percent to military with as much as 10 minutes use of afterburner. Time in the operating area is approximately 45 minutes. Configurations include: 1 AIM-9M PTM, 1 AIS pod, and chaff and flares.

*Mission Employment* – 1.5 hrs, six-ship plus unknown number of friendly aircraft, unknown number of adversaries and bombers with ECM capabilities – MOAs, 70 series, and ECRs. Mission objectives include: demonstrate instructor-level knowledge of planning a composite strike force mission by day and at night; provide force protection for strikers during ingress and egress. Demonstrate instructor-level knowledge of planning a sector defense mission, provide 30 minutes of sector defense against a large composite force, employ weapons in a tactically sound manner. Mission tasks include: perform as Blue Force air-to-air mission commander, systems check, air refueling, defend strike force with escort aircraft by intercepting air threats in a day and night ECM environment, establish CAP procedures to defend against a composite force attack, emphasize intercepting and destroying bomber aircraft, maintain mutual support, maximize force survival in an ECM environment. Altitudes in the area vary from 300 AGL to 50,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.5. Cruise and maneuvering power settings vary from 78 percent to military with as much as 10 minutes use of afterburner. Time in the operating area is approximately 90 minutes. Configurations include: 1 AIM-9M PTM, 1 AIS pod, and chaff and flares.

### **F-15E Strike Eagles**

*Advanced Handling Characteristics* – 1.2 hrs, two-ship – MOAs. Mission tasks: airborne systems checks, G-awareness exercise, AHC profile, gun tracking exercise, 1v1 maneuvering from visual perch setups, local area orientation. Altitudes in the area may vary from 5,000 AGL to 30,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 0 to mach 1.0. Cruise and maneuvering power settings vary from 92 percent to military with as much as 5 minutes use of afterburner. Time in the operating area is approximately 45 minutes. Configuration: captive AIM-9.

*Basic Fighter Maneuvers* – 1.0 to 1.2 hrs, two-ship – MOAs. Typical mission tasks: airborne systems checks, 1v1 intercepts to weapons envelope; G-awareness exercise, gun/missile exercises, 1v1 maneuvering from visual perch setups, 1v1 maneuvering from visual high aspect setups. Altitudes in the area may vary from 5,000 AGL to 30,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 0 to mach 1.0. Cruise and maneuvering power settings vary from 92 percent to military with as much as 10 minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9, AIS pod, and chaff/flares.

*Tactical Intercepts* – 1.4 hrs, three-ship and four-ship – MOAs and 70 series ranges. Typical mission tasks: airborne systems checks, G-awareness exercise, single-ship intercepts against a low altitude aircraft (500 feet minimum), single-ship intercepts against a two-ship employing a variety of formations and tactics, two/four-ship intercepts from low altitude ingress (simulating night operations) against up to four adversaries employing a variety of formations and tactics. Altitudes in the area may vary from 500 AGL to 40,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 0 to mach 1.0. Cruise and maneuvering power settings vary from 92 percent to military with as much as 2 minutes use of afterburner. Time in the operating area is approximately 60 minutes. Configuration: captive AIM-9, AIS pod, chaff/flares, and LANTIRN.

*Air Combat Maneuvering/Air Combat Tactics* – 1.2 hrs, three-ship, one, two, four, or six adversaries – MOAs, 70 series & ECRs. Typical mission tasks: airborne systems checks, G-awareness exercise, two-ship intercepts to high aspect ACM against a single adversary, defensive ACM perches against a single adversary executing multiple attack options, two-ship tactical maneuvering while being attacked randomly by a single adversary, two-ship intercepts against a two-ship at low altitude (500 feet minimum), two-ship short range intercepts against a two-ship employing a variety of formations and tactics, defend a specific point from an air threat for a specific time. Altitudes in the area may vary from 500 AGL to 40,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 0 to mach 1.0. Cruise and maneuvering power settings vary from 92 percent to military with as much as 5 minutes use of afterburner. Time in the operating area is approximately 45 minutes. Configuration: captive AIM-9, AIS pod, and chaff/flares.

*Air-to-Air Weapons Employment* – (Nellis Ranges not used)

*Surface Attack* – 1.6 hrs, two-ship – 70 series or 60 series. Typical mission tasks: airborne systems checks, day and night low altitude navigation to the target area, two-ship day and night low altitude formation training, visual deliveries of simulated nuclear weapons, radar assisted deliveries of nuclear weapons, free-fall weapons deliveries from a pop-up pattern, high and low angle strafe deliveries from a box pattern, medium and low altitude free-fall weapons deliveries using radar and target pod designations, medium and low altitude laser guided bomb (LGB) deliveries with and without buddy lasing, medium and low altitude TGM-65/TGBU-15/TAGM-130 deliveries. Altitudes in the area may vary from 75 feet AGL to 25,000 feet MSL. Airspeeds vary from 350 KCAS to 600 KCAS. Cruise and maneuvering power settings vary from 92 percent to military with as much as 2 minutes use of afterburner. Time in the operating area is approximately 60 minutes. Configurations include: 200 20mm TP, 1 BDU-38, 4 MK-106, BDU-33s, LANTIRN pods, TGM-65, TGBU-15, TAGM-130, captive AIM-9, and chaff/flares.

*Surface Attack Tactics, day/night* – 1.5 hrs, two/four-ship, up to four adversaries – 70 series and ECRs. Typical mission tasks include two/four-ship tactical ingress; low/medium altitude, surface and airborne threat reactions; medium/low altitude, two/four ship attacks on tactical targets; weapons delivery escape maneuvers. Altitudes in the area may vary from 75' AGL to 25,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 350 KCAS to

600 KCAS. Cruise and maneuvering power settings vary from 92 percent to military with as much as 5 minutes use of afterburner. Time in the operating area is approximately 45 minutes. Configurations include: 12 BDU-33, 12 BDU-50, 2 MK-84LD(I), 2 GBU-10(I), captive AIM-9, and chaff/flares.

*Weapons, day/night*, – 1.4 hrs, two/four-ship, up to four adversaries – 70 series or 60 series. Typical mission tasks include tactical ingress, reactions to airborne and surface threats, delivery of live or inert ordnance on tactical targets, tactical egress. Altitudes in the area may vary from 75' AGL to 25,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 350 KCAS to 600 KCAS. Cruise and maneuvering power settings vary from 92 percent to military with as much as 5 minutes use of afterburner. Time in the operating area is approximately 45 minutes. Configurations include 12 live CBU-52/58/71, 12 live MK-20, 12 live MK-82 AIR, 12 live MK-82 LD, 1 GBU-15(I), 1 GBU-24(I), 1 AGM-65D/G, 2 TGM-65D/G, 2 live GBU-12, 2 live GBU-10, 2 live MK-84 AIR, 2 MK-84 LD, 12 live CBU-87, captive AIM-9, and chaff/flares

*Mission Employment* – 1.6 hrs, two/four-ship, up to four adversaries – MOAs, 70 series, ECRs. Typical mission tasks include tactical ingress of a coordinated strike package, reaction to airborne and surface threats, delivery of inert ordnance, tactical egress. Altitudes in the area may vary from 300 AGL to 30,000 feet MSL. Airspeeds vary from 350 KCAS to mach 1. Cruise and maneuvering power settings vary from 92 percent to military with as much as 5 minutes use of afterburner. Time in the operating area can be as long as 20 minutes. Configurations include 2 GBU-10(I), 2 GBU-12(I), 12 MK-82AIR(I), 12 MK-82LD(I), captive AIM-9, and chaff/flares.

## **F-16 Falcons**

*Advanced Handling Characteristics (AHC)* – 1.2 hrs, two-ship – 60 series and MOAs. Mission tasks: airborne systems checks, G-awareness exercise, AHC profile, gun tracking exercise, local area orientation, and low approach at Indian Springs AFAF. Altitudes in the area may vary from 5000 AGL to 30,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 0 KCAS to mach 1. Cruise and maneuvering power settings vary from 92 percent to military with as much as 4 minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9.

*Basic Fighter Maneuvers* – 0.9 hrs, two-ship – MOAs. Typical mission tasks: airborne systems checks, G-awareness exercise, gun/missile exercises, 1v1 maneuvering from visual perch setups, 1v1 maneuvering from visual high aspect setups. Altitudes in the area vary from 5000 AGL to 30,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 0 KCAS to mach 1. Cruise and maneuvering power settings vary from 92 percent to military with as much as 4 minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9, AIS pod, and flares.

*Tactical Intercepts/Air Combat Maneuvering* – 1.0 to 1.3 hrs, two- to four-ship – MOAs – Typical mission tasks: airborne systems checks, G-awareness exercise, single-ship intercepts

against a low altitude aircraft (500 feet minimum), single-ship intercepts against a two-ship employing a variety of formations and tactics, two/four-ship intercepts from low altitude ingress against up to four adversaries employing a variety of formations and tactics, continuous point defense CAP. Altitudes in the area vary from 500 AGL to 40,000 feet MSL, depending on maneuvers being practiced. Airspeeds vary from 0 KCAS to mach 1. Cruise and maneuvering power settings vary from 92 percent to military with as much as 2 minutes use of afterburner. Time in the operating area is approximately 40 – 45 minutes. Configuration: captive AIM-9, AMD pod, and chaff/ flares.

*Air Combat Tactics* – 1.1 hrs, four-ship – MOAs. Typical mission tasks: establish a CAP to defend a specified point from four to six adversaries for a specified time period, provide adequate protection of an attack flight inbound and outbound from its assigned target against up to eight adversaries. Altitudes in the area vary from 500 feet for one sortie then 5,000 AGL to 50,000 feet MSL. Airspeeds vary from 0 KCAS to mach 1.3. Cruise and maneuvering power settings vary from 92 percent to military with as much as 4 minutes use of afterburner. Time in the operating area is approximately 35 – 40 minutes. Configuration: captive AIM-9, 1 ALQ-131 pod, AMD pod, and chaff/flares.

*Air-to-Air Weapons Employment* – (Nellis Ranges not used)

*Surface Attack* – 1.5 hrs, four-ship – 60 series or 70 series and ECRs. Mission tasks: Airborne weapons systems checks, low altitude visual and radar navigation, single ship low altitude step down training (LASDT) at 300 to 500 AGL and 100 to 300 AGL, two ship low altitude formation at 300 to 500 AGL and 100 to 300 AGL, radar/visual deliveries using computed and manual systems, multiangle computed dive bomb deliveries from curvilinear and pop up patterns, low angle strafe. Altitudes in the area vary from 500 AGL to 30,000 feet MSL. Airspeeds vary from 350 KCAS to 550 KCAS. Cruise and maneuvering power settings vary from 92 percent to military with as much as 1 minute use of afterburner. Time in the operating area is approximately 40 minutes. Configurations: 1 300-gal tank, 2 SUU-20, 4 to 6 BDU-33, 4 MK-106, and 250 20mm TP.

*Surface Attack Tactics* – 1.2 hrs, two ship – 60 series or 70 series and EC Ranges. Mission tasks: Two/four-ship low altitude ingress at 300 AGL, low altitude adversary threat reactions, two-ship initial point (IP) to target navigation and attack, single ship threat reactions against surface to air threat emitters, four-ship attacks against enemy air defense targets, attacks employing LGB ordnance and LANTIRN, weapons delivery escape maneuvers, and low altitude egress. Altitudes in the area vary from 500 AGL to 30,000 feet MSL. Airspeeds vary from 350 KCAS to 550 KCAS. Cruise and maneuvering power settings vary from 92 percent to military with as much as 1 minute use of afterburner. Time in the operating area is approximately 40 minutes. Configurations: 1 300-gal tank, 2 SUU-20, 12 BDU-33, 1 CATM-88, 1 ALIC, 6 MK-82 AIR Inert, 1 Target pod, 1 NAV pod, 2 GBU-12 (I), captive AIM-9, and chaff/flares

*Close Air Support* – 1.3 hrs, two ship plus one FAC – 60 series. Mission tasks: night low level (500 AGL) using LANTIRN, one- and two-ship Maverick attacks (300 AGL), FAC coordinated attacks, live AGM-65D/G, threat reactions, and tactical egress. Altitudes in the area vary from



500 AGL to 30,000 feet MSL. Airspeeds vary from 350 KCAS to 550 KCAS. Cruise and maneuvering power settings vary from 92 percent to military with as much as 1 minute use of afterburner. Time in the operating area is approximately 40 minutes. Configurations: 2 370-gal tanks, 1 TGM-65A/B, 1 TGM-65 D/G, 1 AGM-65D/G (live), 2 GBU-12 (inert), 1 nav pod, 1 targeting pod, and chaff/flares.

*Weapons* – 1.1 to 1.2 hrs, four- to eight-ship, up to eight adversaries – 70 series. Mission tasks: four-ship medium or low altitude ingress, two- or four-ship preplanned attacks with inert and live ordnance, live ordnance deliveries against enemy air defense type targets in high threat environment, live LGB employment with self or buddy illumination, airborne and surface threat reactions, and tactical egress. Altitudes in the area vary from 300 AGL to 50,000 feet MSL. Airspeeds vary from 350 KCAS to mach 1.2. Cruise and maneuvering power settings vary from 92 percent to military with as much as 2 minutes use of afterburner. Time in the operating area is approximately 40 minutes. Configurations: 1 300-gal tank, 2 TGM-65D/G, 2 GBU-12 (live), 4 MK-20, 4 CBU-52/58, 2 CBU-87 or CBU-58, 6 MK-82 LDGP, 2 MK-84, nav pod, targeting pod, captive AIM-9, and chaff/flares.

*Night* – 1.3 hrs, two- or four-ship – 60 series or 70 series. Mission tasks: LANTIRN TFR checks, two-ship medium altitude ingress (5,000 AGL minimum) with step down to low altitude (500 AGL), four-ship medium or low altitude ingress, two- or four-ship preplanned night attacks with inert and live ordnance, airborne and surface threat reactions, and tactical egress. Altitudes in the area vary from 500 AGL or 5,000 AGL to 30,000 feet MSL. Airspeeds vary from 350 KCAS to 550 KCAS. Cruise and maneuvering power settings vary from 92 percent to military with as much as 1 minute use of afterburner. Time in the operating area is approximately 40 minutes. Configurations: 2 370-gal tanks, 1 300-gal tank, 2 TGM-65D/G, 2 GBU-12 (live), nav pod, targeting pod, and chaff/flares.

*Mission Employment* – 1.3 hrs, four-ship, four bombers, 4 adversaries – 70 series and ECRs. Mission tasks: night composite force employment or defend a specified area from an adversary air threat for a specified time period with multiple ship CAP and commit, tactical ingress (5,000 feet or 500 AGL min altitude), target area tactics execution, threat reactions, and tactical egress. Altitudes in the area vary from 500 AGL or 5,000 AGL to 30,000 feet MSL. Airspeeds vary from 350 KCAS to mach 1.2. Cruise and maneuvering power settings vary from 92 percent to military with as much as 2 minutes use of afterburner. Time in the operating area is approximately 40 minutes. Configurations: 1 ALQ-131, 2 TGM-65D/G, 1 AIS pod, nav pod, targeting pod, and chaff/flares.

### **A/OA-10 Thunderbolt IIs**

*Advanced Handling Characteristics (AHC)* – 1.7 hrs, two ship – Alamo, 60 series. Mission objectives: perform advanced handling maneuvers and practice low altitude flying. Mission tasks: local area orientation, low altitude navigation, maneuvering, and formation; vertical recovery, stall series, and performance exercises. Altitudes vary from 5,000 AGL to 25,000 feet MSL, airspeeds range from 120 to 350 KCAS, power settings range from 75 percent to mil, time in the area is 60-90 min. Configuration: clean.

*Basic Fighter Maneuvers (BFM)* – 1.7 hrs, two ship – Alamo, 60 series. Mission objectives: perform BFM and practice low altitude flying. Mission tasks: weapons systems checks, low altitude navigation, maneuvering, formation instruction during BFM perch attacks, AIM-9M employment instruction, and ALE-40 flare employment instruction. Altitudes vary from 5,000 AGL to 25,000 feet MSL, airspeeds range from 120 to 350 KCAS, power settings range from 75 percent to mil, time in the area is 60-90 min. Configuration: 1 captive AIM-9M, and flares.

*Surface Attack* – 1.7 hrs, four-ship – 60 series, 70 series, EC range. Mission objectives include: perform LASTE weapons deliveries, basic heading altitude reference system (HARS) and LASTE option C manual weapons deliveries using normal and degraded HUD modes, demonstrate and instruct curvilinear full system deliveries, high threat LASTE deliveries, long range strafe, two-target strafe, high and low altitude AGM-65 deliveries, Pave Penny employment, MK-20, CBU-52/58/87, LGB and 30mm Combat Mix employment, and multi-ship low altitude tactical navigation and formation. Demonstrate and instruct two-ship holding options, attack formations, mutual support considerations, and delivery options in a high threat and reduced threat environment. Instruct in effective countermeasures against selected threat radar systems. Mission tasks include: conventional box pattern using LASTE, HARS, and LASTE Mode C modes of delivery, low angle, high angle, and long range strafe, two target strafe, curvilinear deliveries, AGM-65 deliveries, MK-20, CBU-52/58/87, LGB deliveries and 30mm CM strafe, Pave Penny and LGB employment, laser team/ground FAC coordination and target acquisition, airborne error analysis, low altitude navigation, maneuvering and formation, two-ship low and medium altitude holding patterns, two-ship attacks, high threat and reduced threat free fall munitions employment, ALR-69, ALE-40, and ECM pod operations and employment. Ingress altitudes vary from 300 AGL to 16,000 feet MSL, airspeed is 300 KCAS, mil power setting. Target area altitudes vary 100 AGL to 25,000 feet MSL, airspeeds 200 to 400 KCAS, power settings vary 75 percent to mil, time in the target area 60-90 min. Configurations include: up to 18 BDU-33s, 4 2.75 inch TP RX, up to 450 rounds 30mm TP or 300 rounds 30mm combat mix, 1 TGM-65A/B or live AGM-65 A/B and 1 TGM-65D/G or live AGM-65D/G, 1 GBU-12, 2 CBU-52/58, 2 CBU-87, 2 MK-20, 6 MK-82LDGP (live), 7 WP RX, 1 ALQ-131 pod, and chaff.

*Air-to-air Weapons Employment* – (Live AIM-9 firing, not accomplished at Nellis Ranges).

*Weapons Employment* – 1.7 hrs, two- and four-ship – medium threat scenario uses 60 series, high threat scenarios use 70 series and ECRs. Mission objectives: demonstrate and instruct holding options, low threat tactics, high threat tactics, high threat CAS, use MK 82 bombs, HE rockets, 30mm under simulated 5,000 feet ceiling, multiple two-ship attacks, employ appropriate low drag tactical options, and analyze A-10 heavyweight handling characteristics. Mission tasks: weapons systems checks, reduced threat en route formations, low altitude enrobe formations, multiple two ship holding options, Tactical Air Control System (TACS) coordination, two-ship attacks, multiple two-ship attacks, AGM-65, rocket and gun employment, reattack options, mutual support and threat suppression options, ALE-40 flares employment, determination of weapons effectiveness, and Pave Penny employment. Medium threat scenario altitudes vary 100 AGL to 25,000 feet MSL, airspeed varies 200 to 400 KCAS, power settings vary 75 percent to mil, 60-90 min. in target area. High threat scenario

parameters vary 100 feet to 4000 AGL, 300-330 KCAS ingress, target area airspeed varies 250-350 KCAS, power settings vary 80 percent to mil, 60- 75 minutes in the target area.

Configurations include: 12 MK 82LDGP(live), 8 MK 82HDGP (live, cockpit selectable), 14 2.75-inch HE rockets, 3 MK 84 (live) w/FMU-113 Fuse or 2 MK 84 (live) with 1 TGM-65A/B and 1 TGM-65D/G (live AGM-65s may be substituted), 500 rounds 30mm TP, flares/chaff, and Pave Penny pod.

*Combat Search and Rescue (SAR)* – 1.7 hrs, four ship – 60 series, 70 series, ECRs. Mission objectives: demonstrate ability to perform and instruct basic functions of SAR and SAR in a tactical alert scenario. Mission tasks: visual search techniques, electronic search techniques, command, control, and communications (C<sup>3</sup>), strike control and reconnaissance techniques, escort formations, threat suppression/mutual support, weapon employment, Pave Penny employment, and survivor pick-up planning and execution. Altitudes vary 100 AGL to 20,000 feet MSL, airspeeds are 300 KCAS ingress/egress and 200 to 400 KCAS in the target area. Power settings range from 75 percent to mil, with 60 to 90 minutes in target area.

Configurations include: 6 BDU-33, 2 TGM-65 A/B/C/D, 400 rounds 30mm TP, 14 2.75-inch WP RX, 1 Pave Penny pod, and flares.

*Night* – 1.7 hrs, two ship – 60 series. Mission objectives include: demonstrate and instruct basic night weapons deliveries, various flare deliveries, laser, and Pave Penny options, low intensity CAS, Air Interdiction (AI), low threat tactics using illumination flares and MK84 bombs in a night tactical CAS scenario. Mission tasks include: conventional box pattern, high angle strafe, airborne error analysis, flare procedures and deliveries, laser procedures, Maverick and WP rocket employment, TACS coordination, threat suppression. Altitudes vary 2,000 AGL to 20,000 feet MSL, airspeed varies 200 to 400 KCAS, power settings vary 75 percent to mil, 60 to 120 minutes in target area. Configurations include: 9 BDU-33, 1 GBU-12, 2 MK 84LDGP (live), 4 2.75-inch WP RX, 300 rounds 30mm TP, 2 SUU-25 flare dispensers, 8 LUU-2A/B flares, 8 LUU-1/5/6 flares, 2 TGM-65D/G (live AGM-65 may be substituted), Pave Penny pod, and flares.

*Dissimilar Air Combat Tactics (DACT)/Defensive Low Altitude Air-to-Air Training (LOWAT)* – 1.7 hrs, two-ship, four adversaries – MOAs, or 60 series. Mission objectives include: demonstrate and instruct mutual support and defensive maneuvers during medium altitude ingress with radar air threat (2v2). Demonstrate and instruct two-ship visual lookout, mutual support, and 2v2 defensive maneuvering during LOWAT. Mission tasks include: weapons system check, in-flight instructional techniques, medium altitude DACT 1v2 and 2v2 with one pair of dissimilar aircraft, medium altitude defensive BFM (1v1) with one dissimilar aircraft, 2v2 LOWAT with one pair of dissimilar aircraft, visual lookout, threat identification, defensive initial moves, mutual support, ALR-69, ECM pod, and ALE-40 use. Altitudes range from 300 AGL to 25,000 feet MSL, airspeeds range from 120 KCAS to 450 KCAS, power settings are 80 percent to mil, 60-75 minutes time in the area. Configuration: chaff/flares, 1 ALQ-131, and 1 captive AIM-9M.

*Joint Air Attack Team (JAAT)* – (Nellis Ranges not used)

*Mission Employment (ME)* – 1.8 hrs, two/three/four-ship, two dissimilar escort, two adversaries – MOAs, 70 series and ECRs. Mission objectives include: instruct the employment

of the AGM-65, gun, free-fall ordnance, and LUU-1/2A/B flares and/or NVGs in a complex night composite force scenario against fixed and mobile targets. Instruct multi-ship battlefield air interdiction (BAI) concepts in a complex composite force tactical scenario employing free-fall ordnance against fixed targets. Locate mobile targets using armed reconnaissance. Mission tasks include: Weapons system checks, enrobe formations, armed reconnaissance, target acquisition, free-fall munitions employment, forward firing munitions employment, flare employment, threat identification/mutual support, ALR-69/ECM pod/ALE-40 employment. Altitudes range from 300 AGL to 30,000 feet MSL, airspeeds range from 300 to 330 KCAS with military power during ingress/egress and 300 to 350 KCAS, military power, in the target area. Time in the target area is 10-15 minutes. Configurations include: 6 BDU-33, 1 TGM-65D/G, Pave Penny pod, 1 captive AIM-9M, 1 ALQ-131, and chaff/flares.

#### **414 CTS/AT Adversary Tactics — F-16C Falcon**

*Local Area Orientation* — 1.2 hrs, two-ship — 70 series, MOAs. Mission objective: local area familiarization and procedures orientation. Mission tasks: G-awareness exercise, air-to-air intercepts, local area orientation, low approach at Indian Springs AFAF. Altitudes in the areas may vary from 10,000 AGL to 50,000 feet MSL, airspeeds vary from 200 KCAS to mach 1.2. Cruise and maneuvering power settings vary from 95 percent to military with usually no use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9.

*Single Air Combat (SAC)* — 1.2 hrs, two-ship — MOAs. Mission objectives: introduce Former Soviet Union (FSU) formations, basic offensive maneuvers, basic defensive maneuvers, and gun exercises. Typical mission tasks include: FSU close and deployed formations, ranging exercise, offensive SAC to IR missile/gun parameters, tracking and high deflection gunshots, subsequent attacks and separations, defensive SAC, 1v1 maneuvering from visual high aspect setups. Altitudes in the areas may vary from 10,000 AGL to 50,000 feet MSL, airspeeds vary from 200 KCAS to mach 1.2. Cruise and maneuvering power settings vary from 95 percent to military with approximately five minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9, AIS pod, and chaff/flares.

*Element Air Combat (EAC)* — 1.2 hrs, two-ship, one adversary — MOAs. Mission objectives: employ FSU element offensive and counter offensive maneuvers against a single bandit from visual perch or beyond visual range (BVR) set-ups. Mission tasks include: demonstrate proficiency in defensive and offensive visual formation tactics to engage, kill, and separate from a single bandit; high aspect SAC tactics, GCI directed intercepts. Altitudes in the areas may vary from 10,000 AGL to 50,000 feet MSL, airspeeds vary from 200 KCAS to mach 1.2. Cruise and maneuvering power settings vary from 95 percent to military with approximately five minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9, AIS pod, and chaff/flares.

*Low Altitude Step Down Training (LASDT)* — 1.2 hrs, two-ship, two adversaries — MOAs. Mission objectives: demonstrate proficiency at low altitude to include acceleration, deceleration, turns, terrain masking, ridge crossings; vertical maneuvers to include climbs,

descents, slices, low altitude formations, proper threat assessment and defensive reactions, low altitude pursuit and weapons employment; and high-to-low conversions against low altitude targets. Mission tasks: practice FSU low altitude attack formations, low altitude handling, turns, and vertical awareness, defensive reactions, offensive pursuit and weapons employment, high-to-low conversions. Altitudes in the areas may vary from 500 AGL to 30,000 feet MSL, airspeeds vary from 200 KCAS to mach 1.2. Cruise and maneuvering power settings vary from 95 percent to military with approximately five minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9, AIS pod, and chaff/flares.

*Element Combat Tactics (ECT)* – 1.2 hrs, two/four-ship, two/four adversaries – MOAs. Mission objectives: practice basic Mig-29 FULCRUM formations and tactics with GCI control against adversary sweep. Introduce advanced FULCRUM intercept and engagement tactics. Properly employ an element against CAP and sweep patterns. Demonstrate proficiency in element integrity, radar and visual search techniques and communications procedures. Use F-16 fire control system (FCS) to simulate proper FULCRUM FCS and FULCRUM weapons employment. Mission tasks include: practice FULCRUM tactics and advanced FULCRUM tactics, under GCI control. Demonstrate proficiency in FULCRUM element tactics, and situational awareness. Altitudes in the areas may vary from 10,000 AGL to 50,000 feet MSL, airspeeds vary from 200 KCAS to mach 1.2. Cruise and maneuvering power settings vary from 95 percent to military with approximately five minutes use of afterburner. Time in the operating area is approximately 30 minutes. Configuration: captive AIM-9, AIS pod, and chaff,/flares.

## **422 Test & Evaluation Squadron**

The 422 TES is dedicated to testing and evaluating various equipment, software, and tactics on F-15C, F-15E, F-16C, HH-60G, and A-10 aircraft. The flight profiles vary with each aircraft type and test profile. Flight profiles generally fall into one of the previous mentioned categories and can be approximated using the corresponding aircraft type in the previous sections.

## **HH-60 Division USAFWS HH-60G Pave Hawk**

*Familiarization* – 3.0 hrs, two-ship – 60 series ranges, Indian Springs. Familiarize crews with Nellis local flying area and procedures. Mission tasks include: Nellis AFB and Indian Springs AFAP traffic pattern orientation, overflight of remote sites, and local instrument procedures. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 kts to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is usually 90 minutes. Configuration: Forward Looking Infrared (FLIR).

*Night Familiarization* – 3.0 hrs, two ship – 60 series ranges, Indian Springs. Night area orientation and equipment use. Mission tasks include: enhanced systems and Heads Down Display proficiency demonstration, range orientation with shadow gunnery moving target acquisition, and night desert landing. Altitudes in the area vary from surface to 1,000 AGL,

depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is usually 90 minutes. Configuration: FLIR, and 2 M-60 w/1500 rounds 7.62mm.

*Navigation Systems Operations* – 2.5 hrs, two-ship – 60 series ranges. Demonstrate proficiency with enhanced systems and degraded operation. Mission tasks include GPS approach, degraded operation of nav systems, and shadow gunnery. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is usually 90 minutes. Configuration: FLIR, and 2 M-60 w/1500 rounds 7.62mm.

*Basic Helicopter Maneuvers (BHM)* – 2.0 hrs, two-ship – MOAs, 60 series ranges. Instruct and review basic helicopter maneuvers and two-ship maneuvering. Mission tasks include power and G force management, horizontal and vertical maneuvering, low-level operations, advanced handling maneuvers, two-ship formation maneuvers, tactical formations and turns, in-place/cross/center/split/break/check turns, dig & pinch, and Night Vision Goggles (NVG) maneuvering operations. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is usually 90 minutes. Configuration: clean.

*Defensive Maneuvering (DM) Ground* – 3.5 hrs, two-ship – 70 series ranges. Demonstrate ability to evade electronic threats. One sortie will be at night. Mission tasks include formation maneuvering, threat area ingress, threat avoidance, and defensive maneuvers against ground based threats. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is usually 2 hours. Configurations: chaff, APR-39, ALQ-144, and FLIR.

*Defensive Maneuvering Air* – 2.0 hrs, two-ship, up to two helicopter aggressors, up to two fixed wing aggressors – 60 series, MOAs. Instruct defensive maneuvers to counter attacking airborne threats. Mission tasks include ranging exercise, tail-chase maneuvers, counters to tail-chase maneuvers, covering maneuvers, head-on attacks, pitch-back attack, counter to pitch-back attack, one vs. one operations, two vs. one operations, two vs. two operations, one helicopter vs. one fixed-wing fighter, two helicopters vs. one fixed-wing fighter, two helicopters vs. two fixed-wing fighters, and DM box operations. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is usually 90 minutes. Configurations include: FLIR, 2 M-60 with 800 7.62mm blanks, ALQ-144, chaff, and APR-39.

*Combat Search and Rescue Task Force Scenario* – 2.5 hrs, two-ship, HC-130, rescort aircraft, survivor and ground aggressors – 60 series ranges and Alamo. Instruct Search and Rescue (SAR) in a tactical alert, preplanned scenario. Two sorties will be conducted at night. Mission tasks include: Command, Control and Communications (C3) techniques, visual/electronic

search techniques, call for fire, pick-up options, threat suppression/ mutual support, weapon employment, survivor pick-up, and medical exercise. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is approximately 2 hours. Configurations include: FLIR, 2 M-60 with 800 7.62mm blanks, and chaff.

*Mission Employment* – 4.0 hrs, two-ship, HC-130, rescort aircraft, survivor, fixed-wing or helicopter aggressor, ground aggressors – 70 series and ECRs. Instruct SAR in a preplanned scenario against a hostile force. One sortie will go long-range to Fallon EC range for a deep penetration exercise. Mission tasks include: C3 techniques, visual/ electronic search techniques, call for fire, pick-up options, threat suppression/ mutual support, weapon employment, survivor pick-up, and medical exercise. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is usually 2.5 hours. Configurations include: FLIR, 2 M-60 with 1500 7.62mm live, and chaff.

## **66 Rescue Squadron HH-60G Pave Hawk**

The 66 RQS is an operational helicopter rescue squadron that flies in the NAFR to maintain aircrew currency and proficiency. The profiles are similar to the CRQS.

*Air-to-ground* – 3.0 hrs, one to two-ship – 60 series ranges. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. Cruise and maneuvering power setting is always full throttle for the Pave Hawk. Time in the range area is 60 to 90 minutes. Configuration: FLIR and 2 M-60 w/1500 rounds 7.62mm live.

*Electronic Combat* – 4.0 hrs, two-ship – 70-Series and ECRs. Altitudes in the area vary from surface to 1,000 AGL, depending on tactics employed. Airspeeds vary from 0 to 140 KCAS. May conduct repelling operations. Time in the range area is usually 2.5 hours. Configurations include: FLIR, 2 M-60 with 1500 7.62mm live, and chaff.

*Low-level Navigation Training* – 3.0 hrs, one- to three-ship – MOAs. Altitudes in the area vary from surface to 200 AGL. Airspeeds vary from 0 to 140 KCAS. May conduct repelling operations. Time in the range area is usually 2.0 hours. Configurations include: FLIR and 2 M-60 with 1500 7.62mm blanks.

Air Refueling operations are conducted in Mormon Mesa AR track with C-130s providing the fuel. Altitudes vary from as low as 1000 AGL to 6,000 feet MSL. Air refueling airspeed is 115 KCAS. Time in the area is as long as 2.0 hrs.

## **WS Det (Ellsworth AFB) B-52 Stratofortress**

B-52s usually only fly in the NAFR when participating in large force exercises such as Red/Green Flags and the Mission Employment/Strike phases of B-52 Weapons School. They will usually enter from the east through Caliente through the MOAs, 70 series and ECRs or 60

series ranges. They will typically employ as many as three aircraft. They may ingress to the 70 or 60 series ranges at 300 AGL to 39,000 feet MSL, 340 to 420 KTAS. Approximate power settings range from 60 percent to 90 percent RPM and are very dependent on airspeed and altitude. Time in the target areas are 24 to 40 minutes for the 60 series and 30 to 90 minutes for the 70 series ranges.

### **USAF Air Demonstration Squadron — Thunderbirds — F-16C/D Falcon**

Nellis AFB is the home of the USAF Thunderbirds Air Demonstration Squadron. They typically fly as a six-ship for 1.2 hrs flying time per sortie and practice almost exclusively at Indian Springs AFAF within R65, and occasionally at Nellis AFB. They also may fly an incentive/media flight as a single ship using all the same maneuvers, altitudes, and power settings. The Thunderbirds practice three profiles listed in the following tables: a high show, low show, and flat show, to allow for demonstrations in various weather conditions. Altitudes range from 250 AGL to 18,000 feet MSL. Airspeeds vary from 110 KCAS to .94 mach, with power settings from 82 percent to military with 1.5 to 2 minutes of afterburner. Time in the area is 35 to 40 minutes. Configuration — smoke only.

### **11<sup>th</sup> to 15<sup>th</sup> Reconnaissance Squadrons**

The mission of the 11<sup>th</sup> to 15<sup>th</sup> Reconnaissance Squadrons are to provide long endurance, unmanned aerial reconnaissance, surveillance and target acquisition that produces near real-time multi-sensor imagery and intelligence for the war fighter. Operations commenced September 1996 with the Predator UAVs. The Tier 3 Minus and/or Tier 2 Plus may be operated in the future. The number of sorties flown will be dependent on the availability of aircraft which may grow as high as 30. Initial estimates are for two sorties per week. The Predator flies at 65-100 kts from 1500 AGL to FL250. Tier 2+ and Tier3- will fly at 300+ kts from 1500 AGL to FL600. Sorties lengths will be from 1 hr to 40+ hrs. R63, R64 and R65 will be the primarily operating areas on the Nellis Air Force Range. The main activity on these ranges will be for flight pattern work and use of airspace to climb the UAVs into the positive control area above FL180. Other ranges may be used for target acquisition practice for the training of sensor operators and intel analysis.

### **Defense Threat Reduction Agency (DTRA)**

The DTRA has a 5-year plan which should start in 1998 and go through at least 2002. They intend to build a subterranean building approximately 110 feet 110 feet x 25' high on R64. This building will be blast hardened and earthen covered with at least 20 feet of dirt. Their mission is to test building structures against simulated biological/ chemical (bio/chem) agents. At the start of these test, simulated bio/chem agents will be inserted near the structure to test its integrity under non-blast conditions. As the tests progress, air dropped weapons will be used to deliver the simulated bio/chem weapons. Sensors will be placed throughout the building to test blast and bio/chem intrusion effects. It is expected that a follow-on program will continue to do test past the year 2002.



### **Sandia National Laboratories (Tonopah Test)**

The Sandia mission has been on-going for many years in the Tonopah Test area. Their primary mission is to develop, operate, and maintain a ballistic and flight test range and associated facilities to support special weapons research and development. They also perform quality assurance of special weapons by actual deliveries of weapons taken from the shelf and dropped on an instrumented range. They then analyze the resulting internal function of the weapon. Any explosive which functions is non-nuclear.

### **USAF Desert Warfare Training Center**

The USAF Desert Warfare Training Center, more commonly called "Silver Flag Alpha" provides advanced training to over 2,100 security police personnel annually from Air Force active duty, national Guard and Reserve units on tactical and weapons skills for the defense of Air force bases in a desert environment. The training lasts 14 to 16 days and includes: classroom and practical training on common soldier skills (i.e. claymore mines, patrolling, land navigation. . .), individual and specialized equipment, unit level operations, and small arms marksmanship. The training concludes with a 2 to 3 day field training exercise that provides the unit with a practical evaluation of its strengths and weaknesses. Additionally, the Desert Warfare Training Center provides weapons and tactical training, live-fire ranges and training facilities for an additional 1,500 personnel annually to include other USAF units, Department of Defense Services, and Federal, State, and local law enforcement agencies. These activities take place on a portion of R63 and include small arms live fire and tactics.

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**APPENDIX A.4**

**MUNITIONS DATA**

## APPENDIX A.4

### MUNITIONS DATA

Table A.4-1 came directly from the 99 RANS monthly range utilization report data base, which addresses utilization of the NAFR from time available versus time used. The percentage shown in this attachment is an average of both day and nighttime use. The amount of daytime available on the range varies depending on the time of year and its percentage is based on time flown versus time available. Nighttime and weekend use is based solely on time scheduled versus time used (i.e., scheduling effectiveness).

Table A.4-1. NAFR Utilization						
	1990	1991	1992	1993	1994	1995
R61	88	75	81	82	87	85
R62	91	66	57	62	85	88
R63	86	34	24	44	60	72
R64	93	73	76	81	88	87
R65	91	60	52	49	78	84
R71	82	57	68	65	80	77
R74	97	85	82	89	96	96
R75	99	80	78	74	94	96
R76	99	62	68	68	91	94
ECE	87	86	80	82	89	93
ECW	80	77	77	80	85	90
Alamo	82	81	73	71	80	82
Caliente	84	88	84	72	77	83
Coyote	94	96	95	92	95	96
Elgin	79	80	80	65	70	75
Reveille	81	80	75	74	60	82

Table A.4-2 shows the approximate amount of ordnance dropped on the NAFR. The 1994 data came from the Combat Munitions Unit (CMU) and Red Flag records. The CMU only keeps the current year and one previous year of data. Red Flag keeps data for several years, but without the CMU numbers it's not possible to show accurate total data prior to 1994. This information varies from that reported in the "Special Nevada Report" (approximately 1,000 tons per year). The numbers acquired for the Report did not reflect the Red Flag data for that year. Without the Red Flag data, the tonnage for 1994 was 1,338 tons, approximately rounded down to 1,000 tons. In 1991, the Tonopah F-117s and George AFB F-4Gs were still flying on the NRC, hence a slightly larger amount of ordnance. As both George AFB and Tonopah operations closed, the

amount of ordnance decreased slightly. With current projections, the ordnance dropped on the NRC is expected to remain approximately 3,000 tons per year, of which, 47 percent is live (high explosive).

Table A.4-2. Net Weight of Ordnance Dropped on NAFR			
	WEIGHT IN TONS		
	<i>Inert</i>	<i>Live</i>	<i>Total</i>
1991	1998	1692	3690
1992	1948	1662	3610
1993	1779	1636	3415
1994	1641	1393	3034
1995	2401	2103	4504

*Note:* A.4-3 provides data on ordnance usage at Silver Flag Alpha.

Table A.4-3 provides a detailed breakdown of CY95 57<sup>th</sup> Wing and TDY ordnance expenditures. Table A.4-4 provides data on ordnance usage at Silver Flag Alpha.

<i>Noun</i>	<i>57<sup>th</sup> Wing</i>	<i>Flag Exercises</i>	<i>Visiting Units</i>	<i>Capstone</i>	<i>Total</i>
20mm TP	22,504				22,504
20mm HEI	930				930
30mm TP	239,591		390	4,215	244,196
30mm HEI	14,337				14,337
Flares	70,209	11,277	7,496	1,104	90,086
Chaff	186,095	182,872	25,777		394,744
LUUs	1,280		69		1,349
AGM-65s	101				101
2.75" RKTS	4,155			73	4,228
BDU-33s	10,819	3,324	201		14,344
BDU-38s	22				22
MK-20s	132		8		140
CBUs	475		24	18	517
GBU-12 inert	145	129	20		294
GBU-10 inert	19	36			55
GBU-15 inert	17	2			19
GBU-12 live	116	72		4	192
GBU-10 live	0	2			2
GBU-24 live	0	5			5
AGM-130 live	1				1
BDU-50s	1,351	2,211			3,562
MK-82 live	1,790	2,000	24	6	3,820
MK-84 inert	390	338	191		919
MK-84 live	278	516	20	34	848

POC: TSGT Hedlind or SSGT Davidson, AFK, 1266

Table A.4-4. Range 63A Munitions Use

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
			<b>Silver Flag Alpha Munitions Use</b>													
9mm	5500	6500	7000	7500	1500	9000	13020	13020	13020	14000	14000	14000	14000	14000	14000	14000
5.56mm (ball)	843000	844686	667656	927300	295050	1180200	1433100	705900	923100	1357500	1574700	1683300	1683300	1683300	1683300	1683300
5.56mm (tracer)	80000	80160	63360	88000	28000	112000	136000	104000	136000	200000	232000	248000	248000	248000	248000	248000
7.62mm (ball/tracer)	1890000	1501500	1978200	1680000	840000	1680000	1480500	1155000	987000	1680000	1680000	1680000	1680000	1680000	1680000	1680000
40mm Aluminum training round	0	6,300	15,220	16,200	2,250	17,000	11,250	35,100	35,600	40,000	40,000	40,000	40,000	40,000	40,000	40,000
40mm (Talcum power training round)	2500	9950	5000	7500	2500	6250	8125	9750	6825	11250	12500	15000	15000	15000	15000	15000
40mm (Tear Gas Round)	500	500	500	500	100	500	600	600	700	800	1000	1000	1000	1000	1000	1000
40mm (Illumination Round)	500	500	500	500	150	250	300	400	500	600	750	1000	1000	1000	1000	1000
40mm High Explosive Armour Piercing	0	0	0	0	0	0	0	0	0	500	1500	1500	1500	1500	1500	1500
81mm (White Phosphorus)	252	210	252	210	210	228	168	210	210	210	210	210	210	210	210	210
81mm (High Explosive HE)	252	210	252	210	210	228	168	210	210	210	210	210	210	210	210	210
81mm (Training Round)	252	210	252	210	210	228	168	210	210	210	210	210	210	210	210	210
81mm (Illumination Round)	378	315	378	378	108	342	378	378	450	450	450	450	450	450	450	450
50 caliber (Armor Piercing/Incendiary)	28800	18000	37800	48600	39600	34200	41400	25200	39600	37800	37800	37800	37800	37800	37800	37800
12 gauge (OO buckshot)	500	500	500	500	100	1000	2000	2000	2500	2500	2500	2500	2500	2500	2500	2500
12 gauge (Slug)	100	100	100	100	25	250	500	500	750	750	750	750	750	750	750	750
66mm light anti-tank weapon (LAW)	30	30	30	30	0	30	20	25	30	25	25	25	25	25	25	25
35mm subcaliber projectile for LAW	2288	3224	5408	11544	4550	18200	22100	16900	15665	32500	37700	39000	39000	39000	39000	39000
60mm (High Explosive)	500	500	500	500	500	500	1,500	1,500	1,500	2,000	2,000	3,000	4,000	4,000	4,000	4,000
84mm (AT-4) anti-tank weapon	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) HE 441B airburst round	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) HEDP 502 anti bunker/armor	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) HEAT 551 anti armor	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) 469B smoke round	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) FFV 552 target practice(7.62)	0	0	0	0	0	0	0	0	0	0	50,000	60,000	60,000	60,000	60,000	60,000
90mm Flechette	1000	1000	1000	1000	255	200	0	0	0	0	0	0	0	0	0	0
90mm High Explosive	1000	1000	1000	1000	255	200	0	0	0	0	0	0	0	0	0	0
Ground Burst Simulator	490	630	420	1120	420	1085	1400	1015	1400	1540	2275	2380	2380	2380	2380	2380
Smoke Pot (White)	56	72	48	128	48	124	128	116	128	176	260	272	272	272	272	272
CS Grenade (Tear Gas)	490	630	420	1120	420	1085	1400	1015	1400	1540	2275	3010	3010	3010	3010	3010
Whistler Booby Trap	350	450	300	800	300	775	1000	725	1000	1100	1625	2150	2150	2150	2150	2150
M127A1 Slap Flares	420	540	360	960	360	930	1200	870	1200	1320	1950	2040	2040	2040	2040	2040
Trp Flares	504	648	432	1152	432	1116	1440	1044	1440	1584	2340	2448	2448	2448	2448	2448
Smoke (Green, Purple, Yellow)	798	1026	684	1824	684	1767	2280	1653	2280	1824	3705	3876	3876	3876	3876	3876
Grenade Simulators	910	1170	780	2080	780	2015	2600	2600	2600	2860	4225	4420	4420	4420	4420	4420
5.56mm Blank	49280	126720	84480	225280	84480	218240	281600	204160	281600	309760	457600	478720	478720	478720	478720	478720
7.62mm Blank	14700	37800	25200	67200	25200	65100	84000	60900	84000	92400	136500	142800	142800	142800	142800	142800

**APPENDIX A.5**

**SILVER FLAG ALPHA TRAINING**



## APPENDIX A.5

### SILVER FLAG ALPHA TRAINING

Table A.5-1 covers the activities accomplished on Range 63A, also known as the Silver Flag Alpha training site. It shows the wide variety of law enforcement personnel who train at this site. It is the most complete data on record for the NAFR, with meaningful projections through 1999. Projections after that are straight-lined. These data came from Silver Flag Alpha records.



Table A.5-1. I : 63A Activities (continued)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
				<b>Silver Flag Alpha Munitions Use</b>												
9mm	5500	6500	7000	7500	1500	9000	13020	13020	13020	14000	14000	14000	14000	14000	14000	14000
5.56mm (ball)	843000	844686	667656	927300	295050	1180200	1433100	705900	923100	1357500	1574700	1683300	1683300	1683300	1683300	1683300
5.56mm (tracer)	80000	80160	63360	88000	28000	112000	136000	104000	136000	200000	232000	248000	248000	248000	248000	248000
7.62mm (ball/tracer)	1890000	1501500	1978200	1680000	840000	1680000	1480500	1155000	987000	1680000	1680000	1680000	1680000	1680000	1680000	1680000
40mm Aluminum training round	0	6,300	15,220	16,200	2,250	17,000	11,250	35,100	35,600	40,000	40,000	40,000	40,000	40,000	40,000	40,000
40mm (Talcum power training round)	2500	9950	5000	7500	2500	6250	8125	9750	6225	11250	12500	15000	15000	15000	15000	15000
40mm (Tear Gas Round)	500	500	500	500	100	500	600	600	700	800	1000	1000	1000	1000	1000	1000
40mm (Illumination Round)	500	500	500	500	150	250	300	400	500	600	750	1000	1000	1000	1000	1000
40mm High Explosive Armour Piercing	0	0	0	0	0	0	0	0	0	500	1500	1500	1500	1500	1500	1500
81mm (White Phosphorus)	252	210	252	210	210	228	168	210	210	210	210	210	210	210	210	210
81mm (High Explosive HE)	252	210	252	210	210	228	168	210	210	210	210	210	210	210	210	210
81mm (Training Round)	252	210	252	210	210	228	168	210	210	210	210	210	210	210	210	210
81mm (Illumination Round)	378	315	378	378	108	342	378	378	450	450	450	450	450	450	450	450
50 caliber (Armor Piercing/Incendiary)	28800	18000	37800	48600	39600	34200	41400	25200	39600	37800	37800	37800	37800	37800	37800	37800
12 gauge (OO buckshot)	500	500	500	500	100	1000	2000	2000	2500	2500	2500	2500	2500	2500	2500	2500
12 gauge (Slug)	100	100	100	100	25	250	500	500	750	750	750	750	750	750	750	750
66mm light anti-tank weapon (LAW)	30	30	30	30	0	30	20	25	30	25	25	25	25	25	25	25
35mm subcaliber projectile for LAW	2288	3224	5408	11544	4550	18200	22100	16900	15665	32500	37700	39000	39000	39000	39000	39000
60mm (High Explosive)	500	500	500	500	500	500	1,500	1,500	1,500	2,000	2,000	3,000	4,000	4,000	4,000	4,000
84mm (AT-4) anti-tank weapon	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) HE 441B airburst round	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) HEDP 502 anti bunker/armor	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) HEAT 551 anti armor	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) 469B smoke round	0	0	0	0	0	0	0	0	0	0	500	500	500	500	500	500
84mm (M3) FFV 552 target practice(7.62)	0	0	0	0	0	0	0	0	0	0	50,000	60,000	60,000	60,000	60,000	60,000
90mm Flechette	1000	1000	1000	1000	255	200	0	0	0	0	0	0	0	0	0	0
90mm High Explosive	1000	1000	1000	1000	255	200	0	0	0	0	0	0	0	0	0	0
Ground Burst Simulator	490	630	420	1120	420	1085	1400	1015	1400	1540	2275	2380	2380	2380	2380	2380
Smoke Pot (White)	56	72	48	128	48	124	128	116	128	176	260	272	272	272	272	272
CS Grenade (Tear Gas)	490	630	420	1120	420	1085	1400	1015	1400	1540	2275	3010	3010	3010	3010	3010
Whistler Booby Trap	350	450	300	800	300	775	1000	725	1000	1100	1625	2150	2150	2150	2150	2150
M127A1 Slap Flares	420	540	360	960	360	930	1200	870	1200	1320	1950	2040	2040	2040	2040	2040
Trip Flares	504	648	432	1152	432	1116	1440	1044	1440	1584	2340	2448	2448	2448	2448	2448
Smoke (Green, Purple, Yellow)	798	1026	684	1824	684	1767	2280	1653	2280	1824	3705	3876	3876	3876	3876	3876
Grenade Simulators	910	1170	780	2080	780	2015	2600	2600	2600	2860	4225	4420	4420	4420	4420	4420
5.56mm Blank	49280	126720	84480	225280	84480	218240	281600	204160	281600	309760	457600	478720	478720	478720	478720	478720
7.62mm Blank	14700	37800	25200	67200	25200	65100	84000	60900	84000	92400	136500	142800	142800	142800	142800	142800

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**APPENDIX A.6**

**NAFR GROUND ACTIVITIES**

## APPENDIX A.6

### NAFR GROUND ACTIVITIES

3 The data in Tables A.6-1 and A.6-2 below covers Air Force, DOE, and contractor personnel  
4 ground activities, acres, targets, and roads used during the operations and maintenance of  
5 NAFR. Miles driven on the range are for activities such as rebuilding targets, operating threat  
6 radars and cleaning up expended ordnance and target debris. The radio and microwave  
7 transmissions come from all the communications infrastructure on the range, which feeds data  
8 back and forth from Nellis AFB to NAFR. For vehicles, 21 percent were 1 ton or greater, of  
9 which 75 percent were diesel powered. Of the remaining 79 percent (under-1-ton vehicles),  
10 only 5.6 percent were powered by diesel. The radar numbers are for 65 individual radars,  
11 while the radio, generator, and microwave information is a total for each type of system. This  
12 data will be updated as required in the future. Projected activity is expected to remain at the  
13 level of the 1995 numbers.

Table A.6-1. 1994 Nellis Range Ground Activity

1994 Nellis Range Ground Activity								
Threat Radars:	Frequency	TX Hours		Threat Radars:	Frequency	TX Hours		A/G Radios: # of Emitters Hours
MPS-T1				A64	I	100		GRC-171 40 29,200
S14	E/F	445			J	90		GRC-211 5 3,650
S16	I	160			E	8		GRT-21 11 8,030
S18	G	635		A66	I	103		GRT-22 34 24,820
S19	I	80			J	26		
S20	G	297			E	8		<b>Microwave: # of Emitters Hours</b>
S21	G	612		A67	I	138		MSF-5000 4 2,080
S22	I	213			J	5		MICOR 6 11,360
S23	I	177			E	2		MASTER II 1 520
S36	G	615		TPT-1				FTR 2410A 2 1,040
S37	E/F	682		U3A	H	398		TCM-6 42 213,560
S38	I	486		U3B	H	147		RHG 12 30,960
MSQ-77				U3C	J	211		RACON 8 16,640
A58	I	600		U3D	J	224		GRANGER 7 39,260
A59	I	260		U3E	J	220		MW-518 1 8,760
A60	I	400		U4A	H	117		MDR-8 16 140,160
A61	I	66		U4B	H	167		MDR-8-5N 4 35,040
A62	I	520		U4C	J	119		MVR-8G 36 229,600
MPS-9				U4D	J	117		
L89	E/F	420		U4E	J	176		<b>Other Emitters</b>
MPS-T14				VPQ-1				Freq Band # of Emitters Hours
H25	E	350		A70	J	62		A 209 91,542
TPT-5 UMTE	I	2017		A71	J	16		B 121 52,998
MSQ-T43				A73	J	37		C 40 17,520
S131	I	125		A75	J	95		D 69 317,331
S30	J	33		A77	J	54		E 159 69,642
S31	J	150		A78	J	180		F 15 4,680
S32	J	102		A80	J	49		G 47 14,664
S33	J	29		A90	J	64		H 87 38,106
S34	J	21		A91	J	32		I 23 10,074
MSQ-T13				A92	J	97		J 35 10,920
S12	I	20		A93	J	48		K 2 624
	G	2		A97	J	7		
	H	20		A98	J	12		
MPQ-T3				HMU	J	25		
A63	I	1		TPT-4				
	I	1		U2	J	12		
	I	1						
<b>Number of Targets</b>		<b>Withdrawal Acreage</b>						
R4806 = 253		Total 3,050,000						
R4807 = 867		Impact Areas 23,084						
				Gallons	Gallons			
<b>Vehicles:</b>		Miles	Gas	Gas	Diesel			
< or = 1 Ton		12,306,293	1,156,792	73,838				
> 1 Ton		3,272,444	94,361	283,083				
<b>Road Maint:</b>								
Paved		298						
Gravel		188						
Dirt		327						
<b>Road Mileage:</b>								
Paved		344						
Unpaved		1600						
<b>Generators:</b>		Hours						
< or = 15 KW		35,088		17,180	38,516			
> 15 KW		129,267			478,033			
Steam					412,000			

Table A.6-2. 1995 Nellis Range Ground Activity

1995 Nellis Range Ground Activity								
Threat Radars:	Frequency	TX Hours	Threat Radars:	Frequency	TX Hours	A/J Radios:	# of Emitters	Hours
<b>MPS-T1</b>			A64	I	70	GRC-171 (V4)	10	24,800
S14	E/F	425		J	3	GRC-171	60	29,200
S16	I	194		E	10	GRC-211	11	3,650
S18	G	422	A66	I	41	GRT-21	12	8,030
S19	I	75		J	22	GRT-22	41	24,820
S20	G	190		E	27			
S21	G	305	A67	I	71	<b>Microwave:</b>		<b>Hours</b>
S22	I	283		J	7	MSF-5000	4	2,080
S23	I	270		E	1	MICOR	6	11,360
S36	G	150	A68	I	118	MASTER II	1	520
S37	E/F	120		J	6	FTR 2410A	2	1,040
S38	I	60		E	2	TCM-6	42	213,560
<b>MSQ-77</b>			<b>TPT-1</b>			RHG	12	30,960
A58	I	250	U3A	H	200	RACON	8	16,640
A59	I	260	U3B	H	160	GRANGER	7	39,260
A60	I	280	U3C	J	210	MW-518	2	8,760
A61	I	50	U3D	J	150	MDR-8	16	140,160
A62	I	240	U3E	J	85	MDR-8-5N	4	35,040
<b>MPS-9</b>			U4A	H	110	MVR-8G	36	229,600
L89	E/F	416	U4B	H	90			
<b>MPS-T14</b>			U4C	J	105	<b>Other Emitters</b>		
H25	E	398	U4D	J	125	Freq Band	# of Emitters	Hours
<b>TPT-5 UMTE</b>			U4E	J	120	A	209	91,542
<b>MSQ-T43</b>			<b>MSQ-T12</b>			B	121	52,998
S13	I	116	A69	J	91	C	40	17,520
S30	J	46	<b>VPO-1</b>			D	69	317,331
S31	J	130	A70	J	28	E	159	69,642
S32	J	113	A71	J	36	F	15	4,680
S33	J	88	A73	J	47	G	47	14,664
S34	J	90	A75	J	48	H	87	38,106
<b>MSQ-T13</b>			A77	J	31	I	23	10,074
S12	I	53	A78	J	54	J	35	10,920
	G	7	A80	J	43	K	2	624
	H	17	A90	J	104			
S10	I	51	A91	J	34			
	G	6	A93	J	56			
	H	7	HMU	J	21			
<b>MPQ-T3</b>			<b>TPT-4</b>					
A63	I	55	U2	J	36			
	I	3						
	I	10						
<b>Number of Targets</b>		<b>Withdrawal Acreage</b>						
R4806 = 253		Total 3,050,000						
R4807 = 867		Impact Areas 23,084						
<b>Vehicles:</b>		Gallons	Gallons					
Miles	Gas	Diesel						



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**APPENDIX A.7**

**SENSITIVE AND AVOIDANCE LOCATIONS  
ON NAFR**

★Beginning at 37° 53' N, 116° 11' W  
to 37° 58' N, 115° 00' W  
to 37° 34' N, 115° 00' W  
to 37° 34' N, 115° 53' W  
to 37° 42' N, 115° 53' W  
to 37° 42' N, 116° 11' W  
to 37° 53' N, 116° 11' W  
to the point of beginning.

\*1.2.4.2.5. Sally Area:

• Coordinates:

★Beginning at 37° 17' N, 115° 11' W  
to 37° 17' N, 114° 51' W  
to 36° 43' N, 114° 51' W  
to 36° 43' N, 115° 03' W  
to 36° 26' N, 115° 18' W  
to 36° 38' N, 115° 18' W  
to 36° 48' N, 115° 07' W  
to 37° 13' N, 115° 07' W  
to the point of beginning.

\*• Description. Sally (9,700 ft MSL to infinity) is the Nellis AFB transition route to the northern training areas. Nellis Control provides positive control to aircraft using the corridor.

1.2.4.2.6. Cedar ATCAA:

• Coordinates:

\*Beginning at 38° 00' N, 114° 34' 30" W  
to 38° 01' N, 114° 30' W  
to 38° 01' N, 114° 12' 00" W  
to 37° 53' N, 113° 39' 00" W  
to 37° 43' N, 113° 48' 00" W  
to the point of beginning.

• Description. Cedar airspace (100 ft AGL to infinity). Aircrews must be aware that Cedar may be recalled at any time. When recalled, a vertical limit will be specified.

\*1.2.4.2.7. Desert National Wildlife Range. (See paragraph 1.30.).

\*1.2.4.2.8. R-4808N (Includes R-4808W/R-4808E):

• Coordinates:

\*Beginning at 36° 41' N, 115° 56' W

to 36° 41' N, 116° 15' W  
to 36° 46' N, 116° 27' W  
to 36° 51' N, 116° 27' W  
to 36° 51' N, 116° 34' W  
to 37° 16' N, 116° 34' W  
to 37° 16' N, 116° 00' W  
to 37° 28' N, 116° 00' W  
to 37° 28' N, 115° 35' W  
to 37° 06' N, 115° 35' W  
to 37° 06' N, 115° 56' W  
to the point of beginning.

\*1.2.4.2.9. R-4808W

• Coordinates: Reference paragraph 1.29.2

• Restrictions. Overflight of R-4808W is restricted to aircraft following locally published departure and recovery routes, emergencies, or missions scheduled within the Nevada Test Site. Do not overfly R-4808W below 15,000 ft MSL. See paragraph 1.29.3 for further restrictions.

1.3. Supersonic Training Area:

1.3.1. Supersonic flight is approved within designated areas based on the requirement for realistic testing and training. Conduct supersonic flight only when necessary to accomplish the mission. Log all supersonic activity on AF Form 121, Sonic Boom Log. Forward a copy of AF Form 121 to AWC/SER when requested. Pilots should avoid populated portions of the area to minimize public reaction. Specific designated areas and their associated restrictions are:

1.3.1.1. Supersonic overflight is authorized in the following areas of the Desert MOA, ATCAAs and R-4806E from 5,000 AGL to infinity:

1.3.1.1.1. Alamo or R-4806E - North of the 36° 43' N latitude.

1.3.1.1.2. Caliente - West of the 114° 35' W longitude.

1.3.1.1.3. Coyote - All.

\*1.3.1.1.4. Sally - North of the 36° 52' N latitude.

1.3.1.1.5. Elgin - North of a line from 36° 52' N, 114° 50' 43" W to 37° 04' N, 114° 33' W to 37° 04' N, 114° 20' W.

1.3.1.2. In Reveille from 5,000 ft AGL to the highest altitude scheduled.

1.3.1.3. In R-4806W above 5,000 ft AGL to unlimited.

1.3.1.4. In R-4807A above 500 ft AGL minimum overflight to unlimited.

1.3.1.5. Supersonic flight is not authorized:

1.3.1.5.1. Below 5,000 ft AGL in the boundaries of Tolicha Peak EC Range.

1.3.1.5.2. Below 5,000 ft AGL in Electronic Combat East (ECE), Cactus ECR, and EC South (ECS).

1.3.1.5.3. Within the boundaries of R-4807B (Pahute Mesa).

\*1.3.2. Subsonic flight is authorized in R-4809. This includes EC West. Supersonic flight may be approved after coordination with Sandia Corporation through 99 RANS/DOOS on a case-by-case basis. Once approved, supersonic flight will only be conducted above 5,000 ft AGL. Other flight restrictions may apply and will be passed at the time of approval.

#### Section C - Manned Bombing Ranges.

#### 1.4. Overview:

1.4.1. Ranges 63 and 65, located within R-4806W, can be controlled from the South Range Blockhouse (call sign Fatness 63) or from each main tower. Both ranges contain numerous Television Ordnance Scoring System (TOSS) and Time-Space-Position-Information (TSPI) scoreable targets. Fatness 63 must coordinate all range activity to protect ground parties from inadvertent deliveries. Aircrews will establish a two-way radio contact with the appropriate range control tower, call sign Fatness 63 for Range 63 and Fatness 65, for Range 65 and receive specific clearance for the intended target prior to releasing any ordnance. Fatness 63 can give clearance to expend on Range 65 when Range 65 is used as a Class B range.

1.4.2. Range Control Officer (RCO) requirements are determined by range classification and target:

1.4.2.1. Range 63 is a Class A or B range. Refer to AFI 13-212, Volume 1/NAFB Supplement 1 to determine RCO requirements.

1.4.3. Range 63 is primarily used for Operational Testing and Evaluation (OT&E) missions and night conventional weapons training and as a backup day conventional weapons delivery range. Range 63 will not normally be used for tactics training when ordnance delivery is planned. Range 65 is used primarily for day conventional weapons delivery training.

1.4.4. Aircrews using Ranges 63 and 65 may not penetrate Indian Springs Air Force Auxiliary Field (Indian Springs AFAF) airport traffic area below 6,133 ft MSL (3,000 ft AGL) without prior authorization from the Indian Springs tower. Aircrews must check NOTAMS to confirm the status of the Thunderbird extensive training area.

\*1.4.5. Both Ranges 63 and 65 lie within the Desert National Wildlife Range. Restrictions in paragraph 1.30. apply.

\*1.4.6. The 57th Operations Group Commander (57 OG/CC) or equivalent may request waivers to these guidelines through 99 RANS/CC and AWC/SER.

#### 1.5. Range 63:

1.5.1. Description. Located in the southern portion of R-4806W, 31 NM northwest of Nellis AFB, Range 63 is the primary OT&E range for the NRC. It can accommodate live or inert, conventional, and nuclear training air-to-ground deliveries with TOSS scoring and Kineto Tracking Mounts (KTMs). The manned range is a three-towered range. The east tower and west tower are 5,896 ft and 5,895 ft, respectively from the center tower. Range 63 contains two subareas; Range 63A and 63B. Both ranges are normally reserved for use by the Air Command Combat Arms School (ACCAS). Both ranges are small arms live-fire training facilities. Aircrews will not overfly Range 63A or Range 63B below 18,000 ft MSL when the respective range is scheduled "hot".

ground parties endanger vehicles along the Alamo road.

\*1.34.3. Northern Range:

\*1.34.3.1. Hunters will be allowed access in R-76 airspace west of 117° 01' 00" W and of the portion north of 37° 26' 00" N.

\*1.34.3.2. Minimum flight altitude, is 10,000 ft MSL.

\*1.34.3.3. Ground parties will be below subject airspace.

\*1.34.4. For both ranges:

\*1.34.4.1. Do not release ordnance.

\*1.34.4.2. Ground parties, except hunters and EOD, TOSS and the O&M contractors are restricted to allow hunters full access. Nonessential access will be limited to the valley floors below the 4,000 ft contour line nor will ground parties endanger vehicles along the Alamo road.

\*1.34.4.3. Verify restrictions published in daily range schedule.

1.34.2. During the Bighorn Sheep hunt, accomplish emergency jettison on Range 63 with Blackjack approval and under Fatness 63 control. Expect Fatness 63 to direct jettison on Target 63-4 (south grid).

**\*1.35. Use of Public Lands.** Use of public lands outside those designated as the Nellis Air Force Range (NAFR) under Public Law 99-606 (reference the Federal Register, Vol 52, No. 16, Monday, 26 Jan 91, page 2773, and the Federal Register, Vol 53, No. 189, Thursday, 29 Sep 88, page 38099, or refer to the dotted line showing the NAFR boundary on the Nellis range chart):

\*1.35.1. The 99th Civil Engineering Squadron (99 CES/CERR) establishes all right-of-ways, casual use agreements, leases, and permits related to real property. Those in force are:

\*1.35.1.1. Landing Zones:

1.35.1.1.1. Texas Lake (Delamar Airstrip). Use on hold. Use is in work with AWC/EV and

99 CES/CERR; currently closed to operations.

\*1.35.1.2. Drop Zones:

\*1.35.1.2.1. In the BLM Tonopah Resource Area: ROW N49649 - Pipeline, Boxcar, and Rock.

\*1.35.1.2.2. In the BLM Caliente Resource Area: ROW R49861 - 364, 355, Macomb, Judy, King, Delamar Lake, 4871, Jenkins, Delamar, Famar, Delamar East, 307, Macomb, Husch 308.

1.35.1.3. Auxiliary Fire Sites (AFS) for SAM/Patriot Ops in the Tonopah Resource Area: ROW N50838 - Hawk AFS, West Hawk AFS, North Patriot AFS, and Patriot AFS.

1.35.1.4. For the use of County Airstrips/Airports in Southern Nevada coordinate:

1.35.1.4.1. With Lincoln County for: Pioche, Caliente, Delamar; Alamo.

1.35.1.4.2. With Nye County for: Beatty, Lease, #DACA 09-5-89-3; Tonopah Municipal, Lease, #DACA 09-5-89-5.

1.35.2. Use of public or private lands below MOAs and/or outside the NAFR land withdrawal require specified steps listed below:

1.35.2.1. Establishment of lease, right-of-way, casual use agreement, or permit through 99 CES/CERR, Real Property Office.

1.35.2.2. Notification of BLM when using public lands, per the terms and conditions of the subject agreement or compliance with lease agreement on private lands or public airstrips.

1.35.2.3. Notification of local/county law enforcement to prevent confusion with smuggling operations when generating aircraft landings or takeoffs. Local law enforcement will inform the Drug Enforcement Agency, if necessary.

\*1.35.3. Users of drop zones, landing zones, and county airstrips should consult 414 CTS (Red Flag) before upcoming operations. BLM requires advance notice in order to notify other users of public lands, unless emergency conditions prevail (i.e., SAR or Plan 6 activity).

\*1.35.4. Notification is usually given two weeks in advance. (Suggest statement to transfer operational control to Red Flag):

1.35.4.1. Notify 414 CTS/DOM for light aircraft operations, to include helicopters, and fighter aircraft use.

1.35.4.2. Notify 414 CTS/AMCLO for medium aircraft operations. (Those aircraft normally controlled by HQ AMC).

1.35.5. Sensitive and no-fly areas: The following is a list, (by Range/MOA) of sensitive and no-fly areas:

Range/ MOA	Site Name	Coordinates	Restrictions
R63	Corn Creek Station	36° 26' 00" N 115° 22' 00" W	2NM radius, 8,000' MSL
R65	Town of Indian Springs	36° 34' 50" N 115° 40' 30" W	1NM radius, 500' AGL
R63	Alpha		(See para 2-5) Do not overfly below 18,000 feet MSL when the range is scheduled hot.
	Bravo		Do not overfly below 18,000 feet MSL when the range is scheduled hot.
Range/ MOA	Site Name	Coordinates	Restrictions
EC West	RF Emitter	37° 41' 06" N 116° 25' 10" W	0.5NM radius, 2,000' AGL
Reveille	Adaven	38° 08' 00" N 115° 36' 00" W	1.5NM radius, 1,500' AGL
	Carter Ranch	38° 03' 30" N 115° 38' 00" W	3 NM radius, 3,000' AGL
	Town of Reveille	38° 02' 00" N 116° 10' 10" W	1.5NM radius, 1,500' AGL
Alamo	Alamo	37° 22' 00" N 115° 10' 00" W	1.5NM radius, 1,500' AGL
*Caliente	Caliente	37° 36' 50" N 114° 31' 20" W	5NM radius, 20,000' MSL MSL
	Lincoln	37° 47' 15" N 114° 25' 18" W	3NM radius, 1,500' AGL
	Pioche	37° 56' 00" N 114° 27' 10" W	1NM radius, 1,000' AGL
	Pioche Airport	38° 00' 50" N 114° 31' 00" W	3NM radius, 1,500' AGL
Coyote	Hiko	37° 36' 00" N 115° 13' 30" W	1.5NM radius, 1,500' AGL

	Pahranangat Wildlife Refuge	37° 12' 00" N 115° 03' 00" W 37° 19' 00" N	1NM radius, east and west around line, 2,000' AGL
	Key Pitman Wildlife Management	115° 08' 00" W 37° 32' 00" N 115° 14' 00" W 37° 36' 00" N	NM east and west of line. N 2,000' AGL
	Rachel	115° 13' 00" W 37° 42' 00" N 115° 50' 00" W 37° 42' 00" N 115° 41' 18" W to the tangent of a circle with a 1.5NM radius drawn around a point at 37° 39' 00" N 15° 38' 00" W then to 37° 38' 00" N 115° 42' 42" W 37° 37' 06" N 115° 50' 24" W 37° 38' 42" N 115° 53' 12" W 37° 40' 42" N 115° 53' 12" W	Overflight 1,500' AGL and above subsonic, 5,000' AGL and above supersonic
Elgin	Elgin	37° 21' 00" N 114° 32' 00" W	1.5NM radius, 1,500' AGL
	★Brookshire Farm	36° 50' 24" N 114° 39' 24" W	3.0 NM radius, 1500' AGL
Range/ MOA	Site Name	Coordinates	Restrictions
*Sally	Desert National Wildlife Range	36° 48' 00" N 115° 07' 00" W 36° 38' 00" N 115° 18' 00" W 36° 26' 00" N 115° 18' 00" W 36° 38' 30" N 115° 07' 00" W	2,000' AGL
Off-range	Beatty airport	36° 52' 00" N 116° 47' 00" W	3NM radius, 3,000' AGL
	Calvada Meadows Airport Amargosa Valley	36° 16' 00" N 116° 00' 00" W 36° 25' 30" N 116° 23' 30" W 36° 25' 10" N 116° 24' 45" W 36° 27' 30" N 116° 26' 30" W 36° 30' 30" N 116° 29' 00" W	1.5NM radius, 1,500' AGL 0.5NM radius, 500' AGL. Fly above 500' AGL on VR-1225 and IR-286 when 116° 15' W and 116° 38' W.

Range/ MOA	Site Name	Coordinates	Restrictions
	Ash Meadows	36° 31' 15" N 116° 25' 45" W 36° 34' 15" N 116° 28' 00" W 36° 18' 00" N 116° 40' 30" W 36° 28' 00" N	2NM east and west around line, 2,000' AGL
	Wildlife Refuge	116° 21' 00" W 36° 21' 00" N 116° 15' 00" W	
	Bell Residence	36° 32' 20" N 116° 27' 30" W	1NM radius, 1,000' AGL
	Glendale	36° 39' 50" N 114° 34' 05" W	1NM radius, 1,000' AGL
	Goldbar Mine	36° 56' 00" N 116° 53' 00" W	1NM radius, 1,000' AGL
	Goldfield	37° 42' 30" N 117° 14' 00" W	3NM radius, 2,000' AGL
	Lathrop Wells	36° 38' 30" N 116° 24' 00" W	2NM radius, 1,500' AGL
	Logandale	36° 36' 00" N 114° 29' 00" W	1NM radius, 1,000' AGL
	Moapa	36° 40' 30" N 114° 37' 30" W	1NM radius, 1,000' AGL
	Spicer Residence	36° 58' 54" N 116° 43' 12" W	2NM radius, 1,500' AGL
	Mt Potosi	36° 00' 00" N 115° 30' 00" W	2NM radius, 2,000' AGL
	Nellis AFB Area II Overton	3NM northeast of Nellis 36° 32' 30" N 114° 27' 00" W	No overflight 1NM radius, 1,000' AGL
	Rhyolite	36° 54' 30" N 116° 49' 50" W	1NM radius, 1,000' AGL
	Smith Ranch	36° 17' 00" N 116° 05' 20" W	1NM radius, 1,000' AGL
	Tonopah	38° 04' 20" N 117° 14' 00" W	1NM radius, 1,000' AGL
	Tule Springs	36° 19' 00" N 115° 16' 00" W	1.5NM radius, 1,500' AGL

\*Coordinates. (See para 1.32.3):

DROP ZONE	Coordinates (WGS-72)		
Antelope	37° 48' 12" N	116° 25' 16" W	/ 11SNM50948394
Black Mountain	37° 18' 18" N	116° 06' 54" W	/ 11SNM34202920
Boxcar	37° 44' 47" N	116° 05' 44" W	/ 11SNM79647794
Coin	37° 47' 39" N	116° 17' 06" W	/ 11SNM6281820*
FAC Alpha	37° 21' 12" N	116° 47' 00" W	/ 11SNM33851
Keno	37° 45' 32" N	116° 14' 50" W	/ 11SNM664578
L'Amour	37° 48' 00" N	116° 24' 33" W	/ 11SNM52108491



Mellan	37° 41' 00" N	116° 37' 33" W	/	11SNM33087055
Pinnacle	37° 50' 34" N	116° 26' 52" W	/	11SNM48418790
Pipeline	37° 44' 09" N	116° 09' 10" W	/	11SNM74997682
Poker	37° 42' 53" N	116° 17' 58" W	/	11SNM61717473
Prospect	37° 51' 34" N	116° 28' 22" W	/	11SNM46349003
Rebel	37° 47' 39" N	116° 17' 06" W	/	11SNM63048302
Ricardo	37° 21' 24" N	116° 43' 24" W	/	11SNM23953395
Rock	37° 44' 02" N	116° 04' 14" W	/	11SNM82177635
Sand	37° 48' 02" N	116° 03' 19" W	/	11SNM83458411
Sumner Spring	37° 46' 21" N	116° 17' 25" W	/	11SNM62478041
Texas Lake	37° 19' 50" N	114° 56' 10" W	/	11SPM82933334
Token	37° 46' 29" N	116° 22' 13" W	/	11SNM5998082
Tres Burros	37° 10' 36" N	116° 49' 00" W	/	11SNM16601385
Wild Horse	37° 47' 21" N	116° 23' 41" W	/	11SNM53258283

## Chapter 2

### WEAPONS EMPLOYMENT PROCEDURES

**\*2.1. Overview.** The procedures outlined in this chapter apply to all aircrews and ground personnel using the NRC. Range users must closely monitor the 99 RANS daily flying schedule for ordnance delivery restrictions such as ground party overflight restrictions and chaff and flare release restrictions:

2.1.1. A member of the flight will contact Blackjack prior to or upon entering the range complex and confirm ordnance being carried. Confirm with Blackjack the range targets they wish to drop on, the number and type of ordnance, including live training and inert.

2.1.2. The master armament switch will be in the SAFE/SIM position when aircraft are not on the range of intended employment. For a combined load of captive, training, inert or live ordnance, aircrews will not select armament switches that could possibly induce the inadvertent release of any ordnance prior to range entry. Captive training ordnance may be selected at any time. Avoid overflying populated areas. Aircraft with externally loaded ordnance will accomplish an ordnance check before exiting the range complex. Fly a hung ordnance pattern if ordnance status cannot be positively verified.

2.1.3. All targets must be positively identified prior to weapons release.

**\*WARNING:** Some manned and unmanned site support vehicles are painted white to distinguish them from targets. Do not expend ordnance against anything painted white. Manned sites have strobes in

the daytime and steady white lights at night. Unmanned sites also have strobes for FLIR distinguishing such as IR tank generators.

#### 2.2. Ordnance Categories:

##### 2.2.1. Training Ordnance:

2.2.1.1. TP or TPT ammunition.

2.2.1.2. Rockets with inert warheads.

2.2.1.3. BDU-33, BDU-48, BDU-50, and MK-106 practice bombs.

2.2.1.4. Captive air-to-ground training missiles without motors including TGM-45/65/88s.

2.2.1.5. Air-to-air captive training missiles.

2.2.2. Inert ordnance. General Purpose (GP) bombs, Guided Bomb Units (GBUs), and Cluster Bomb Units (CBUs) without live explosives or fuses. Also included are BDU-8/12/38 bombs.

##### 2.2.3. Live ordnance:

\*2.2.3.1. AP/API and HE/HEU. Depleted Uranium (DU) ammunition authorized for special test only.

2.2.3.2. Rockets with live warheads including White Phosphorous (WP).

**APPENDIX A.8**

**NO-ACTION SCENARIO  
(REDUCTIONS IN FORCE ASSUMPTIONS)**

**Appendix A.8**  
**No-Action Reduction in Force Assumptions**  
**(as of 1 Jan 98)**

<i>Nellis AFB Unit</i>	<i>Assumed % Reduction</i>
Air Warfare Center	50%
USAF Air Demonstration Squadron	0%
547 Intelligence Squadron	50%
66 Rescue Squadron	100%
57 Logistics Group	50%
57 Operations Group	50%
57 Logistic Support Squadron	50%
57 Operations Support Squadron	50%
57 Wing	50%
57 Equipment Maintenance Squadron	50%
USAF Weapons School	75%
11 Reconnaissance Squadron	100%
422 Test & Evaluation Squadron	100%
57 Aircraft Generation Squadron	50%
57 Component Repair Squadron	50 %
414 Combat Training Squadron	100%
57 Wing – Detachment 0	50%
57 Training Support Squadron	75%
549 Combat Training Squadron	0%
99 Mission Support Squadron	50%
99 Comptroller Squadron	50%
99 Security Police Operations	50%
99 Civil Engineering Squadron	50%
99 Medical Group	0 %
99 Supply Squadron	50 %
99 Security Support	50 %
99 Transportation Squadron	50 %
99 Communications Squadron	50 %
99 Security Police Squadron	50 %
99 Contracting Squadron	50 %
99 Ground Combat Training	100 %
99 Medical Operations Squadron	50 %
99 Aerospace Medicine Squadron	50 %
99 Medical Support Squadron	50 %
99 Range Squadron – Detachment 0	100 %
99 Air Base Wing	50 %
99 Logistics Group	50 %
99 Range Squadron	100 %
99 Range Support Squadron	100 %
99 Services	50 %
99 Security Police	50 %

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**APPENDIX A.9**

**THE ANALYSIS OF HISTORICAL AIRCRAFT SORTIE DATA AND  
THE PROJECTION OF A RANGE OF FUTURE AIRCRAFT  
OPERATIONS AT THE NELLIS RANGE COMPLEX**

## APPENDIX A.9

# THE ANALYSIS OF HISTORICAL AIRCRAFT SORTIE DATA AND THE PROJECTION OF A RANGE OF FUTURE AIRCRAFT OPERATIONS AT THE NELLIS RANGE COMPLEX

### 1.0 INTRODUCTION

Aircraft operations over the NAFR and within the NRC have historically varied, depending on many factors including international events, congressional funding, training needs, and operational test and evaluation requirements. It is anticipated that future aircraft operations would be expected to vary in response to this wide range of factors. Various organizations within the Air Force also maintain independent records of aircraft operations within the NRC to support their needs and requirements. The Air Force conducted a detailed, comprehensive review of aircraft operations within the NRC from 1991 through 1995 (the 2001 Utilization Study) to support this LEIS.

An independent evaluation of the various records of aircraft operation within the NRC covering annual operations outside of the years covered by the 2001 Utilization Study was completed in order to support the LEIS and to develop a basis for projections of annual sorties by aircraft by airspace subdivision. This analysis summarizes this evaluation and includes descriptions of the data reviewed, a display of the data collected and analyzed, a process for normalizing the available data, a methodology for distributing aircraft sorties over the NRC, and a projection of the range of yearly NRC aircraft operations (for a projected low-use year and a high-use year).

### 2.0 REVIEW OF EXISTING SORTIE DATA

Several different sources of aircraft sortie data were collected and reviewed in an effort to establish a consistent summary of Nellis Range Complex (NRC) use since 1983. Because of administrative limitations on how long operational records are maintained, it was necessary to examine both historical records from various Air Force organizations and environmental reports for documentation on past NRC use. Table 1 summarizes the sortie data from several sources.

Since the existing sortie data were collected for the specific purposes of the individual organizations, there are differences and inconsistencies among the various data sets. Differences between the data sets can be attributed to the following:

- Specific purposes and requirements of the tracking organization can lead to different methods of sortie counting. For example, data shown in Table 1 under "Other Sources" (obtained from past environmental assessments and from 57th FW operational data) reflect the number of complex-wide range sortie missions, for which one mission into

the NRC is counted as one sortie, rather than counting each operation within each NRC airspace subdivision. For the other organizations identified in Table 1, the sorties were counted once for *each* of the airspace subdivisions flown during a single mission into the NRC. This difference in methodology accounts for the higher numbers shown for the 2001 Utilization Study, Range Group Scheduling, the HQ-AFSA/XATF

RAPCON records and the 99th OSG History. (Range Group Scheduling is also the source of the 99th OSG history records.)

- Some data sets are reported by calendar year (CY) while others are reported by fiscal year (FY), as indicated in the table. This fact can account for significant differences in yearly totals if a Red Flag, other large force exercises or changes in operations tempo occurred during the October-December quarter.
- Aircraft realignments, unit activation/deactivations, reductions in force and flying hours, budget constraints, and other such actions since the late 1980s have affected the number and type of aircraft using the NRC. The number of Flag exercises and participants has declined in recent years. Deactivation of the 474th TFW resulted in removal of 66 F-16s from Nellis. Other realignments included beddown of 5 F-15Es, conversion from 20 F-5s to 18 F-16s, relocation of F-117s to Holloman AFB, and relocation of F-4Gs to Nellis and their subsequent deactivation. The TAC and SAC merger, use of more precision guided weapons, and other considerations have also changed the composition of mission packages.
- The number of subdivisions tracked may vary depending upon the organization (e.g., Range Group Scheduling). Further, since airspace subdivisions may be established or disbanded at the convenience of the Air Force (i.e., without formal coordination with the FAA or other agencies) the number and location of internal boundaries of subdivisions may change over time.
- The years for which sortie data were available differed among the various data sources.

Because of the above differences, the 2001 Utilization Study and the Range Group Scheduling data sets were found to be the only sources sufficiently consistent and comprehensive for estimating NRC airspace use for the purposes of the LEIS. However, there are several differences in how these two sources accounted for the NRC sorties:

- The 2001 Utilization Study data were prepared as a special effort for calendar years 1991-1995 and were based on extensive research of different range data sources and organizational records to determine sorties flown by aircraft type. The data accounted for 21 NRC airspace subdivisions that included the north and south range areas, 4 MOA sectors, as well as Pahute Mesa, R-4808 E, R-4808 W, and R-4809A. Sorties were counted once for each of the airspace subdivisions flown during a range mission. An estimate of the number of subdivisions flown during a Red Flag mission was made in the study. Red Flag factors of zero, one, five or ten were applied for each Red Flag

participant depending upon aircraft type. No distribution of sorties by airspace subdivision was made for Red Flag participants. This study also included estimates of civil/contract aircraft (B-737 and small prop) that transit NRC airspace. Some specific details on how the 2001 Utilization Study data were assembled are not available, but information from the other sources helped to validate the general reliability of the 2001 Utilization Study data. Table 2 summarizes the 2001 Utilization Study data. The complete 2001 Utilization Study data tables are presented in Tables 8 through 12.

- The Range Group Scheduling office tracked and reported use of the NRC by accounting for *actual* sorties flown by organization by fiscal year within 17 of the 21 airspace subdivisions prior to October 1996. (No aircraft type data was available.) The four airspace subdivisions (Pahute Mesa, R-4808E, R-4808W, and R-4809A) were not tracked until October 1996. Starting in August 1997, the Range Group Scheduling Office tracked R-4808E and R-4808W as one subdivision. Flying organizations provide daily updates to the office that reflect sorties flown during the previous day's range schedule. While these data are reliable, they only track military test and training sorties and do not include civil/commercial flights. Further, Red Flag and Green Flag organizations list extensive use of 11 to 14 airspace subdivisions and moderate annual use of up to four additional subdivisions from 1995 through 1997 (see Tables 13, 23, and 36). An additional data anomaly to be considered is the lack of data for August, September, and October 1995 and the omission of this data from the FY95 and FY96 totals, which results in the total for CY 1995 being significantly lower than other years. Table 3 present Range Group Scheduling data by calendar year for 1995 through 1997. Following "normalization" of assumptions (to account for the differences in the subdivisions and aircraft types covered) this data would correspond with 2001 Utilization Study calendar year data. (Data for years before 1995 were no longer on file.)

The Range Scheduling data for 1995 through 1997 are organized by military organization and are used to document how airspace subdivisions were used by each organization. Once an aircraft leaves Nellis AFB-controlled airspace, Range Scheduling charges the organization for airspace subdivisions reserved. The airspace subdivisions are then recorded. If an aircraft actually uses fewer subdivisions, the change is not registered in Range records. This could explain why the 2001 Utilization Study elected to use what constitutes an average of 10 airspace subdivisions for most large force exercise aircraft. (Range Scheduling lists 11-14 sortie-operations for airspace subdivisions with heavy use and up to 18 subdivisions affected per Flag aircraft.) Breakout by aircraft types by airspace subdivision is not provided by Range Scheduling. The type of aircraft flown per organization is not readily available from historical records. This is especially the case where the "organization" is Red Flag.

### **3.0 NORMALIZED RESULTS**

No single data source or combination of sources currently available contain sufficient detail to comprehensively construct an accurate accounting of past NRC use by aircraft type and by airspace subdivision as presented in the 2001 Utilization Study. This is primarily due to the



administrative limitations on the length of time records are maintained and because tracking requirements by any one organization do not fully account for all range users by aircraft type and by airspace subdivision. In addition, it is not likely that previous data needs or requests had required the compilation of range use data as was accomplished for the 2001 Utilization Study.

In an effort to evaluate the most recent NRC use data (for 1995 through 1997), the Range Group Scheduling monthly data were normalized so that the data could be compared with data in the 2001 Utilization Study. The results are presented in Table 4.

The normalization procedure involved the following adjustments:

For CY 95:

- Data were not available for August, September and October. The data for the rest of the year was presumed to be representative for these three months. The annual total was therefore prorated based on the nine months of available data.
- Data for subdivisions R-4808 E, R-4808-W and R-4809 and Pahute Mesa were not available. An estimate of the military sorties for these subdivisions was calculated by averaging the sorties for these subdivisions for CY96 and CY97.
- Civilian and commercial flights were estimated from the 2001 Utilization Study (average of 5 years) to be 19,161 per year.

For CY 96:

- Data for subdivisions R-4808 E, R-4808-W and R-4809 and Pahute Mesa were prorated from three months to a full year. Since there were three Red Flag exercises during the year, this proration was reduced by the number of Red Flag sorties associated with these subdivisions for one Red Flag exercise (approximately 7,860 sorties).
- Civilian and commercial flights were estimated from the 2001 Utilization Study (average of 5 years) to be 19,161 per year.

For CY 97:

- Civilian and commercial flights were estimated from the 2001 Utilization Study (average of 5 years) to be 19,161 per year.

#### **4.0 PROJECTIONS OF FUTURE AIRCRAFT OPERATIONS AND DISTRIBUTION METHODOLOGY**

Based primarily on an examination of the 2001 Utilization Study data and the Range Group Scheduling office data, a range of from 200,000 to 300,000 subdivision sorties per year,

including Flag operations, is considered a reasonable, bracketing range of sorties for the purposes of this LEIS.

A method was developed for creating a distribution of aircraft over the 21 airspace subdivisions of the NRC. This distribution then permits calculating the number of sorties by aircraft type by airspace subdivision for a given total number of sorties. The procedure is as follows:

- As a starting point, the CY 95 distribution from the 2001 Utilization Study was used because it represents the most complete data set available for the numbers of sorties by aircraft type and by airspace subdivision. (As depicted in Table 12, an annual total of 230,573 sorties were identified in this study.)
- Because of the retirement of certain aircraft types, a revised table was created in which the F-111 sorties were added to the F-15 sorties to simulate the replacement of F-111s by F-15Es. Likewise the F-4 sorties were added to the F-16 sorties as the transfer of the SEAD mission of F-4s was moved to F-16s.
- Ratios of the number of each aircraft type in each airspace subdivision to the total number of sorties were calculated.
- For the Red Flag aircraft, for which no airspace subdivision use by aircraft type data was provided in the 2001 Utilization Study, a distribution was developed for each aircraft type depending upon its Red Flag factor given in the 2001 Utilization Study (see Table 5). As above, ratios of the number of each Red Flag aircraft type in each airspace subdivision were calculated.
- The above distributions were then applied to the total numbers of non-Red Flag and Red Flag aircraft separately to produce tables of aircraft type by airspace subdivision.
- The non-Red Flag and Red Flag sortie distribution tables are then added to form the combined sortie distribution table for a given total number of sorties.

The application of the above distribution methodology for these low and high limits result in Tables 6 and 7, respectively. These tables present the calendar year number of sorties into each airspace subdivision by aircraft type, using the modified CY 95 distribution based on 2001 Utilization Study data.

Table 1. Summary of Annual NRC Sortie Data 1983-1997

Year	2001 Utilization Study	Range Group Scheduling	Air Traffic Activity HQ AFSA/XATF RAPCON	99th OSG History Records	Other Sources
1983					65,866 FY <sup>(1)</sup>
1984					71,122 FY <sup>(1)</sup>
1985					69,524 FY <sup>(1)</sup>
1986				200,089 CY	69,279 FY <sup>(1)</sup>
1987			360,758 CY		69,771 FY <sup>(1)</sup> 241,019 FY <sup>(2)</sup>
1988			319,741 CY	199,734 FY	196,824 FY <sup>(2)</sup>
1989			334,449 CY	259,289 FY	
1990			311,258 CY	208,424 CY	
1991	*268,511 CY	251,808 FY	248,893 CY	(same as Range Scheduling data)	
1992	*236,905 CY	259,185 FY	255,106 CY	"	
1993	*239,682 CY	213,413 FY	240,402 CY	"	
1994	*222,627 CY	198,490 FY		"	*64,993 CY <sup>(3)</sup>
1995	*230,573 CY	**181,014 FY	242,116 CY	"	*61,165 CY <sup>(3)</sup>
1996		***186,233 FY	207,293 CY	"	*66,843 CY <sup>(3)</sup>
1997		****255,025 FY			*24,419 CY <sup>(3)</sup>

Notes: 1. Final Environmental Assessment, R-4807 Expansion, May 1989  
 2. 1989 Airspace Management Briefing  
 3. Sortie data provided by 57th FW Operations (Complex wide)  
 \* Data set is available by aircraft type.  
 \*\* Partial fiscal year - data were not available for August and September 1995.  
 \*\*\* Partial fiscal year - data were not available for October 1995.  
 \*\*\*\* Range Scheduling began tracking four additional subdivisions (Pahute Mesa, R-4808 E&W, and R4809A)

<i>Subdivision</i>	1991	1992	1993	1994	1995	<i>Average</i>
<b>Desert MOA</b>						
Caliente	12,782	11,969	14,110	14,120	11,372	12,871
Coyote	7,789	7,933	8,039	7,837	6,292	7,578
Elgin	13,862	10,610	11,350	10,023	8,775	10,924
<b>Reveille MOA</b>	8,106	8,133	7,577	7,583	6,060	7,492
<b>R 4806</b>						
R61	4,105	3,740	4,911	3,704	3,660	4,024
R62	5,504	5,194	6,383	5,195	5,281	5,511
R63	4,430	4,280	6,491	5,487	5,538	5,245
R64	7,474	7,149	8,531	6,687	6,718	7,312
R65	7,113	6,019	7,858	6,448	6,814	6,850
Alamo	4,685	4,380	5,415	4,742	4,294	4,703
<b>R 4807</b>						
EC South	7,744	5,311	5,686	4,771	6,478	5,998
Pahute Mesa	5,983	5,470	5,287	5,063	5,981	5,557
R71	8,464	5,493	4,687	4,499	6,953	6,019
R74	7,314	6,886	6,649	6,572	9,583	7,401
R75	7,648	6,853	6,240	6,044	9,977	7,352
R76	10,922	8,950	7,751	6,617	8,247	8,497
<b>R 4808</b>						
R4808E	4,988	4,987	5,126	4,328	4,910	4,868
R4808W	5,961	5,438	5,965	5,420	6,400	5,837
<b>R4809A</b>	2,321	2,321	2,321	1,821	2,905	2,338
EC East	6,826	5,503	5,712	6,308	6,479	6,166
EC West	9,509	7,179	7,849	7,379	7,536	7,890
<b>Subtotal<sup>1</sup></b>	<b>153,530</b>	<b>133,798</b>	<b>143,938</b>	<b>130,648</b>	<b>140,253</b>	<b>140,433</b>
<b>Red Flag Total</b>	<b>114,981</b>	<b>103,107</b>	<b>95,744</b>	<b>91,979</b>	<b>90,320</b>	<b>99,226</b>
<b>Grand Total</b>	<b>268,511</b>	<b>236,905</b>	<b>239,682</b>	<b>222,627</b>	<b>230,573</b>	<b>239,660</b>
<i>Note:</i> 1. Subtotal of sorties in the above subdivisions.						

<b>Table 3. NRC Sortie Data CY95-97 by Subdivision -- Range Group Scheduling</b>			
<i>Subdivision</i>	<i>Partial CY 95<sup>1</sup></i>	<i>Partial CY 96<sup>2</sup></i>	<i>CY 97</i>
Desert MOA			
Caliente	15,978	21,841	18,221
Coyote	13,642	17,890	13,882
Elgin	13,480	20,066	14,534
Reveille MOA	13,444	17,265	13,734
R 4806			
R61	3,701	4,537	4,266
R62	3,108	4,809	4,357
R63	3,227	4,930	4,160
R64	3,079	4,640	4,223
R65	4,092	5,936	5,179
Alamo	4,075	5,378	4,275
R 4807			
R71	12,843	16,955	13,460
R74	13,131	17,492	13,610
R75	13,367	17,591	13,490
R76	13,060	17,326	13,644
EC South	12,788	17,067	13,556
Pahute Mesa <sup>2</sup>		5,157	13,157
R 4808			
R4808E <sup>2</sup>		479	5,804
R4808W <sup>2</sup>		5,145	8,208
R4809A <sup>2</sup>		4,721	12,863
EC East	13,312	17,577	13,590
EC West	13,242	17,446	13,520
<b>Total</b>	<b>169,569</b>	<b>244,248</b>	<b>221,733</b>
<i>Notes:</i> 1. Partial CY 95 Data not available for August, September and October. 2. Partial CY 96 Data collected in October, November & December only for R4808E, R4808W, Pahute Mesa, R4809A			

**Table 4. Normalized NRC Monthly Sortie Data CY95-97 by Subdivision  
– Range Group Scheduling**

<i>Subdivision</i>	1995 <sup>1</sup>	1996 <sup>2</sup>	1997 <sup>3</sup>	<i>Average</i>
Desert MOA				
Caliente	15,978	21,841	18,221	
Coyote	13,642	17,890	13,882	
Elgin	13,480	20,066	14,534	
Reveille MOA	13,444	17,265	13,734	
R 4806				
R61	3,701	4,537	4,266	
R62	3,108	4,809	4,357	
R63	3,227	4,930	4,160	
R64	3,079	4,640	4,223	
R65	4,092	5,936	5,179	
Alamo	4,075	5,378	4,275	
R 4807				
R71	12,843	16,955	13,460	
R74	13,131	17,492	13,610	
R75	13,367	17,591	13,490	
R76	13,060	17,326	13,644	
EC South	12,788	17,067	13,556	
Pahute Mesa	0	5,157	13,157	
R 4808				
R4808E	0	479	5,804	
R4808W	0	5,145	8,208	
R4809A	0	4,721	12,863	
EC East	13,312	17,577	13,590	
EC West	13,242	17,446	13,520	
MOAs, 60 & 70 Ranges	169,569	228,746	181,701	
4808, 4809 & PM	0	15,502	40,032	
Subtotal	169,569	244,248	221,733	
Adjustments				
MOAs, 60 & 70 Ranges	0	0	0	
Aug, Sept & Oct <sup>4</sup>	56,523	0	0	
R4808, 4809 & PM <sup>5</sup>	47,090	38,645	0	
Military Aircraft				
MOAs, 60 & 70 Ranges	226,092	228,746	181,701	212,180
R4808, 4809 & PM	47,090	54,147	40,032	47,090
Military Aircraft	273,182	282,893	221,733	259,269
Civilian/Commercial <sup>6</sup>	19,161	19,161	19,161	19,161
Grand Total CY	292,343	302,054	240,894	278,430

*Notes:*

1. Partial CY 95 data. Data not available for August, September and October 1995 and no data available for R 4808E and 4808W, R4809 and Pahute Mesa.
2. Partial CY 96 data. Data for R 4808E and 4808W, R4809 and Pahute Mesa collected in October, November & December 1996 only.
3. Full CY 97 data.
4. Prorated from 1995 annual total for nine months.
5. CY 95 value for R4808, R4809 and Pahute Mesa is average of 96 and 97 data. CY 96 value is increased by 75% of the average 96 and 97 data.
6. B-737, Cessna and Small Props – Average from 2001 Utilization Study (CY 91-95).

<b>Table 5. Red Flag Sortie Distribution by Airspace Subdivision</b>			
<i>Red Flag Factor</i>	<i>1</i>	<i>5</i>	<i>10</i>
Desert MOA			
Caliente	100.0%	40.0%	15.0%
Coyote		20.0%	10.0%
Elgin		20.0%	5.0%
Reveille MOA		20.0%	10.0%
R 4806			
R61			
R62			
R63			
R64			
R65			
Alamo			
R4807			
EC South			1.0%
Pahute Mesa			
R 71			5.0%
R 74			17.0%
R 75			13.0%
R 76			13.0%
R 4808			
R 4808W			6.0%
R 4808E			
R 4809			
EC East			3.0%
EC West			2.0%

Table 6 Projected NRC Distribution by Aircraft Type and Subdivision -- 200,000 Sorties Annually

	AV-8	A-10	B-1	B-2	B-52	C-130	C-141	E-3	EA-6B	F-14				
Desert MOA														
Caliente	138	69	542	10	93	836	101	162	471	311				
Coyote	104	83	377	7	69	419	50	1	235	175				
Elgin	120	92	194	3	46	417	50	2	236	151				
Reveille MOA	102	71	381	7	67	419	50	1	235	170				
R 4806														
R61	79	989	7	2	23	4				2				
R62	97	1,157	7	2	23	4				2				
R63	19	1,139	7		21	7				2				
R64	78	1,164	7	2	23	5				1				
R65	81	1,187	7	2	23	8				1				
Alamo	97	1,148	5	2	23	5				1				
R4807														
EC South	27	526	67	1	24	1				53				
Pahute Me	22	149	36	1	15	1				42				
R 71	66	517	197	3	46				1	109				
R 74	150	123	603	13	97	1		1		274				
R 75	132	212	472	10	80	1				222				
R 76	126	559	462	9	80	1			1	222				
R 4808														
R 4808W	73	189	229	5	39	2				120				
R 4808E					3									
R 4809		2												
EC East	42	134	143	4	35	1				80				
EC West	45	149	105	2	28	1		1		66				
<b>Total</b>	<b>1,599</b>	<b>9,659</b>	<b>3,848</b>	<b>84</b>	<b>854</b>	<b>2,133</b>	<b>252</b>	<b>167</b>	<b>1,179</b>	<b>2,003</b>				
	F-15	F-16	F-18	F-111	F-117	KC-10	KC-135	Mirage	all Proprs	Tornado	Helos	Other	Airspace Subunit Total	Airspace Total
Desert MOA														49,984
Caliente	6,803	11,232	948		26	26	883	333	54	5	250	127	23,420	
Coyote	3,995	6,819	533		16	13	444	225	26	45	225	81	13,943	
Elgin	3,716	6,214	484		9	13	443	111	26	3	128	62	12,521	
Reveille MOA	4,002	6,668	530		17	13	443	225	31	47	181	82	13,742	13,742
R 4806														28,021
R61	562	1,314	29		2		2		1		158	2	3,175	
R62	716	1,488	38		2		3		1		173	868	4,581	
R63	774	1,716	37		3		1				211	868	4,804	
R64	641	1,505	40		2		1				188	2,171	5,827	
R65	654	2,856	36		2		2		8		177	868	5,910	
Alamo	716	1,504	45		2		2				176		3,725	
R4807														75,999
EC South	1,250	3,214	125		3		3	25	2	46	85	885	6,334	
Pahute Me	1,421	2,849	128		1		1				70	455	5,188	
R 71	2,111	4,806	286		9		3	114		43	62	1,234	9,607	
R 74	5,699	9,732	782		28		2	380	347	46	954	1,239	20,470	
R 75	4,790	8,473	642		21		2	291	347	41	947	1,267	17,951	
R 76	3,894	7,914	605		22		3	291	347	46	104	1,763	16,450	
R 4808														14,101
R 4808W	2,724	5,019	340		10		3	133		4	76	875	9,842	
R 4808E	435	434								41	1,174	2,172	4,259	
R 4809														18,252
EC East	163	266								347	441	1,301	2,520	
EC West	2,303	4,198	239		5		2	69	347	46	97	19	7,765	
EC West	1,961	3,893	198		3		1	47	2	46	100	1,321	7,967	
<b>Total</b>	<b>49,329</b>	<b>92,116</b>	<b>6,065</b>		<b>182</b>	<b>65</b>	<b>2,241</b>	<b>2,244</b>	<b>1,885</b>	<b>460</b>	<b>5,977</b>	<b>17,659</b>	<b>200,000</b>	<b>200,000</b>



Table 7 Projected NRC Distribution by Aircraft Type and Subdivision -- 300,000 Sorties Annually

	AV-8	A-10	B-1	B-2	B-52	C-130	C-141	E-3	EA-6B	F-14				
Desert MOA														
Caliente	207	103	813	16	140	1,254	151	243	707	466				
Coyote	156	125	566	10	104	628	75	1	353	263				
Elgin	180	139	291	5	70	626	75	3	354	226				
Reveille MOA	154	107	571	10	100	628	75	1	353	255				
R 4806														
R61	118	1,483	10	3	34	7				3				
R62	146	1,736	10	3	34	7				3				
R63	29	1,708	10		31	10				3				
R64	117	1,746	10	3	34	8				1				
R65	121	1,780	10	3	34	12				1				
Alamo	146	1,721	8	3	34	8				1				
R4807														
EC South	41	788	100	1	36	1				79				
Pahute Me	33	224	53	1	22	1				62				
R 71	99	776	296	5	68				1	164				
R 74	226	184	905	19	145	1		1		411				
R 75	199	318	708	15	119	1				334				
R 76	189	839	693	14	121	1			1	334				
R 4808														
R 4808W	110	284	343	8	58	3				181				
R 4808E					4									
R 4809														
EC East	63	201	215	6	53	1				120				
EC West	67	224	158	3	41	1		1		98				
<b>Total</b>	<b>2,398</b>	<b>14,489</b>	<b>5,772</b>	<b>126</b>	<b>1,282</b>	<b>3,199</b>	<b>377</b>	<b>251</b>	<b>1,768</b>	<b>3,004</b>				
	F-15	F-16	F-18	F-111	F-117	KC-10	KC-135	Mirage	all Props	Tornado	Helos	Other	Airspace Subunit Total	Airspace Total
Desert MOA														
Caliente	10,204	16,849	1,421		40	39	1,325	500	81	8	375	190	35,130	74,826
Coyote	5,992	10,228	800		25	20	666	337	39	68	337	121	20,915	
Elgin	5,574	9,320	725		14	20	665	167	39	5	193	92	18,782	
Reveille MOA	6,003	10,002	795		26	20	665	337	47	70	272	122	20,613	20,613
R 4806														
R61	843	1,971	44		3		3		1		237	3	4,762	42,032
R62	1,075	2,233	57		3		4		1		259	1,302	6,871	
R63	1,161	2,571	56		4		1				316	1,302	7,206	
R64	962	2,271	60		3		1				282	3,257	8,741	
R65	981	4,285	55		3		3		12		265	1,302	8,866	
Alamo	1,073	2,256	68		3		3				264		5,587	
R4807														
EC South	1,874	4,822	187		4		4	37	3	69	128	1,327	9,501	113,999
Pahute Me	2,131	4,274	191				1				105	682	7,782	
R 71	3,166	7,209	429		14		4	170		65	92	1,851	14,410	
R 74	8,548	14,598	1,173		42		3	570	520	69	1,431	1,858	30,704	
R 75	7,185	12,709	962		32		3	437	520	61	1,421	1,901	26,926	
R 76	5,841	11,871	908		33		4	437	520	69	156	2,644	24,675	
R 4808														
R 4808W	4,087	7,528	511		15		4	200		7	114	1,313	14,763	21,152
R 4808E	653	651								61	1,762	3,258	6,388	
R 4809														
EC East	245	399							520		661	1,952	3,780	27,378
EC West	3,454	6,297	359		7		3	104	520	69	146	29	11,648	
EC West	2,941	5,840	296		5		1	71	3	69	150	1,982	11,951	
<b>Total</b>	<b>73,994</b>	<b>138,174</b>	<b>9,097</b>		<b>273</b>	<b>98</b>	<b>3,361</b>	<b>3,366</b>	<b>2,827</b>	<b>690</b>	<b>8,966</b>	<b>26,488</b>	<b>300,000</b>	<b>300,000</b>

Table 8. NRC CY91 Sortie Data by Aircraft Type and Subtype -- 2001 Utilization Study

	A-4	A-6	A-7	AV-8	A-10	B-1	B-2	C-12	C-130	C-141	C-160	CESSNA	E-3	EA-6	F-4
Alamo	4	13	26	84	1,004		11		1						152
Calliente	3	47	47	78	66	54	50		1					4	129
Coyote	3	38	26	50	44	58	62		1					2	49
ECE		14	4	18	50	62	329							2	626
ECS		8	1	6	345		243		150			5		4	1,342
ECW		12		38	50	53	329		8					4	653
Elgin	4	39	21	30	175		118						12	2	188
Pahute Mesa		16	24	70	44	9	195							3	16
R4808E						50	110	450	500						
R4808W		16		38	42	5	259	250	500				25	4	537
R4809A															
R61		4	18	56	836		12						12		148
R62		13	26	84	1,020		12						12		148
R63		12	29	36	554		1		2						108
R64		1	16	84	1,168		12		500						152
R65		3	34	56	84	1,075	12		500						148
Reveille		8	10	33	50	52	50		1					4	1,435
R71		18	28	86	44	61	62	4	11					4	58
R74		18	16	48	77	59	62	250	1					4	727
R75		14	11	6	334	68	50	254	500				16	4	1,351
R76		28	322	377	892	7,376	585	1,487	2,969	0	0	115	0	45	7,991
Subtotal:	0	88	141	473	631	77	0	335	0	396	30	25	0	231	46
RF Sorties:	10	10	10	10	10	10	10	10	5	5	5	5	1	5	10
RF Factor:	0	880	1,410	4,730	6,310	770	0	3,350	0	1,980	150	125	0	231	230
RF Total:															3,770

Nellis Range Complex Utilization - 1991

	F-5	F-14	F-15	F-16	F-18	F-86	F-111	F-117	HELO	KC-10	KC-135	OV-10	RF-4	T-38	U-2	Other	Total
Alamo	4	70	638	1,946	92	4	56	92	159				207	15		321	4,685
Calliente	20	206	3,478	4,184	310		114	3,180	147	3	23		210	129		7	12,782
Coyote	4	64	1,187	1,302	130		219	3,254	223		17		211	82		439	7,789
ECE		4	609	677	92		207	3,333	150		17		239	36		384	6,826
ECS		4	150	532	72		158	3,258	61		17		209	70		1,079	7,744
ECW		42	1,221	1,313	77		199	3,305	164		17		5	74		1,783	9,509
Elgin		20	367	498	80	3	54	3,158	154		4		205	144		16	13,862
Pahute Mesa							154	3,275	18		15			68		882	5,983
R4808E		4	178	335	80		99	2,427	11		17		167	64		1,341	4,988
R4808W																1,500	2,321
R4809A		4	562	1,751	85	5	52	67	20				1	17		388	4,105
R61	4	71	620	1,865	93	6	60	67	70				1	16		1,319	5,504
R62		75	633	1,614	55	2	184	3	128				1	7		1,006	4,430
R63		70	561	1,634	71	3	53	64	148				1	16		1,281	7,474
R64		70	584	2,868	64	4	73	67	188				11	16		2,920	7,474
R65		54	1,091	1,156	134		198	4,238	35		8		208	209		268	8,106
Reveille		32	568	680	112		122	4,227	15		17		253	184		557	8,464
R71		20	394	587	100		217	3,393	128		17		211	72		941	7,314
R74							217	3,523	38		17		211	74		871	7,648
R75							207	3,910	87		17		217	135		2,487	10,922
R76		78	986	17,501	30,212	2,125	27	2,673	44,842	2,116	3	203	2,568	1,428	0	22,466	153,530
Subtotal:																	
RF Sorties:	10	10	10	10	10	10	10	10	10	5	5	5	10	10	10	5	
RF Factor:	0	0	27,310	43,930	2,450	0	7,990	0	0	0	0	1,805	1,630	5,710	0	220	0
RF Total:																	114,981
Grand Total:																	268,511

Table 9. NRC CY92 Sortie Data by Aircraft Type and Subdivision -- 2001 Utilization Study

	A-4	A-6	A-7	AV-8	A-10	B-1	B-2	B-52	C-12	C-130	C-141	CESSNA	DOE	E-3	EA-6	F-4	F-5
Alamo		6	2	6	1,184		34	3		9			3			3	22
Callente	26	108	131		67	57	50	182		25	2		1	1	9	18	4
Coyote	24	79	102		105	61	84	188		14			3	3	3	21	42
ECE	8	22	5		121	53	84	152		9		1	1	1	5	81	6
ECS					332	6	82	82		154		3	3			451	
ECW	0	20	57		141	52	51	152		7		23	1	3	3	102	
Elgin		64			134		3	3		18				6	2		33
Pahute Mes	2	28	88		113	9	32	46		6		4	1		8		
R4808E						50	50	110	450	500			1				11
R4808W						5	32	94		304	6		3			81	
R4809A									250	500							
R61		12	2		948		34	3		1			1				6
R62		16	2		1,170		34	3		2		1	1		2	2	22
R63		14	15		797		3	3		2		1	2		2	2	
R64		18			1,224		34	3		505		1	1		4	4	
R65		10	40		1,105		34	3		500		3	1		2	2	
Reveille	26	105	100		28	64	51	188	2	22		1	1		4	15	47
R71		31			358	9	111			1					7	499	44
R74	12	38	84		113	64	82	188	250	8		1	1		5	12	39
R75	2	57	64		166	67	85	183	251	6		7	2		5	106	39
R76		53			445	79	50	191	250	510		3			5	508	68
<b>Subtotal:</b>	<b>100</b>	<b>713</b>	<b>692</b>	<b>19</b>	<b>8,675</b>	<b>576</b>	<b>821</b>	<b>1,888</b>	<b>1,453</b>	<b>3,103</b>	<b>8</b>	<b>51</b>	<b>21</b>	<b>52</b>	<b>1,915</b>	<b>383</b>	
RF Sorties:					492	188	230		716	18	251		227	157	281		
RF Factor:					4,920	1,880	0	2,300	0	3,580	90	1,255	0	227	785	2,810	0
<b>RF Total:</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>10</b>	<b>10</b>

Nellis Range Complex Utilization - 1992

	F-14	F-15	F-16	F-18	F-86	F-111	F-117	HELO	KC-10	KC-135	M2000	RF-4	T-34	T-38	ornado	U-2	Other	Total
Alamo	82	637	1,563	179	3	81	329		4	6	12	9				203	4,380	
Callente	213	3,440	3,692	926		118	2,415	4	9	12	43	1			1	28	11,969	
Coyote	87	1,589	1,841	435		147	2,399	397	4	93	17	1			1	380	7,933	
ECE	51	720	927	81		93	2,551	133	92	289	17	1			1	289	5,503	
ECS	7	236	519	8		105	2,096	50	138	1	17	1			1	1,102	5,311	
ECW	24	796	1,190	27		88	2,502	106	91		17	1			1	1,785	7,179	
Elgin	152	2,794	3,790	875	2	37	2,265	317	2	6	65	2			1	17	10,610	
Pahute Mes	56	665	710	204		145	2,388	6	82	13	14				1	813	5,470	
R4808E	54	380	485	138		59	2,232	4	64	2	14				1	1,308	4,987	
R4808W																	5,438	
R4809A																	2,321	
R61	84	566	1,490	82	3	66	49				16	9			1	359	3,740	
R62	84	620	1,562	175	3	66	124		2	11	16	9			1	1,268	5,194	
R63	84	616	1,492	60	2	65	5			4	10	7			1	1,014	4,280	
R64	84	580	1,516	32	3	67	187				12	9			1	2,868	7,149	
R65	84	568	1,927	32	3	63	86				12	9			1	1,538	6,019	
Reveille	93	1,606	1,599	483		145	2,957	155	150	7	65	1			1	219	8,133	
R71	22	241	560	169		76	2,491	50	147	19	63	1			1	594	5,493	
R74	79	889	857	291		139	2,581	116	2	2	17	1			1	912	6,886	
R75	75	709	882	300		129	2,583	130	2	2	19	1			1	839	6,853	
R76	20	352	773	296		117	2,648	163	189	24	53	1			1	2,149	8,950	
<b>Subtotal:</b>	<b>1,435</b>	<b>18,504</b>	<b>27,675</b>	<b>4,793</b>	<b>19</b>	<b>1,806</b>	<b>32,113</b>	<b>2,951</b>	<b>6</b>	<b>18</b>	<b>18</b>	<b>133</b>	<b>499</b>	<b>54</b>	<b>19</b>	<b>21,907</b>	<b>133,798</b>	
RF Sorties:																		
RF Factor:																		
<b>RF Total:</b>	<b>950</b>	<b>22,540</b>	<b>36,150</b>	<b>1,930</b>	<b>0</b>	<b>5,840</b>	<b>570</b>	<b>0</b>	<b>3,180</b>	<b>2,010</b>	<b>3,320</b>	<b>0</b>	<b>0</b>	<b>8,370</b>	<b>125</b>	<b>230</b>	<b>7</b>	
<b>Grand Total:</b>																		

Table 10. NRC CY93 Sortie Data by Aircraft Type and Subdivision -- 2001 Utilization Study

	A-4	A-6	A-10	AT-38	B-1	B-2	C-12	C-130	C-141	E-3	EA-6B	EF-111	F-1
Alamo	8	2	1,305	2	62	23	1	23					
Caliente	18	55	44	20	60	50	80	1					9
Coyote	7	41	44	9	56	113	80	1					8
ECE		24	143		55	106	76	1					8
ECS		1	608		3	14	23	152					8
ECW		24	169		55	76	74	1					8
Elgin	17		42	16	6	1	13	1					10
Pahute Mesa	2	24	175		2	62	19	1					
R4808E					50	61	50	500					8
R4808W	2	24	199		2	62	12	302					
R4809A								500					
R61	4		1,100	2	64	6	6	2	19				
R62	9		1,317	2	58	9	9	2	23				
R63	9		1,448	10		9	9	2	521				
R64	5		1,341	2	60	7	7	2	525				
R65	5		1,359	2	35	7	7	26					
Reveille	23	32	22	9	56	66	73	1	1				10
R71			538	1	5	13	32	1	1				8
R74	2	36	101	9	55	113	83	250	1				8
R75		24	201		54	105	81	251	1				8
R76			599		58	64	86	251	500				8
<b>Subtotal:</b>	<b>111</b>	<b>287</b>	<b>10,755</b>	<b>84</b>	<b>517</b>	<b>1,185</b>	<b>829</b>	<b>1,475</b>	<b>3,101</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>101</b>
RF Sorties:	88	616		157		235		462	166	189	149	193	92
RF Factor:	10	10	10	10	10	10	10	5	5	1	5	5	10
<b>RF Total:</b>	<b>880</b>	<b>6,160</b>	<b>0</b>	<b>1,570</b>	<b>0</b>	<b>2,350</b>	<b>0</b>	<b>4,620</b>	<b>830</b>	<b>189</b>	<b>745</b>	<b>965</b>	<b>920</b>

	F-4	F-14	F-15	F-16	F-18	F-111	F-117	KC-10	KC-135	RF-4	ornado	Helos	Other	U-2	Total	
Alamo	165	23	1,111	2,070	24	54	1	4	8	156	8	92	459	1	5,415	
Caliente	389	313	5,055	6,810	819	121	6	2	8	163	8	26	68	2	14,110	
Coyote	240	138	2,349	3,184	665	135	1			163	8	160	643	2	8,039	
ECE	364	135	1,115	2,199	516	140				156	8	146	525	3	5,712	
ECS	470	59	747	1,415	122	86		5		149	10	533	1,274	3	5,686	
ECW	399	123	1,615	2,301	513	141				155	8	167	2,026	2	7,849	
Elgin	382	209	3,972	6,196	313	40	7			9	2	55	65	3	11,350	
Pahute Mesa	329	124	1,000	1,716	526	87				152	8	24	1,033	3	5,287	
R4808E			500	501		50				145	8	29	1,535	1	5,126	
R4808W			998	1,674	496	61						71	1,500		2,321	
R4809A												19	611		4,911	
R61	120	30	932	1,956	16	26	1			3		96	1,468		6,383	
R62	161	30	1,095	2,032	26	52	1			2		118	1,072		6,491	
R63	149	18	1,023	2,039	13	51	7			2		216	3,120		8,531	
R64	148	30	1,025	1,987	24	36	1			2		193	1,153		7,858	
R65	165	30	1,095	3,714	24	47	1			2		183	1,153		7,577	
Reveille	203	150	2,309	3,142	669	165	1			1	152	8	128	365	2	4,687
R71	556	58	802	1,420	212	93	1			5	156	8	39	742	4	6,649
R74	265	129	1,315	2,084	592	132	1			155	8	137	1,177	4	6,240	
R75	396	129	1,157	1,942	560	149				155	8	45	978	4	6,240	
R76	569	68	870	1,560	420	147				5	158	10	56	2,326	4	7,751
<b>Subtotal:</b>	<b>5,770</b>	<b>1,911</b>	<b>30,085</b>	<b>49,942</b>	<b>6,550</b>	<b>1,813</b>	<b>29</b>	<b>2</b>	<b>24</b>	<b>1,876</b>	<b>102</b>	<b>2,450</b>	<b>25,004</b>	<b>36</b>	<b>143,938</b>	
RF Sorties:	123	181	1,879	3,210	498	851	70	597	44	464	180	64	26			
RF Factor:	10	10	10	10	10	10	10	5	5	10	10	5	5			
<b>RF Total:</b>	<b>1,230</b>	<b>1,810</b>	<b>18,790</b>	<b>32,100</b>	<b>4,980</b>	<b>8,510</b>	<b>700</b>	<b>2,985</b>	<b>440</b>	<b>4,640</b>	<b>800</b>	<b>320</b>	<b>130</b>		<b>95,744</b>	
<b>Grand Total:</b>															<b>239,682</b>	

Table 11. NRC CY94 Sortie Data by Aircraft Type and Subdivision -- 2001 Utilization Study

	A-4	A-6	AV-8	A-10	B-1	B-2	B-52	C-5	C-12	C-130	C-141	E-2	E-3	EA-6B	EF-111
Alamo				1,838			16			5				4	
Calliente	4	84	126	72	50	88		8	11					8	16
Coyote		76	51	72	65	82		6	6					3	15
ECE		76	169	66	66	82		3	2					2	15
ECS			569	9	4	19		1	1						
ECW		34	210	66	55	81		3	3						18
Elgin	4	2	168	15	31			7	8					6	17
Pahute Mesa		76	238	7	16	19		1	2						15
R4808E				50	54	50		451							
R4808W		76	268	7	16	12		2							
R4809A								250							
R61			1,170		16	16		1	4					4	
R62			1,340		17	17		1	6					4	
R63			1,226			22		1	5					4	
R64			1,378		16	15		1	4					4	
R65	1		1,374		13	15		1	1	19	3			4	
Reveille		78	49	74	52	80		11	11					7	
R71			568	10	3	20		2	4						
R74		76	135	54	66	81		253	4					3	15
R75		58	229	69	66	94		250	2					1	15
R76			582	61	53	90		250	3					1	
<b>Subtotal:</b>	<b>9</b>	<b>0</b>	<b>636</b>	<b>11,686</b>	<b>632</b>	<b>644</b>	<b>930</b>	<b>2</b>	<b>1,489</b>	<b>97</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>55</b>	<b>126</b>
RFSorties	0	161	218	433	212	0	143	9	0	463	33	25	184	241	110
RF Factor	10	10	10	10	10	10	10	5	5	5	5	1	1	5	5
<b>RF Total:</b>	<b>1,610</b>	<b>2,180</b>	<b>4,330</b>	<b>2,120</b>	<b>0</b>	<b>1,430</b>	<b>0</b>	<b>45</b>	<b>0</b>	<b>2,315</b>	<b>165</b>	<b>25</b>	<b>184</b>	<b>1,205</b>	<b>560</b>

Nellis Range Complex Utilization - 1994

	F-1	F-4	F-14	F-15	F-16	F-18	F-117	F-1117	KC-10	KC-135	RF-4	T-38	ornado	Helos	Other	U-2	Total
Alamo				680	1,668	63	30										4,742
Calliente	372	255	5,167	6,405	1,084	163	2	8	51	14	12	98	10	9	10	9	14,120
Coyote	302	106	2,661	3,157	785	149	1	4	49	2	16	149	9	11	9	11	7,837
ECE	529	63	1,890	2,391	549	139	4	4	48	4	16	174	4	16	4	16	6,308
ECS	775	8	706	1,363	172	69			3	48	16	3	1,000	5	3	5	4,771
ECW	581	10	1,811	2,106	528	123	4	4	2	49	16	184	1,502	14	14	14	7,379
Elgin	355	196	3,594	4,850	566	66	2	3	2	49	10	37	502	5	5	5	10,023
Pahute Mesa	502	28	1,331	1,621	536	69			2	2	2	173	2,500	8	8	8	5,063
R4808W			500	500		50			2	2	2	116	1,000				4,328
R4809A			1,253	1,560	468	69			2	2	2	71	1,500				5,420
R61	90	9	553	1,611	48	52	1					128	1				3,704
R62	117	13	635	1,866	56	52	29					241	1,000				5,195
R63	182	10	768	1,886	59	95	30					198	1,000				5,487
R64	107	11	619	1,580	47	52	1					348	2,503				6,687
R65	150	9	680	2,791	53	77	1					256	1,001				6,448
Reveille	153	107	2,669	3,217	806	148	1		2	6	53	16	26	9	19	19	7,563
R71	807	28	745	1,377	202	90	4		4	4	52	16	49	502	16	16	4,499
R74	368	89	1,723	2,285	616	136	4		6	6	49	16	73	507	15	15	6,572
R75	590	37	1,477	1,806	554	127	4		6	6	49	16	76	503	15	15	6,044
R76	798	20	795	1,429	203	137	4		7	7	49	16	103	2,000	16	16	6,617
<b>Subtotal:</b>	<b>0</b>	<b>7,376</b>	<b>1,038</b>	<b>30,257</b>	<b>45,269</b>	<b>7,395</b>	<b>1,923</b>	<b>122</b>	<b>10</b>	<b>54</b>	<b>598</b>	<b>33</b>	<b>168</b>	<b>2,872</b>	<b>17,067</b>	<b>157</b>	<b>130,648</b>
RFSorties	314	263	79	1,990	2,870	289	46		0	585	0	0	911	73	64	0	
RF Factor	10	10	10	10	10	10	10	10	5	5	10	10	10	5	5	5	
<b>RF Total:</b>	<b>3,140</b>	<b>2,630</b>	<b>790</b>	<b>19,900</b>	<b>28,700</b>	<b>2,690</b>	<b>4,790</b>	<b>0</b>	<b>2,925</b>	<b>0</b>	<b>9,110</b>	<b>365</b>	<b>320</b>	<b>0</b>	<b>91,979</b>	<b>0</b>	<b>222,627</b>

Table 12. NRC CY95 Sortie Data by Aircraft Type and Subdivision -- 2001 Utilization Study

	AV-8	A-10	B-1	B-2	B-52	C-130	C-141	E-3	EA-6B	EF-111	F-4	F-14
Alamo	112	1,323	6	2	26	6				161		1
Calliente	21	66	53		34	2		2	1	7	714	136
Coyote	28	87	54		31	2		1		10	975	54
ECE	21	152	51	2	26	1				10	1,220	48
ECS	22	605	39		23	1				7	1,627	46
ECW	33	170	45	1	22	1		1		10	1,374	46
Elgin	92	102	33		29	1		2		1	624	100
Pahute Mesa	25	172	41	1	17	1				12	1,092	48
R4808E	29	213	35	1	15	2			9		1,107	50
R4808W		2									62	
R4809A	91	1,140	8	2	26	5					146	2
R61	112	1,334	8	2	26	5					157	2
R62	22	1,313	8		24	8					152	2
R63	90	1,342	8	2	26	6					159	1
R64	93	1,368	8	2	26	9					147	1
R65	26	73	58		28	2		1		10	856	48
Reveille	30	592	37		28	1			1	9	1,641	52
R71	17	126	48	1	28	1		1		10	1,023	64
R74	33	233	49	1	28	1			11		1,306	64
R75	26	633	37		29	1			9		1,672	64
R76	923	11,046	626	17	495	54	0	8	4	115	16,215	829
Subtotal:	92	9	381	8	49	481	58	185	271	31	335	148
RF Factor	10	10	10	10	10	5	5	1	5	5	10	10
RF Total:	920	90	3,810	80	490	2,405	290	185	1,355	155	3,350	1,480

Neliss Range Complex Utilization - 1995													
	F-15	F-16	F-18	F-111	F-117	KC-10	KC-135	Mirage	m Prop	ornado	Helos	Other	Total
Alamo	777	1,573	52	48	2	2				203		0	4,294
Calliente	4,016	5,700	419	105	2				4	6	68	16	11,372
Coyote	2,029	2,529	166	90		3	3		1	52	149	28	6,292
ECE	1,815	2,313	141	87		2	3	400	53	112	22	22	6,479
ECS	1,130	1,643	99	56	1	3	3	2	53	98	1,020		6,478
ECW	1,663	2,243	138	92		1	3	2	53	115	1,523		7,536
Elgin	3,002	4,361	333	43	1	2			4	38	6		8,775
Pahute Mesa	1,575	2,193	147	51		1			47	81	524		5,981
R4808E	502	500	123	54		3			5	1,354	2,504		4,910
R4808W	1,592	2,065								88	1,009		6,400
R4809A	185	245		3		400				508	1,500		2,905
R61	616	1,369	34	32	2	2		1		182	2		3,660
R62	786	1,559	44	40	2	3		1		199	1,001		5,281
R63	818	1,826	43	74	3	1				243	1,001		5,538
R64	708	1,576	46	31	2	1				217	2,503		6,718
R65	723	3,146	42	31	2	2		9		204	1,001		6,814
Reveille	2,048	2,474	162	79	1	2		3	7	99	29		6,060
R71	1,116	1,721	105	70	1	3		3	50	71	1,423		6,953
R74	2,259	2,790	138	91		2		3	400	53	1,100	1,428	9,583
R75	2,210	2,798	156	82		2		3	400	47	1,092	1,461	9,977
R76	1,191	1,768	114	70	1	3		3	400	53	120	2,032	8,247
Subtotal:	30,761	45,412	2,502	1,229	20	0	38	27	2,028	530	6,341	20,033	140,253
RF Factor	10	10	10	10	10	10	10	10	10	10	10	10	10
RF Total:	19,120	40,220	4,490	5,490	190	75	2,545	2,560	145	0	580	325	90,320
Grand Total:													230,573

Table 13. NRC Partial CY95 Sortie Data by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo	77	876	2,698	138		286	4,075
Caliente	251	1,508	5,945	4,786	2,935	553	15,978
Coyote	471	1,503	3,407	4,786	2,935	540	13,642
Elgin	321	1,361	4,963	3,337	2,874	624	13,480
Reveille	372	1,328	3,499	4,785	2,932	528	13,444
R61	65	696	2,581	138		221	3,701
R62	75	885	1,887			261	3,108
R63	70	1,055	1,842	1		259	3,227
R64	73	835	1,890			281	3,079
R65	67	746	2,999	2		278	4,092
R71	1,011	1,117	2,633	4,683	2,932	467	12,843
R74	510	1,321	3,236	4,683	2,932	449	13,131
R75	712	1,372	3,184	4,683	2,928	488	13,367
R76	1,001	1,289	2,643	4,683	2,932	512	13,060
EC East	669	1,350	3,235	4,683	2,932	443	13,312
EC West	783	1,312	3,087	4,684	2,932	444	13,242
EC South	1,035	1,170	2,689	4,683	2,932	279	12,788
Total	7,563	19,724	52,418	50,755	32,196	6,913	169,569

1) Data not available for August, September and October

Table 14. NRC Sortie Data January 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo	8	76	131	138		22	375
Caliente	13	108	295	1,150		26	1,592
Coyote	55	134	10	1,150		33	1,382
Elgin	27	136	463	395		19	1,040
Reveille	28	144	14	1,149		30	1,365
R61	8	66	122	138		9	343
R62	6	77	134			21	238
R63	2	106	123			19	250
R64	5	78	137			6	226
R65	6	34	379			9	428
R71	220	128	44	1,142		9	1,543
R74	70	139	4	1,142		10	1,365
R75	134	163	8	1,142		21	1,468
R76	202	123	52	1,142		18	1,537
EC East	136	131	8	1,142		16	1,433
EC West	170	117	8	1,142		13	1,450
EC South	220	128	44	1,142		6	1,540
Total	1,310	1,888	1,976	12,114		287	17,575

Table 15. NRC Sortie Data February 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo	2	126	156			19	303
Caliente	42	89	707	1,193		38	2,069
Coyote	112	186	41	1,193		37	1,569
Elgin	52	92	853	788		7	1,792
Reveille	106	181	28	1,193		35	1,543
R61	1	114	132			17	264
R62	2	127	158			19	306
R63	2	152	166			29	349
R64	2	122	168			20	312
R65	1	102	368	1		19	491
R71	138	149	24	1,193		37	1,541
R74	104	132	50	1,193		32	1,511
R75	156	106	12	1,193		67	1,534
R76	138	159	28	1,193		37	1,555
EC East	136	150	28	1,193		31	1,538
EC West	154	131	12	1,193		31	1,521
EC South	138	161	24	1,193		40	1,556
Total	1,286	2,279	2,955	12,719		515	19,754

Table 16. NRC Sortie Data March 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo	20	106	241			25	392
Caliente	30	114	793		1,917	48	2,902
Coyote	65	172	203		1,917	35	2,392
Elgin	55	111	754		1,856	52	2,828
Reveille	52	138	225		1,914	11	2,340
R61	19	92	239			12	362
R62	20	102	250			22	394
R63	19	158	200			33	410
R64	19	95	287			16	417
R65	19	91	507			9	626
R71	126	187	175		1,914	6	2,408
R74	70	142	212		1,914	14	2,352
R75	108	184	218		1,914	14	2,438
R76	116	237	180		1,914	20	2,467
EC East	94	162	218		1,914		2,388
EC West	114	126	230		1,914		2,384
EC South	118	210	210		1,914	8	2,460
Total	1,064	2,427	5,142		21,002	325	29,960



Table 17. NRC Sortie Data April 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo	20	74	333			9	436
Caliente	33	238	410		1,018	201	1,900
Coyote	46	155	226		1,018	195	1,640
Elgin	45	231	428		1,018	197	1,919
Reveille	38	134	240		1,018	183	1,613
R61	14	43	336			8	401
R62	20	63	334			9	426
R63	20	83	340			31	474
R64	20	61	340			31	452
R65	22	70	401			33	526
R71	103	158	174		1,018	159	1,612
R74	52	146	219		1,018	170	1,605
R75	84	152	251		1,014	164	1,665
R76	107	153	167		1,018	173	1,618
EC East	74	152	231		1,018	177	1,652
EC West	96	136	202		1,018	170	1,622
EC South	107	157	163		1,018	165	1,610
Total	901	2,206	4,795		11,194	2,075	21,171

Table 18. NRC Sortie Data May 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo	10	101	247			71	429
Caliente	47	312	909			8	1,276
Coyote	39	262	822			2	1,125
Elgin	55	186	255			42	538
Reveille	20	238	831			7	1,096
R61	10	87	213			69	379
R62	10	91	248			70	419
R63	10	111	250			73	444
R64	10	84	242			70	406
R65	10	89	266			71	436
R71	90	115	365			1	571
R74	46	216	778			2	1,042
R75	56	219	744				1,019
R76	95	132	367			1	595
EC East	58	209	752			2	1,021
EC West	68	266	697			3	1,034
EC South	102	118	352			2	574
Total	736	2,836	8,338			494	12,404

Table 19. NRC Sortie Data June 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		108	579			103	790
Caliente	34	249	767	479		150	1,679
Coyote	47	217	549	479		147	1,439
Elgin	29	126	686	393		230	1,464
Reveille	43	203	568	479		153	1,446
R61		71	552			87	710
R62		118	211			92	421
R63		112	235			13	360
R64		107	180			94	381
R65		117	238			93	448
R71	73	113	504	479		156	1,325
R74	55	211	533	479		142	1,420
R75	54	205	499	479		138	1,375
R76	70	126	492	479		161	1,328
EC East	51	203	535	479		142	1,410
EC West	51	195	559	479		142	1,426
EC South	70	118	490	479		12	1,169
Total	577	2,599	8,177	5,183		2,055	18,591

Table 20. NRC Sortie Data July 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo	9	36	176			28	249
Caliente	11	83	410	1,964		64	2,532
Coyote	48	269	10	1,964		39	2,330
Elgin	15	93	531	1,761		42	2,442
Reveille	26	207	10	1,964		59	2,266
R61	9	30	136			17	192
R62	9	28	164			17	218
R63	9	32	163	1		42	247
R64	9	30	168			16	223
R65	9	32	171	1		41	254
R71	67	164		1,869		46	2,146
R74	50	239		1,869		38	2,196
R75	54	239		1,869		42	2,204
R76	71	233		1,869		48	2,221
EC East	54	239		1,869		36	2,198
EC West	54	239		1,870		46	2,209
EC South	71	169		1,869		32	2,141
Total	575	2,362	1,939	20,739		653	26,268

Table 21. NRC Sortie Data November 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization				Other	Total
	561st	422th	57th	Red Flag Green Flag		
Alamo	4	171	324		8	507
Caliente	32	191	973		17	1,213
Coyote	8	53	907		50	1,018
Elgin	34	267	318		34	653
Reveille	8	39	944		49	1,040
R61		127	338		1	466
R62	4	160	342		10	516
R63	4	179	316		18	517
R64	4	167	328		1	500
R65		142	403		2	547
R71	106	72	767		36	981
R74	8	54	847		36	945
R75	14	62	857		39	972
R76	114	72	769		40	995
EC East	14	60	870		36	980
EC West	30	58	850		36	974
EC South	116	60	757		14	947
Total	500	1,934	10,910		427	13,771

Table 22. NRC Sortie Data December 95 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization				Other	Total
	561st	422th	57th	Red Flag Green Flag		
Alamo	4	78	511		1	594
Caliente	9	124	681		1	815
Coyote	51	55	639		2	747
Elgin	9	119	675		1	804
Reveille	51	44	639		1	735
R61	4	66	513		1	584
R62	4	119	46		1	170
R63	4	122	49		1	176
R64	4	91	40		27	162
R65		69	266		1	336
R71	88	31	580		17	716
R74	55	42	593		5	695
R75	52	42	595		3	692
R76	88	54	588		14	744
EC East	52	44	593		3	692
EC West	46	44	529		3	622
EC South	93	49	649			791
Total	614	1,193	8,186		82	10,075

Table 23. NRC CY96 Sortie Data by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo	4	1,094	3,180	494	1	605	5,378
Caliente	59	2,222	7,169	8,168	2,406	1,817	21,841
Coyote	114	1,422	4,142	8,226	2,494	1,492	17,890
Elgin	63	2,116	6,586	7,284	2,494	1,523	20,066
Reveille	118	1,334	4,203	7,710	2,488	1,412	17,265
R61	8	917	3,045			567	4,537
R62	8	1,034	3,169			598	4,809
R63	8	1,327	2,906			689	4,930
R64	8	904	3,153	2		573	4,640
R65	8	972	4,308	3		645	5,936
R71	202	958	3,850	8,254	2,494	1,197	16,955
R74	126	1,228	4,055	8,254	2,494	1,335	17,492
R75	140	1,207	4,147	8,254	2,494	1,349	17,591
R76	204	1,024	4,085	8,254	2,494	1,265	17,326
EC East	146	1,233	4,109	8,254	2,494	1,341	17,577
EC West	140	1,212	3,991	8,254	2,494	1,355	17,446
EC South	206	968	4,159	8,254	2,494	986	17,067
R4808E <sup>(2)</sup>		10	469				479
R4808W <sup>(2)</sup>		185	1,670	2,661		629	5,145
Pah. Mesa <sup>(2)</sup>		184	1,676	2,661		636	5,157
R4809A <sup>(2)</sup>		150	1,502	2,539		530	4,721
<b>Total</b>	<b>1,562</b>	<b>21,701</b>	<b>75,574</b>	<b>97,526</b>	<b>27,341</b>	<b>20,544</b>	<b>244,248</b>

Data collected in October, November & December only  
 For R4808E, R4808W, Pahute Mesa, R4809A

Table 24. NRC Sortie Data January 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo		148	153			12	313
Caliente	19	160	446	1,932		38	2,595
Coyote	46	56	24	1,903		18	2,047
Elgin	19	184	556	1,658		19	2,436
Reveille	62	34	16	1,933		19	2,064
R61	4	141	132			14	291
R62	4	164	146			15	329
R63	4	164	78			20	266
R64	4	138	144			22	308
R65	4	111	377			18	510
R71	98	49	26	1,933		7	2,113
R74	62	44	24	1,933		11	2,074
R75	70	30	24	1,933		28	2,085
R76	98	49	28	1,933		28	2,136
EC East	70	40	24	1,933		9	2,076
EC West	70	32	24	1,933		15	2,074
EC South	98	49	28	1,933		9	2,117
<b>Total</b>	<b>732</b>	<b>1,593</b>	<b>2,250</b>	<b>20,957</b>		<b>302</b>	<b>25,834</b>

Table 25. NRC Sortie Data February 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo	4	93	132			20	249
Caliente	22	217	633	886		15	1,773
Coyote	24	65	243	886		17	1,235
Elgin	20	226	680	183		18	1,127
Reveille	20	55	242	886		9	1,212
R61	4	87	117			17	225
R62	4	93	125			17	239
R63	4	140	111			21	276
R64	4	88	147			21	260
R65	4	78	382	1		23	488
R71	76	57	42	886		18	1,079
R74	28	60	231	886		8	1,213
R75	50	32	237	886		6	1,211
R76	76	55	131	886		38	1,186
EC East	40	60	237	886		10	1,233
EC West	50	24	140	886		8	1,108
EC South	78	53	126	886		6	1,149
<b>Total</b>	<b>508</b>	<b>1,483</b>	<b>3,956</b>	<b>9,044</b>		<b>272</b>	<b>15,263</b>

Table 26. NRC Sortie Data March 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo		118	203			39	360
Caliente	18	207	524		1,621	117	2,487
Coyote	44	51	173		1,621	107	1,996
Elgin	24	266	607		1,621	102	2,620
Reveille	36	57	167		1,615	80	1,955
R61		116	176			25	317
R62		134	200			28	362
R63		144	236			29	409
R64		116	198			27	341
R65		124	275			29	428
R71	28	96	87		1,621	93	1,925
R74	36	47	172		1,621	100	1,976
R75	20	67	158		1,621	73	1,939
R76	30	98	117		1,621	74	1,940
EC East	36	50	169		1,621	96	1,972
EC West	20	69	149		1,621	98	1,957
EC South	30	86	165		1,621	61	1,963
<b>Total</b>	<b>322</b>	<b>1,846</b>	<b>3,776</b>		<b>17,825</b>	<b>1,178</b>	<b>24,947</b>

Table 27. NRC Sortie Data April 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		88	348		1	61	498
Caliente		289	642		785	99	1,815
Coyote		162	488		873	71	1,594
Elgin		214	628		873	101	1,816
Reveille		162	516		873	72	1,623
R61		81	332			53	466
R62		97	336			55	488
R63		111	328			49	488
R64		88	314			56	458
R65		99	386			59	544
R71		150	611		873	68	1,702
R74		156	486		873	66	1,581
R75		156	551		873	63	1,643
R76		148	604		873	72	1,697
EC East		146	516		873	66	1,601
EC West		146	516		873	60	1,595
EC South		148	597		873	74	1,692
<b>Total</b>		<b>2,441</b>	<b>8,199</b>		<b>9,516</b>	<b>1,145</b>	<b>21,301</b>

Table 28. NRC Sortie Data May 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		71	294			52	417
Caliente		286	936			205	1,427
Coyote		196	780			191	1,167
Elgin		239	493			97	829
Reveille		184	742			192	1,118
R61		55	281			51	387
R62		72	282			47	401
R63		81	258			71	410
R64		61	292			32	385
R65		70	324			49	443
R71		117	716			191	1,024
R74		117	716			189	1,022
R75		115	736			191	1,042
R76		115	735			195	1,045
EC East		113	731			177	1,021
EC West		115	729			195	1,039
EC South		114	747			196	1,057
<b>Total</b>		<b>2,121</b>	<b>9,792</b>			<b>2,321</b>	<b>14,234</b>

Table 29. NRC Sortie Data June 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization				Other	Total	
	561st	422th	57th	Red Flag			Green Flag
Alamo		47	588			5	640
Caliente		165	765			6	936
Coyote		112	571			8	691
Elgin		154	773			7	934
Reveille		112	600			5	717
R61		16	570			4	590
R62		47	588			6	641
R63		54	585			38	677
R64		37	587			5	629
R65		32	604			6	642
R71		18	568			4	590
R74		18	568			4	590
R75		18	568			3	589
R76		19	568			4	591
EC East		34	568			4	606
EC West		32	568			5	605
EC South		18	568				586
<b>Total</b>		<b>933</b>	<b>10,207</b>			<b>114</b>	<b>11,254</b>

Table 30. NRC Sortie Data July 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization				Other	Total	
	561st	422th	57th	Red Flag			Green Flag
Alamo		142	237			3	382
Caliente		228	434	2,230		45	2,937
Coyote		325	1	2,230		46	2,602
Elgin		160	501	2,232		28	2,921
Reveille		297		2,230		44	2,571
R61		122	264			3	389
R62		108	281			3	392
R63		167	236			28	431
R64		103	257			3	363
R65		116	308			6	430
R71		101	13	2,230		29	2,373
R74		324	1	2,230		30	2,585
R75		324	1	2,230		44	2,599
R76		105	23	2,230		36	2,394
EC East		336	1	2,230		46	2,613
EC West		326	1	2,230		47	2,604
EC South		123	25	2,230			2,378
<b>Total</b>		<b>3,407</b>	<b>2,584</b>	<b>24,532</b>		<b>441</b>	<b>30,964</b>

Table 31. NRC Sortie Data August 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		110	186	494		39	829
Caliente		85	623	453		417	1,578
Coyote		213	54	544		268	1,079
Elgin		55	661	544		401	1,661
Reveille		199	102			258	559
R61		109	179			38	326
R62		111	175			46	332
R63		170	158			56	384
R64		85	190			36	311
R65		100	279			62	441
R71		131	37	544		164	876
R74		219	47	544		242	1,052
R75		221	47	544		250	1,062
R76		164	33	544		186	927
EC East		220	47	544		258	1,069
EC West		222	47	544		247	1,060
EC South		130	33	544		42	749
Total		2,544	2,898	5,843		3,010	14,295

Table 32. NRC Sortie Data September 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		53	74			68	195
Caliente		133	298			28	459
Coyote		74	138			38	250
Elgin		120	266			31	417
Reveille		70	140			22	232
R61		26	75			63	164
R62		35	75			69	179
R63		81	74			83	238
R64		37	75			64	176
R65		29	138			95	262
R71		65	142			19	226
R74		66	138			22	226
R75		61	138			27	226
R76		65	150			25	240
EC East		66	146			27	239
EC West		66	136			22	224
EC South		67	150			12	229
Total		1,114	2,353			715	4,182



Table 33. NRC Sortie Data October 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo		119	238			104	461
Caliente		154	578	1,673		424	2,829
Coyote		24	457	1,669		339	2,489
Elgin		185	433	1,673		351	2,642
Reveille		22	466	1,669		326	2,483
R61		79	231			100	410
R62		97	248			105	450
R63		113	228			117	458
R64		92	235			97	424
R65		121	287			85	493
R71		28	429	1,669		287	2,413
R74		22	463	1,669		320	2,474
R75		30	462	1,669		320	2,481
R76		62	422	1,669		285	2,438
EC East		30	453	1,669		316	2,468
EC West		30	467	1,669		317	2,483
EC South		30	457	1,669		267	2,423
R4808E		8					8
R4808W		30	473	1,669		301	2,473
Pah. Mesa		29	467	1,669		300	2,465
R4809A		26	420	1,669		237	2,352
Total		1,331	7,914	23,374		4,998	37,617

Table 34. NRC Sortie Data November 96 by Organization and Subdivision-- Range Group Scheduling

Subdivision	Scheduling Organization					Other	Total
	561st	422th	57th	Red Flag	Green Flag		
Alamo		77	234			200	511
Caliente		155	678	994		400	2,227
Coyote		41	606	994		382	2,023
Elgin		165	389	994		341	1,889
Reveille		41	610	992		378	2,021
R61		72	190			195	457
R62		51	220			201	472
R63		79	201			171	451
R64		47	201	2		195	445
R65		70	293	2		186	551
R71		41	638	992		310	1,981
R74		41	612	992		336	1,981
R75		41	623	992		337	1,993
R76		37	648	992		315	1,992
EC East		33	612	992		325	1,962
EC West		41	614	992		334	1,981
EC South		39	656	992		312	1,999
R4808E		2					2
R4808W		41	608	992		321	1,962
Pah. Mesa		41	608	992		329	1,970
R4809A		43	568	870		286	1,767
Total		1,198	9,809	13,776		5,854	30,637

Table 35. NRC Sortie Data December 96 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		28	493			2	523
Caliente		143	612			23	778
Coyote		103	607			7	717
Elgin		148	599			27	774
Reveille		101	602			7	710
R61		13	498			4	515
R62		25	493			6	524
R63		23	413			6	442
R64		12	513			15	540
R65		22	655			27	704
R71		105	541			7	653
R74		114	597			7	718
R75		112	602			7	721
R76		107	626			7	740
EC East		105	605			7	717
EC West		109	600			7	716
EC South		111	607			7	725
R4808E			469				469
R4808W		114	589			7	710
Pah. Mesa		114	601			7	722
R4809A		81	514			7	602
Total		1,690	11,836			194	13,720

Table 36. NRC CY97 Summary and Monthly Sortie Data by Organization -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo		570	2,801	59		845	4,275
Caliente		2,230	6,796	2,658	2,775	3,762	18,221
Coyote		2,089	3,646	2,658	2,775	2,714	13,882
Elgin		1,965	6,758	106	2,775	2,930	14,534
Reveille		2,116	3,542	2,658	2,779	2,639	13,734
R61		537	2,697	250		782	4,266
R62		564	2,862	121		810	4,357
R63		779	2,301			1,080	4,160
R64		515	2,743			965	4,223
R65		470	3,706			1,003	5,179
R71		2,161	3,475	2,658	2,763	2,403	13,460
R74		2,076	3,530	2,658	2,763	2,583	13,610
R75		1,990	3,570	2,658	2,763	2,509	13,490
R76		2,100	3,562	2,541	2,763	2,678	13,644
EC East		2,076	3,488	2,658	2,763	2,605	13,590
EC West		2,055	3,491	2,658	2,763	2,553	13,520
EC South		2,091	3,540	2,658	2,763	2,504	13,556
R4808E <sup>(2)</sup>		452	2,237	2,091		1,024	5,804
R4808W <sup>(2)</sup>		1,601	1,588	963	2,775	1,281	8,208
Pah. Mesa <sup>(2)</sup>		1,963	3,476	2,655	2,650	2,413	13,157
R4809A <sup>(2)</sup>		2,073	3,205	2,658	2,763	2,164	12,863
Total		32,473	73,014	35,366	38,633	42,247	221,733

Table 37. NRC Sortie Data January 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo		64	181			64	309
Caliente		192	524			94	810
Coyote		199	75			200	474
Elgin		109	569			10	688
Reveille		218	57			225	500
R61		61	148			38	247
R62		64	174			70	308
R63		102	109			51	262
R64		59	154			78	291
R65		51	352			65	468
R71		205	49			118	372
R74		198	45			235	478
R75		202	45			246	493
R76		200	61			282	543
EC East		204	45			237	486
EC West		205	45			208	458
EC South		206	45			184	435
R4808E		3					3
R4808W		182	49			116	347
Pahute Mesa		185	57			184	426
R4809A		197	25			109	331
Total		3106	2809			2814	8729

Table 38. NRC Sortie Data February 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		23	123			50	196
Caliente		343	417		1317	479	2,556
Coyote		437	58		1317	226	2,038
Elgin		237	525		1317	389	2,468
Reveille		410	66		1317	254	2,047
R61		23	115			44	182
R62		23	121			48	192
R63		58	74			206	338
R64		42	112			105	259
R65		31	313			69	413
R71		403	42		1305	229	1,979
R74		409	26		1305	223	1,963
R75		401	40		1305	241	1,987
R76		403	42		1305	242	1,992
EC East		404	40		1305	242	1,991
EC West		402	36		1305	235	1,978
EC South		395	44		1305	243	1,987
R4808E		3					3
R4808W		403	34		1317	236	1,990
Pahute Mesa		357	34		1305	230	1,926
R4809A		398	20		1305	192	1,915
Total		5605	2282		18330	4183	30400

Table 39. NRC Sortie Data March 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		42	212			79	333
Caliente		476	358		1458	405	2,697
Coyote		391	156		1458	136	2,141
Elgin		400	503		1458	445	2,806
Reveille		435	113		1462	114	2,124
R61		37	198			80	315
R62		39	198			81	318
R63		57	129			87	273
R64		47	193			83	323
R65		27	419			91	537
R71		418	139		1458	100	2,115
R74		430	105		1458	99	2,092
R75		370	193		1458	107	2,128
R76		424	168		1458	109	2,159
EC East		428	131		1458	100	2,117
EC West		420	142		1458	100	2,120
EC South		424	170		1458	90	2,142
R4808E		7					7
R4808W		418	123		1458	78	2,077
Pahute Mesa		416	125		1345	83	1,969
R4809A		419	99		1458	70	2,046
Total		6125	3874		20303	2537	32839

Table 40. NRC Sortie Data April 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		13	99			76	188
Caliente		289	436			378	1,103
Coyote		333	309			270	912
Elgin		266	376			245	887
Reveille		328	314			237	879
R61		13	90			69	172
R62		13	100			77	190
R63		52	89			127	268
R64		9	102			119	230
R65		12	136			151	299
R71		337	365			243	945
R74		325	337			265	927
R75		301	383			268	952
R76		326	372			273	971
EC East		334	344			255	933
EC West		324	343			251	918
EC South		328	372			265	965
R4808E						3	3
R4808W		329	329			251	909
Pahute Mesa		299	346			258	903
R4809A		332	303			202	837
<b>Total</b>		<b>4563</b>	<b>5545</b>			<b>4283</b>	<b>14391</b>

Table 41. NRC Sortie Data May 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		77	157			170	404
Caliente		138	664			784	1,586
Coyote		102	591			663	1,356
Elgin		161	447			619	1,227
Reveille		96	589			658	1,343
R61		78	165			168	411
R62		81	153			139	373
R63		107	78			88	273
R64		67	151			153	371
R65		57	126			91	274
R71		76	435			570	1,081
R74		87	573			665	1,325
R75		72	437			515	1,024
R76		72	439			596	1,107
EC East		75	435			612	1,122
EC West		72	435			606	1,113
EC South		72	431			587	1,090
R4808E						5	5
R4808W		70	433			567	1,070
Pahute Mesa		72	445			537	1,054
R4809A		72	390			558	1,020
<b>Total</b>		<b>1704</b>	<b>7574</b>			<b>9351</b>	<b>18629</b>

Table 42. NRC Sortie Data June 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		37	465			52	554
Caliente		156	823			72	1,051
Coyote		75	588			66	729
Elgin		150	834			68	1,052
Reveille		75	574			47	696
R61		35	463			49	547
R62		38	547			49	634
R63		62	527			94	683
R64		32	524			52	608
R65		37	533			78	648
R71		105	584			62	751
R74		75	584			48	707
R75		75	582			56	713
R76		74	586			67	727
EC East		75	583			65	723
EC West		75	583			64	722
EC South		76	586			64	726
R4808E			482			1	483
R4808W		75	574			13	662
Pahute Mesa		75	582			54	711
R4809A		106	582			13	701
Total		1508	12186			1134	14828

Table 43. NRC Sortie Data July 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		72	263	59		39	433
Caliente		104	471	963		62	1,600
Coyote		123	54	963		57	1,197
Elgin		139	594	106		58	897
Reveille		115	48	963		32	1,158
R61		68	242	250		37	597
R62		60	254	121		40	475
R63		85	176			59	320
R64		38	233			40	311
R65		32	187			66	285
R71		123	50	963		30	1,166
R74		123	46	963		27	1,159
R75		121	46	963		24	1,154
R76		123	50	846		33	1,052
EC East		123	46	963		31	1,163
EC West		123	46	963		31	1,163
EC South		123	50	963		20	1,156
R4808E		12		396			408
R4808W		124	46	963		20	1,153
Pahute Mesa		123	56	963		22	1,164
R4809A		116	46	963		29	1,154
Total		2070	3004	13334		757	19165

Table 44. NRC Sortie Data August 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		116	331			66	513
Caliente		35	560	1695		203	2,493
Coyote		62	92	1695		99	1,948
Elgin		84	775			177	1,036
Reveille		60	87	1695		73	1,915
R61		104	292			55	451
R62		115	329			66	510
R63		116	258			69	443
R64		82	290			54	426
R65		94	265			65	424
R71		68	85	1695		66	1,914
R74		50	96	1695		63	1,904
R75		56	84	1695		59	1,894
R76		68	89	1695		60	1,912
EC East		56	108	1695		61	1,920
EC West		56	101	1695		61	1,913
EC South		66	89	1695		44	1,894
R4808E		46	72	1695		34	1,847
R4808W							
Pahute Mesa		50	91	1692		57	1,890
R4809A		60	78	1695		41	1,874
Total		1,444	4,172	22,032		1,473	29,121

Table 45. NRC Sortie Data September 97 by Organization and Subdivision-- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		14	77			21	112
Caliente		55	482			310	847
Coyote		17	110			91	218
Elgin		64	409			245	718
Reveille		17	102			89	208
R61		11	71			25	107
R62		17	74			31	122
R63		31	51			72	154
R64		24	70			33	127
R65		17	96			45	158
R71		16	82			92	190
R74		22	106			65	193
R75		22	106			99	227
R76		16	98			97	211
EC East		15	116			97	228
EC West		16	106			99	221
EC South		16	98			93	207
R4808E		22	98			86	206
R4808W							
Pahute Mesa		22	98			88	208
R4809A		16	98			87	201
Total		450	2548			1865	4863

Table 46. NRC Sortie Data October 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo		64	158			117	339
Caliente		244	614			390	1,248
Coyote		126	375			306	807
Elgin		160	500			285	945
Reveille		128	365			302	795
R61		59	186			106	351
R62		66	190			108	364
R63		71	153			90	314
R64		66	209			124	399
R65		66	225			134	425
R71		151	400			294	845
R74		122	365			302	789
R75		130	412			297	839
R76		136	412			298	846
EC East		125	401			309	835
EC West		125	405			307	837
EC South		133	411			302	846
R4808E		134	369			302	805
R4808W							
Pahute Mesa		130	405			305	840
R4809A		143	351			284	778
Total		2,379	6,906			4,962	14,247

Table 47. NRC Sortie Data November 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization						Total
	561st	422th	57th	Red Flag	Green Flag	Other	
Alamo		19	96			110	225
Caliente		100	576			568	1,244
Coyote		87	506			583	1,176
Elgin		111	384			372	867
Reveille		88	507			592	1,187
R61		16	92			111	219
R62		16	87			100	203
R63		26	72			115	213
R64		20	76			118	214
R65		21	223			108	352
R71		96	510			582	1,188
R74		90	513			576	1,179
R75		90	510			579	1,179
R76		96	510			584	1,190
EC East		90	506			579	1,175
EC West		90	516			572	1,178
EC South		94	510			576	1,180
R4808E		90	508			581	1,179
R4808W							
Pahute Mesa		90	505			586	1,181
R4809A		89	485			569	1,143
all		1,419	7,692			8,561	17,672



Table 48. NRC Sortie Data December 97 by Organization and Subdivision -- Range Group Scheduling

Subdivision	Scheduling Organization					Total	
	561st	422th	57th	Red Flag	Green Flag		Other
Alamo		29	639			1	669
Caliente		98	871			17	986
Coyote		137	732			17	886
Elgin		84	842			17	943
Reveille		146	720			16	882
R61		32	635				667
R62		32	635			1	668
R63		12	585			22	619
R64		29	629			6	664
R65		25	831			40	896
R71		163	734			17	914
R74		145	734			15	894
R75		150	732			18	900
R76		162	735			37	934
EC East		147	733			17	897
EC West		147	733			19	899
EC South		158	734			36	928
R4808E		135	708			12	855
R4808W							
Pahute Mesa		144	732			9	885
R4809A		125	728			10	863
Total		2,100	14,422			327	16,849

**APPENDIX A.10**

**LAND DESCRIPTIONS**

## APPENDIX A.10

### LAND DESCRIPTION

This appendix contains legal descriptions for the current NAFR land use including PLO 99-606, the Groom Mountain Withdrawal (PL 100-338), and White Sides Safety and Security Buffer (PLO 7131). Table A.10-1 provides a basis for the estimation of acreage disturbed within the existing NAFR. This information was used in determining the area directly affected by past and present use of the NAFR. Table A.10-2 provides a summary of the total acreage included in the current NAFR land and each of the alternatives evaluated in this LEIS.

#### **Existing NAFR Legal Description:**

Mount Diablo Meridian, Nevada

#### **PL 99-606**

Tps. 1, 2, 3, and 4 S., R. 44 E., All

T. 5 S., R. 44 E., partly unsurveyed, secs. 1-2:10-16 incl; 20-36 incl.

T. 6 S., R. 44 E., unsurveyed, All.

T. 7 S., R. 44 E., unsurveyed, secs. 1-5, incl; 8-16 incl; 22-26; 35; 36.

T. 8 S., R. 44 E., unsurveyed, sec. 1.

Tps. 1, 2, 3, and 4 S., R., 45 E., All.

Tps. 5, 6, and 7 S., R. 45 E., unsurveyed. All.

T. 8 S., R. 45 E., unsurveyed, secs. 1-18 incl; 20-27 incl; 35, 36.

Tps. 1 and 2 S., R. 46 E., All.

Tps. 3, 4, 5, 6, 7, and 8 S., R. 46 E., unsurveyed, All.

T. 9 S., R. 46 E., unsurveyed, secs. 1-6 incl; 8-15 incl; 23, 24.

Tps. 1 and 2 S., R. 47 E., All.

Tps. 3, 4, 5, 6, 7, and 8 S., R. 47 E., unsurveyed, All.

T. 9 S., R. 47 E., unsurveyed, secs, 1-30, incl; 33-36 incl.

T. 10 S., R. 47 E., secs. 1, 2, 12.

Tps. 1 and 2 S., R. 48 E., All.

Tps. 3, 4, 5, 6, 7, 8, and 9 S., 48 E., unsurveyed, All.

T. 10 S., R. 48 E., unsurveyed, secs. 1-17, incl; 21-26 incl; 36

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Tps. 1 and 2 S., R. 49 E., All.

Tps. 3, 4, 5, 6, and 7 S., R. 49 E., unsurveyed, All

T. 8 S., R. 49 E., unsurveyed, secs. 1-11 incl; 14-23 incl; 26-35 incl; secs. 12, 13, 24, 25, 36, excl of those portions w/d by PLO 2568.

T. 9 S., R. 49 E., unsurveyed, secs. 2-11 incl; 14-23 incl; 26-35 incl; secs. 1, 12, 13, 24, 25, 36, excl of those portions w/d by PLO 2568.

T. 10 S., R. 49 E., unsurveyed, secs. 2-11 incl; 14-23 incl; 26-35 incl; secs. 1, 12, 13, 24, 25, 36, excl of those portions w/d by PLO 2568.

T. 11 S., R. 49 E., unsurveyed, secs. 2-11 incl; 14-23 incl; 26-35 incl; secs. 1, 12, 13, 24, 25, 36, excl of those portions w/d by PLO 2568.

T. 12 S., R. 49 E., unsurveyed, secs. 2-11 incl; 14-23 incl; 26-35 incl; secs. 1, 12, 13, 24, 25, 36, excl of those portions w/d by PLO 2568.

Tps. 1, 2, 3, 4, 5, 6, and 7 S., R. 50 E., unsurveyed, All.

T. 8 S., R. 50 E., unsurveyed, secs. 1-6 incl; secs. 7-12 incl; excl of those portions w/d by PLO 2568.

Tps. 2, 3, 4, 5, 6, and 7 S., R. 51 E., unsurveyed, All.

T. 8 S., R. 51 E., unsurveyed, secs. 1-6 incl; secs. 7-12 incl; excl of those portions w/d by PLO 2568.

Tps. 3 and 4 S., R. 51 1/2 E., unsurveyed, All.

Tps. 3, 4, 5, 6, and 7 S., R. 52 E., unsurveyed, All.

T. 8 S., R. 52 E., unsurveyed, secs. 1-6 incl; secs. 7-12 incl; excl of those portions w/d by PLO 2568 and 805.

Tps. 3 and 4 S., R. 53 E., All.

Tps. 5, 6, and 7 S., R. 53 E., unsurveyed. All.

T. 8 S., R. 53 E., unsurveyed, secs. 1-6 incl; secs 7-12 incl; excl of those portions w/d by PLO 805.

T. 3 S., R. 54 E., secs. 4-9 incl; 16-21 incl; 28-33 incl.

T. 4 S., R. 54 E., secs. 4-9 incl; 16-21 incl; 28-33 incl.

Tps. 5 and 6 S., R. 54 E., unsurveyed. All.

T. 7 S., R. 54 E., unsurveyed, secs. 1-34 incl; secs 35, 36, excl of those portions w/d by PLO 1662.

T. 8 S., R. 54 E., unsurveyed, secs. 3-6 incl; secs. 2, 7-11 incl, 35, 36, excl of those portions w/d by PLOs 805 and 1662.

T. 9 S., R. 54 E., unsurveyed, secs. 1, 12, 13, 24, 25, 36; secs. 2, 11, 14, 23, 35, excl of those portions w/d by PLO 805.

- T. 10 S., R. 54 E., unsurveyed, secs. 1, 12, 24, 25, 36; secs. 2, 11, 14, 23, 26, 35, excl of those portions w/d by PLO 805.
- T. 11 S., R. 54 E., unsurveyed, secs. 1, 12, 13, 24, 25, 36; secs. 2, 11, 14, 23, 26, 35, excl of those portions w/d by PLO 805.
- T. 12 S., R. 54 E., unsurveyed, secs. 1, 12, 13, 24, 25, 36; secs. 2, 11, 14, 23, 26, 35, excl of those portions w/d by PLO 805.
- T. 13 S., R. 54 E., unsurveyed, secs. 10-15 incl; 22-27 incl; 34-36 incl; secs. 9, 16, 21, 28, 33, excl of those portions w/d by PLO 805.
- T. 14 S., R. 54 E., unsurveyed, secs. 1-3 incl; 10-15 incl; 22-27 incl; 34-36 incl; secs 4, 9, 16, 21, 28, 33, excl of those portions w/d by PLO 805.
- T. 16 S., R. 54 E., secs. 1-3, N1/2, incl; sec. 4, NE1/4.
- T. 5 S., R. 55 E., unsurveyed, secs. 2-11 incl; 14-23 incl; 26-35 incl.
- T. 6 S., R. 55 E., unsurveyed, secs. 2-11 incl; 14-23 incl; 26-35 incl.
- T. 7 S., R. 55 E., unsurveyed, secs. 2-11 incl; 14-23 incl; 26-30 incl; secs. 31-35 incl, excl of those portions w/d by PLO 1662; sec. 36, S1/2, excl of those portions w/d by PLO 1662.
- T. 8 S., R. 55 E., unsurveyed, secs. 31-36 incl, excl of those portions w/d by PLO 1662.
- Tps. 9, 10, 11, 12, 13, and 14 S., R. 55 E., unsurveyed. All.
- T. 16 S., R. 55 E., secs. 1-6, N1/2, incl.
- T. 7 S., R. 55 1/2 E., unsurveyed, secs. 31-33, S 1/2, incl, excl of those portions w/d by PLO 1662.
- T. 8 S., R. 55 1/2 E., unsurveyed, secs. 4, 9, 16, 21, 28, 31-33 incl, excl of those portions w.d by PLO 1662.
- Tps. 9, 10, 11, 12, 13, 14, and 15 S., R. 55 1/2 E., unsurveyed. All.
- T. 16 S., R. 55 1/2 E., secs, 1, 2, N1/2.
- Tps. 8, 9, 10, 11, 12, 13, and 14 S., R. 56 E., unsurveyed. All.
- T. 15 S., R. 56 E., All.
- T. 16 S., R. 56 E., secs 1 and 2, All; Sec. 3, lots 5, 6, 7, 8, 9, E1/2; sec. 4, lots 5, 6, 7, 8; sec. 5, lots 5, 6, 7, 8, 9, NW1/4, W1/2 NE 1/4; sec. 6, lots 8, 9, NE1/4, W1/2; sec. 8, lot 1; sec. 9, lot 1; tracts 38, 39, 40, 41, 42 A, B and C.
- Tps. 8, 9, 10, 11, 12, 13, 14, and 15 S., R. 57 E., unsurveyed. All.
- T. 16 S., R. 57 E., unsurveyed, secs. 1-6 incl; sec. 7, NE1/4; secs 8-16 incl; sec. 17, NE1/4; sec. 20, SE1/4 SW1/4, S1/2 SE1/4; sec. 21, NE1/4, SW1/4 SW1/4; secs. 22-26 incl; sec. 27, NE1/4; sec. 28, NW1/4 NW1/4; sec. 29, N1/2 NE1/4; NE1/4 NW1/4; sec. 35, NE 1/4; sec. 46, All.
- Tps. 8, 9, 10, 11, 12, 13, 14, and 15 S., R. 58 E., unsurveyed. All.
- T. 16 S., R. 58 E., unsurveyed, secs. 1-10 incl; 15-22 incl; 27-34 incl.

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T. 17 S., R. 58 E., secs. 1-4 incl; sec. 5, NE1/4; sec. 9, NE1/4; sec. 10 N1/2; N1/2 SW1/4, SE1/4 SW1/4, SE1/4; secs. 11, 12; sec. 13, NW1/4; sec. 14, N1/2, NE1/4 SW1/4, SE1/4; sec.15, NE1/4 NE1/4.

Tps. 8, 9, 10, 11, 12, 13, and 14 S., R. 59 E., unsurveyed. All.

**GROOM MOUNTAIN RANGE WITHDRAWAL AREA (PLO 100-338)**

T.5 S., R. 55 E., secs. 1, 12, 13, 24, 25, 36

T.6 S, R. 55 E., secs 1, 12, 13, 24, 25, 36

T.7 S., R. 55 E., secs 1, 12, 13, 24, 25; sec 36 exclusive of land in PLO 1662

T.5 S, R. 55, 1/2 E., sec. 6 exclusive of mineral patent 9368; secs 7, 8, 16 through 21, 28 through 33

T.6 S, R. 55, 1/2 E

T. 7 S., R. 55 1/2 E, secs 4, 6, 7, 9, 16, 18 through 21, 28 through 30; secs 5, 8 exclusive of mineral patents 1660, 1661, 1034979; sec 17 exclusive of mineral patent 1055957; secs 31 through 33 exclusive of land PLO in 1662

T.5 S., R. 56 E, secs 19, 27 through 35; sec 20 exclusive of mineral patent 3379

T.6 S., R. 56 E, secs 2 through 11, 14 through 23, 26 through 35

T.7 S., R 56 E, secs 2 through 11, 14 through 23, 26 through 35

**WHITE SIDES SAFETY & SECURITY BUFFER (PLO 7131)**

In addition to the above land is the recent White Sides withdrawal of approximately 3,972 acres, which is defined as follows:

T. 6 S., R. 56 E., unsurveyed, secs. 25 and 36.

T. 7 S., R 56 E., unsurveyed, sec. 1; sec. 13, W1/2; sec. 24, NW1/4.

T. 6 S., R 57 E., sec. 30, lots 1 thru 4, E1/2 W1/2; sec. 31, lots 1 thru 4, E1/2 W1/2, E1/2.

T. 7 S., R 57 E., sec. 6 lots 1 thru 7, S1/2 NE1/4, SE1/4 NW1/4, E1/2 SW1/4, SE1/4.

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**Table A-10.1 NELLIS AIR FORCE RANGE – LAND DISTURBANCE SUMMARY**

<i>Location</i>	<i>Acres</i>	<i>Subtotals</i>	<i>Data</i>	<i>Assumption</i>	<i>Reference</i>
<b>NORTH RANGE</b>					
Tonopah Test Range		2,890			
DOE Facilities	624				NAFR Land Use Report
TTR Airfield	2157				USAF Real Property Report
Mancamp	109				USAF Real Property Report
Tolicha Peak	23	23			USAF Real Property Report
TECR	18.1	18			99RANSS/RSF
Green Flag Village	10	10			99RANSS/RSF
Roads		2,460			
70s Ranges trails	561		462.5mi	10 ft	RMO GIS
70s Ranges Improved Roads	1,653		272.8mi	50 ft	RMO GIS
EC South trails	133		109.8mi	10 ft	RMO GIS
EC South Improved Roads	113		18.8mi	50 ft	RMO GIS
Threat Simulators	31	31	133 sites	100 X 100	99RANS/DOE
Targets		34,186			
Individual Targets	31748.3		1025 sites		99 RANS/DOM
Airfield	1600		5 ea	1 X .5 mi	
Convoy	11.5			1000 X 500	
Strafing	826		100 ea.	600 X 600	
DOE Activities & Facilities		16,155			
Project 57	268				DOE/NV ER
Cabriolet/Palanquin	157				DOE/NV ER
Clean Slates 1	13				DOE/NV ER
Clean Slates 2	35				DOE/NV ER
Clean Slates 3	125				DOE/NV ER
Double Tracks	13				DOE/NV ER
Schooner	486				DOE/NV ER
Emplacement Holes	75		3 holes	25 acres each	
Central Pahute Mesa	8000		64 test cavities		
Western Pahute Mesa	2250		18 test cavities		
TTR Bomblet Target Area	3200				DOE/NV
TTR Industrial Sites	18		18 sites	1 acre each	DOE/NV
Pahute Mesa Roads	1515		250 miles	50 ft wide	
<b>NORTH RANGE SUBTOTAL</b>		<b>55,773</b>			
<b>SOUTH RANGE</b>					
Pt. Bravo	7.1	7			99RANSS/RSF
Indian Springs AFAP	2300	2300			USAF Real Property Report
Silver Flag Alpha	53.7	54			99RANSS/RSF
Roads		3426			
60s Ranges trails	508		418.7mi	10 ft	RMO GIS
60s Ranges Improved Roads	953		157.3mi	50 ft	RMO GIS
4809A trails	470		387.7mi	10 ft	RMO GIS
4809A Improved Roads	1,495		246.6mi	50 ft	RMO GIS
Toss Towers (0.01 acres total)	0	1	22 sites	100 sf	99RANS/DOE
Targets	8672.7	8673		280 sites	99 RANS/DOM
DOE ER Areas					
Small Boy	130	130			DOE/NV ER
<b>SOUTH RANGE SUBTOTAL</b>		<b>14,591</b>			
<b>TOTAL NAFR DISTURBED AREA</b>		<b>70,364</b>			

*Note:* The DOE contaminated areas have not been characterized, in whole or in part, and the information provided refers only to the background level and was intended to be used only for land area impact purposes and has no relation to clean-up standards, health standards, or risk analysis.

Table A-10.2 NELLIS AIR FORCE RANGE - LAND AREA SUMMARY					
	Subject Lands	Reference	Year	Affected Area (Acres)	
1	Nellis Air Force Range	P.L. 99-606, Military Lands Withdrawal Act	1986	2,945,726	
2	Groom Mountain Extension	P.L. 100-338	1988	89,000	
3	White Sides Safety & Security Buffer	Public Land Order 7131	1995	3,972	
4	Proposed Non-renewal	Cactus Springs Finger	1995	3,056	
5	Proposed Administrative Transfer	Public Land Order 1662	2001	38,400	
6	Proposed Non-renewal	NAFR Southwestern Boundary	2001	34,768 <sup>(1)(2)</sup>	
7	Proposed Administrative Transfer	Pahute Mesa	2001	127,620 <sup>(1)</sup>	
<b>LEIS Alternatives Summary</b>					
	Current NAFR	1 + 2 + 3		3,038,698	
	Alternative 1A	1 + 2 + 3 - 4		3,035,642	
	Alternative 1B	1 + 2 + 3 - 4 + 5 - 6 - 7		2,911,654	
	Alternative 2A	1 + 2 + 3 - 4		3,035,642	
	Alternative 2B	1 + 2 + 3 - 4 + 5 - 6 - 7		2,911,654	

Notes: (1) Approximate acreage based on whole sections. This value could be further refined prior to Congressional action.  
(2) The final acreage is expected to be between 30,000 and 35,000 acres.



**Appendix B**

**STATEMENT OF PUBLIC PARTICIPATION DOCUMENT**

# APPENDIX B

## STATEMENT OF PUBLIC PARTICIPATION

### 1.0 INTRODUCTION

This document presents a summary of the public participation efforts associated with the Nellis Air Force Range (NAFR) renewal environmental impact analysis process (EIAP). It has been prepared in accordance with federal regulations (43 CFR 2310.3-2) pertaining to development and submittal of the land withdrawal case files. The regulations were developed pursuant to Section 204(10) of the Federal Land Policy and Management Act of October 1976 (FLPMA), which states that lands suggested for withdrawal must be reviewed.

Many opportunities are available for public participation in the NAFR renewal EIAP. These include:

- scoping sessions and comment period;
- receipt of and comment on newsletters;
- participation in community group meetings or agency consultation; and
- public hearings and comment period.

### 2.0 SCOPING PROCESS

The scoping period for the EIAP began when the Notice of Intent was published in the *Federal Register* on 30 May 1996. The closing date for the scoping period was set for 5 August 1996. Although the receipt of public comments is most useful during the early stage of the EIAP, the Air Force stated during the scoping sessions that they would welcome comments throughout the Legislative Environmental Impact Statement (LEIS) analysis and preparation process.

The Air Force's intent during the scoping process was to provide the greatest level of opportunity for government agencies, special interest groups, and the general public to learn about the Air Force's proposal and to offer several ways for those interested to express their thoughts regarding the proposal. Display ads and press releases announcing the scoping sessions were placed in local newspapers in these locations:

- Indian Springs
- Caliente
- Las Vegas
- Beatty
- Tonopah
- Reno

Public service announcements were also aired on regional radio and television stations.

The scoping sessions were designed in an "open house" format to create a comfortable atmosphere for attendees – one in which participants could speak individually to Air Force personnel. During the sessions, attendees were encouraged to ask questions and provide input. Following the initial "open house" portion of the session, senior Air Force officers presented an overview of the NAFR and the LEIS process. Attendees were then invited to identify issues of concern. These were recorded by a court reporter.

At the front door of every scoping session location, Air Force personnel were available to greet attendees and guide them in the right direction once inside the building.

Four principal displays were developed with key messages and information to help people understand the NAFR Renewal process. The displays were arranged so that attendees were presented information in a specific order as they progressed to each display.

There were three methods of commenting available to the public during the scoping sessions. Attendees could provide the following:

1. give verbal testimony to a court reporter;
2. hand in written comments they brought with them to the scoping session or complete a written comment form provided by the Air Force;
3. personally type in comments at one of the available computers or have Air Force personnel type the comment (comments were printed out immediately upon completion and were signed by the commentor).

Scoping sessions were held at locations throughout Nevada in support of the NAFR renewal proposal. The schedule for the scoping sessions and attendance is presented in Table B-1.

<b>Table B-1 Schedule of Sessions and Attendance</b>		
<i>Date</i>	<i>Location</i>	<i>Attendance</i>
June 17, 1996	Indian Springs, Nevada	15
June 18, 1996	Caliente, Nevada	8
June 20, 1996	Las Vegas, Nevada	13
June 24, 1996	Beatty, Nevada	9
June 25, 1996	Tonopah, Nevada	3
June 26, 1996	Reno, Nevada	26

Written and oral comments received from the general public, special interest groups, and government agencies during the comment period were reviewed to summarize the scope of

comments and attendance. This review was documented and included in a formal briefing that was presented to participating individuals within the Air Force, USFWS, and the BLM to identify issues to be addressed in the Draft LEIS. The presentation was based on all oral and written comments submitted. In total, 85 comments were received at the scoping sessions; 3 comments were received via the Internet; and 29 written comments were received via mail.

### **3.0 PUBLIC COMMENT PERIOD**

The public comment period began on October 2, 1998, as identified in the Notice of Availability for the Draft LEIS that was published in the *Federal Register*. It concluded 90 days later, on 31 December 98. During the comment period the Air Force held public hearings to receive formal public comments on the Draft LEIS. A schedule for the public hearings and attendance is presented in Table B-2.

<i>Date</i>	<i>Location</i>	<i>Attendance</i>
November 9, 1998	Indian Springs	22
November 10, 1998	Las Vegas	35
November 11, 1998	Caliente	17
November 12, 1998	Pahrump	14
November 13, 1998	Beatty	11
November 16, 1998	Tonopah	20
November 17, 1998	Reno	41

The purpose of the public hearings was to permanently record relevant oral comments regarding the Draft LEIS from government agencies, commercial and private organizations, and the public.

As part of the National Environmental Policy Act process, Executive Order 13007 requires government-to-government consultation with tribes with ancestral ties to NAFR. To that end, the Air Force held a Native American Interaction Program meeting during the public comment period to allow the interested American Indians an opportunity to comment.

The Air Force used a variety of medium to advertise the public comment period and associated public hearings, including print and electronic media. Fliers were delivered and posted at local post office and community centers, where available in Caliente, Pioche, Alamo, Rachel, Pahrump, Beatty, Indian Springs, Hiko, and Goldfield; print ads were placed in the *Las Vegas Review-Journal*, *Ely Daily Times*, *Pahrump Valley Gazette*, *Tonopah Times*, and *Gazette-Journal*; radio advertisements were placed on local radio, and news releases were sent to both the print and

electronic media, including radio and television stations in the communities surrounding the NAFR. In addition, the October 1998 newsletter included a timeline of the comment period and public hearing dates and locations.

Copies of the Draft LEIS were mailed to all agencies, organizations, and individuals who expressed an interest in receiving a copy during the scoping period. The mailing list also included local government officials and local, state, and federal regulatory agencies with potential areas of responsibility. The Draft LEIS was also made available for review at various repositories and libraries located throughout Nevada. These locations included the Beatty Library; Caliente Library; Carson City Library; Indian Springs Library; Las Vegas Clark County Library; Lincoln County Library; Pahrump Library; Reno Library, Reno; U.S. Bureau of Land Management Tonopah Commissioner's Office; UNLV library; and University of Nevada Reno Library. The Air Force's intention was to give the public every opportunity to familiarize itself with the document prior to each hearing.

In addition to formal oral comments, the public was also invited to submit written comments at the hearing locations or through the mail.

#### **4.0 NEWSLETTERS**

A mailing list was developed from the names and addresses collected during the scoping period. The sources included the following:

- scoping meeting attendance sheets;
- written and oral comment forms;
- return postcards from the newsletters; and
- letters received requesting that the sender be placed on the mailing list.

The list was augmented with the names of interested agencies and groups. This effort was led by public affairs personnel at Nellis AFB.

The goal of maintaining communication with people on the mailing list was accomplished through a series of newsletters. The newsletters were prepared at specific times during the environmental process and the text written to correspond with the current stage of the EIAP.

Each newsletter includes a timeline for the EIAP, with the appropriate segment highlighted. A contact name is always provided, along with an address and phone number, for any questions or comments. A self-addressed, postage-paid response card is also a regular feature of the newsletters. Specific questions are asked on each response card providing an additional opportunity for these and other comments to be sent directly to the Air Force. Approximately 1,000 copies of each newsletter were distributed to those people on the mailing list and also through Nellis AFB.

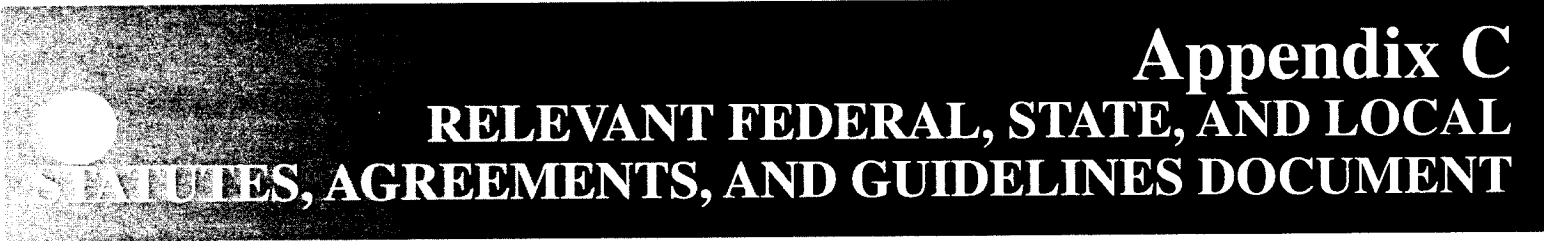
## **5.0 PARTICIPATION IN COMMUNITY GROUP MEETINGS OR AGENCY CONSULTATION**

Prior to publication of the Notice of Intent, the Air Force sought input on the proposal and the EIAP from numerous groups and agencies. The 99th Wing also met with interest groups and state and federal agencies throughout southern Nevada. These presentations and discussions have continued since the publication of the Notice of Intent, throughout the scoping process, and will continue throughout the EIAP process. In addition to informal meetings and presentations on the proposal, there was also formal consultation. Chapter 10.0 of the Draft LEIS provides a list of repositories.

## **6.0 CONCLUSION**

The public participation opportunities for the NAFR LEIS were designed to fulfill the requirements of NEPA and FLPMA. The Air Force's intent was to go beyond the basic requirements of these two laws and provide the highest level-of-effort to make sure everyone interested in the NAFR renewal proposal was given a chance to review the information, ask questions and discuss concerns, and provide comments.

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**Appendix C**  
**RELEVANT FEDERAL, STATE, AND LOCAL**  
**STATUTES, AGREEMENTS, AND GUIDELINES DOCUMENT**



## APPENDIX C

### RELEVANT FEDERAL, STATE, AND LOCAL STATUTES, REGULATIONS, AGREEMENTS, AND GUIDELINES

#### GENERAL

*Air Force Instruction (AFI) 32-7061* (Environmental Impact Analysis Process) is the Air Force implementation of the procedural provisions of the NEPA and CEQ regulations.

*Executive Order 12856* (Right to Know Laws and Pollution Prevention Requirements) directs all federal agencies to reduce and report toxic chemicals entering any wastestream; improve emergency planning, response, and accident notification; and encourage clean technologies and testing of innovative prevention technologies. The executive order also provides that federal agencies are persons for purposes of The Emergency Planning and Community Right-to-Know Act (Superfund Amendments and Reauthorization Act [SARA] Title III), which obliges agencies to meet the requirements of the Act.

*Executive Order 12898* (Environmental Justice) directs federal agencies to achieve environmental justice by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations in the United States and its territories and possessions. The order creates an Interagency Working Group on Environmental Justice and directs each federal agency to develop strategies within prescribed time limits to identify and address environmental justice concerns. The order further directs each federal agency to collect, maintain, and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have a substantial environmental, human health, or economic effect on the surrounding populations, when facilities or sites become the subject of a substantial federal environmental administrative or judicial action and to make such information publicly available.

*Executive Order 12372* (Intergovernmental Review of Federal Programs) directs federal agencies to "make efforts to accommodate state and local elected officials' concerns with proposed . . . direct federal development." It further states, "for those cases where the concerns cannot be accommodated, federal officials shall explain the bases for their decision in a timely manner." The executive order requires federal agencies to provide state and local officials the opportunity to comment on actions that could affect their jurisdictions, using state-established consultation processes when possible.

*Federal Land Policy and Management Act (FLPMA) of 1976* defines the mission of the Bureau of Land Management (BLM) and requires the BLM to inventory and manage all resources within the lands it administers.

*National Environmental Policy Act (NEPA) of 1969* (Public Law 91-190, 42 U.S.C. 4347, as amended) requires federal agencies to take the environmental consequences of proposed actions into consideration in their decisionmaking process. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process.

## **AIRSPACE**

*Federal Aviation Act of 1958* created the Federal Aviation Administration (FAA) and charged the FAA Administrator with ensuring the safety of aircraft and the efficient utilization of the National Airspace System, within the jurisdiction of the United States.

*FAA Handbook 7400.2C* prescribes policy, criteria, and procedures applicable to rulemaking and non-rulemaking actions associated with airspace allocation and utilization, obstruction evaluation and marking airport airspace analyses, and the establishment of air navigation aids.

*FAA Handbook 7110.65* prescribes air traffic control procedures and phraseology for use by personnel providing air traffic control services in the United States.

*Federal Aviation Regulation (Part 71) (1975)* delineates the designation of federal airways, area low routes, controlled airspace, and navigational reporting points.

*Federal Aviation Regulation (Part 73) (1975)* defines special use airspace and prescribes the requirements for the use of that airspace.

*Federal Aviation Regulation (Part 91) (1990)* describes the rules governing the operation of aircraft within the United States.

## **NOISE**

*Executive Order 12088* (Federal Compliance with Pollution Control Standards) (1978) requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution, including noise pollution, with respect to federal facilities and activities under the control of the agency.

*Federal Interagency Committee on Urban Noise* (1980) defines noise levels for various land uses and may result in areas that will not qualify for federal mortgage insurance. Additional sections allow for noise attenuation measures that are often required for HUD approval.

## **SAFETY**

*AFI 13-201* establishes practices to decrease disturbances from flight operations and protect the public from the hazards and effects associated with flight operations.

*AFI 11-206* prohibits Air Force pilots from intentionally allowing any object to be dropped from an aircraft, except in an emergency, without prior approval. Approval is only given when the dropped object will not create a hazard to people, property, or other air traffic.

*AFI 13-212* and *Nellis Supplement 1* outline procedures governing weapons range use of chaff and flares.

*AFI 11-214* delineates procedures for chaff and flare employment.

*Air Combat Command Supplement 1 to AFI 11-214* (February 25, 1997) prescribes a minimum flare release altitude of 2,000 feet AGL over non-government-owned or controlled areas.

*AFI 13-212 (Vol. 1, Vol. 2, Vol. 3)* establishes procedures for the planning, construction, design, operation, and maintenance of weapons ranges. This AFI defines criteria for target placement, weapons safety footprints, and buffer zones as well as safety procedures involving aircraft or ordnance malfunctions.

*AFI 32-2001* defines the requirements for Air Force installation fire protection programs, including equipment, response times, and training.

*AFI 91-301* contains Air Force occupational safety, fire prevention, and health regulations governing a wide range of activities and procedures associated with safety in the workplace.

*Air Force Manual 91-201* regulates and provides procedures for explosives safety and handling. This manual defines criteria for quantity distances, clear zones, and facilities associated with ordnance.

*Department of Defense (DOD) Flight Information Publication* indicates locations of potential hazards (e.g., bird aggregations, obstructions) and noise sensitive locations under military airspace, and defines horizontal and/or vertical avoidance measures. This publication is updated monthly to present current conditions.

*DOD Instruction (DODI) 6055.1* contains occupational health guidance for managing and controlling exposure to radio frequency reduction.

## **HAZARDOUS MATERIALS**

### **Federal Statutes and Regulations**

*AFI 32-1052 (Facility Asbestos Management)* (March 1994)

*AFI 32-1053 (Pest Management Program)* (May 1994)

*AFI 32-4002 (Hazardous Material, Emergency Planning and Response Program)* (December 1997)

*AFI 32-7020 (The Environmental Restoration Program)* (May 1994)

*AFI 32-7042 (Solid and Hazardous Waste Compliance)* (May 1994)

*AFI 32-7044 (Storage Tank Compliance)* (May 1994)

*AFI 32-7080 (Pollution Prevention Program)* (May 1994)

*AFI 32-7086 (Hazardous Material Management)* (August 1997)

*AFI 40-201 (Managing Radioactive Materials in the USAF)* (July 1994)

*Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, and SARA of 1986* provide liability and compensation for cleanup and emergency response from hazardous substances discharged into the environment and the cleanup of hazardous disposal sites.

*Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)* (as amended in 1988) addresses the applications and disposal of pesticides and pesticide containers.

*Hazardous and Solid Waste Amendments (HSWA) of 1984* significantly expanded the scope and requirements of Resource Conservation and Recovery Act (RCRA) and mandated the underground storage tank (UST) regulations.

*Hazardous Materials Transportation Act (HMTA) of 1975* (Title I Section 101) established criteria for shippers and carriers that manage hazardous materials and includes training and qualifications of persons handling hazardous materials.

*Occupational Safety and Health Administration (OSHA) Asbestos Standard (29CFR 1926.58)* lists federal requirements during construction activities for handling and removal of asbestos from equipment and building structures. The chemical hazard communication program (29CFR 1910.120) requires the identification, information, and training on chemical hazards to be available to employees using hazardous materials and instituted material safety data sheets (MSDS) which provide this information.

*Resource Conservation and Recovery Act (RCRA) of 1976* regulates storage, transportation, treatment, and disposal of hazardous waste that could adversely affect the environment.

*Solid Waste Disposal Act (SWDA) and Amendments of 1980* amends RCRA with additional regulation of energy and materials conservation and the establishment of a National Advisory Council.

*Toxic Substance Control Act (TSCA) of 1976* principally regulates polychlorinated biphenyls (PCBs) and asbestos-containing materials (ACM) in schools.

#### **Nevada State Statutes and Regulations**

*Nevada Administrative Code 444, Sanitation (January 1997)* contains guidance for the collection, storage, and disposal of solid waste; the rules and regulations on facilities and standards of practice for the management of hazardous waste; transportation requirements including manifesting and labeling; hazardous waste reduction; and recycling.

*NAC 445A, Water Controls (January 1997)* contains guidance for spill reporting, contamination of soils and corrective actions, groundwater protection, and permitting.

*NAC 459, Hazardous Materials (September, 1996)*, addresses the safe storage and control of radioactive materials.

*NAC 477, State Fire Marshal (November 1994)* contains the requirements for containers for flammable or combustible liquids.

*Title 40 Nevada Revised Statutes, Public Health and Safety* encodes the NACs on hazardous materials and solid waste, including hazardous wastes.

## **EARTH RESOURCES**

### **Federal Statutes and Regulations**

*43 CFR 3000 Series* pertains to mineral management including exploration and mining operations (43 CFR 3809).

*BLM Manual 3031* sets standards for gathering and analyzing information on energy and mineral resources for BLM land use decisions.

*Clean Water Act of 1977 (33 USC 251)* specifically Section 404 regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers prior to such activities.

*Common Varieties Act of 1955* governs sand, gravel, building stone, and similar materials.

*Historic Sites Act of 1935* provides the basis for the establishment of national landmarks which represent "outstanding examples of landforms, geological features, etc., or fossil deposits."

*Mineral Leasing Act of 1920* governs oil, gas and geothermal development. It provides for leasing of deposits of coal, phosphate, sodium, oil, oil shale, or gas, and lands containing deposits owned by the U.S.

*Mining Law of 1872* authorizes hard rock mining (prospecting and extracting minerals) on public domain lands. It also sets the guidelines for staking mining claims on locatable mineral deposits (e.g., gold, silver, lead, asbestos, mica, fluorspar).

### **Nevada State Statutes and Regulations**

*NAC 519A* provides regulations adopted by the Nevada Department of Business and Industry regarding the regulation of mining in Nevada.

## **WATER RESOURCES**

### **Federal Statutes and Regulations**

*CERCLA of 1980* is the primary law that regulates remediation of environmental contamination.

*Clean Water Act of 1977 (33 USC section 1251 et seq.)* requires that any point source waste that discharges into waters of the U.S. requires a National Pollutant Discharge Elimination

System (NPDES) permit. Section 404 of this act regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers prior to such activities.

*Executive Order 11988* (Flood Plain Management) directs that "any federally undertaken, financed, or assisted construction project must provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains." This order requires each federal agency to determine whether the project will occur in a floodplain and to consider alternatives. If no practical alternative is found, it requires minimizing harm and notifying the public as to why the project must be located in the floodplain. It also provides for public review and comment.

*Executive Order 11990* (Protection of Wetlands) (1977) requires that leadership shall be provided by involved agencies to minimize the destruction, loss, or degradation of wetlands. The order was issued to "avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands whenever there is a practicable alternative." Federal agencies are required to provide for early public review of any plans or proposals for new construction in wetlands.

*Executive Order 12088* (Federal Compliance with Pollution Control Standards) requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

*Resource Conservation and Recovery Act (RCRA) of 1976* is the primary law regulating the handling of hazardous waste, which includes wastes generated during environmental cleanup.

*Safe Drinking Water Act of 1974* (42 USC section 300f et seq.) requires the Environmental Protection Agency (EPA) to establish a program which provides for the safety of the nation's drinking water. Regulations under this act can be found in 40 CFR, section 141 et seq.

*Underground Injection Control (UIC) Program* (40 CFR Part 146) is a part of the Safe Drinking Water Act that establishes regulations for the injection of fluids into wells for storage or disposal which are designed to protect underground sources of drinking water.

## Nevada State Statutes and Regulations

*NAC, 445A, Water Controls* (January 1997) regulates surface water quality and groundwater quality in Nevada, including regulation of existing and designated beneficial uses of surface water bodies and groundwater. This regulation: 1) sets the standards for drinking water, specifications for certification, and control of variances/exemptions; 2) sets standards and requirements for the construction of water wells and other water supply systems; 3) establishes the different classes (Class I through V), aquifer exemptions, prohibited wells, operation, monitoring, etc., as wells as plugging and abandonment activities; 4) establishes standards for surface water quality; and 5) specifies discharge permit requirements and notification requirements.

*Nevada Revised Statute 533, Adjudication of Vested Water Rights; Appropriation of Public Waters*, regulates surface water appropriations in Nevada, based on availability and seniority of appropriations. This statute sets forth the requirements, procedures, and process of acquiring a permit for the appropriation of public waters in Nevada. This statute also establishes the fees associated with the processing and issuing of permits and sets forth the environmental requirements.

*Nevada Revised Statute 534, Underground Water and Wells*, regulates groundwater appropriations in Nevada, based on perennial yield of each basin with special provisions for temporary appropriations and adjudication of overdrafted basins. The statute specifies the conditions, requirements, and rules for acquiring such water. Water well drilling standards are also included in this statute, including license requirements of well drillers; the requirements of drilling, construction, and plugging of wells; and the protection of aquifers from pollution and waste.

## AIR QUALITY

*Clean Air Act* (Title 40 CFR parts 50 and 51), amended in August 1977 and November 1990, dictates that the National Ambient Air Quality Standards (NAAQS) must be maintained nationwide. The Act delegates authority to state and local agencies to enforce the NAAQS and to establish air quality standards and regulations of their own. The adopted state standards and regulations must be at least as restrictive as the federal requirements. Air pollution sources within the study area are regulated by the Nevada Department of Environmental Protection. Although mobile sources such as aircraft are exempt from air pollution permitting requirements, the operation of these sources must comply with state and federal regulation and the ambient air quality standard.

*Section 169A of the Clean Air Act* states that a national goal is to prevent any further impairment of visibility within federally mandated Class I areas such as National Parks and Wilderness Areas from man-made sources of air pollution. Visibility impairment is defined as reduction in regional visual range or atmospheric discoloration or plume



blight from exhaust effluents. Federal criteria to determine significant impacts on visibility within Class I areas exist for stationary emission sources, but do not pertain to mobile sources since they are generally exempt from permit review by regulatory agencies.

## **BIOLOGICAL RESOURCES**

### **Federal Statutes and Regulations**

*AFI 32-7064 (Integrated Natural Resources Management)* implements Air Force Policy Directive 32-70, Environmental Quality. This instruction explains how to manage natural resources on Air Force property in compliance with federal, state, and local standards in the U.S. and U.S. territories and possessions.

*Bald Eagle Protection Act* (16 USC 668-668d) addresses the protection of bald and golden eagles and specifies criminal penalties.

*BLM Manual Chapter 6840* sets forth the policy of the BLM to conserve threatened and endangered species and ecosystems they depend upon, primarily by prescribing management for conservation of lands these species inhabit. Similarly, it is BLM policy to manage candidate species and their habitats to ensure that BLM actions do not contribute to the need to list any candidate species as threatened or endangered. It is also BLM policy to carry out management plans for the conservation of state-listed plants and animals. The State Director is to develop policies that will assist the state in achieving their management objectives for those species.

*Clean Water Act of 1977* (33 USC 1251 et seq.) requires a NPDES permit for all discharges to reduce pollution that could affect any form of life. Section 404 of this act regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers.

*Endangered Species Act of 1973* (16 USC section 1531 et seq. as amended) protects proposed and listed threatened or endangered species. Formal consultation with the U.S. Fish and Wildlife Service (USFWS) is required under Section 7 of the act for federal projects and all other projects that require federal permits (e.g., U.S. Army Corps of Engineers permits) where such actions could directly or indirectly affect any proposed or listed species.

*Executive Order 11988 (Floodplain Management)* (1977) requires that governmental agencies, in carrying out their responsibilities, provide leadership and take action to restore and preserve the natural and beneficial values served by floodplains. This order requires each federal agency to determine whether the project will occur in a floodplain and to

consider alternatives. If no practical alternative is found, it requires minimizing harm and notifying the public why the project must be located in the floodplain, and it provides for public review and comment.

*Executive Order 11990 (Protection of Wetlands) (1977)* requires that governmental agencies, in carrying out their responsibilities, provide leadership and take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency is to consider factors relevant to a project proposal's effect on the survival and quality of the wetlands by maintenance of natural systems, including conservation and long-term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, and wildlife. Agencies are required to provide for early public review of any plans or proposal for new construction in wetlands.

*Executive Order 12088 (Federal Compliance with Pollution Control Standards) (1988)* requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

*Federal Cave Resources Protection Act of 1988* requires protection of significant caves on federal land and protects the flora and fauna within the caves. It establishes civil and criminal penalties for damaging or disturbing significant caves.

*Fish and Wildlife Coordination Act (1934) (16 USC section 661 et seq.)* requires the U.S. Army Corps of Engineers to consult with the USFWS and state wildlife agency or agencies on all permit applications for projects in waterways or wetlands under U.S. Army Corps of Engineers jurisdiction.

*Fish and Wildlife Conservation Act (1980)* promotes state programs to conserve, restore, and benefit non-game fish and wildlife and their habitat.

*Migratory Bird Treaty Act of 1972 (16 USC sections 703 through 711)* federally protects all birds including (but not limited to) hawks, eagles, falcons, shorebirds, wading birds, owls, waterfowl, and songbirds by limiting the transportation, importation, killing, or possession of those birds.

*Rivers and Harbors Act of 1899 (sections 9 and 10, 33 USC section 1344)* regulates all types of development in or over navigable water, including bridges, dams, dikes, piers, wharves, booms, weirs, jetties, dredging, and filling by requiring a U.S. Army Corps of Engineers permit for such actions. Navigable waters are defined in title 33 CFR section 329 to include past, present, and potential future use in transporting commerce. Court decisions have expanded protection to estuaries and wetlands (Dederick 1984).

*Wild Free Roaming Horse and Burro Act (1971)*. It is the policy of Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands. Public Law 92-195.

### **Nevada State Statutes and Regulations**

*NAC 503 (Hunting Fishing, and Trapping; Miscellaneous Protective Measures: Sections 010-104)* specifies the classification of wildlife and also specifies protected and unprotected wildlife.

*NAC 527 (Protection and Preservation of Timbered Lands, Trees, and Flora)* provides for the broad protection of the indigenous flora of the state. Those plants, declared to be threatened with extinction, are placed on the state of Nevada's list of fully protected species.

### **CULTURAL RESOURCES**

*AFI 32-7065 (Cultural Resources Management)* implements Air Force Policy Directive 32-70, Environmental Quality. This instruction sets guidelines for protecting and managing cultural resources in the United States and U.S. territories and possessions.

*AF Manual 126-5 (Natural Resources, Outdoor Recreation, and Cultural Values)* provides guidance, standards, and technical information on management of natural resources, outdoor recreational resources, and cultural resources.

*AF Policy Letter (4 January 1982)* establishes that it is Air Force policy to comply with historic preservation and other federal environmental laws and directives, including Historic Sites Act of 1935; NHPA of 1966, as amended; NEPA of 1969; Archaeological and Historic Preservation Act of 1974; ARPA of 1979; and Executive Order 11593.

*American Indian Religious Freedom Act (AIRFA) (1978)* (42 USC section 1996) states that it is the policy of the U.S. to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.

*Archaeological Resources Protection Act (ARPA) of 1979* (16 USC section 470aa-47011) ensures the protection and preservation of archaeological sites on federal or Native American lands.

*Executive Order 11593 (1971)* directs land-holding federal agencies to identify and nominate historic properties to the National Register and requires that these agencies should avoid damaging historic properties that might be eligible for the National Register.

*Executive Order 13007* (1996) directs agencies responsible for managing federal lands to, “(1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.” The order also requires that reasonable notice is given for proposed actions or policies potentially restricting access to, or adversely affecting sacred sites.

*Memorandum for the Heads of Executive Departments and Agencies regarding Government-to-Government Relations with Native American Tribal Governments* directs each executive department and agency to: operate within a government-to-government relationship with federally recognized tribal governments; consult with tribal governments prior to taking actions affecting such governments; and assess the impact of plans, projects, programs and activities on tribal trust resources and assure that tribal rights are considered during consideration of such plans, projects, and programs.

*National Historic Preservation Act (NHPA) of 1966* establishes National Register of Historic Places (National Register) and defines the Section 106 process requiring federal agencies to consider effects of an action on cultural resources on or eligible for the National Register.

*Native American Graves Protection and Repatriation Act (NAGPRA)* (1990) (25 USC 3001-3013) requires protection and repatriation of Native American cultural items found on, or taken from federal or tribal lands, and requires repatriation of cultural items controlled by federal agencies or museums receiving federal funds.

*Protection of Historic and Cultural Properties* (36 CFR section 800) (1986) provides an explicit set of procedures for federal agencies to meet their obligations under the NHPA and Executive Order 11593.

### **Nevada State Statutes and Regulations**

*Indian Burial Law* (1989) (Nevada Revised Statutes [NRS] 383.150-383.190) protects Native American graves on private (including county) and public (state and federal) land. It provides procedures for consultation among landowner, state agencies and American Indian tribes, including treatment of the human remains and re-interment.

*Additional NRSs:* NRS 451.045 allows the local health officer to permit the removal of human remains. NRS 451.069-451.340 cover all aspects of moving cemeteries. NRS 452.305 and 206.125 prohibit destruction of or intentional damage to cemeteries, or property relating to religious or educational purposes. NRS 440.085, NRS 440.420 and NRS 440.430 define the duties of various state and county officers in regard to human remains that are not of American Indians.

*Non-Indian Historic Burials* (NRS 451.030 and 451.020) protects all burials on private land, and under all circumstances not covered by antiquities legislation. NRS 451.030 also prohibits removal, receipt or purchase of human remains without authority of law. NRS 451.020 allows the transportation and distribution of recently cremated human remains anywhere the legal agent chooses.

*Preservation of Prehistoric and Historic Sites, State of Nevada Antiquities Law* (1959, 1979) (NRS 381.195-381-227) sets the standards that guide archaeological research in Nevada, and requires an investigator on state or federal land to be the holder of a valid and current state permit.

## **LAND USE AND TRANSPORTATION**

*California Desert Protection Act of 1994* (108 Stat. 4471) gives National Park status to areas within the Mojave Desert.

*Engle Act of 1958* (43 USC 155 et seq.) requires an Act of Congress to withdraw more than 5,000 acres for any one project planned by the DOD.

*Grazing Administration-Exclusive of Alaska* (43 CFR 4100 series) provides "uniform guidance for administration of grazing on the public lands" (exclusive of Alaska).

*Highway Capacity Manual* (Transportation Research Board) (1985)

*Land and Interest Exchange* (43 CFR 2200 series) "sets forth procedures for the exchange of public lands or interest" in public lands, for non-federal lands and interests in those lands.

*Manual on Uniform Traffic Control Devices and Arterial Streets and Highways* (American Association of State Highway and Transportation Officials [AASHTO]) (1988)

*National Wild and Scenic Rivers Act of 1968* defines wild, scenic, and recreational rivers, designates a river classification, and establishes limits to development on shoreland areas.

*Policy on Design of Urban Highways and Streets* (AASHTO) (1990)

*Resource Management Planning* (43 CFR 1600 series) (1992) provides "a process for the development, approval, maintenance, amendment and revision of resource management plans and the use of existing plans for public lands administered by the BLM," under the authority of FLPMA (1976).

*Use; Rights-of-Way* (43 CFR 2800 series) establishes a procedure for reviewing and processing permits and applications concerning the granting of rights-of-way involving public lands.

*Wilderness Act of 1964* requires a wilderness review of roadless areas to determine suitability for designation by Congress as a Wilderness Area.

## **RECREATION/VISUAL**

*BLM Recreation Opportunity Spectrum (1986)* provides a framework to assess and manage the recreation resource of an area.

*BLM Visual Resource Management Policy and Guidelines for Lands under Wilderness Review* guides assessment and documentation for BLM lands under wilderness review.

*National Wild and Scenic Rivers Act of 1968* defines wild, scenic, and recreational rivers, designates a river classification, and establishes limits to development on shoreland areas.

*Recreation Management* (43 CFR 8300 series) "sets forth procedure and practices for the management and use of public lands for specific kinds of public recreation activities, resource conditions, outdoor recreation occupancy, and resource development." Guidelines are also provided regarding access to public lands and limitations on travel across public lands.

*Wilderness Act of 1964* requires a wilderness review of roadless areas to determine suitability for designation by Congress as a Wilderness Area.

# Five-Party Cooperative Agreement

1 Dec 97

## Purpose:

The purpose of this Five-Party Cooperative Agreement is to enhance management of the natural resources within the Great Basin and Mohave Desert ecosystems located on the Nellis Air Force Range (hereinafter "NAFR"), the Desert National Wildlife Range (hereinafter "DNWR"), and the Nevada Test Site (hereinafter "NTS"). The goal is to form a working group to foster a collaborative and complimentary approach to enhance management of this land and its associated resources using a biodiversity conservation and ecosystem-based approach among the following five agencies: Nellis Air Force Base (hereinafter "Nellis"), United States Fish and Wildlife Service (hereinafter "FWS"), Bureau of Land Management (hereinafter "BLM"), United States Department of Energy (hereinafter "DOE"), and the State of Nevada-Clearinghouse.

The BLM's Nellis Air Force Range Resource Plan, NAFR Integrated Natural Resource Management Plan, DNWR Natural Resource Management Plan, and NTS Resource Management Plan may be served best by a cooperative approach among the above five agencies to fully address the extent and complexity of the ecosystems involved.

## Responsibilities:

1. Those NAFR lands coincidental with DNAA are used pursuant to the 1976 Memorandum of Understanding between Nellis and FWS which was mutually extended by letters, respectively dated 11 Mar 91 and 15 Mar 91, and currently under the guidance of Executive Order No. 12996, 25 Mar 96.
2. All parties agree to meet jointly, at least annually; to foster cooperation, consistency, and collaboration in land and resource management; however, additional meetings may be called with the concurrence of all parties.
3. All parties agree to conduct and attend an open public meeting, at least annually, during which the public may submit comments to any member or members of this agreement.
4. Nellis will host and chair both the first annual Five-Party meeting and the first annual Five-Party public meeting; thereafter, both annual meetings will alternate among the parties.
5. All parties will fund their respective costs incurred under this Agreement.


This Agreement becomes effective when signed by all the parties.



RUSSELL T. BOLT  
Colonel USAF  
Commander, Nellis AFB

11.2 NOV 1997

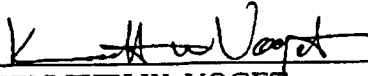
Date



MICHAEL F. DWYER  
District Manager, Las Vegas District  
Bureau of Land Management

11/14/97

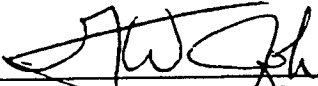
Date



KENNETH W. VOGET  
Project Leader  
U.S. Fish & Wildlife Service

11/18/97

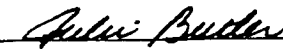
Date



GERRY W. JOHNSON  
Manager Nevada Operations Office  
Department of Energy

11-13-97

Date



JULIE BUTLER  
State of Nevada Clearinghouse

11/17/97

Date





**Appendix D**  
**NOTICE OF INTENT DOCUMENT**



**DEPARTMENT OF THE AIR FORCE**  
HEADQUARTERS AIR WARFARE CENTER (ACC)  
NELLIS AIR FORCE BASE, NEVADA

28 May 1996

HQ AWFC/CC  
4370 N Washington Ave Ste 117  
Nellis AFB NV 89191-7076

Mr Robert W Smith  
Science Applications International Corp.  
3900 Paradise Road  
Las Vegas NV 89109

Dear Mr Smith

As you are aware, the Military Lands Withdrawal Act of 1986 allows Nellis the use of approximately 3.1 million acres of land in Southern Nevada for military operations. The use of this land has to be renewed by the year 2001.

The Range Renewal process unofficially began with six "neighborhood dialogues" designed to inform the public about Nellis Air Force Base activities as well as the Range Renewal process. The next step is the release of the Notice of Intent which outlines our proposed action and alternatives. The NOI will be published in the Federal Register on May 31, 1996.

Attached is a copy of the NOI for your information. If you have any questions, please contact the Public Affairs Office at 652-2750 or the Range Renewal Office at 652-3559.

We look forward to working with you as we continue through this very important process.

A handwritten signature in black ink that reads "Marvin R. Esmond".

MARVIN R. ESMOND  
Major General  
Commander

Attachment:  
1. Notice of Intent

**DEPARTMENT OF DEFENSE**  
**DEPARTMENT OF THE AIR FORCE**

**NOTICE OF INTENT**

**TO PREPARE A LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT FOR  
NELLIS AIR FORCE RANGE (NAFR) RENEWAL, NEVADA**

The United States Air Force (Air Force) will prepare a legislative environmental impact statement (LEIS) to assess the potential environmental impacts of renewal of the Nellis Air Force Range (NAFR), Nevada. The LEIS will be prepared in accordance with the National Environmental Policy Act (NEPA).

The current land withdrawal and reservation of the NAFR was established by the Military Lands Withdrawal Act of 1986 (Public Law 99-606) for the period ending on November 6, 2001. The Act provides that the Air Force may seek renewal of the NAFR withdrawal, in connection with which the Secretary of the Air Force will publish a legislative EIS addressing legislative alternatives and the effects of continued withdrawal.

The purpose of the proposed NAFR renewal is to retain a military training and testing range essential to near- and long-term preparedness of United States air forces. Renewing the land withdrawal will provide for the continued effective implementation of ongoing training and testing missions while maintaining the flexibility to adapt to the training needs of new technologies as they develop. The performance of air operations in combat is directly related to the quality and depth of training. NAFR provides a combination of attributes that serve this training requirement, including the following: favorable location and flying weather; sufficient land and airspace; diverse terrain; and developed training support facilities.

A range of alternatives, including the No Action alternative required by NEPA, will be considered. Three alternatives are described below.

**Proposed Action: Renew Nellis Air Force Range withdrawal and reservation for an indefinite period of time with Congressional review every 15 years.** The existing land withdrawal and reservation, consisting of approximately 3.0 million acres, would be reauthorized for an indefinite period of time. The land would be reserved by Congress for use by the Air Force for an armament and high-hazard test area; training for aerial gunnery, rocketry, electronic warfare, and tactical maneuvering and air support; and other defense-related purposes. Every 15 years Congress would review the Air Force's continuing military need for the land, the environmental effects, and the needs of competing uses for the land and could adjust, if warranted, the terms and conditions of the withdrawal. Without limiting the priority use by the Air Force, the land would be managed in part by the Bureau of Land Management and in part by the U.S. Fish and Wildlife Service. Specifically, the Bureau of Land Management would manage approximately 2.2 million acres of the NAFR pursuant to the Federal Land Policy and Management Act of 1976 and other applicable laws. The remaining 826,000 acres of the NAFR are within the Desert National Wildlife Refuge and would be managed by the Fish and Wildlife Service pursuant to the National Wildlife Refuge System Act of 1976.

**Alternative A: Renew the existing NAFR land withdrawal and reservation for 25 years.** The existing land withdrawal and reservation, consisting of approximately 3.0 million acres, would be reauthorized for a specified term of 25 years, rather than for an indefinite time with periodic reviews. Otherwise, this alternative is like the Proposed Action.

**No Action Alternative: No renewal of the NAFR land withdrawal and reservation.** The land would not be reserved for use by the Air Force. The lands within the existing NAFR boundary would be managed by the Bureau of Land Management and the Fish and Wildlife Service under existing authorities. The No Action alternative would result in the fragmentation or cancellation of training missions accomplished at the NAFR. DOD would prepare appropriate environmental documentation to obtain Federal Aviation Administration approval to reclassify the existing restricted airspace to a Military Operation Area (MOA). This would allow for air-to-air training operations to continue, but would preclude air-to-ground training missions.

To provide a forum for interested parties to provide comments on the scope of the LEIS, a series of scoping meetings will be held in six Nevada communities. In addition, written comments will be accepted throughout the scoping period. Written comments should be forwarded to the address below by August 5, 1996. Scoping meetings will be held at the following times and locations.

1. Indian Springs, NV, June 17, 1996, 6:00 PM to 9:00 PM.
2. Caliente, NV, June 18, 1996, 6:00 PM to 9:00 PM.
3. Las Vegas, NV, June 20, 1996, 6:00 PM to 9:00 PM.
4. Beatty, NV, June 24, 1996, 6:00 PM to 9:00 PM.
5. Tonopah, NV, June 25, 1996, 6:00 PM to 9:00 PM.
6. Reno, NV, June 26, 1996, 6:00 PM to 9:00 PM.

Please direct written comments concerning the NAFR Renewal LEIS to:

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**PATSY J. CONNER**

**Air Force Federal Register Liaison Officer**



**Appendix E**  
**NOISE ANALYSIS**

# APPENDIX E

## AIRCRAFT NOISE ANALYSIS

### 1.1 GENERAL

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with aircraft operations. Of course, aircraft are not the only sources of noise in an urban or suburban surrounding, where interstate and local roadway traffic, rail, industrial, and neighborhood sources also intrude on the everyday quality of life. Nevertheless, aircraft are readily identifiable to those affected by their noise and are typically singled out for special attention and criticism. Consequently, aircraft noise problems often dominate analyses of environmental impacts.

Sound is a physical phenomenon consisting of minute vibrations which travel through a medium, such as air, and are sensed by the human ear. Whether that sound is interpreted as pleasant (for example, music) or unpleasant (for example, aircraft noise) depends largely on the listener's current activity, past experience, and attitude toward the source of that sound. It is often true that one person's music is another person's noise.

The measurement and human perception of sound involves two basic physical characteristics – intensity and frequency. Intensity is a measure of the acoustic energy of the sound vibrations and is expressed in terms of sound pressure. The higher the sound pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is sound frequency which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while high-frequency sounds are typified by sirens or screeches.

The loudest sounds that can be detected comfortably by the human ear have intensities which are 1,000,000,000,000 times larger than those of sounds which can just be detected. Because of this vast range, any attempt to represent the intensity of sound using a linear scale becomes very unwieldy. As a result, a logarithmic unit known as the decibel (abbreviated dB) is used to represent the intensity of a sound. Such a representation is called a sound level.

A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example:

$$60 \text{ dB} + 60 \text{ dB} = 63 \text{ dB, and}$$

$$80 \text{ dB} + 80 \text{ dB} = 83 \text{ dB.}$$

The total sound level produced by two sounds of different levels is usually only slightly more than the higher of the two. For example:

$$60.0 \text{ dB} + 70.0 \text{ dB} = 70.4 \text{ dB.}$$

Because the addition of sound levels behaves differently than that of ordinary numbers, such addition is often referred to as "decibel addition" or "energy addition". The latter term arises from the fact that what we are really doing when we add decibel values is first converting each decibel value to its corresponding acoustic energy, then adding the energies using the normal rules of addition, and finally converting the total energy back to its decibel equivalent.

An important facet of decibel addition arises later when the concept of time-average sound levels is introduced to explain Day-Night Average Sound Level. Because of the logarithmic units, the time-average sound level is dominated by the louder levels which occur during the averaging period. As a simple example, consider a sound level which is 100 dB and lasts for 30 seconds, followed by a sound level of 50 dB which also lasts for 30 seconds. The time-average sound level over the total 60-second period is 97 dB, not 75 dB.

The minimum change in the time-average sound level of individual events which an average human ear can detect is about 3 dB. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness, and this relation holds true for loud sounds and for quieter sounds. A decrease in sound level of 10 dB actually represents a 90 percent decrease in sound *intensity* but only a 50 percent decrease in perceived *loudness* because of the nonlinear response of the human ear (similar to most human senses).

Sound frequency is measured in terms of cycles per second (cps), or hertz (Hz), which is the preferred scientific unit for cps. The normal human ear can detect sounds which range in frequency from about 20 Hz to about 15,000 Hz. All sounds in this wide range of frequencies, however, are not heard equally well by the human ear, which is most sensitive to frequencies in the 1000 to 4000 Hz range. In measuring community noise, this frequency dependence is taken into account by adjusting the very high and very low frequencies to approximate the human ear's lower sensitivity to those frequencies. This is called "A-weighting" and is commonly used in measurements of community environmental noise.

Sound levels measured using A-weighting are most properly called A-weighted sound levels while sound levels measured without any frequency weighting are most properly called sound levels. However, since most environmental impact analysis documents deal only with A-weighted sound levels, the adjective "A-weighted" is often omitted, and A-weighted sound levels are referred to simply as sound levels. In some instances, the author will indicate that the levels have been A-weighted by using the abbreviation dBA or dB(A), rather than the abbreviation dB, for decibel. As long as the use of A-weighting is understood to be used, there

is no difference implied by the terms "sound level" and "A-weighted sound level" or by the units dB, dBA, and dB(A). In this document, all levels are A-weighted and are reported in dB, unless otherwise indicated.

Sound levels do not represent instantaneous measurements but rather averages over short periods of time. Two measurement time periods are most common – one second and one-eighth of a second. A measured sound level averaged over one second is called a slow response sound level; one averaged over one-eighth of a second is called a fast response sound level. Most environmental noise studies use slow response measurements, and the adjective "slow response" is usually omitted. It is easy to understand why the proper descriptor "slow response A-weighted sound level" is usually shortened to "sound level" in environmental impact analysis documents.

## 1.2 NOISE METRICS

A "metric" is defined as something "of, involving, or used in measurement." As used in environmental noise analyses, a metric refers to the unit or quantity which quantitatively measures the *effect* of noise on the environment. Noise studies have typically involved a confusing proliferation of noise metrics as individual researchers have attempted to understand and represent the effects of noise. As a result, past literature describing environmental noise or environmental noise abatement has included many different metrics. Recently, however, various federal agencies involved in environmental noise mitigation have agreed on common metrics for environmental impact analysis documents, and both the Department of Defense and the Federal Aviation Administration have specified those which should be used for federal aviation noise assessments. These metrics are as follows.

### 1.2.1 Maximum Sound Level

The highest A-weighted sound level measured during a single event in which the sound level changes value as time goes on (e.g., an aircraft overflight) is called the maximum A-weighted sound level or maximum sound level, for short. It is usually abbreviated by ALM,  $L_{max}$  or  $L_{Amax}$ . The maximum sound levels of typical events are shown in Table E-1. The maximum sound level is important in judging the interference caused by a noise event with conversation, TV or radio listening, sleep, or other common activities.

### 1.2.2 Sound Exposure Level

Individual time-varying noise events have two main characteristics – a sound level which changes throughout the event and a period of time during which the event is heard. Although the maximum sound level, described above, provides some measure of the intrusiveness of the event, it alone does not completely describe the total event. The period of time during which the sound is heard is also significant. The Sound Exposure Level (abbreviated SEL or LAE) combines both of these characteristics into a single metric.



**Table E-1  
Typical Sound Levels Measured in the Environment**

<i>At a Given Distance from Noise Source</i>	<i>A-Weighted Sound Level in Decibels</i>	<i>Noise Environments</i>	<i>Subjective Impression</i>
Civil defense siren (100')	140		
	130		
Jet takeoff (200')	120		Pain threshold
	110	Rock music concert	
Pile driver (50')	100		Very loud
Ambulance siren (100')	90	Boiler room	
Freight cars (50')	80	Printing press plant	
Pneumatic drill (50')	80	In kitchen with garbage disposal running	
	70		Moderately loud
Vacuum cleaner (10')	60	Data processing center	
Light traffic (100')	50	Department store	
Large transformer (200')	50	Private business office	
	40		Quiet
Soft whisper (5')	30	Quiet bedroom	
	20	Recording studio	
	10		Threshold of hearing
	0		

Source: U.S. Department of Housing and Urban Development 1985.

Sound Exposure Level is a logarithmic measure of the total acoustic energy transmitted to the listener during the event. Mathematically, it represents the sound level of the constant sound that would, in one second, generate the same acoustic energy as did the actual time-varying noise event. Since aircraft overflights usually last longer than one second, the Sound Exposure Level of an overflight is usually greater than the maximum sound level of the overflight.

Sound exposure level is a composite metric which represents both the intensity of a sound and its duration. It does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event. It has been well established in the scientific community that Sound Exposure Level measures this impact much more reliably than just the maximum sound level.

Because the sound exposure level and the maximum sound level are both A-weighted sound levels expressed in decibels, there is sometimes confusion between the two, so the specific metric used should be clearly stated.

### **1.2.3 Day-Night Average Sound Level**

Time-average sound levels are the measurements of sound levels which are averaged over a specified length of time. These levels provide a measure of the average sound energy during the measurement period.

For the evaluation of community noise effects, and particularly aircraft noise effects, the Day-Night Average Sound Level (abbreviated DNL or  $L_{dn}$ ) is used. Day-Night Average Sound Level averages aircraft sound levels at a location over a complete 24-hour period, with a 10-decibel adjustment added to those noise events which take place between 10:00 P.M. and 7:00 A.M. (local time) the following morning. This 10-decibel "penalty" represents the added intrusiveness of sounds which occur during normal sleeping hours, both because of the increased sensitivity to noise during those hours and because ambient sound levels during nighttime are typically about 10 dB lower than during daytime hours.

Ignoring the 10-decibel nighttime adjustment for the moment, Day-Night Average Sound Level may be thought of as the continuous A-weighted Sound Level which would be present if all of the variations in sound level which occur over a 24-hour period were smoothed out so as to contain the same total sound energy.

Day-Night Average Sound Level provides a single measure of overall noise impact, but does not provide specific information on the number of noise events or the individual sound levels which occur during the day. For example, a Day-Night Average Sound Level of 65 dB could result from a very few noisy events, or a large number of quieter events.

As noted earlier for Sound Exposure Level, Day-Night Average Sound Level does not represent the sound level heard at any particular time, but rather represents the total sound exposure. Scientific studies and social surveys which have been conducted to appraise community annoyance to all types of environmental noise have found the Day-Night Average Sound Level

to be the best measure of that annoyance. Its use is endorsed by the scientific community (ANSI 1980; ANSI 1988; USEPA 1972a; FICUN 1980; FICON 1992).

There is, in fact, a remarkable consistency in the results of attitudinal surveys about aircraft noise conducted in different countries to find the percentages of groups of people who express various degrees of annoyance when exposed to different levels of Day-Night Average Sound Level. This is illustrated in Figure E-1, which summarizes the results of a large number of social surveys relating community responses to various types of noises, measured in Day-Night Average Sound Level.

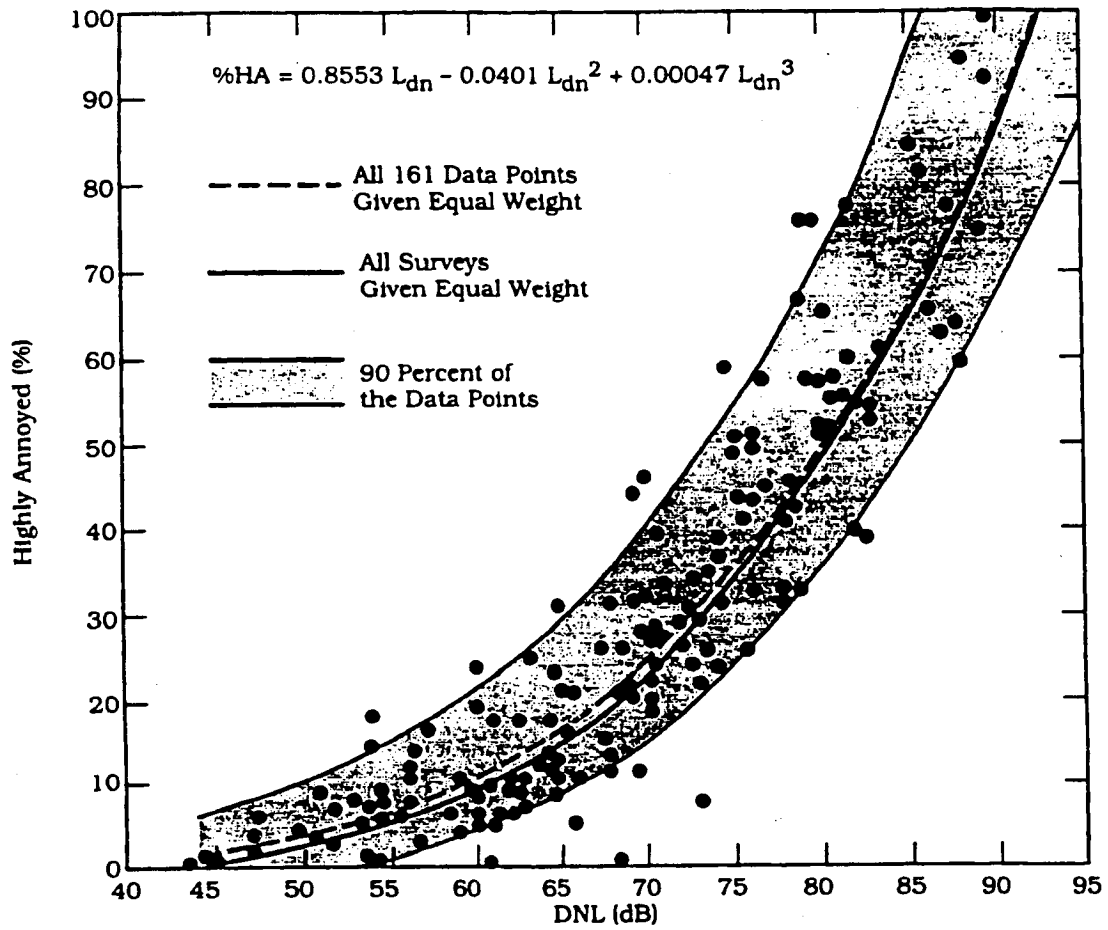
Figure E-1 was taken from a 1978 publication (Schultz 1978), and shows the original curve fit. A more recent study has reaffirmed this relationship (Fidell et al. 1991). Figure E-2 (FICON 1992) shows an updated form of the curve fit (Finegold et al. 1994) in comparison with the original. The updated fit, which does not differ substantially from the original, is the current preferred form. In general, correlation coefficients of 0.85 to 0.95 are found between the percentages of groups of people highly annoyed and the level of average noise exposure. The correlation coefficients for the annoyance of individuals are relatively low, however, on the order of 0.5 or less. This is not surprising, considering the varying personal factors which influence the manner in which individuals react to noise. Nevertheless, findings substantiate that community annoyance to aircraft noise is represented quite reliably using Day-Night Average Sound Level.

This relation between community annoyance and time-average sound level has been confirmed, even for infrequent aircraft noise events. A NASA study (Fields and Powell 1985) reported the reactions of individuals in a community to daily helicopter overflights, ranging from one to 32 per day. The stated reactions to infrequent helicopter overflights correlated quite well with the daily time-average sound levels over this range of numbers of daily noise events.

The use of Day-Night Average Sound Level has been criticized recently as not accurately representing community annoyance and land-use compatibility with aircraft noise. Much of that criticism stems from a lack of understanding of the basis for the measurement or calculation of  $L_{dn}$ . One frequent criticism is based on the inherent feeling that people react more to single noise events and not as much to "meaningless" time-average sound levels.

In fact, a time-average noise metric, such as  $L_{dn}$ , takes into account both the noise levels of all individual events which occur during a 24-hour period and the number of times those events occur. As described briefly above, the logarithmic nature of the decibel unit causes the noise levels of the loudest events to control the 24-hour average.

As a simple example of this characteristic, consider a case in which only one aircraft overflight occurs in daytime during a 24-hour period, creating a sound level of 100 dB for 30 seconds. During the remaining 23 hours, 59 minutes, and 30 seconds of the day, the ambient sound level is 50 dB. The Day-Night Average Sound Level for this 24-hour period is 65.5 dB. Assume, as a second example, that ten such 30-second overflights occur in daytime hours during the next 24-



Source: Schultz, 1978.

Figure E-1. Community Surveys of Noise Annoyance

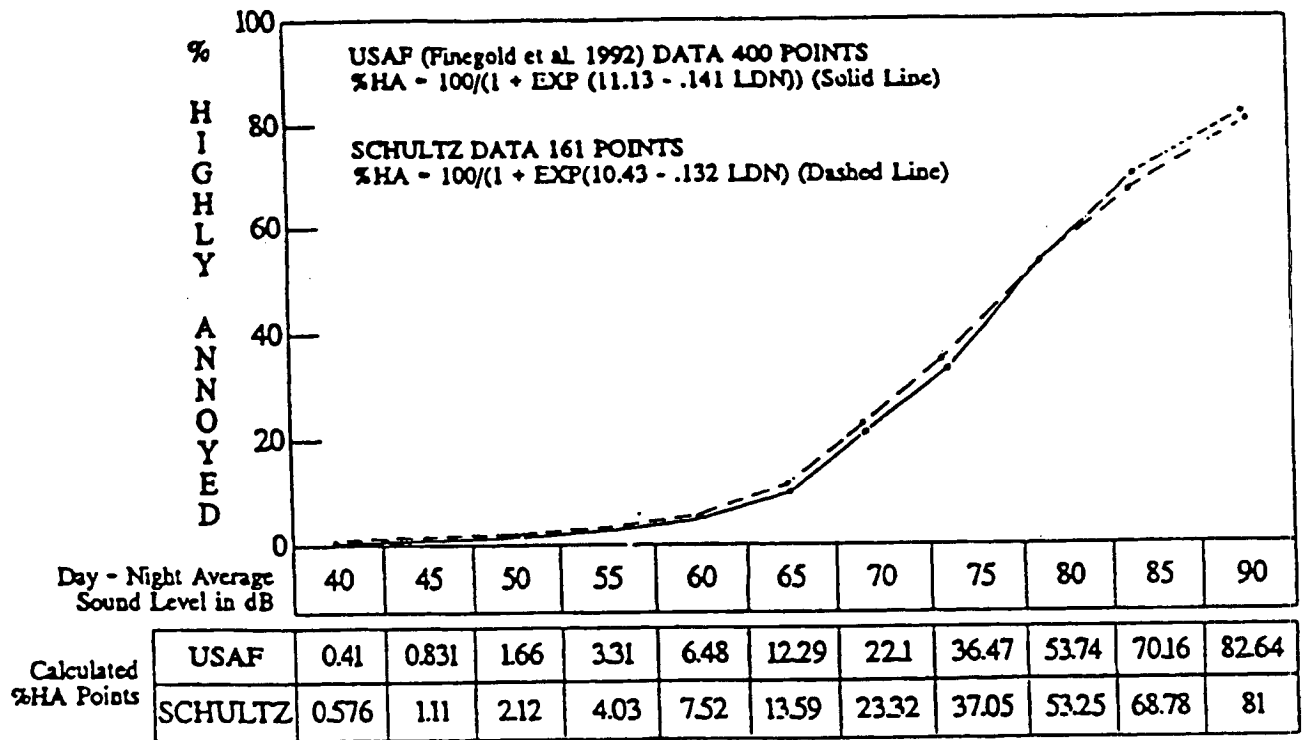


Figure E-2. Response of Communities to Noise; Comparison of Original (Schultz 1978) and Current (Finogold et al. 1994) Curve Fits

hour period, with the same ambient sound level of 50 dB during the remaining 23 hours and 55 minutes of the day. The Day-Night Average Sound Level for this 24-hour period is 75.4 dB. Clearly, the averaging of noise over a 24-hour period does not ignore the louder single events and tends to emphasize both the sound levels and number of those events. This is the basic concept of a time-average sound metric, and specifically the Day-Night Average Sound Level.

#### 1.2.4 Onset-Rate Adjusted Day-Night Average Sound Level

Aircraft operations along low-altitude Military Training Routes (MTRs) generate a noise environment somewhat different from other community noise environments. Overflights are highly sporadic, ranging from five or ten per day to less than five per week. This situation differs from most community noise environments, in which noise tends to be continuous or patterned. Individual military overflight events also differ from typical community noise events, because of the low-altitude and high-air-speed characteristics of military aircraft operating on Military Training Routes. To represent these differences, the conventional Day-Night Average Sound Level metric is adjusted to account for the "surprise" effect of the sudden onset of aircraft noise events on humans (Plotkin et al. 1991; Stusnick et al. 1992; Stusnick et al. 1993). For aircraft exhibiting a rate of increase in sound level (called onset rate) of from 15 to 30 dB per second, an adjustment or penalty ranging from 0 to 5 dB is added to the normal Sound Exposure Level. Onset rates above 30 dB per second require a 5 dB penalty, while onset rates below 15 dB per second require no adjustment. The Day-Night Average Sound Level is then determined in the same manner as for conventional aircraft noise events and is designated as Onset-Rate Adjusted Day Night Average Sound Level (abbreviated  $L_{dnr}$ ). Because of the sporadic occurrences of aircraft overflights along Military Training Routes, the number of average daily operations is determined by using the calendar month with the highest number of operations along the Military Training Route. The monthly average is denoted  $L_{dnmr}$ .

### 1.3 LAND-USE COMPATIBILITY

As noted above, the inherent variability between individuals makes it impossible to predict accurately how any individual will react to a given noise event. Nevertheless, when a community is considered as a whole, its overall reaction to noise can be represented with a high degree of confidence. As described above, the best noise exposure metric for this correlation is the Day-Night Average Sound Level or Onset-Rate Adjusted Day-Night Average Sound Level for military overflights.

In June 1980, an *ad hoc* Federal Interagency Committee on Urban Noise published guidelines (FICUN 1980) relating Day-Night Average Sound Levels to compatible land uses. This committee was composed of representatives from the U.S. Departments of Defense, Transportation, and Housing and Urban Development; the Environmental Protection Agency; and the Veterans Administration. Since the issuance of these guidelines, federal agencies have generally adopted these guidelines for their noise analyses.

Following the lead of the committee, the Department of Defense and the Federal Aviation Administration (FAA) adopted the concept of land-use compatibility as the accepted measure

of aircraft noise effect. The FAA included the committee's guidelines in the Federal Aviation Regulations (USDOT 1984). These guidelines are reprinted in Table E-2, along with the explanatory notes included in the regulation. Although these guidelines are not mandatory, they provide the best means for determining noise impact in airport communities. In general, residential land uses normally are not compatible with outdoor Day-Night Average Sound Levels ( $L_{dn}$  values) above 65 dB, and the extent of land areas and populations exposed to  $L_{dn}$  of 65 dB and higher provides the best means for assessing the noise impacts of alternative aircraft actions.

In 1990 a new Federal Interagency Committee on Noise was formed to review the manner in which aviation noise effects are assessed and presented. This group released its report in 1992 and reaffirmed the use of Day-Night Average Sound Level as the best metric for this purpose (FICON 1992).

Analyses of aircraft noise impacts and compatible land uses around Department of Defense facilities and airspaces are normally made using NOISEMAP (Moulton 1992) and/or ROUTEMAP (Lucas and Plotkin 1988). These computer-based simulation programs calculate Day-Night Average Sound Levels at many points on the ground around an airfield or military operating area and draw contours of equal level for overlay onto land-use maps of the same scale. Each program mathematically calculates the Sound Exposure Levels of all aircraft operations for a 24-hour period, taking into consideration the number and types of aircraft, their flight paths and engine thrust settings, the time of day (daytime or nighttime) that each operation occurs, and the onset rate, as appropriate. NOISEMAP and ROUTEMAP utilize the same physical models and aircraft performance data and are collectively referred to as "NOISEMAP technology" or simply "NOISEMAP."

Day-Night Average Sound Levels may also be measured directly around an airfield, rather than calculated with NOISEMAP; however, the direct measurement of annualized Day-Night Average Sound Level is difficult and costly since it requires year-round monitoring or careful seasonal sampling.

NOISEMAP provides an accurate projection of aircraft noise around airfields. NOISEMAP also has the flexibility of calculating sound levels at any specified ground location so that noise levels at representative points under flight paths can be ascertained. NOISEMAP is most accurate for comparing "before and after" noise impacts which would result from proposed airfield changes or alternative noise control actions, so long as the various impacts are calculated in a consistent manner.

## **2.0 NOISE EFFECTS**

### **2.1 HEARING LOSS**

Noise-induced hearing loss is probably the best defined of the potential effects of human exposure to excessive noise. Federal workplace standards for protection from hearing loss allow a time-average level of 90 dB over an 8-hour work period, or 85 dB averaged over a 16-

**Table E-2  
LAND-USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS**

Land Use	Yearly Day-Night Average Sound Level ( $L_{dn}$ ) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
<b>Residential</b>						
Residential, other than mobile homes and transient lodgings .....	Y	N(1)	N(1)	N	N	N
Mobile home parks .....	Y	N	N	N	N	N
Transient lodgings .....	Y	N(1)	N(1)	N(1)	N	N
<b>Public Use</b>						
Schools .....	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes .....	Y	25	30	N	N	N
Churches, auditoria, and concert halls .....	Y	25	30	N	N	N
Governmental services .....	Y	Y	25	30	N	N
Transportation .....	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking .....	Y	Y	Y(2)	Y(3)	Y(4)	N
<b>Commercial Use</b>						
Offices, business and professional .....	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware, and farm equipment .....	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general .....	Y	Y	25	30	N	N
Utilities .....	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication .....	Y	Y	25	30	N	N
<b>Manufacturing and Production</b>						
Manufacturing, general .....	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical .....	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry .....	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding .....	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction .....	Y	Y	Y	Y	Y	Y
<b>Recreational</b>						
Outdoor sports arenas and spectator sports .....	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters .....	Y	N	N	N	N	N
Nature exhibits and zoos .....	Y	Y	N	N	N	N
Musements, parks, resorts, and camps .....	Y	Y	Y	N	N	N
off courses, riding stables, and water recreation .....	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

\* The designations contained in this table do not constitute a federal determination that any use of land covered by the program is acceptable or unacceptable under federal, state, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise-compatible land uses.

**KEY TO TABLE**

SLUCM = Standard Land-Use Coding Manual.

Y (Yes) = Land Use and related structures compatible without restrictions.

N (No) = Land Use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 = Land Use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structures.

**NOTES:**

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB; thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal level is low.

(5) Land-use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

Residential buildings not permitted.



hour period. Even the most protective criterion (no measurable hearing loss for the most sensitive portion of the population at the ear's most sensitive frequency, 4000 Hz, after a 40-year exposure) suggests a time-average sound level of 70 dB over a 24-hour period (USEPA 1972a). Since it is unlikely that airport neighbors will remain outside their homes 24 hours per day for extended periods of time, there is little possibility of hearing loss below a Day-Night Average Sound Level of 75 dB, and this level is extremely conservative.

## **2.2 NONAUDITORY HEALTH EFFECTS**

Nonauditory health effects of long-term noise exposure, where noise may act as a risk factor, have never been found to occur at levels below those protective against noise-induced hearing loss, described above. Most studies attempting to clarify such health effects have found that noise exposure levels established for hearing protection will also protect against any potential nonauditory health effects, at least in workplace conditions. The best scientific summary of these findings is contained in the lead paper at the National Institutes of Health Conference on Noise and Hearing Loss, held on 22-24 January 1990 in Washington, D.C., which states the following:

“The nonauditory effects of chronic noise exposure, when noise is suspected to act as one of the risk factors in the development of hypertension, cardiovascular disease, and other nervous disorders, have never been proven to occur as chronic manifestations at levels below these criteria (an average of 75 dBA for complete protection against hearing loss for an eight-hour day). At the recent (1988) International Congress on Noise as a Public Health Problem, most studies attempting to clarify such health effects did not find them at levels below the criteria protective of noise-induced hearing loss, and even above these criteria, results regarding such health effects were ambiguous. Consequently, one comes to the conclusion that establishing and enforcing exposure levels protecting against noise-induced hearing loss would not only solve the noise-induced hearing loss problem but also any potential nonauditory health effects in the work place.” (von Gierke 1990; parenthetical wording added for clarification.)

Although these findings were directed specifically at noise effects in the work place, they are equally applicable to aircraft noise effects in the community environment. Research studies regarding the nonauditory health effects of aircraft noise are ambiguous, at best, and often contradictory. Yet, even those studies which purport to find such health effects use time-average noise levels of 75 dB and higher for their research.

For example, in an often-quoted paper, two UCLA researchers apparently found a relation between aircraft noise levels under the approach path to Los Angeles International Airport (LAX) and increased mortality rates among the exposed residents by using an average noise exposure level greater than 75 dB for the “noise-exposed” population (Meecham and Shaw 1979). Nevertheless, three other UCLA professors analyzed those same data and found no relation between noise exposure and mortality rates (Fredricks et al. 1980).

As a second example, two other UCLA researchers used this same population near Los Angeles International Airport to show a higher rate of birth defects during the period of 1970 to 1972 when compared with a control group residing away from the airport (Jones and Tauscher 1978). Based on this report, a separate group at the U.S. Centers for Disease Control performed a more thorough study of populations near Atlanta's Hartsfield International Airport for 1970 to 1972 and found no relation in their study of 17 identified categories of birth defects to aircraft noise levels above 65 dB (Edmonds 1979).

A recent review of health effects, prepared by a Committee of the Health Council of The Netherlands (CHCN 1996) reviewed currently available published information on this topic. They concluded that the threshold for possible long-term health effects was a 16-hour (0600 to 2200) Leq of 70 dB. Projecting this to 24 hours and applying the 10 dB nighttime penalty used with L<sub>dn</sub>, this corresponds to L<sub>dn</sub> of about 75 dB. The study also affirmed the risk threshold for hearing loss, as discussed earlier.

In summary, there is no scientific basis for a claim that potential health effects exist for aircraft time-average sound levels below 75 dB.

### **2.3 ANNOYANCE**

The primary effect of aircraft noise on exposed communities is one of annoyance. Noise annoyance is defined by the U.S. Environmental Protection Agency as any negative subjective reaction on the part of an individual or group (USEPA 1972a). As noted in the discussion of Day-Night Average Sound Level above, community annoyance is best measured by that metric.

Because the EPA Levels Document (USEPA 1972a) identified L<sub>dn</sub> of 55 dB as "...requisite to protect public health and welfare with an adequate margin of safety", it is commonly assumed that 55 dB should be adopted as a criterion for community noise analysis. From a noise exposure perspective, that would be an ideal selection. However, financial and technical resources are generally not available to achieve that goal. Most agencies have identified L<sub>dn</sub> of 65 dB as a criterion which protects those most impacted by noise, and which can often be achieved on a practical basis (FICON 1992). This corresponds to about 13 percent of the exposed population being highly annoyed.

Although L<sub>dn</sub> of 65 dB is widely used as a benchmark for significant noise impact, and is often an acceptable compromise, it is not a statutory limit and it is appropriate to consider other thresholds in particular cases. In this LEIS, no specific threshold is used. The noise in each affected area is evaluated on the basis of the information presented in this appendix and in the body of the LEIS. Particular attention is given to the ideal 55 dB identified by EPA.

### **2.4 SPEECH INTERFERENCE**

Speech interference associated with aircraft noise is a primary cause of annoyance to individuals on the ground. The disruption of routine activities such as radio or television listening, telephone use, or family conversation gives rise to frustration and irritation. The

quality of speech communication is also important in classrooms, offices, and industrial settings and can cause fatigue and vocal strain in those who attempt to communicate over the noise. Research has shown that the use of the Sound Exposure Level metric will measure speech interference successfully, and that a Sound Exposure Level exceeding 65 dB will begin to interfere with speech communication.

## **2.5 SLEEP INTERFERENCE**

Sleep interference is another source of annoyance associated with aircraft noise. This is especially true because of the intermittent nature and content of aircraft noise, which is more disturbing than continuous noise of equal energy and neutral meaning.

Sleep interference may be measured in either of two ways. "Arousal" represents actual awakening from sleep, while a change in "sleep stage" represents a shift from one of four sleep stages to another stage of lighter sleep without actual awakening. In general, arousal requires a somewhat higher noise level than does a change in sleep stage.

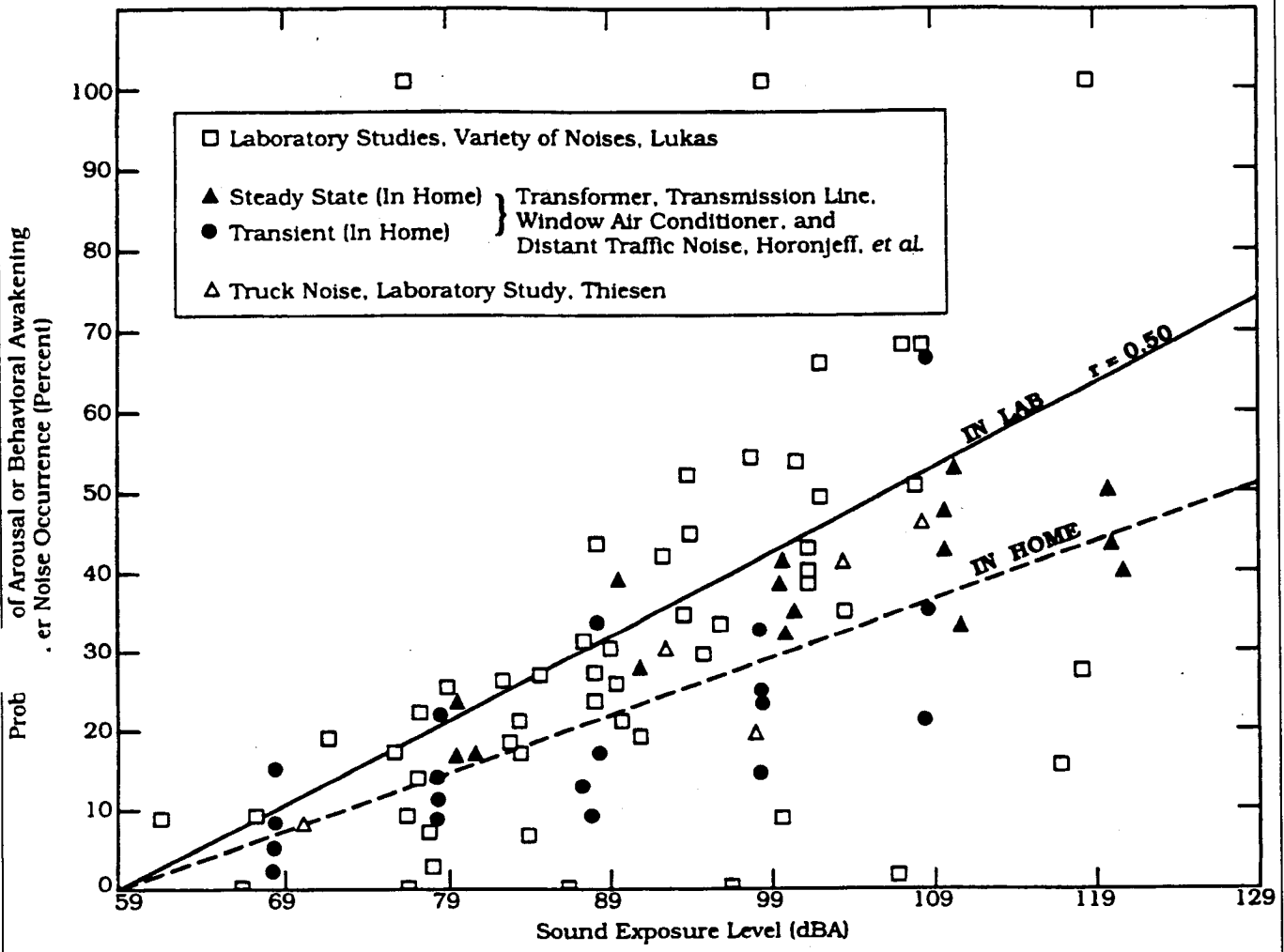
A recent analysis sponsored by the U.S. Air Force summarized 21 published studies concerning the effects of noise on sleep (Pearsons et al. 1989). The analysis concluded that a lack of reliable studies in homes, combined with large differences among the results from the various laboratory studies and the limited in-home studies, did not permit development of an acceptably accurate assessment procedure. The noise events used in the laboratory studies and in contrived in-home studies were presented at much higher rates of occurrence than would normally be experienced in the home. None of the laboratory studies were of sufficiently long duration to determine any effects of habituation, such as that which would occur under normal community conditions.

Nevertheless, some guidance is available in judging sleep interference. The EPA identified an indoor Day-Night Average Sound Level of 45 dB as necessary to protect against sleep interference (USEPA 1972a). Assuming a very conservative structural noise insulation of 20 dB for typical dwelling units, this corresponds to an outdoor Day-Night Average Sound Level of 65 dB as minimizing sleep interference.

A 1984 publication reviewed the probability of arousal or behavioral awakening in terms of Sound Exposure Level (Kryter 1984). Figure E-3, extracted from Figure 10.37 of Kryter 1984, indicates that an indoor Sound Exposure Level of 65 dB or lower should awaken less than 5 percent of those exposed. These results do not include any habituation over time by sleeping subjects. Nevertheless, this provides a reasonable guideline for assessing sleep interference and corresponds to similar guidance for speech interference, as noted above.

## **2.6 NOISE EFFECTS ON DOMESTIC ANIMALS AND WILDLIFE**

Animal species differ greatly in their responses to noise. Each species has adapted, physically and behaviorally, to fill its ecological role in nature, and its hearing ability usually reflects that role. Animals rely on their hearing to avoid predators, obtain food, and communicate with and



Source: Kryter, 1984.

Figure E-3. Probability of Arousal or Behavioral Awakening in Terms of Sound Exposure Level

attract other members of their species. Aircraft noise may mask or interfere with these functions. Secondary effects may include nonauditory effects similar to those exhibited by humans – stress, hypertension, and other nervous disorders. Tertiary effects may include interference with mating and resultant population declines.

There are available many scientific studies regarding the effects of noise on wildlife and some anecdotal reports of wildlife “flight” due to noise. Few of these studies or reports include any reliable measures of the actual noise levels involved. However, in the absence of definitive data on the effect of noise on animals, the Committee on Hearing, Bioacoustics, and Biomechanics of the National Research Council has proposed that protective noise criteria for animals be taken to be the same as for humans (NRC NAS 1977).

## **2.7 NOISE EFFECTS ON STRUCTURES**

Normally, the most sensitive components of a structure to airborne noise are the windows and, infrequently, the plastered walls and ceilings. An evaluation of the peak sound pressures impinging on the structure is normally sufficient to determine the possibility of damage. In general, at sound levels above 130 dB, there is the possibility of the excitation of structural component resonances. While certain frequencies (such as 30 hertz for window breakage) may be of more concern than other frequencies, conservatively, only sounds lasting more than one second above a sound level of 130 dB are potentially damaging to structural components (NRC NAS 1977).

A recent study, directed specifically at low-altitude, high-speed aircraft on Military Training Routes, showed that there is little probability of structural damage from such operations (Sutherland 1989). One finding in that study is that sound levels at damaging frequencies (e.g., 30 Hz for window breakage or 15 to 25 Hz for whole-house response) are rarely above 130 dB.

Noise-induced structural vibration may also cause annoyance to dwelling occupants because of induced secondary vibrations, or “rattle,” of objects within the dwelling – hanging pictures, dishes, plaques, and bric-a-brac. Window panes may also vibrate noticeably when exposed to high levels of airborne noise, causing homeowners to fear of breakage. In general, such noise-induced vibrations occur at sound levels above those considered normally compatible with residential land use. Thus assessments of noise exposure levels for compatible land use should also be protective of noise-induced secondary vibrations.

## **2.8 NOISE EFFECTS ON TERRAIN**

Members of the public often perceive that noise from low-flying aircraft can cause avalanches or landslides by disturbing fragile soil or snow structures, especially in mountainous areas, causing landslides or avalanches. There are no known instances of such effects, and it is considered improbable that such effects will result from routine, subsonic aircraft operations.

## 2.9 NOISE EFFECTS ON HISTORICAL AND ARCHAEOLOGICAL SITES

Because of the potential for increased fragility of structural components of historical buildings and other historical sites, aircraft noise may affect such sites more severely than newer, modern structures. Again, there are few scientific studies of such effects to provide guidance for their assessment.

One study involved the measurements of sound levels and structural vibration levels in a superbly restored plantation house, originally built in 1795, and now situated approximately 1,500 feet from the centerline at the departure end of Runway 19L at Washington Dulles International Airport (IAD). These measurements were made in connection with the proposed scheduled operation of the supersonic Concorde airplane at Dulles (Wesler 1977). There was special concern for the building's windows, since roughly half of the 324 panes were original. No instances of structural damage were found. Interestingly, despite the high levels of noise during Concorde takeoffs, the induced structural vibration levels were actually less than those induced by touring groups and vacuum cleaning within the building itself.

As noted above for the noise effects of noise-induced vibrations of normal structures, assessments of noise exposure levels for normally compatible land uses should also be protective of historic and archaeological sites.

## 3.0 IMPULSIVE NOISE ASSOCIATED WITH THE DETONATION OF HIGH EXPLOSIVES

Many targets on NAFR are capable of supporting the delivery of live ordnance. This section of this appendix discusses the methodology used to quantify the acoustic effects associated with the detonation of high explosives and develops capacity assessments for these targets that indicate the levels of ordnance use they can support without creating environmental acoustic impacts outside the boundaries of the range.

The noise associated with the detonation of high explosives is impulsive in nature, and its main components emphasize very low frequencies, often equal to or less than 100 cycles per second (Hertz [Hz]). Since the noise is impulsive, it is measured on the "C-weighted" scale.

The noise model used for this impact assessment is the Noise Assessment and Prediction System (NAPS) developed for the U.S. Army's Atmospheric Sciences Laboratory, White Sands Missile Range, New Mexico. The NAPS model is a single-event model that generates sound intensity contours based on meteorological conditions that influence the speed of sound and the propagation of sound. NAPS calculates Sound Pressure Levels (SPL) in dBP (unweighted maximum sound pressure level, in decibels) based on the amount of explosive material normalized to an equivalent weight of trinitrotoluene (TNT). The model uses a ray trace approach that takes into account spherical spreading, atmospheric absorption, and refraction (Smith et al. 1991).

SPLs spread spherically in the absence of wind. This spreading is normally calculated so that for each doubling of distance from the noise source, the SPL decreases by 6 dB (U.S. Army 1995).

The atmosphere absorbs sound energy. However, this absorption is not a significant factor for sounds with frequencies of 500 Hz or less. For example, at 10 Hz, approximately 0.04 dB is lost to atmospheric absorption over a 10 kilometer (km) distance, and for a sound at 100 Hz, about 3.5 dB is attenuated over the same distance. Conversely, for a sound at 1,000 Hz, approximately 100 dB would be lost over the same 10 km. What is important is that when sound created by the detonation of high explosives is considered, since these sounds normally occur in the 5-10 Hz range or less, atmospheric absorption has little effect (U.S. Army 1995).

Ground impedance is a measurement of the extent to which an acoustic wave traveling through the atmosphere would be absorbed into the ground upon contact, or reflected back into the atmosphere. Soft sands, such as those found on beaches, and fresh, powdery snow, are examples of ground with low impedance, where most of the acoustic energy is absorbed, and little is reflected. Medium impedance surfaces reflect a majority of the acoustic energy, and most lands within the United States are classified as medium impedance surfaces for sounds of 200 Hz or less. Surfaces such as water, concrete, and mountains with rock outcroppings are illustrative of high impedance surfaces which will reflect all, or almost all of the acoustic energy (U.S. Army 1995).

As previously discussed, actual SPLs are usually "weighted" to more closely approximate the response of the human ear to the sound. The most commonly used metrics for characterizing impulsive noise are based on the "C-weighting" protocol, which represses SPLs under 100 and over 3,000 Hz. Field measurements suggest that unweighted SPLs are 22 to 25 dB higher than C-weighted SPLs for high explosive events (Kerry and Ford 1994).

The dBP metric utilized by the NAPS model does not reflect the cumulative effects from multiple noise events over time. The preferred metric for assessing the annoyance level associated with multiple impulsive noise events associated with use of high explosives is the C-weighted Day-Night Average Sound Level ( $L_{Cdn}$ ).  $L_{Cdn}$  is calculated:

$$L_{Cdn} = CSEL + \left(10 \log_{10} (N_D + 10N_N)\right) - 49.4$$

*Equation 1*

Where:

CSEL = C-weighted Sound Exposure Level for a single event.

$N_D$  = Number of events per 24-hour period occurring between 7:00 A.M. and 10:00 P.M. (daytime)

$N_N$  = Number of events per 24-hour period occurring between 10:01 P.M. and 6:59 A.M. (nighttime).

Multiplying the events by 10 assigns a 10 dB penalty for noise events at night.

49.4 = 10  $\log_{10}$  times 86,400 (the number of seconds in a 24-hour period).

Source: U.S. Army CERL 1986

Further, the relationship between dBP and CSEL is given by the following:

$$CSEL \cong dBP - 25$$

Equation 2

Source: Kerry and Ford 1994

Therefore, a dBP-dependent equation for  $L_{Cdn}$  may be written as follows, and, based on substitution:

$$L_{Cdn} \cong dBP - 25 + (10 \text{Log}_{10}(N_D + 10N_N)) - 49.4$$

Equation 3a

and

$$L_{Cdn} \cong dBP + (10 \text{Log}_{10}(N_D + 10N_N)) - 74.4$$

Equation 3b

For land use planning purposes,  $L_{Cdn} 62$  is generally considered to be equivalent to  $L_{dn} 65$ . That is, residential development is normally compatible with noise levels below  $L_{Cdn} 62$ .

Although the NAPS model outputs contours in unweighted SPL, this output can be used to represent  $L_{Cdn}$  values. As shown above, if one noise event occurred during daytime in a 24-hour period, then the  $L_{Cdn}$  value would be 74.4 dB lower than the NAPS calculated SPL (Equations 3a and 3b). Therefore:

$$L_{Cdn} 62 = 136.4 dBP$$

Equation 4

As the number of events from the same source increase above one per 24-hour period, the value of:

$$10 \text{Log}_{10}(N_D + 10N_N)$$

may be subtracted from 136.4 to obtain the SPL contour value from NAPS that is equivalent to  $L_{Cdn} 62$ . For multiple sources contributing different sound levels at given distances, source specific  $L_{Cdn}$  values would be summed logarithmically to obtain total cumulative  $L_{Cdn}$ .

Alternatively, if it is desired to keep exposure of a given location at or below a specific  $L_{Cdn}$  value, and the unweighted SPL value is known for that location, the number of permissible day-equivalent events that can occur may be calculated by:



$$\text{AntiLog}_{10}\left(\frac{136.4 - \text{SPL}}{10}\right) = N_{DE}$$

Equation 5

As indicated, Equation 5 provides the number of day-equivalent events. Dividing the result by ten would provide the number of night-permissible events. Mixed day and night events may be determined using a ratio of one night event to ten day events. For example, 30 day events would equal three night events, or ten day events and two night events.

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**Appendix F**  
**WATER ANALYSIS**

**Table F-1. Dry Lake Bed Drainage Areas and Runoff Volume Estimates  
Nellis Air Force Range Complex**

<i>Dry Lake Bed Watershed Designation/Name</i>	<i>Watershed Area (square miles)</i>	<i>USGS Quadrangles<sup>1</sup> (1:100,000 scale)</i>	<i>Estimated Runoff Volume (acre-feet)</i>	<i>USGS Quadrangles<sup>2</sup> (1:24,000 scale)</i>
A – Ralston Valley	971	Cactus Flat Goldfield	49,715	Mud Lake North Mud Lake South
B – Cactus Flat (Total)	390	Cactus Flat	19,954	Stinking Spring, SW
Antelope Lake	254	Cactus Flat	13,005	Stinking Spring, NW
Northern Lake	136	Cactus Flat	6,949	
E – Stonewall Flat	346	Cactus Flat Goldfield	17,715	Stonewall Spring Packrat Canyon
F – Gold Flat	686	Cactus Flat Pahute Mesa	35,123	West of Quartzite Mt. Gold Flat East
G – Kawich Valley	359	Cactus Flat Pahute Mesa	18,381	Lamb's Pond Sundown Reservoir
L – Emigrant Valley	713	Cactus Flat Pahute Mesa Pahrangat Range Timpahute Range	36,506	Groom Mine Papoose Range
Q – Papoose Lake Valley	99	Pahrangat Range Indian Springs	5,069	Papoose Range Papoose Lake
S – Frenchman Flat	463	Restricted Access Area	23,706	Frenchman Lake
T – Indian Springs Valley	655	Outside of NAFR	33,536	Quartz Peak SW Tim Spring Indian Springs NW Heavens Well
U – Three Lakes Valley North	303	Indian Springs North Pahrangat Range North	15,514	Dog Bone Lake North Dog Bone Lake South
V – Three Lakes Valley South	345	Indian Springs Las Vegas	17,638	Black Hills NW Black Hills SW Indian Springs SE Heavens Well

Notes: 1. Dry lake bed watershed boundary shown on these U.S. Geological Survey (USGS) quadrangles.

2. Dry lake bed floodplain delineation shown on these quadrangles.

Source: Air Force 1997. Final Floodplain Inventory Report, Nellis Air Force Range, Nevada.

**Table F-2. Valley Collector Drainage Areas and Peak Discharge Estimates**  
 Nellis Air Force Range Complex (page 1 of 3)

Collector Watershed Designation	Drainage Area (square miles)	USGS Quadrangles <sup>1</sup> (1:100,000 scale)	Estimated Peak Discharge (cfs)	USGS Quadrangles <sup>2</sup> (1:24,000 scale)
A - Ralston Valley A-1	108	Cactus Flat	2,750	Mud Lake North
C - Cactus Flat C-1	60	Cactus Flat	1,760	Stinking Spring SW
C-2	30	Cactus Flat	1,130	Roller Coaster Knob Mellan Breen Creek
C-3	52	Cactus Flat	1,390	Roller Coaster Knob Mellan
C-4	60	Cactus Flat	1,700	Roller Coaster Knob Trappman Hills
E - Stonewall Flat E-1/E-2	205	Cactus Flat	5,050	White Patch Drain Packrat Canyon
E-3	34	Goldfield	1,280	East of Goldfield
E-4	30	Goldfield	1,180	Stonewall Spring
E-5	35	Cactus Flat	1,300	Packrat Canyon
F - Gold Flat F-1	29	Pahute Mesa	1,200	West of Quartzite Mt.
F-2	21	Pahute Mesa	1,000	Gold Flat East
F-3	347	Cactus Flat Pahute Mesa	7,370	Gold Flat East
F-4	26	Pahute Mesa	1,120	Gold Flat East
F-8	38	Cactus Flat	1,350	West of Quartzite Mt.
F-9	178	Cactus Flat	3,900	West of Quartzite Mt.
G - Kawich Valley G-1	118	Cactus Flat	3,296	Lamb's Pond
G-2	32	Pahute Mesa	1,220	Lamb's Pond
K - Sarcobatus Flat K-1	139	Last Chance Range	3,100	Scotty's Junction

**Table F-2. Valley Collector Drainage Areas and Peak Discharge Estimates**  
 Nellis Air Force Range Complex (page 2 of 3)

Collector Watershed Designation	Drainage Area (square miles)	USGS Quadrangles <sup>1</sup> (1:100,000 scale)	Estimated Peak Discharge (cfs)	USGS Quadrangles <sup>2</sup> (1:24,000 scale)
K-2	85	Pahute Mesa	2,250	Springdale NW Tolicha Peak SW Tolicha Peak
L - Emigrant Valley L-1	75	Pahranaगत Range	2,060	Groom Mine Groom Mine SW Papoose Range Fallout Hills NW
L-3/L-4	43	Pahranaगत Range	1,500	Groom Mine
L-5	38	Pahranaगत Range	1,350	Groom Mine
L-6	87	Pahranaगत Range	2,300	Groom Mine Groom Mine SW
L-7	4.4	Pahranaगत Range	700	Groom Mine
L-8	38	Pahranaगत Range	1,350	Groom Mine
L-9	49	Pahranaगत Range	1,600	Papoose Range
N - Oasis Valley N-1	207	Pahute Mesa	4,600	Thirsty Canyon SW Thirsty Canyon NW Thirsty Canyon
Q - Papoose Lake Valley Q-1	6	Pahranaगत Range	750	Papoose Range
Q-2	31	Pahranaगत Range	1,220	Papoose Lake
Q-3	39.6	Pahranaगत Range	1,400	Papoose Lake
S - Frenchman Flat S-2	63	Indian Springs	1,940	Frenchman Lake
S-4	50	Indian Springs	1,600	Frenchman Lake
T - Indian Springs Valley T-1	59	Indian Springs	1,750	Indian Springs NW
T-2	202	Pahranaगत Range Indian Springs	4,450	Quartz Peak SW Tim Spring
T-3	5	Indian Springs	700	Indian Springs NW Heavens Well

Table F-2. Valley Collector Drainage Areas and Peak Discharge Estimates Nellis Air Force Range Complex (page 3 of 3)				
Collector Watershed Designation	Drainage Area (square miles)	USGS Quadrangles <sup>1</sup> (1:100,000 scale)	Estimated Peak Discharge (cfs)	USGS Quadrangles <sup>2</sup> (1:24,000 scale)
U - Three Lakes Valley North U-1	22	Indian Springs Pahranaagat Range	1,025	Dog Bone Lake North
U-2	53	Pahranaagat Range Indian Springs	1,625	Dog Bone Lake North
U-3	32	Indian Springs	1,225	Dog Bone Lake North
V - Three Lakes Valley South V-1	66	Indian Springs	1,900	Black Hills NW Heavens Well

Notes: 1. Collector watershed boundary shown on these quadrangles.

2. Collector floodplain delineation shown on these quadrangles.

Source: Air Force 1997h. Final Floodplain Inventory Report, Nellis Air Force Range, Nevada.



**Table F-3. Alluvial Fan Drainage Areas and Runoff Volume Estimates**  
 Nellis Air Force Range Complex (page 1 of 2)

Dry Lake Bed Watershed Designation/Name	Alluvial Fan Designation/Name	Alluvial Fan Drainage Area (square miles)	Estimated Peak Discharge (cfs)	USGS Quadrangles (1:24,000 scale) (Apex Quad First)	
E - Stonewall Flat	E-F1	1.12	359	Stonewall Spring	
	E-F2	0.78	284	Stonewall Spring	
	E-F3 Pack Rat Canyon	19.1	2,742	Pack Rat Canyon Stonewall Spring Scotty's Junction NE Tolicha Peak NW	
F - Gold Flat	E-F4 Civet Cat Canyon	60.4	6,533	Pack Rat Canyon Civet Cat Cave Trappman Hills Tolicha Peak NE Mount Helen	
	F-F1 Cedar Pass North	0.6	313	Wild Horse Ranch Cedar Pass Georges Water	
	F-F2 Wild Horse Draw	10.9	2,022	Wild Horse Ranch Cedar Pass	
	F-F3	1.48	490	Quartzite Mountain	
	F-F4	3.1	848	Quartzite Mountain	
G - Kawich Valley	F-F5 Apache Tear Canyon	4.1	1,040	Apache Tear Canyon Gold Flat East	
	G-F1	4.8	1,363	Lambs Pond Belted Peak	
	G-F2	5.1	1,271	Lambs Pond Belted Peak	
	G-F3 Saucer Mesa	13.9	3,022	Apache Tear Canyon Dead Horse Flat	
L - Emigrant Valley	G-F4	1.3	646	Sundown Reservoir Wheel Barrow Peak	
	L-F1	23.3	2,871	Groom Mine NW Wheel Barrow Peak Belted Peak	
	L-F5	42.4	5,895	Oak Spring Butte Quartet Dome Wheelbarrow Peak Sundown Reservoir	
	M - Tikapoo Valley	M-F1	15.9	2,539	Groom Range Groom Range NE

**Table F-3. Alluvial Fan Drainage Areas and Runoff Volume Estimates**  
 Nellis Air Force Range Complex (page 2 of 2)

Dry Lake Bed Watershed Designation/Name	Alluvial Fan Designation/Name	Alluvial Fan Drainage Area (square miles)	Estimated Peak Discharge (cfs)	USGS Quadrangles (1:24,000 scale) (Apex Quad First)
S - Frenchman Flat	S-F1	1.4	614	Frenchman Lake Frenchman Lake SE Mercury Mercury NE
T - Indian Springs Valley	T-F1	8.8	2,426	Quartz Peak SW
	T-F2	10.6	2,776	Quartz Peak SW
	T-F3	3.9	1,099	Tim Spring Heavens Well
	T-F4	4.9	1,272	Heavens Well
	T-F5	16.7	3,079	Quartz Peak Southeastern Mine
U - Three Lakes Valley North	U-F1 Indian Canyon	4.5	1,601	Quartz Peak
	U-F2	9.7	2,296	Dead Horse Ridge
	U-F3	6.7	1,574	Dog Bone Lake South Dead Horse Ridge Burro Basin
V - Three Lakes Valley South	U-F5 Joe May Canyon	9.0	1,606	Black Hills
	V-F2	1.15	481	Burro Basin
	V-F3	0.68	344	Mule Deer Ridge NW
	V-F4 Yellow Jacket Canyon	6.2	1,056	White Sage Flat Hayford Peak Dead Horse Ridge
	Spot Canyon	1.6	530	Black Hills SW

Source: Air Force 1997h. Final Floodplain Inventory Report, Nellis Air Force Range, Nevada.

NV / Chapter 445A + Water Pollution Control + Standards for Water + 445A.119  
 ion: 445A.119 Criteria for Water Quality for Designated Beneficial  
 Use

Date: September 25, 1990  
 Subject Terms: Water | water quality | standard  
 Standards for Water Quality.  
 445A.119. Criteria for Water Quality for Designated  
 Beneficial Uses.

The water quality criteria for designated beneficial uses for the various waters of the state are in the following table. The criteria are water quality characteristics based upon available scientific and technical information and are to be used as guidelines in establishing water quality standards.

ENFLEX Note: The following table is wider than your screen. Please scroll right to see the entire table.

Parameter	Beneficial Uses			Agricultural Uses			Aquatic Life			Water Contact Recreation	Non-Contact Recreation	Municipal or Domestic Supply	Industrial Supply	Propagation of Wildlife
	Irrigation	Wetland of Livestock	Cold Water	Warm Water	Water Contact Recreation	Non-Contact Recreation	Municipal or Domestic Supply	Industrial Supply	Propagation of Wildlife					
pH Units	4.5 - 9.0(a,b)	5.0 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)	6.5 - 9.0(b)
Single Value														
Chloride	>	X	X	X	X	X	X	X	X	X	X	X	X	X
Single Value- $\text{mg/l}$														
Total Phosphates	<	1500(f)												1500(f)
as P														
Single Value- $\text{mg/l}$														
Nitrate as N	<	100(a)												100(a)
Single Value- $\text{mg/l}$														
Nitrite as N	<	10(a)												10(a)
Single Value- $\text{mg/l}$														
Total Nitrogen	<	X												X
Single Value- $\text{mg/l}$														
Un-ionized Ammonia as NH(3)	<	X												X
Single Value- $\text{mg/l}$														
Total Dissolved Solids	<	3000(a)												X
Color (PT-CO)	<	X												X
Single Value														
Turbidity, Single Value- $\text{PTU}$	<	X												X
Single Value- $\text{PTU}$														
Fecal Coliform (MF/100ml)	<	1000(a)												1000(a)
Geometric Mean														
Alkalinity as CaCO(3)	<	X												X
Single Value- $\text{mg/l}$														
Hardness as CaCO(3)	<	X												X
Single Value- $\text{mg/l}$														
Sulfates	<	X												X
Single Value- $\text{mg/l}$														

< means less than.

> means greater than.

x means a specific recommendation has not been developed.

y means the cited reference recommended no value be established.

(1) Based on a minimum of five samples taken over a 30-day period, the fecal coliform bacterial level must not exceed a log mean of 200 per 100 ml nor may more than 10 percent of the total samples taken during any 30-day period exceed 400 per 100 ml.

(2) The table is not all-inclusive. As the need arises and data becomes available, appropriate revisions and additions will be made.

(a) National Academy of Sciences, Water Quality Criteria (Blue Book) (1972).

(b) U.S. Environmental Protection Agency, Pub. No. EPA 440/9-76-023, Quality Criteria for Water (1976). Office of Water and Hazardous Materials, Washington, D.C.

(c) Nevada Division of Health, Water Supply Regulation, Part I, Water Quality Standards, Monitoring, Record Keeping and Reporting (1977). State Board of Health, Carson City, Nevada.

(d) Report of the Commission on Water Quality Criteria (FWPCA) (Green Book) (1968).

(e) American Fisheries Society, Water Quality Section, A Review of the EPA Red Book: Quality Criteria for Water (1979).

(f) McKee and Wolf, California State Water Resources Control Board, Water Quality Criteria (1963).

(g) Environmental Comm'n, Water Pollution Control Reg. \* 4.1.4, eff. 9-15-80 (NAC A 7-27-82; 12-3-84; 9-25-90)

(Substituted in revision for NAC 445.117)

Title: NV / Chapter 445A · Water Pollution Control · Standards for Water Quality · 445A.120  
Section: 445A.120 Applicability  
Date: December 3, 1984  
Subject Terms: water | surface water | water quality | applicability

445A.120. Applicability.

1. NAC 445A.120 to 445A.213, inclusive, apply to all natural streams and lakes, reservoirs or impoundments on natural streams and other specified waterways, unless excepted on the basis of existing irreparable conditions which preclude such use. Man-made waterways, unless otherwise specified, must be protected for public health and the use for which the waterways were developed.
2. The quality of any waters receiving waste discharges must be such that no impairment of the beneficial usage of water occurs as the result of the discharge. Natural water conditions may, on occasion, be outside the limits established by standards. The standards adopted in NAC 445A.120 to 445A.213, inclusive, relate to the condition of waters as affected by discharges relating to the activities of man.

[Environmental Comm'n, Water Pollution Control Reg. § 4.1, eff. 5-2-78]  
(NAC A 12-3-84)  
(Substituted in revision for NAC 445.118)

Title: NV / Chapter 445A · Water Pollution Control · Standards for Water Quality · 445A.121  
Section: 445A.121 Standards Applicable to All Waters  
Date: September 26, 1990  
Subject Terms: water | water quality | standard | compliance

#### 445A.121. Standards Applicable to All Waters.

The following standards are applicable to all waters of the state:

1. Waters must be free from substances attributable to domestic or industrial waste or other controllable sources that will settle to form sludge or bottom deposits in amounts sufficient to be unsightly, putrescent or odorous or in amounts sufficient to interfere with any beneficial use of the water.
2. Waters must be free from floating debris, oil, grease, scum and other floating materials attributable to domestic or industrial waste or other controllable sources in amounts sufficient to be unsightly or in amounts sufficient to interfere with any beneficial use of the water.
3. Waters must be free from materials attributable to domestic or industrial waste or other controllable sources in amounts sufficient to produce taste or odor in the water or detectable off-flavor in the flesh of fish or in amounts sufficient to change the existing color, turbidity or other conditions in the receiving stream to such a degree as to create a public nuisance or in amounts sufficient to interfere with any beneficial use of the water.
4. Waters must be free from high temperature, biocides, organisms pathogenic to human beings, toxic, corrosive or other deleterious substances attributable to domestic or industrial waste or other controllable sources at levels or combinations sufficient to be toxic to human, animal, plant or aquatic life or in amounts sufficient to interfere with any beneficial use of the water. Compliance with the provisions of this subsection may be determined in accordance with methods of testing prescribed by the department. If used as an indicator, survival of test organisms must not be significantly less in test water than in control water.
5. If toxic materials are known or suspected by the department to be present in a water, testing for toxicity may be required to determine compliance with the provisions of this section and effluent limitations. The department may specify the method of testing to be used. The failure to determine the presence of toxic materials by testing does not preclude a determination by the department, on the basis of other criteria or methods, that excessive levels of toxic materials are present.
6. Radioactive materials attributable to municipal, industrial or other controllable sources must be the minimum concentrations which are physically and economically feasible to achieve. In no case must materials exceed the limits established in the 1962 Public Health Service Drinking Water Standards (or later amendments) or 1/30th of the MPC values given for continuous occupational exposure in the "National Bureau of Standards Handbook No. 69." The concentrations in water must not result in accumulation of radioactivity in plants or animals that result in a hazard to humans or harm to aquatic life.
7. Wastes from municipal, industrial or other controllable sources containing arsenic, barium, boron, cadmium, chromium, cyanide, fluoride, lead, selenium, silver, copper and zinc that are reasonably amenable to treatment or control must not be discharged untreated or uncontrolled into the waters of Nevada. In addition, the limits for concentrations of the chemical constituents must provide water quality consistent with the mandatory requirements of the 1962 Public Health Service Drinking Water Standards.
8. The specified standards are not considered violated when the natural conditions of the receiving water are outside the established limits, including periods of extreme high or low flow. Where effluents are discharged to such waters, the discharges are not considered a contributor to substandard conditions provided maximum treatment in compliance with permit requirements is maintained.

[Environmental Comm'n, Water Pollution Control Reg. § 4.1.2 subsecs. a - g, eff. 5-2-78]  
(NAC A 9-26-90)  
(Substituted in revision for NAC 445.119)

Title: NV / Chapter 445A · Water Pollution Control · Standards for Water Quality · 445A.122  
Section: 445A.122 Standards Applicable to Beneficial Uses  
Date: November 9, 1995  
Subject Terms: water | water quality | standard | agriculture

445A.122. Standards Applicable to Beneficial Uses.

1. The following standards are intended to protect both existing and designated beneficial uses and must not be used to prohibit the use of the water as authorized under Title 48 of NRS:

- (a) Watering of livestock. The water must be suitable for the watering of livestock without treatment.
- (b) Irrigation. The water must be suitable for irrigation without treatment.
- (c) Aquatic life. The water must be suitable as a habitat for fish and other aquatic life existing in a body of water. This does not preclude the reestablishment of other fish or aquatic life.
- (d) Recreation involving contact with the water. There must be no evidence of manmade pollution, floating debris, sludge accumulation or similar pollutants.
- (e) Recreation not involving contact with the water. The water must be free from:
  - (1) Visible floating, suspended or settled solids arising from man's activities;
  - (2) Sludge banks;
  - (3) Slime infestation;
  - (4) Heavy growth of attached plants, blooms or high concentrations of plankton, discoloration or excessive acidity or alkalinity that leads to corrosion of boats and docks;
  - (5) Surfactants that foam when the water is agitated or aerated; and
  - (6) Excessive water temperatures.
- (f) Municipal or domestic supply. The water must be capable of being treated by conventional methods of water treatment in order to comply with Nevada's drinking water standards.
- (g) Industrial supply. The water must be treatable to provide a quality of water which is suitable for the intended use.
- (h) Propagation of wildlife. The water must be suitable for the propagation of wildlife and waterfowl without treatment.
- (i) Waters of extraordinary ecological or aesthetic value. The unique ecological or aesthetic value of the water must be maintained.
- (j) Enhancement of water quality. The water must support natural enhancement or improvement of water quality in any water which is downstream.

2. This section does not entitle an appropriator to require that the source meet his particular requirements for water quality.

[Environmental Comm'n, Water Pollution Control Reg. § 4.1.1, eff. 5-2-78]  
(NAC A 11-22-82; 12-3-84; 11-9-95)

Title: NV / Chapter 445A · Water Pollution Control · Standards for Water Quality · 445A.123  
Section: 445A.123 Classification and Reclassification of Waters  
Date: December 3, 1984  
Subject Terms: water | surface water | water quality | water classification

445A.123. Classification and Reclassification of Waters.

1. Stream standards and classifications in NAC 445A.123 to 445A.127, inclusive, do not preclude the commission from establishing standards and classifications for additional public waters nor reclassifying the waters covered by those sections.

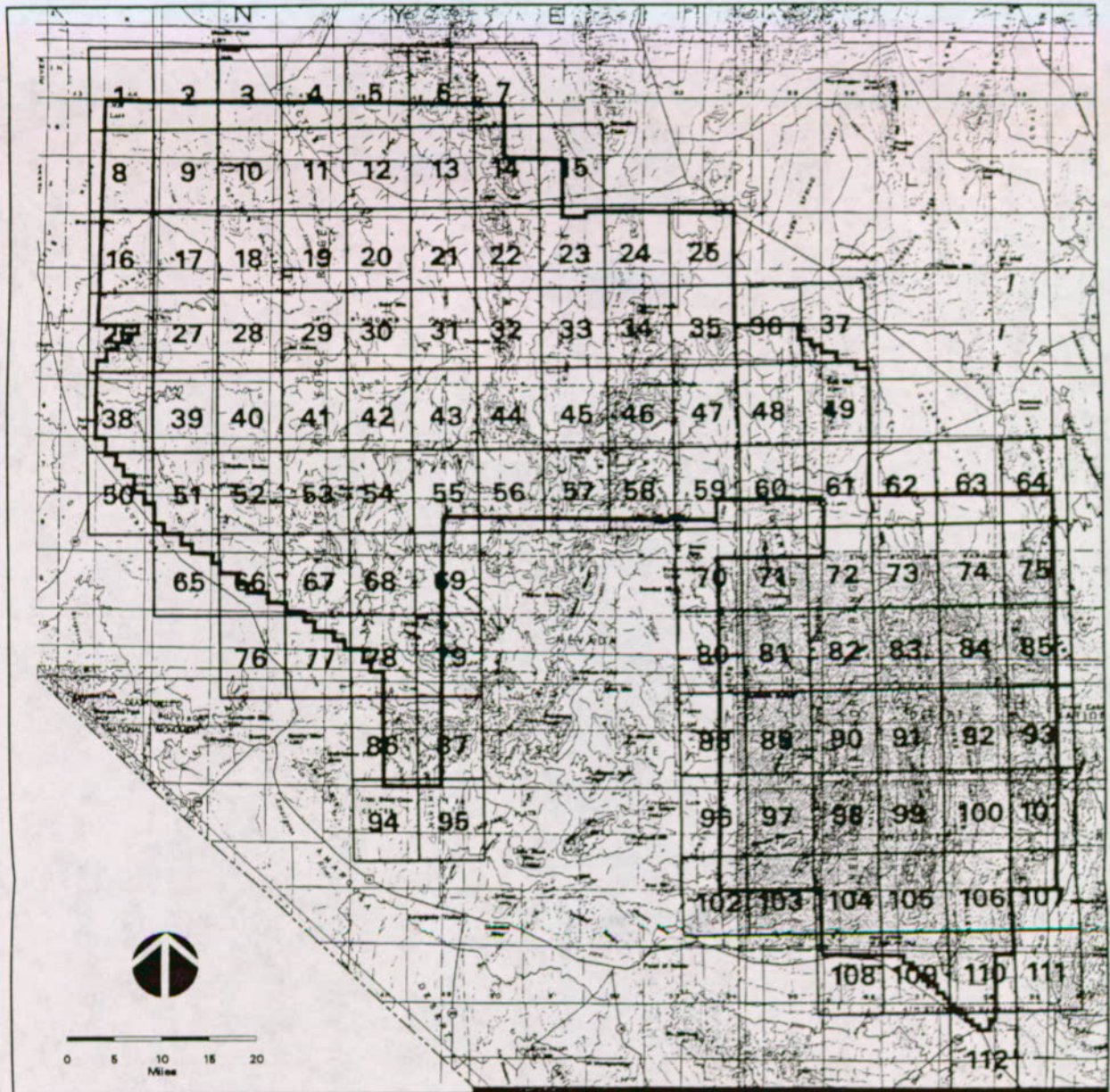
2. The commission will consider classification of a body of public water not contained in the tables in NAC 445A.123 to 445A.127, inclusive, upon a request for a permit to discharge into that body of water.

[Environmental Comm'n, Water Pollution Control Reg. § 4.2, eff. 5-2-78]  
(NAC A 12-3-84)  
(Substituted in revision for NAC 445.121)

**Appendix G**  
**BIOLOGICAL RESOURCES DATA**

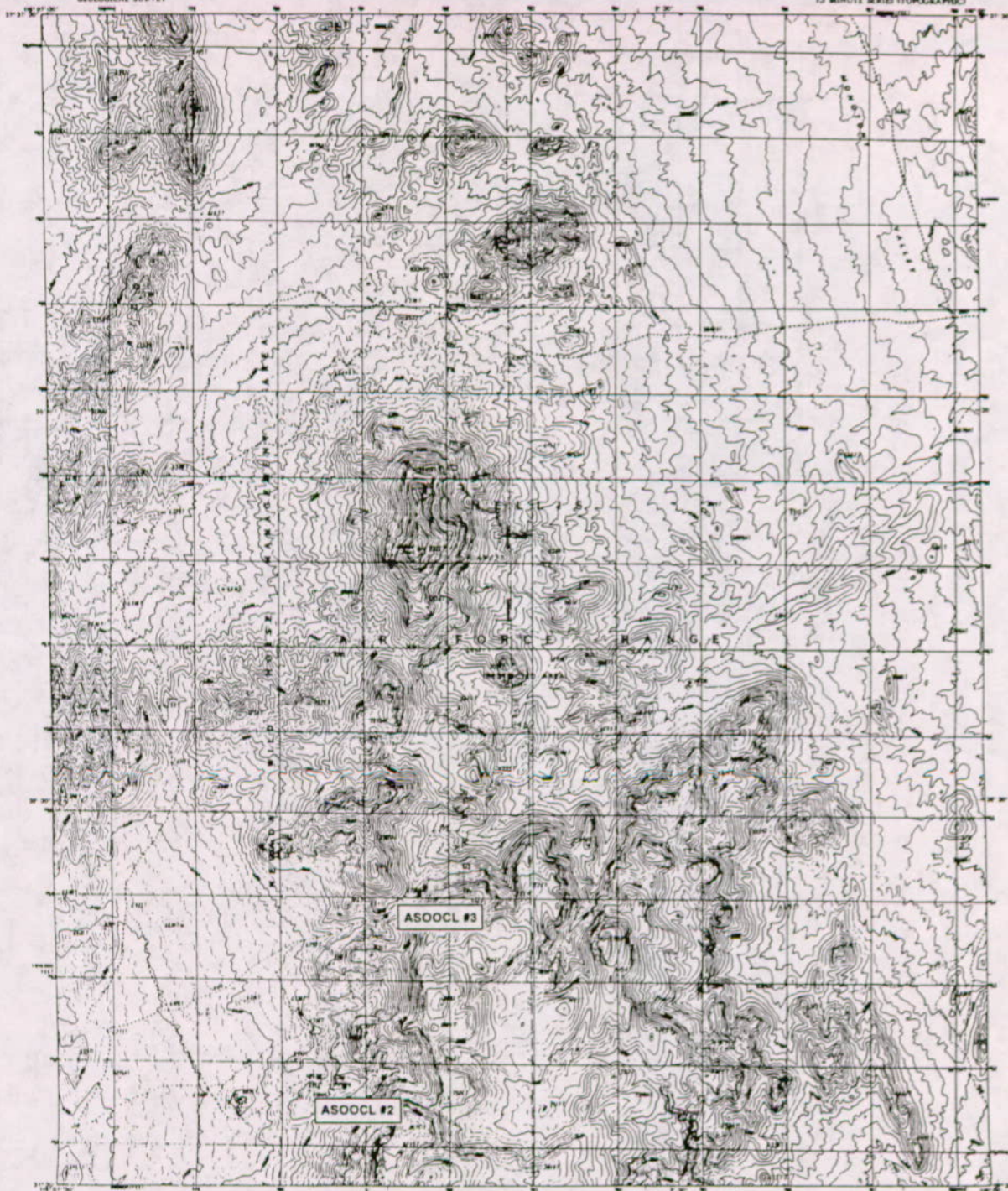


**Appendix G-1**  
**Site Locations for Rare Plants on**  
**Nellis Air Force Range (TNC 1997)**



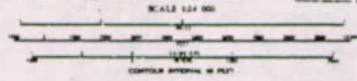
## Threatened & Endangered Plant Survey Nellis AFB Bombing & Gunnery Range **7.5 min. QUAD INDEX**

- |                            |                               |                      |                            |
|----------------------------|-------------------------------|----------------------|----------------------------|
| 1 Mud Lake North           | 29 Topman Hills               | 67 Quartz Dome       | 85 Desert Hills SE         |
| 2 Monitor Peak             | 30 Triangle Mountain          | 68 Oak Spring Butte  | 86 East of Beatty Mountain |
| 3 Reed's Ranch             | 31 West of Quartzite Mountain | 69 Groom Mine SW     | 87 Topoan Spring NW        |
| 4 Stinking Spring NW       | 32 Quartzite Mountain         | 70 Groom Mine        | 88 Plutonum Valley         |
| 5 Stinking Spring          | 33 Lamba Pond                 | 71 Groom Range SW    | 89 Aysees Peak             |
| 6 Karwich Peak             | 34 Barbad Peak                | 72 Groom Range SE    | 90 Quartz Peak NW          |
| 7 Karwich Peak NE          | 35 White Blotch Springs       | 73 Cutler Reservoir  | 91 Quartz Peak             |
| 8 Mud Lake South           | 36 White Blotch Springs SE    | 74 Badger Spring     | 92 Dog Bone Lake North     |
| 9 Cactus Peak              | 37 Yampokta Mountain South    | 75 Springdale NW     | 93 Burro Basin             |
| 10 East of Cactus Peak     | 38 Scottys Junction NE        | 76 Springdale NE     | 94 Crater Flat             |
| 11 Stinking Spring SW      | 39 Tolicha Peak NW            | 77 Thirsty Canyon NW | 95 Busted Butte            |
| 12 Breen Creek             | 40 Tolicha Peak NE            | 78 Thirsty Canyon    | 96 Frenchman Lake          |
| 13 Karwich Peak SW         | 41 Mount Helen                | 79 Sorugham Peak     | 97 Frenchman Lake SE       |
| 14 George Water            | 42 Gold Rat West              | 80 Jangle Ridge      | 98 Quartz Peak SW          |
| 15 Ravella Peak            | 43 Gold Rat East              | 81 Popoos Range      | 99 Tim Spring              |
| 16 East of Goldfield       | 44 Apache Tear Canyon         | 82 Fallout Hills NW  | 100 Dog Bone Lake South    |
| 17 White Patch Draw        | 45 Sundown Reservoir          | 83 Fallout Hills NE  | 101 Dead Horse Ridge       |
| 18 Cactus Spring           | 46 Wheelbarrow Peak           | 84 Desert Hills NW   | 102 Mercury                |
| 19 Roller Coaster Knob     | 47 Groom Mine NW              | 85 Desert Hills NE   | 103 Mercury NE             |
| 20 Mellan                  | 48 Cattle Spring              | 86 Springdale        | 104 Indian Springs NW      |
| 21 Wild Horse Ranch        | 49 Groom Range                | 87 Thirsty Canyon SW | 105 Havens Wall            |
| 22 Cedar Pass              | 50 Scottys Junction           | 88 Thirsty Canyon SE | 106 Black Hills NW         |
| 23 Rhyolite Knob           | 51 Tolicha Peak SW            | 89 Timber Mountain   | 107 White Sage Flat        |
| 24 Monotony Valley         | 52 Tolicha Peak               | 90 Peukta Ridge      | 108 Indian Springs         |
| 25 White Blotch Springs NW | 53 Black Mountain             | 91 Popoos Lake       | 109 Indian Springs SE      |
| 26 Stonewall Spring        | 54 Trail Ridge                | 92 Fallout Hills     | 110 Black Hills SW         |
| 27 Peck Rat Canyon         | 55 Slant Butte                | 93 Southeastern Mine | 111 Black Hills            |
| 28 Chert Cat Cave          | 56 Dead Horse Flat            | 94 Desert Hills SW   | 112 Corn Creek Springs NW  |



PREPARED BY THE UNITED STATES GEOLOGICAL SURVEY  
FROM AERIAL PHOTOGRAPHS TAKEN IN 1958. ORIGINAL  
SCALE 1:25,000. CONTOUR INTERVAL 20 FEET. ELEVATION  
IN FEET. THIS MAP IS A PROVISIONAL MAP AND SHOULD  
NOT BE USED FOR ANY PURPOSE REQUIRING ACCURACY  
BEYOND THAT OF A GENERAL REFERENCE MAP. THE  
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FROM THE USE OF THIS MAP. THE GEOLOGICAL SURVEY  
IS NOT RESPONSIBLE FOR ANY LOSS OR DAMAGE TO  
PROPERTY OR PERSONS ARISING FROM THE USE OF  
THIS MAP. THE GEOLOGICAL SURVEY IS NOT  
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OF THIS MAP.

PROVISIONAL MAP  
Prepared from original  
aerial photographs taken  
in 1958. Contour interval  
20 feet. Elevation in feet.  
This map is a provisional map  
and should not be used for  
any purpose requiring  
accuracy beyond that of a  
general reference map.



1	2	3
4	5	6
7	8	9

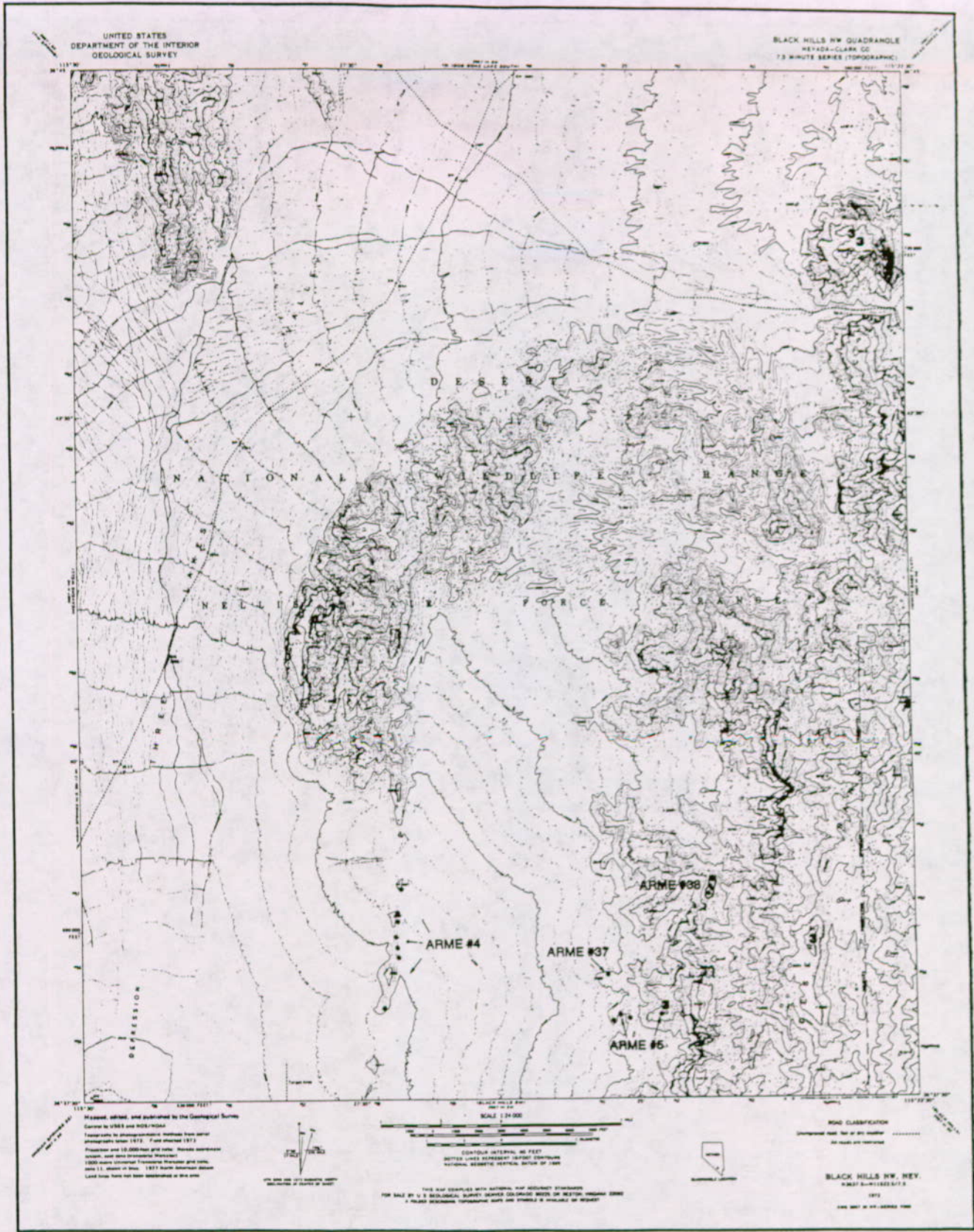
ROADS  
 Improved Road  
 Unimproved Road  
 Trail  
 Interstate Road  
 U.S. Route  
 State Road  
 BELTED PEAK, NEVADA  
 PROVISIONAL EDITION 1961

Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy  
ASOCL

Species of Concern  
*Artemisia oophorus* var. *clokeyanus*

Other Sources  
none



Threatened and Endangered Plant Survey  
 Nellis Air Force Base  
 Bombing and Gunnery Range

The Nature Conservancy

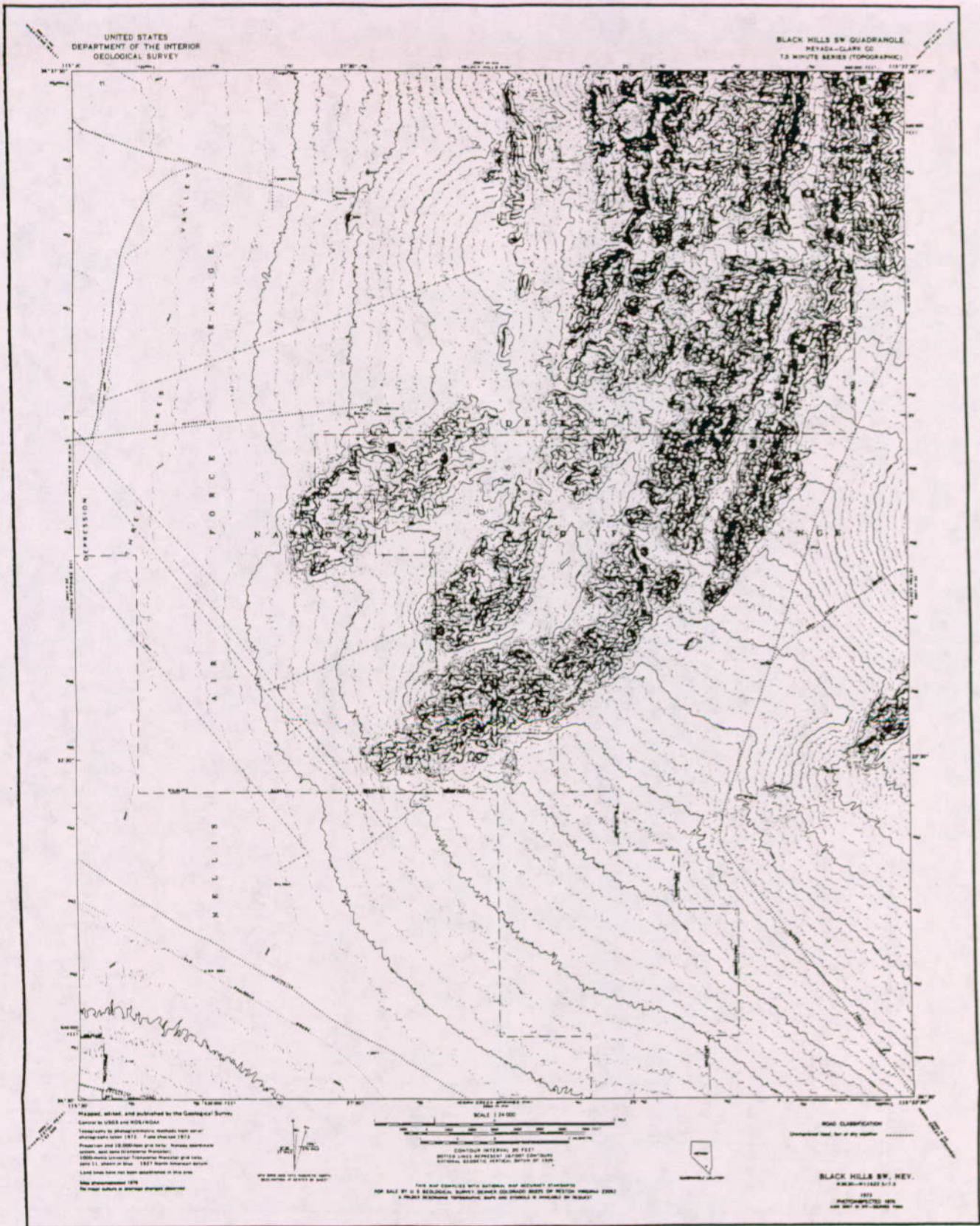
Species of Concern

Other Sources

ARME

*Arctomecon merriamii*

3



Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

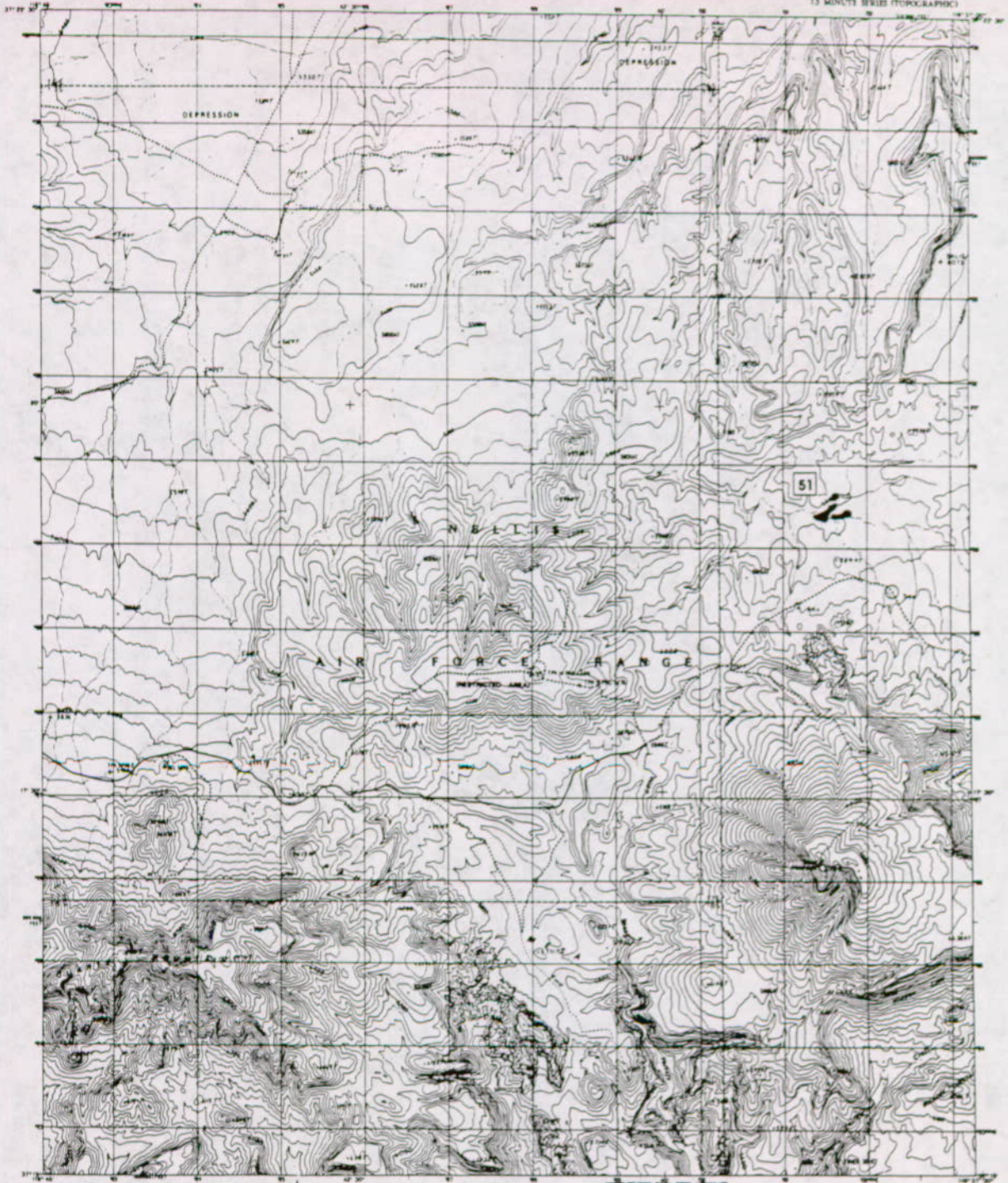
Species of Concern

Other Sources

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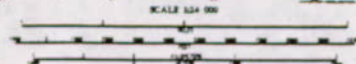
*Arctomecon merriamii*

3



PROVISIONAL MAP OF THE UNITED STATES GEOLOGICAL SURVEY  
Produced from original photorecognition drawings, before revision drawing or of date of photorecognition.

PROVISIONAL MAP  
Produced from original photorecognition drawings, before revision drawing or of date of photorecognition.



SCALE 1:50,000  
CONTAIN INTERVAL OF 100 FT.  
APPROXIMATE CONTAIN INTERVAL IS 100 FT.  
THIS MAP IS A PROVISIONAL MAP AND IS NOT TO BE USED AS A BASIS FOR ANY OTHER PURPOSES.  
THE GEOLOGICAL SURVEY OFFICE OF THE GEOLOGICAL SURVEY, WASHINGTON, D.C. 20508

1	2	3
4	5	6
7	8	9

ROAD LEGEND  
Imagined Road  
Unimproved Road  
Improved Road  
BLANK MOUNTAIN, NEVADA  
PROVISIONAL EDITION 1988

Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

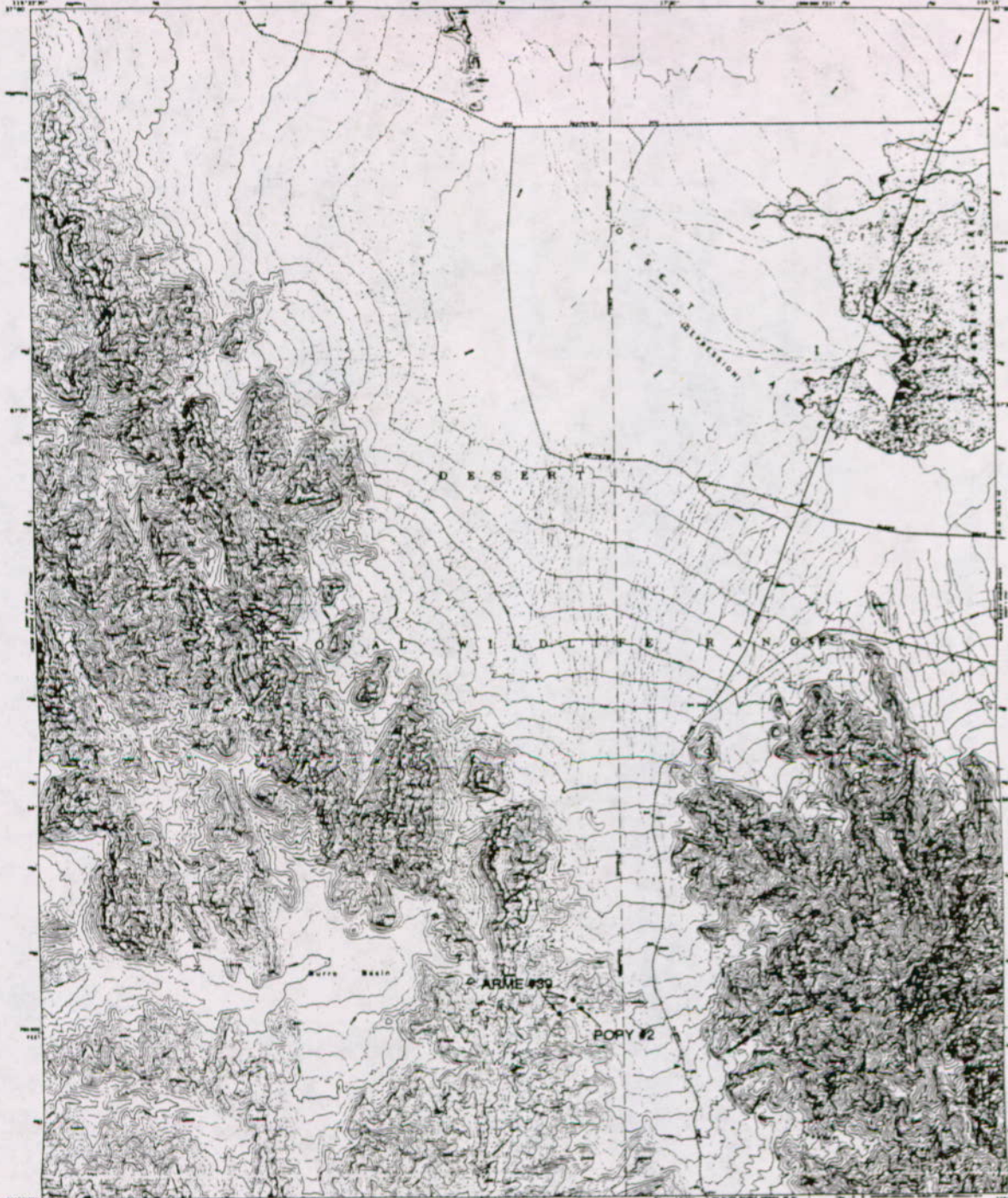
Species of Concern

Other Sources

none

*Astragalus beatleyae*

51



Map was revised and published by the Geological Survey  
Controlled by 1000 and 1000-10000  
Topographic information is derived from aerial  
photographs taken 1972. Field checked 1973.  
Projection and 10,000-foot grid scale. Meters, international  
system, and some horizontal distances.  
Elevation contours: 20-foot intervals and some  
more 11, shown in blue. 1987 North American datum.  
Land uses have not been updated in this area.



SCALE 1:24,000  
CONTOUR INTERVAL 20 FEET  
BUTTE COUNTY DISTRICT COURTHOUSE  
NATIONAL SCIENTIFIC METHOD, SECTION OF 1985

ROAD CLASSIFICATION  
Intermittent and, 100 ft or less, dashed.

BURRO BASIN, NEV.  
7.5-MINUTE SERIES  
1973  
LAST DATE OF REV. 10-20-88

This map complies with National Map Accuracy Standards  
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A POLAR PROJECTION, TRANSVERSE GUYER AND STRICKLAND IS PROJECTIONS

Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

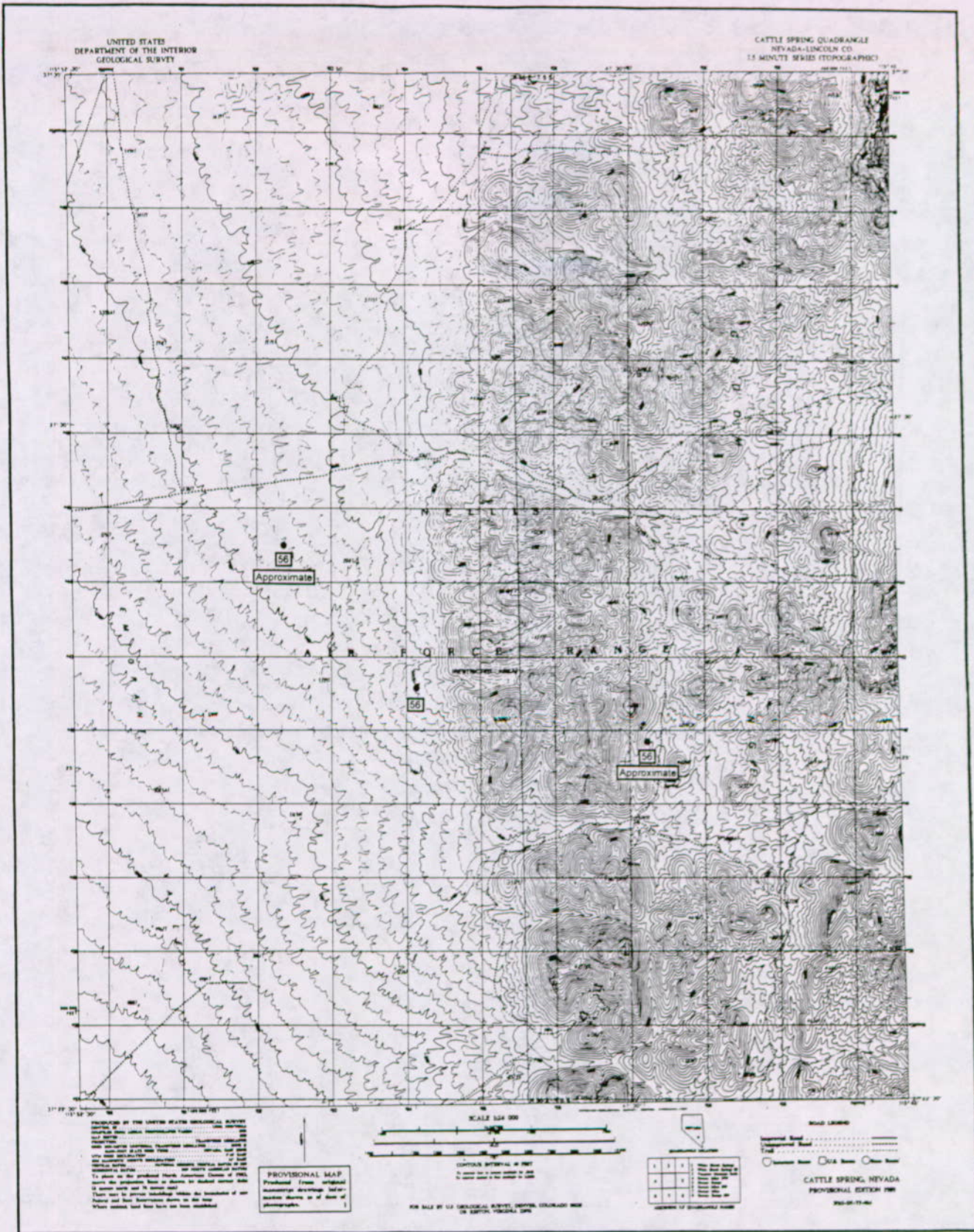
ARME  
POPY

Species of Concern

*Arctomecon merriamii*  
*Porophyllum pygmaeum*

Other Sources

none  
none



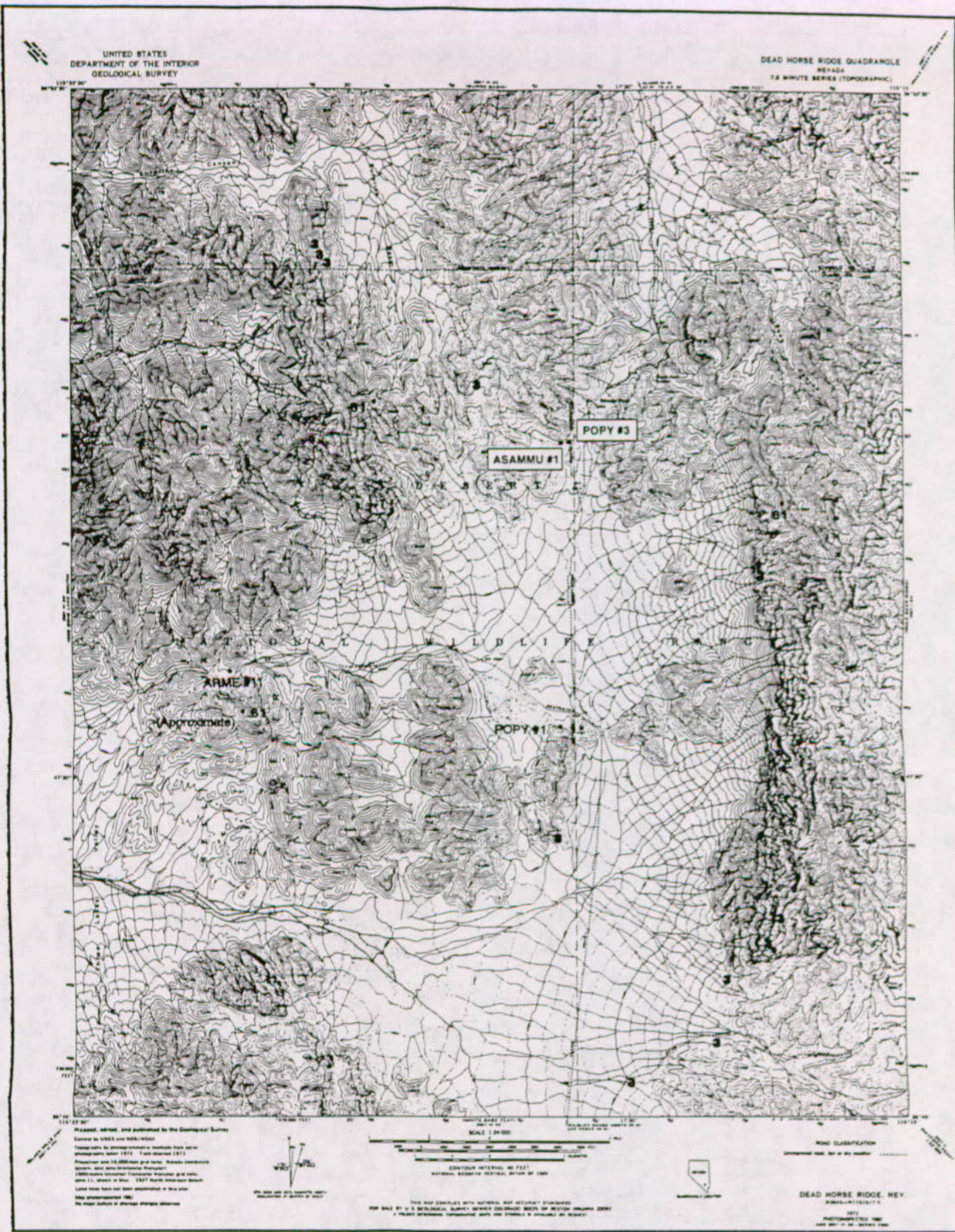
Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy  
none

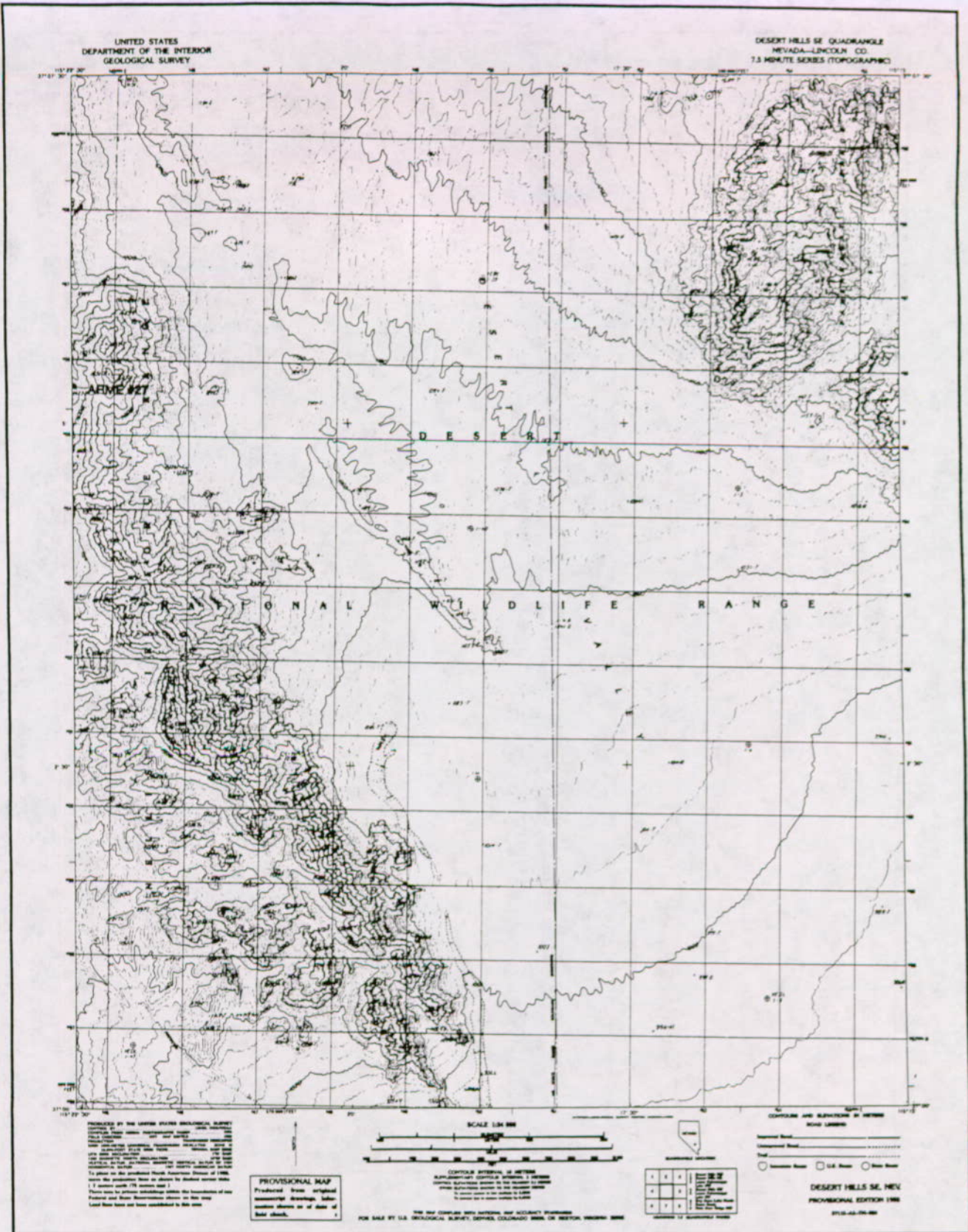
Species of Concern  
*Astragalus gilmanii*

Other Sources  
56

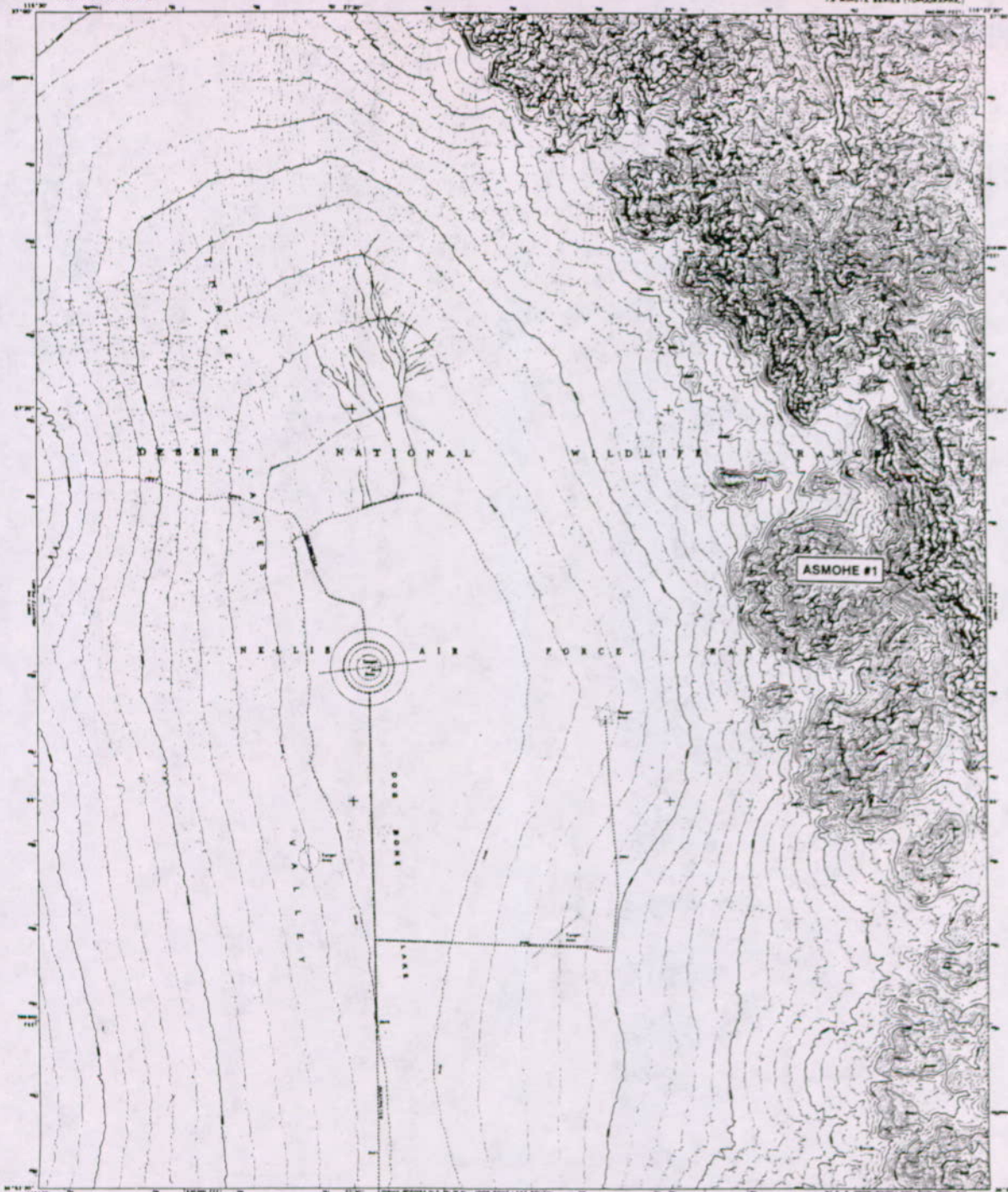




Threatened and Endangered Plant Survey Nellis Air Force Base Bombing and Gunnery Range		
The Nature Conservancy	Species of Concern	Other Sources
ARME	<i>Arctomecon merriamii</i>	3
POPY	<i>Porophyllum pygmaeum</i>	61
ASAMMU	<i>Astragalus amphioxys</i> var. <i>musimonum</i>	none



Threatened and Endangered Plant Survey Nellis Air Force Base Bombing and Gunnery Range		
The Nature Conservancy	Species of Concern	Other Sources
ARME	<i>Arctomecon merriamii</i>	none



Map made, edited, and published by the Geological Survey  
Cover to 4823 and 4824/4824a  
Topography by stereographic method from aerial photographs taken 1973. 7.5 minute (1973)  
Projection and 10,000-foot grid facts: North-south distance 10000 meters (32808 feet) horizontal distance 10000 meters (32808 feet) vertical distance 10000 meters (32808 feet)  
Lands have been and are designated as follows

CONTOUR INTERVAL, IN FEET  
5000 FEET (EXCEPT WHERE SHOWN OTHERWISE)  
VERTICAL DATUM: MEAN SEA LEVEL

Scale: 1:24,000

DOG BONE LAKE NORTH, NEV.  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
1973

Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

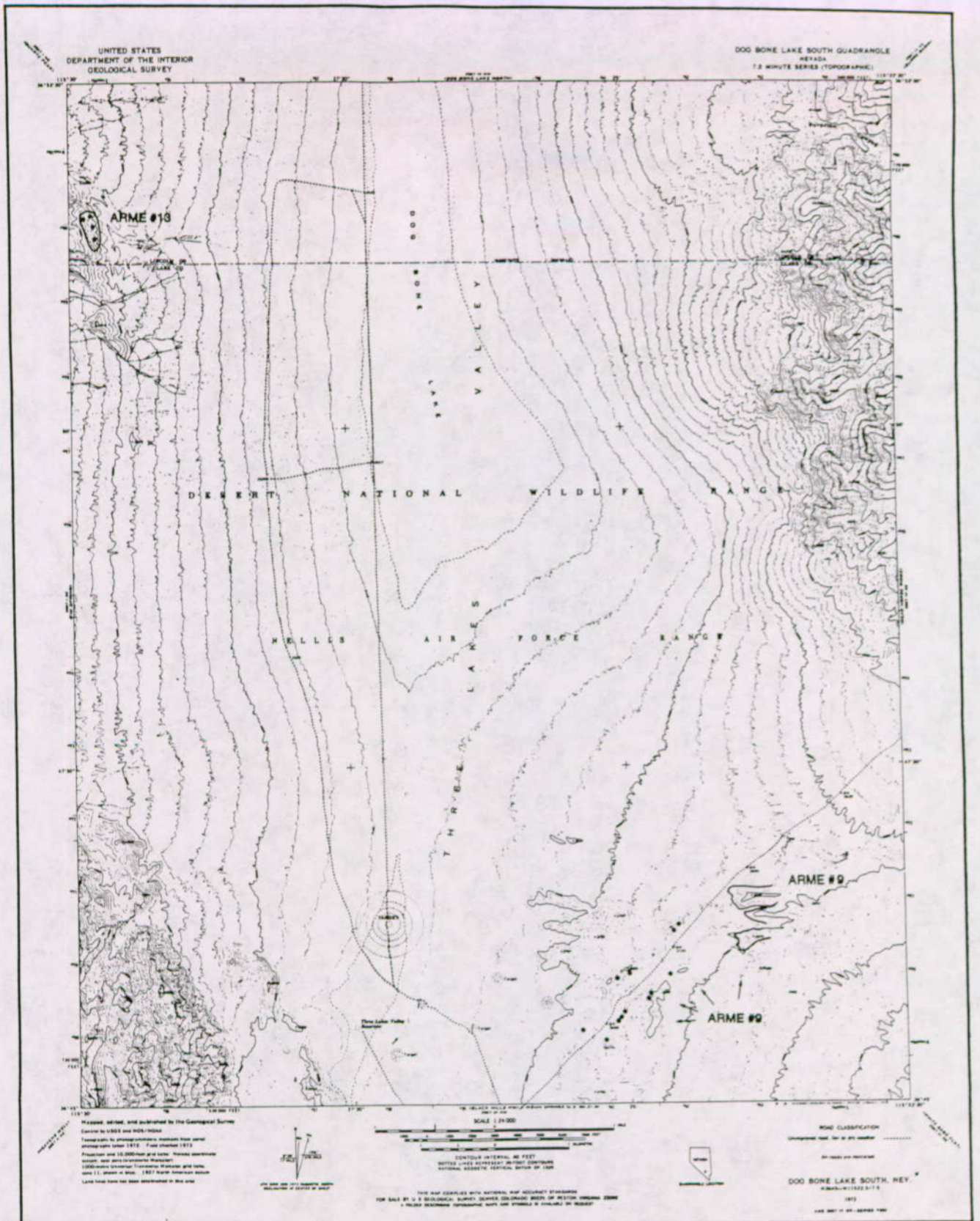
Species of Concern

Other Sources

ASMOHE

*Astragalus mohavensis* var. *hemigyris*

none



Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

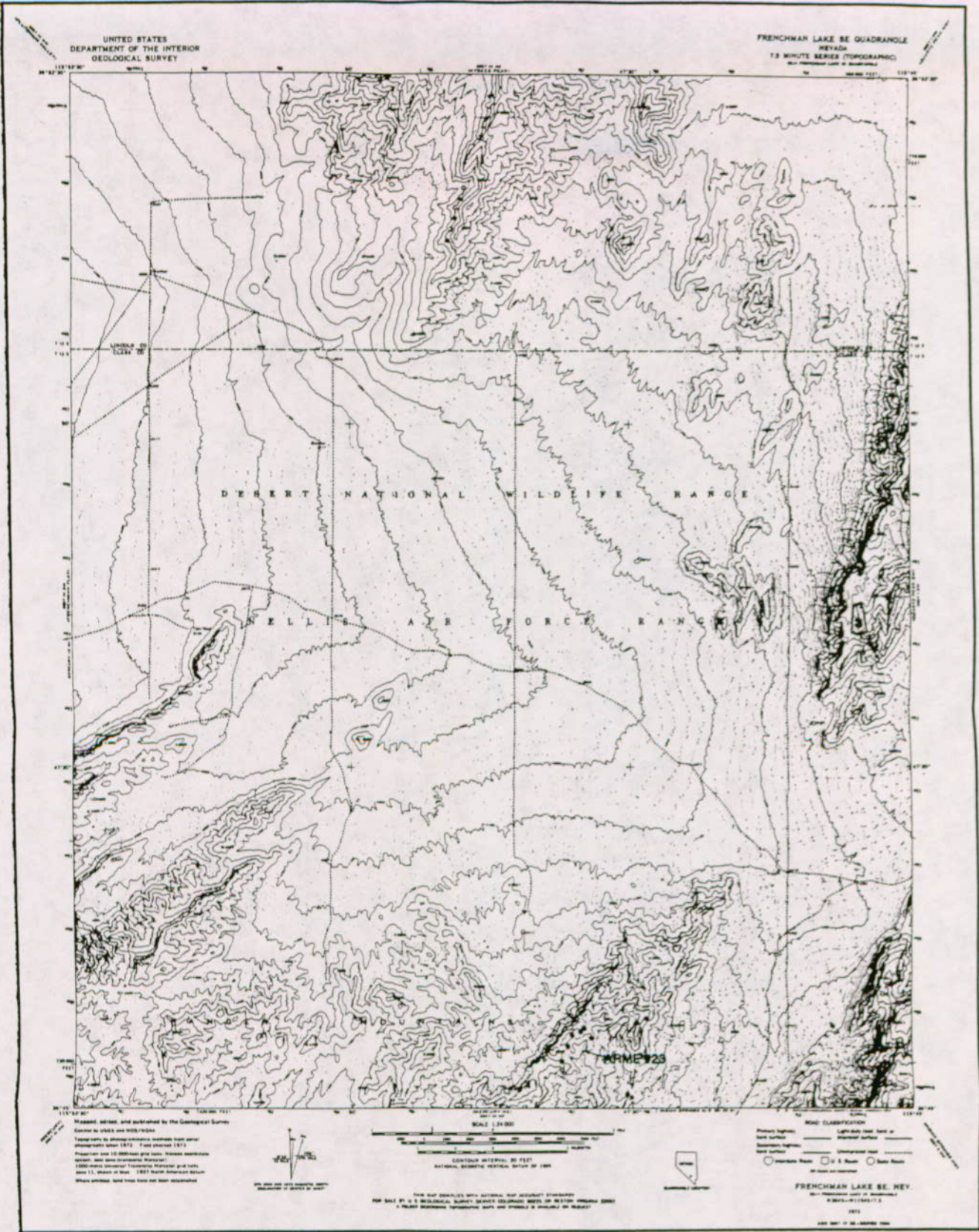
Species of Concern

Other Sources

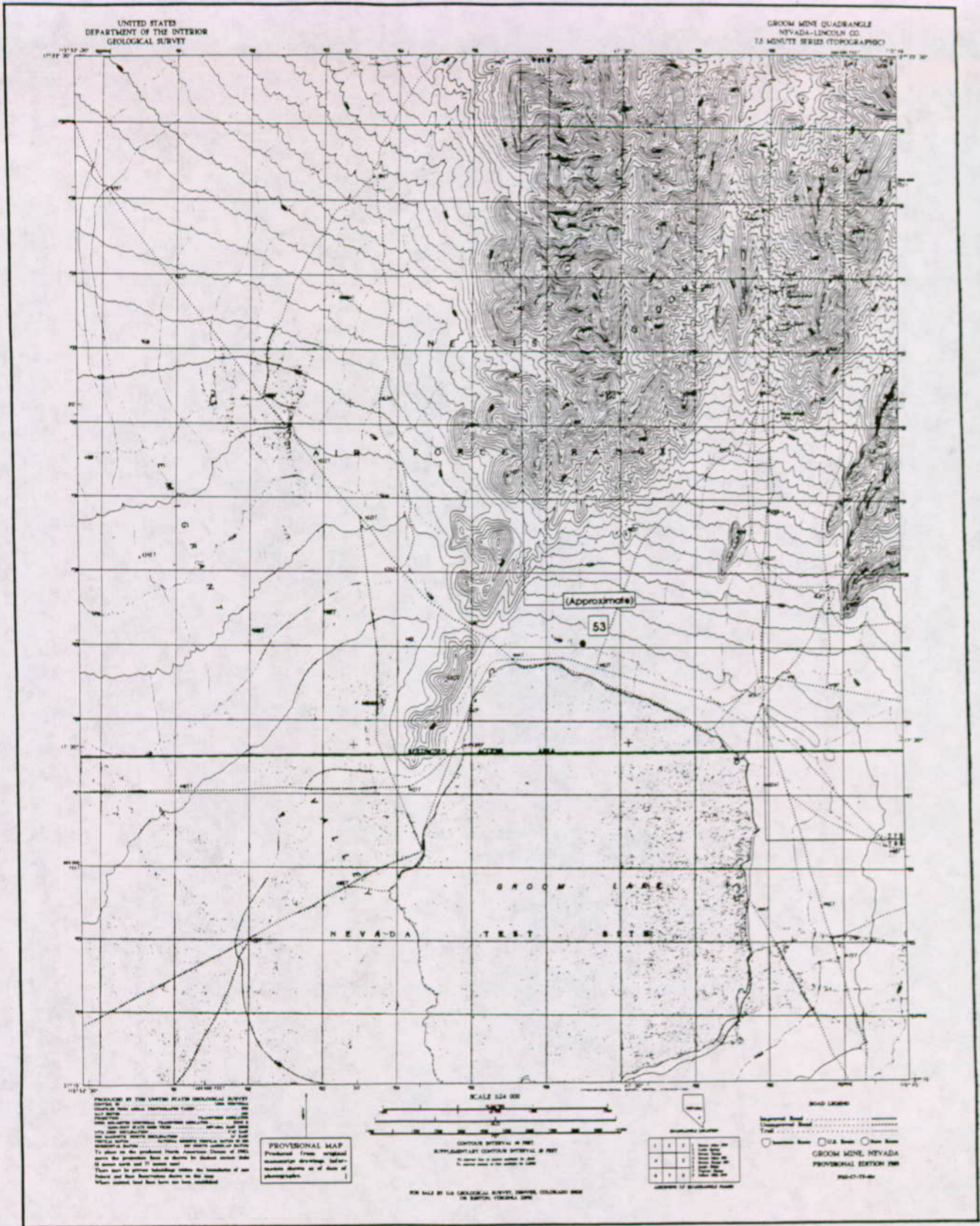
ARME

*Arctomecon merriamii*

none



The Nature Conservancy	Threatened and Endangered Plant Survey Nellis Air Force Base Bombing and Gunnery Range	Other Sources
ARME	Species of Concern <i>Arctomecon merriamii</i>	3



Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

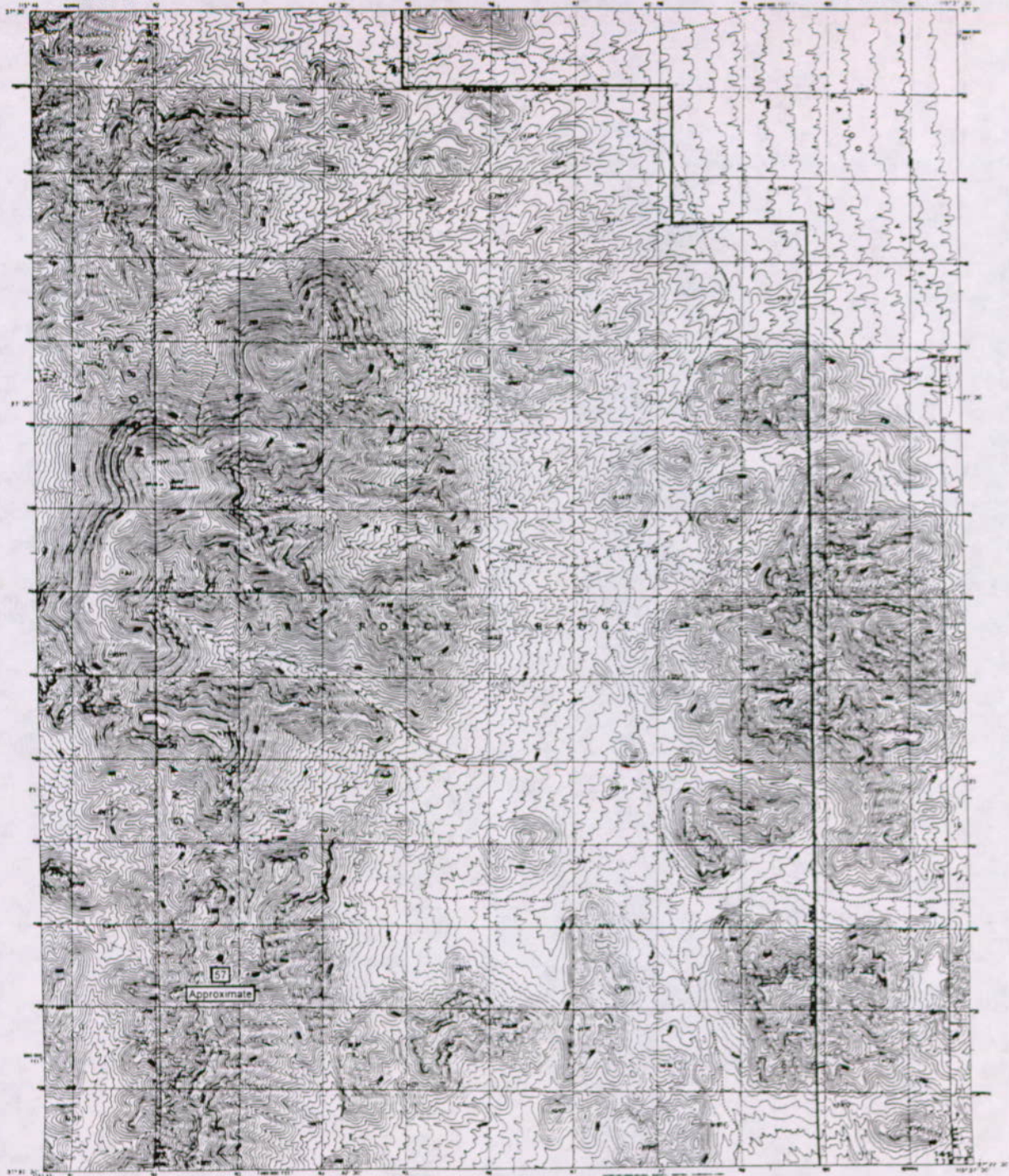
Species of Concern

Other Sources

none

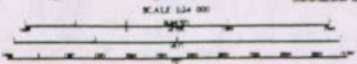
*Cymopterus ripleyi* var. *saniculoides*

53



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PROVISIONAL MAP  
Produced from original  
manuscript drawings. In-  
formation shown is of date of  
photograph.



1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

ROAD LEGEND  
 Improved Road  
 Unimproved Road  
 Trail  
 Section Line  
 U.S. Base  
 GROOM RANGE, NEVADA  
 PROVISIONAL EDITION 1961  
 500-56-17-40

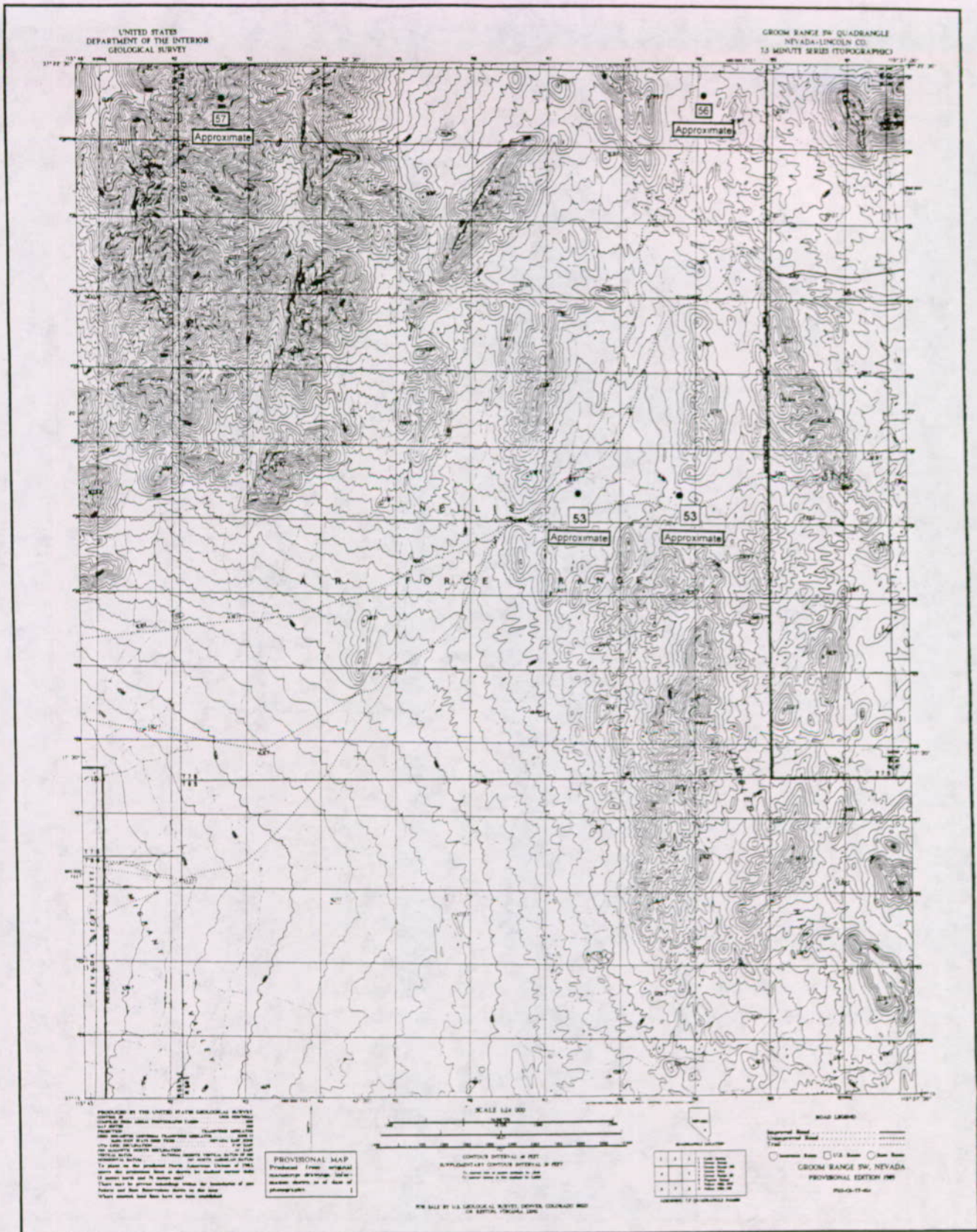
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Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy  
none

Species of Concern  
*Erigeron ovinus*

Other Sources  
57



Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

none  
none  
none

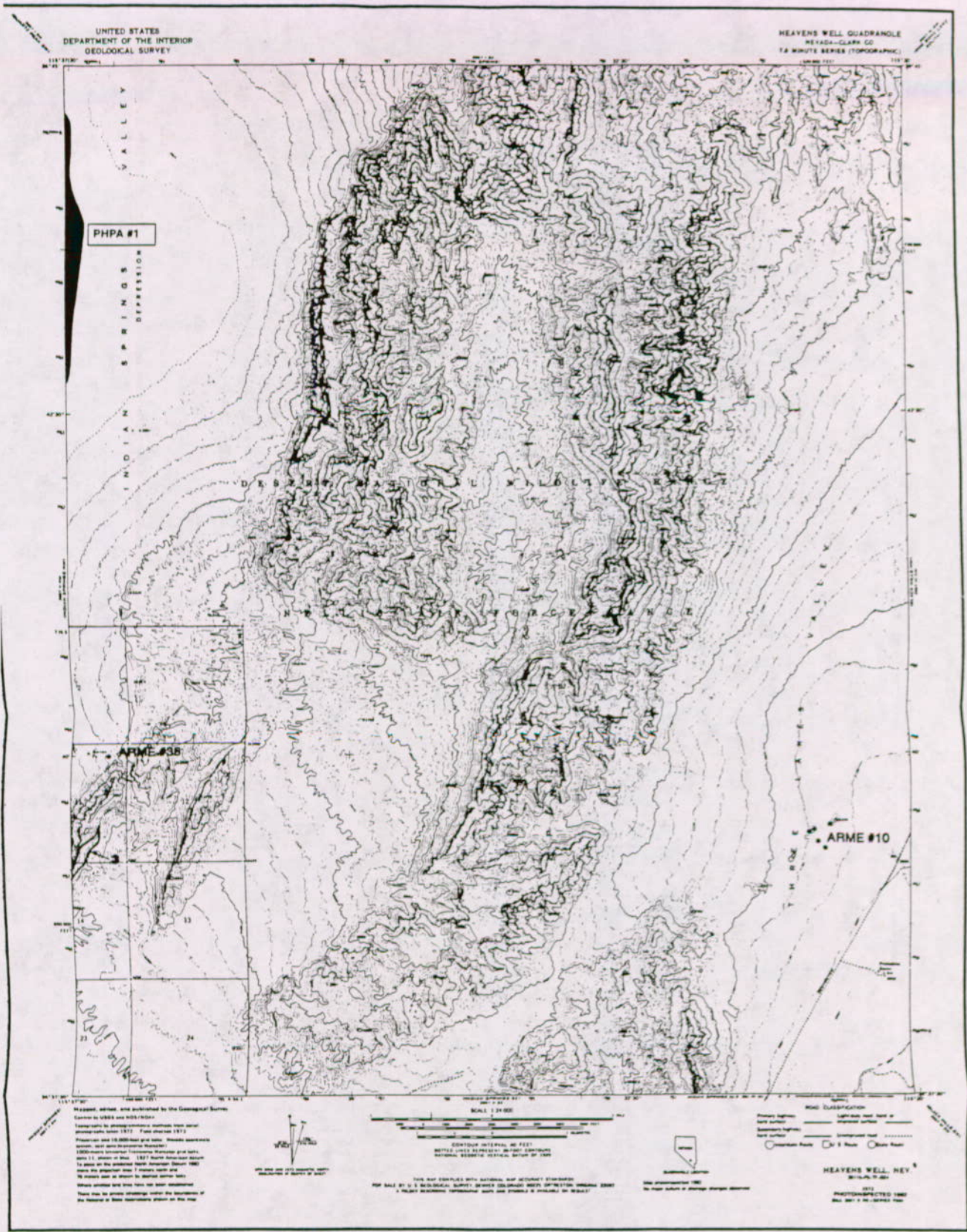
Species of Concern

*Astragalus gilmanii*  
*Cymopterus riplei* var. *saniculoides*  
*Erigeron ovinus*

Other Sources

56  
53  
57





Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

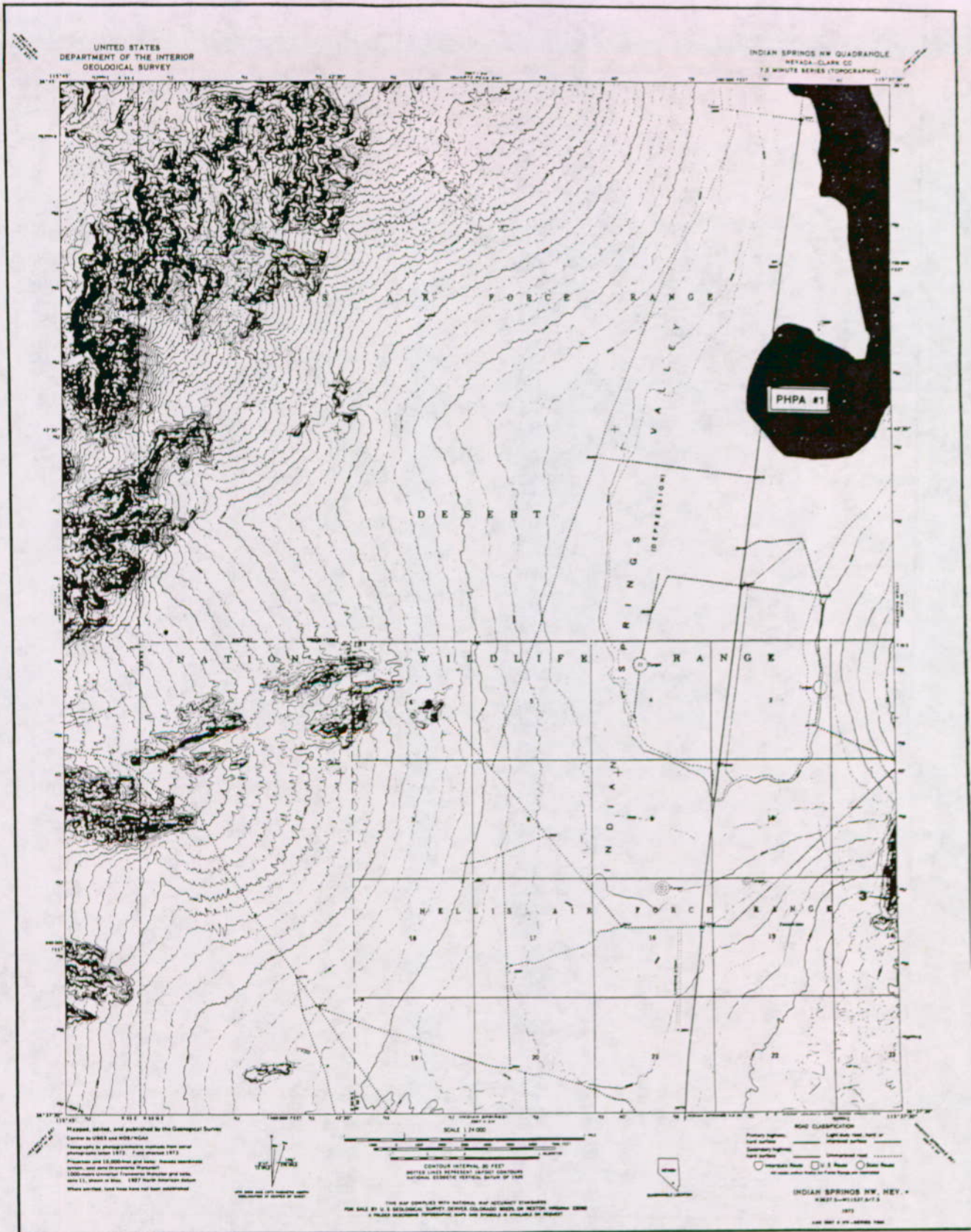
Species of Concern

Other Sources

ARME  
PHPA

*Arctomecon merriamii*  
*Phacelia parishii*

3  
none



Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

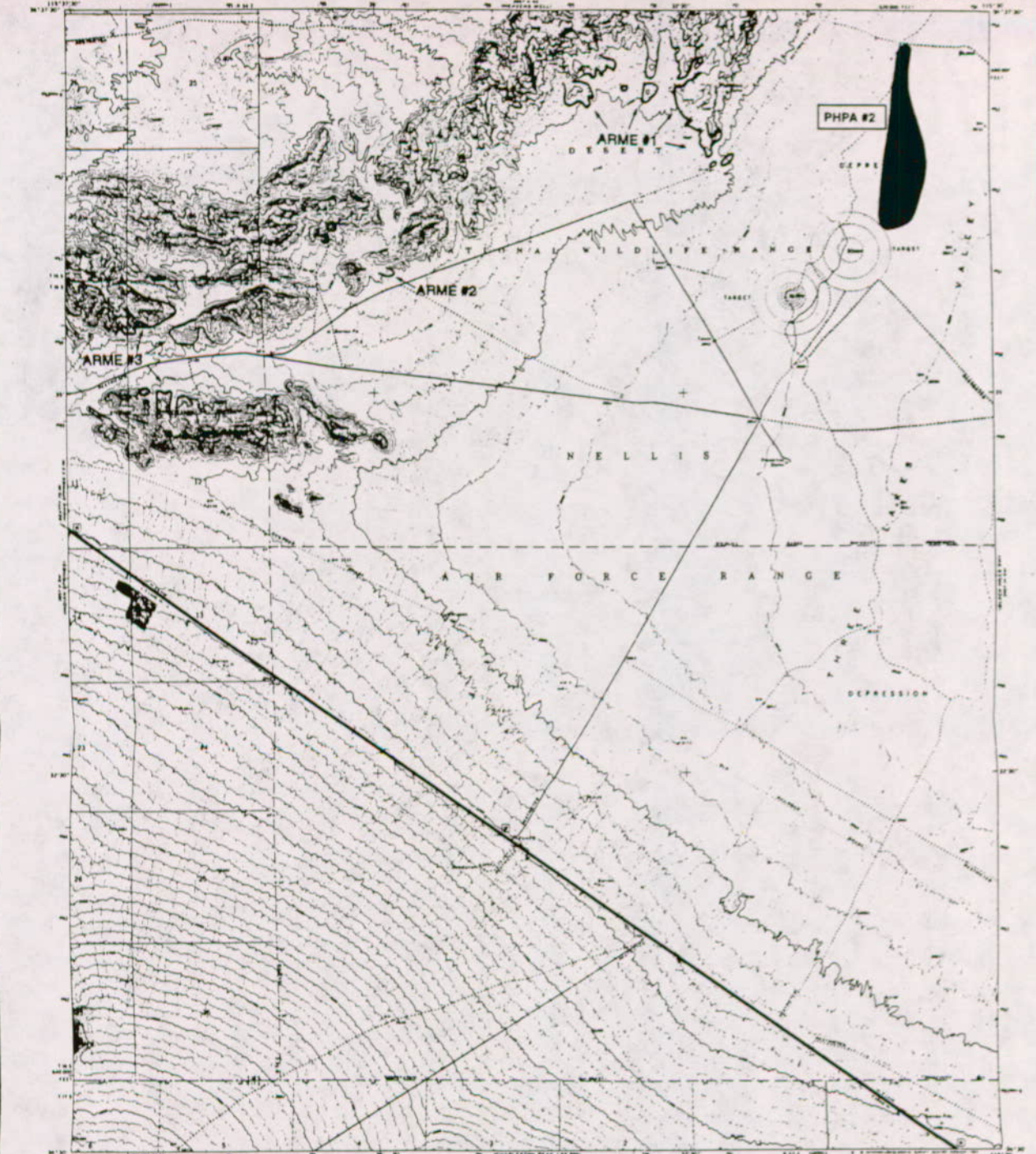
Species of Concern

Other Sources

none  
PHPA

*Arctomecon merriamii*  
*Phacelia parishii*

3  
none



Prepared, edited, and published by the Geological Survey  
Control by USGS and NGS/INDAG  
Topographic by stereographic methods from air-  
photographs taken 1952. First edition 1973.  
Projection and 10,000-foot grid. Meters converted  
to feet. Units in feet. 1983. Revised and changed  
to meet the present state standard. (Scale 1:50,000)  
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of the Bureau of Land Management, Department of the Interior.

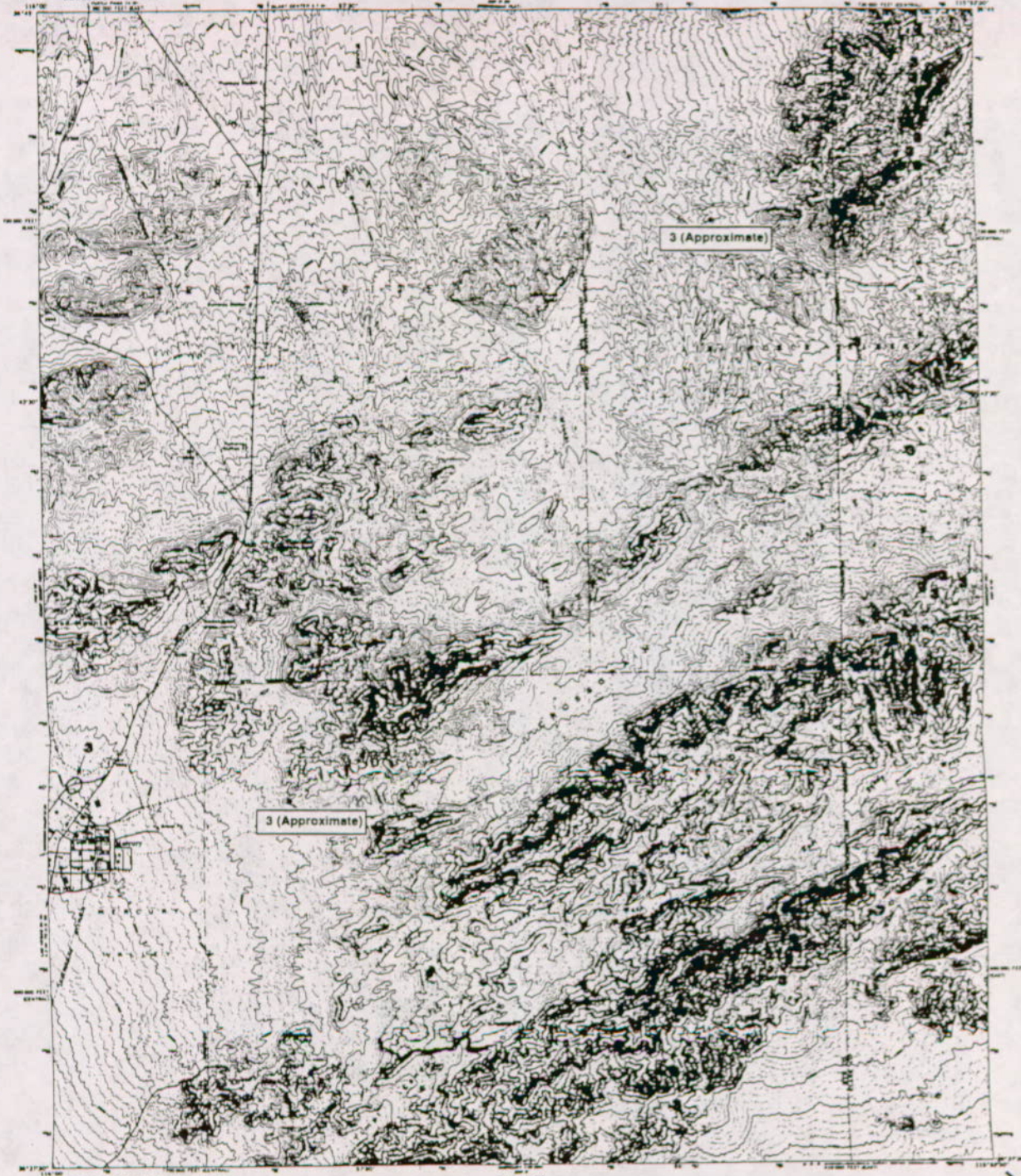
Scale 1:50,000  
CONTOUR INTERVAL, 50 FEET  
DOTTED LINES REPRESENT AIRPORT LOCATIONS  
VERTICAL CURVATURE CORRECTED BY 1983

INDIAN SPRINGS SE, NEV.  
7.5-MINUTE SERIES  
1973  
G.S. 100-11130-1-2

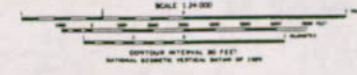
**Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range**

The Nature Conservancy	Species of Concern	Other Sources
ARME PHPA	<i>Arctomecon merriamii</i> <i>Phacelia parishii</i>	3 none





Revised, edited, and published by the Geological Survey  
in cooperation with the Atomic Energy Commission  
under the Atomic Energy Act, and the  
Energy Reorganization Act of 1954.  
Topographic base map by the Geological Survey,  
1963. Contour interval 20 feet. Scale 1:250,000.  
Photographic base map by the Geological Survey,  
1963. Contour interval 20 feet. Scale 1:250,000.  
This map is published under the authority of the  
Secretary of the Interior, Department of the Interior,  
Washington, D.C. 20540.



SOIL CLASSIFICATION  
Very Dark Brown      Light Brown  
Dark Brown      Unconsolidated

MERCURY, NEV.  
1:250,000 SERIES  
FIRST EDITION 1963

Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

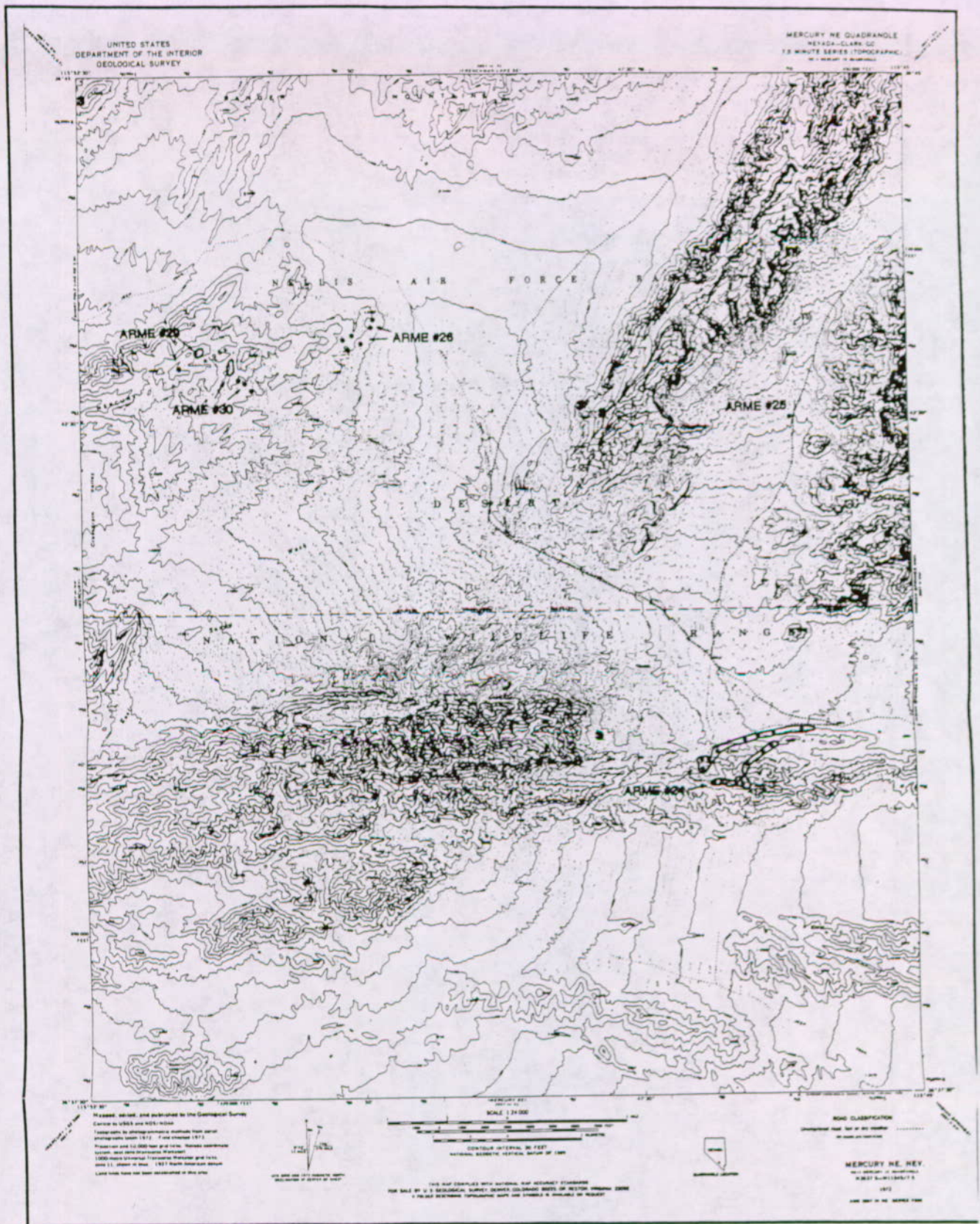
Species of Concern

Other Sources

none

*Arctomecon merriamii*

3



Threatened and Endangered Plant Survey  
 Nellis Air Force Base  
 Bombing and Gunnery Range

The Nature Conservancy

Species of Concern

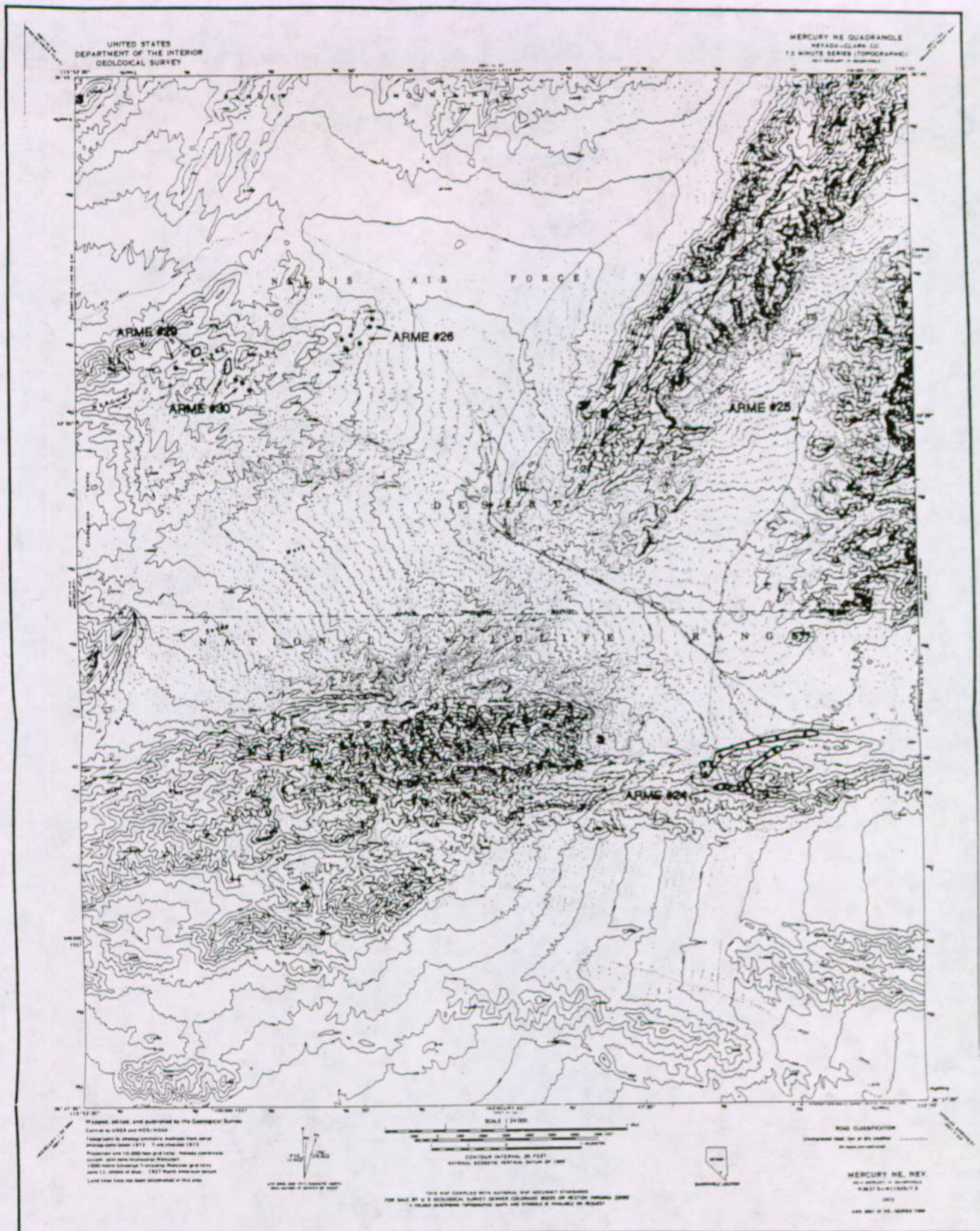
Other Sources

ARME

*Arctomecon merriamii*

3





Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

Species of Concern

Other Sources

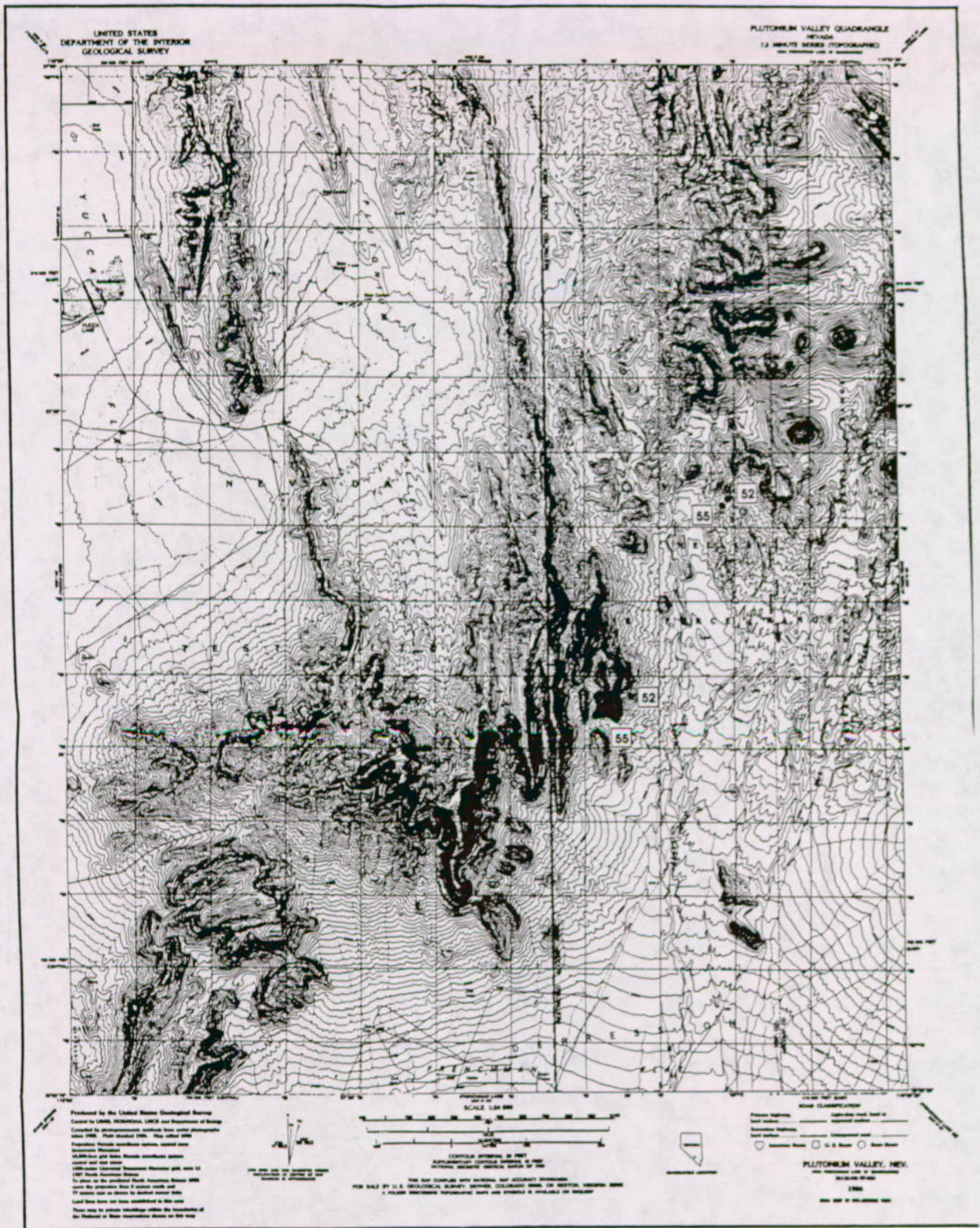
ARME

*Arctomecon merriamii*

3







Threatened and Endangered Plant Survey  
 Nellis Air Force Base  
 Bombing and Gunnery Range

The Nature Conservancy

none  
 none

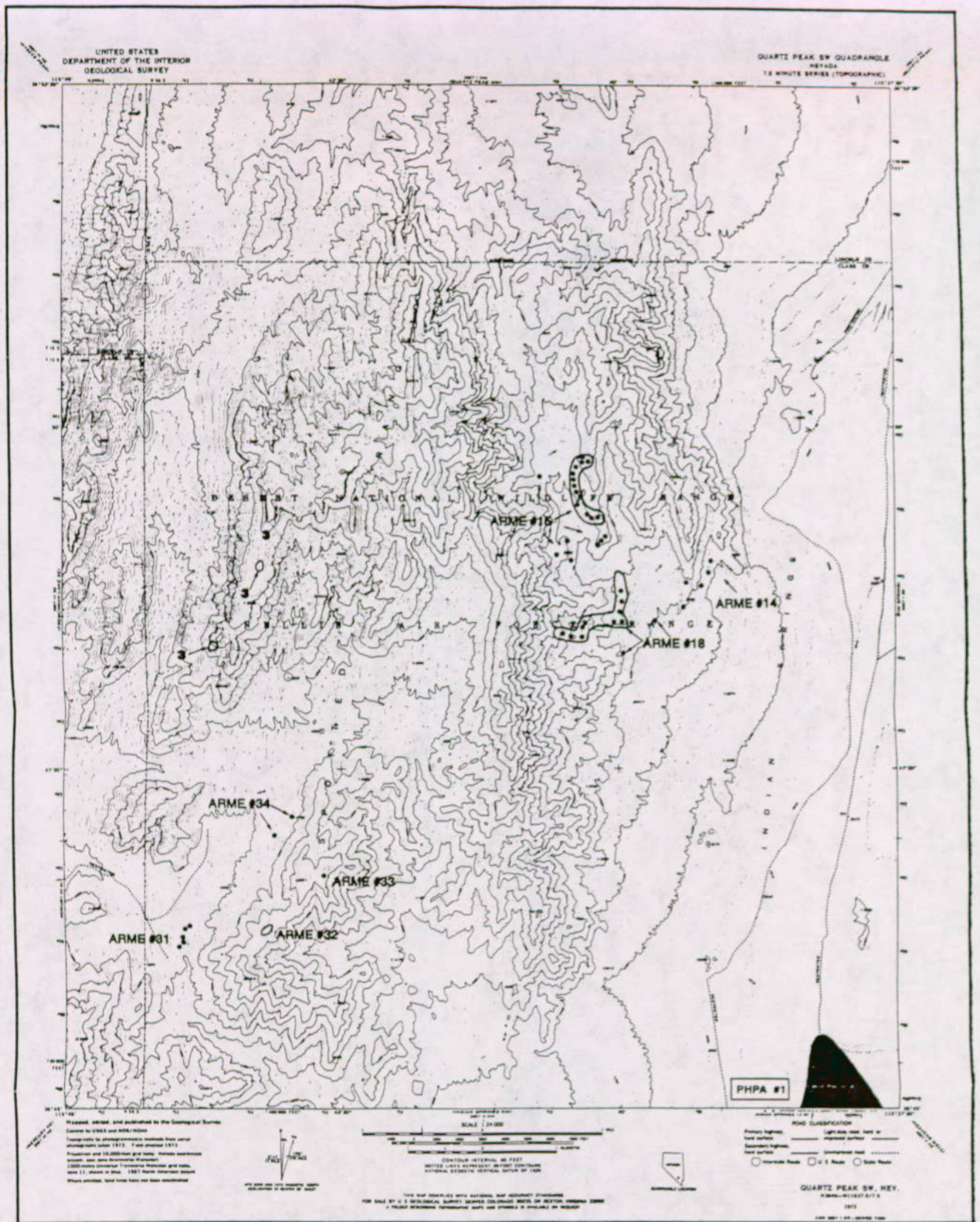
Species of Concern

*Astragalus funereus*  
*Phacelia beatleyae*

Other Sources

52  
 55





Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

Species of Concern

Other Sources

ARME  
PHPA

*Arctomecon merriamii*  
*Phacelia parishii*

3  
none



Threatened and Endangered Plant Survey Nellis Air Force Base Bombing and Gunnery Range		
The Nature Conservancy	Species of Concern	Other Sources
ARME	<i>Arctomecon merriamii</i>	3
ASAC	<i>Astragalus ackermanii</i>	36
CHER	<i>Chrysothamnus eremobius</i>	none



Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

Species of Concern

Other Sources

none

*Astragalus beatleyae*

51





Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

Species of Concern

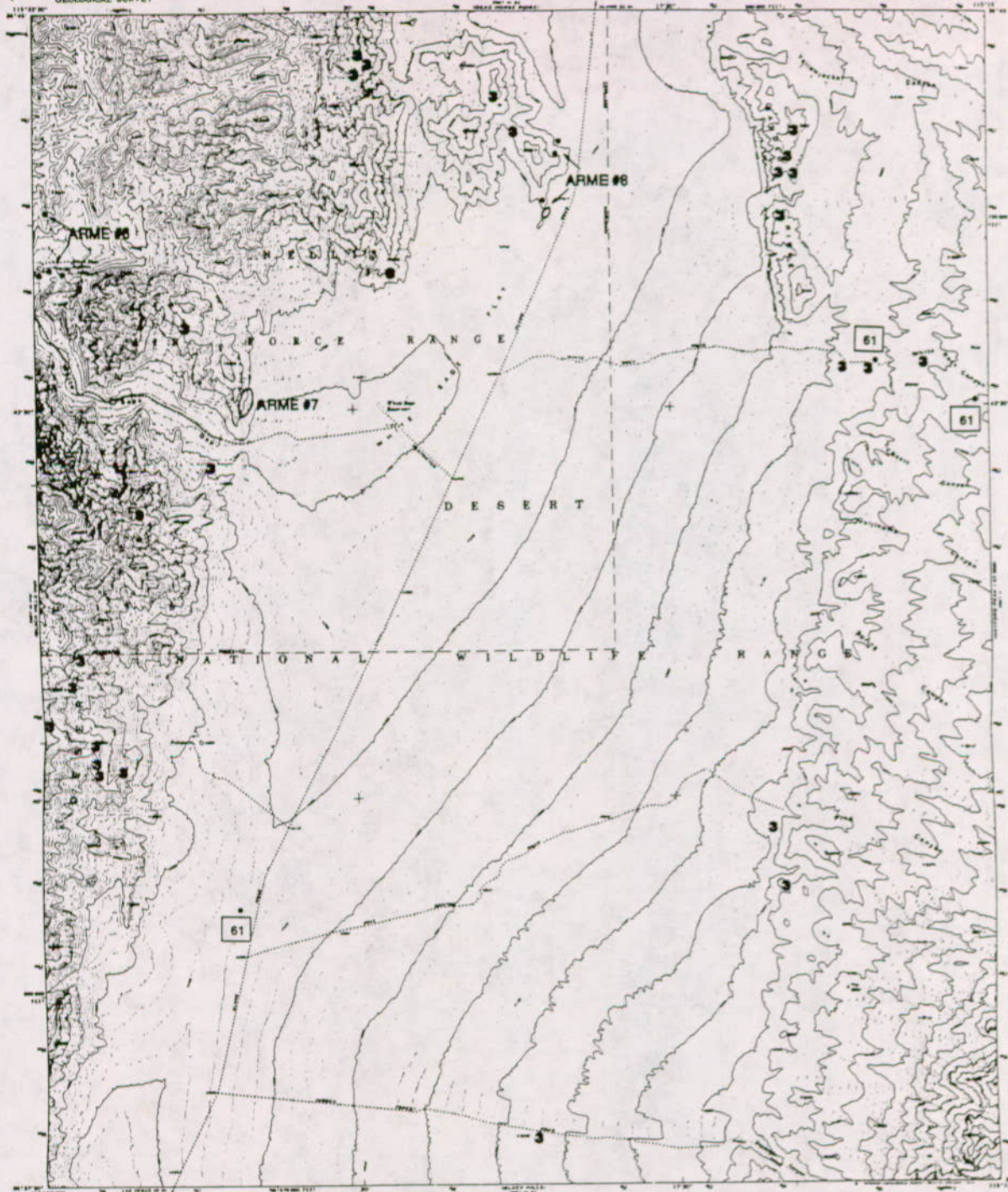
Other Sources

ASBE

*Astragalus beatleyae*

51





Revised, edited, and published by the Geographical Names  
Center in 1983 and 1984/1984  
Transferable to photostatic copies from paper  
reproduction since 1973. For details 1973  
Production and 10,000 topographic maps. Revised conditions  
shown. Map data reproduced from  
1980-1982 (original) 1:50,000 scale topographic maps  
and 1:100,000 scale 1:50,000 scale topographic maps.  
Land here has not been disturbed in this area.



CONTINUOUS INTERVAL 40 FEET  
MAY BE USED TO DETERMINE HORIZONTAL DISTANCE  
THIS MAP COMPLETES WITH NATIONAL MAP SECURITY PROGRAM  
FOR SALE BY U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C. 20508  
A PUBLISHED INFORMATION SERVICE AND PRODUCT OF THE GOVERNMENT

ROAD CLASSIFICATION  
Indicated map for use in the country

WHITE SAND FLAT, NEV.  
WEST 6-111111-1  
1973  
1:50,000 SCALE

Threatened and Endangered Plant Survey  
Nellis Air Force Base  
Bombing and Gunnery Range

The Nature Conservancy

Species of Concern

Other Sources

ARME  
none

*Arctomecon merriamii*  
*Porophyllum pygmaeum*

3  
61

**Appendix G-2**  
**Field Data on Surface Water Resources**  
**of the Nellis Air Force Range**  
**(Baker Environmental and Dames & Moore 1996)**

Note: Reference EIS Figure 3.8-1 and Table 3.8-1.





**CODE DESCRIPTIONS FOR ATTRIBUTES IN GIS TABLE (cont.)**

ATTRIBUTE <sup>1</sup>	CODE <sup>2</sup>	DESCRIPTION	CODE <sup>2</sup>	DESCRIPTION
Wildlife sign: (WS):	AB	- American Badger ( <i>Taxidea taxus</i> )	MO	- Mourning Dove ( <i>Zenaidura macroura</i> )
	AR	- American Robin ( <i>Turdus migratorius</i> )	MD	- Mule Deer ( <i>Odocoileus hemionus</i> )
	BG	- Black-throated Gray Warbler ( <i>Dendroica nigrescens</i> )	ML	- Mountain Lion ( <i>Felis concolor</i> )
	BTS	- Black-throated Sparrow ( <i>Amphispiza bilineata</i> )	MW	- Marsh Wren ( <i>Cistothorus palustris</i> )
	C	- Coyote ( <i>Canis latrans</i> )	NF	- Northern Flicker ( <i>Colaptes auratus</i> )
	CH	- Chukar ( <i>Alectoris chukar</i> )	NM	- Northern Mockingbird ( <i>Mimus polyglottos</i> )
	CM	- California Myotis Bat ( <i>Myotis californicus</i> )	OF	- Olive-sided Flycatcher ( <i>Contopus borealis</i> )
	CO	- Mountain Cottontail ( <i>Sylvilagus nuttalli</i> )	PA	- Pronghorn Antelope ( <i>Antilocapra americana</i> )
	CR	- Common Raven ( <i>Corvus corax</i> )	PF	- Prairie Falcon ( <i>Falco mexicanus</i> )
	CS	- Chipping Sparrow ( <i>Spizella passerina</i> )	RH	- Red-tailed Hawk ( <i>Buteo jamaicensis</i> )
	DB	- Desert Bighorn Sheep ( <i>Ovis canadensis</i> )	RM	- Red-breasted Merganser ( <i>Mergus serrator</i> )
	DSL	- Desert Spiny Lizard ( <i>Sceloporus magister</i> )	PJ	- Pinyon Jay ( <i>Gymnorhinus cyanocephalus</i> )
	DW	- Desert Woodrat ( <i>Neotoma lepida</i> )	RC	- Raccoon ( <i>Procyon lotor</i> )
	GF	- Goldfish ( <i>Carassius auratus</i> )	RT	- Rufous-sided Towhee ( <i>Pipilo erythrophthalmus</i> )
	KF	- Kit-Fox ( <i>Vulpes macrotis nevadensis</i> )	RU	- Raptors (unspecified identities)
	GHO	- Great Horned Owl ( <i>Bubo virginianus</i> )	SO	- Scott's Oriole ( <i>Icterus parisorum</i> )
	GK	- Golden-crowned Kinglet ( <i>Regulus satrapa</i> )	SJ	- Scrub Jay ( <i>Aphelocoma coerulescens</i> )
	GQ	- Gambel's Quail ( <i>Callipepla gambelii</i> )	ST	- Sage Thrasher ( <i>Oreoscoptes montanus</i> )
	GT	- Green-tailed Towhee ( <i>Pipilo chlorurus</i> )	T	- Turkey ( <i>Meleagris gallopavo</i> )
	H	- Horse ( <i>Equus caballus</i> )	WCS	- White-crowned Sparrow ( <i>Zonotrichia leucophrys</i> )
	HF	- House Finch ( <i>Carpodacus mexicanus</i> )	WWP	- Western Wood-pewee ( <i>Contopus sordidulus</i> )
	HL	- Horned Lark ( <i>Eremophila alpestris</i> )	YB	- Yellow-headed Blackbird ( <i>Xanthocephalus xanthocephalus</i> )
	HW	- House Wren ( <i>Troglodytes aedon</i> )	YRW	- Yellow-rumped Warbler ( <i>Dendroica coronata</i> )
	JR	- Jackrabbit ( <i>Lepus californicus</i> )		
	LS	- Lark Sparrow ( <i>Chondestes grammacus</i> )		
	MC	- Mountain Chickadee ( <i>Parus gambeli</i> )		

**Habitat Quality Value**

Rating (HQVR): A, B, C, D, F (scholastic letter-grade equivalent)

<sup>1</sup> See Appendix A for detailed explanations about how attributes were recorded onto field survey dataforms.

<sup>2</sup> The code "NA" (not applicable) is entered in the GIS database table whenever an attribute was not present or not measurable at a given site.

## CODE DESCRIPTIONS FOR ATTRIBUTES IN GIS TABLE

ATTRIBUTE'	CODE?	DESCRIPTION	ATTRIBUTE'	CODE?	DESCRIPTION
<b>Water Resources Types (WR):</b>	MMP	Man-made pond	<b>Dominant Vegetation Elements (DVE):</b>	AM	Prostrate Amaranth ( <i>Amaranthus blifoides</i> )
	MTP	Metal trough from pipe		AW	Arroyo Willow ( <i>Salix lasiolepis</i> )
	PA	Pooled area		BC	Desert Buttercup ( <i>Ranunculus cymbalaria saximontanus</i> )
	S	Seep		BR	Bulrush ( <i>Scirpus validus</i> )
	SFBP	Spring-fed bermed pond		BS	Big Sagebrush ( <i>Artemisia tridentata</i> )
	SIW	Seep with intermittent watercourse		BW	Black Willow ( <i>Salix gooddingii</i> )
	SNSF	Spring, no surface flow		C	Clover ( <i>Trifolium monanthum monanthum</i> )
	SSA	Saturated soil area		CE	Chinese Elm ( <i>Ulmus parviflora</i> )
	W	Well		CG	Cheat-grass ( <i>Bromus tectorum</i> )
	WFBP	Water-filled bermed pond		CT	Cat-tail ( <i>Typha domingensis/T. latifolia</i> )
	WM	Wet meadow		D	Dock ( <i>Rumex crispus</i> )
<b>Inundation Present (IP):</b>	Y	Yes; N - No		DL	Dandelion ( <i>Taraxacum officinale</i> )
<b>Overall Length (OL):</b>	(meters)			DL	Dandelion ( <i>Taraxacum officinale</i> )
<b>Overall Width (OW):</b>	(meters)			FC	Fremont Cottonwood ( <i>Populus fremontii</i> )
<b>Average Depth (AD):</b>	(decimeters)			FWSB	Four-winged Saltbush ( <i>Atriplex canescens canescens</i> )
<b>Depth Range (DR):</b>	(decimeters)			GA	Green Algae ( <i>Chlorophyta-nonspecific identity</i> )
<b>Source-to-Sink Distance (SSD):</b>	(meters)			GO	Gambel Oak ( <i>Quercus gambelii</i> )
<b>Estimated Flow-Volume (EFV):</b>	(liters per minute)			J	Juniper ( <i>Juniperus osteosperma</i> )
<b>Est. Volume of Standing Water (EVSU):</b>	(liters)			JT	Joshua Tree ( <i>Yucca brevifolia</i> )
<b>Substrate Type (ST):</b>				MM	Mountain Mahogany ( <i>Cercocarpus ledifolius</i> )
	BR	Bedrock		NP	Nitrophila ( <i>Nitrophila occidentalis</i> )
	GSSL	Gravelly sandy clay loam		P	Pinyon ( <i>Pinus monophylla</i> )
	GSL	Gravelly sandy loam		PS	Penstemon ( <i>Penstemon-nonspecific identity</i> )
	RA	Rocky alluvium		PW	Pondweed ( <i>Potamogeton pectinatus</i> )
	RCL	Rocky clay loam		R	Rush ( <i>Juncus batiticus, J. nodosus, J. ensifolius montanus</i> )
	RGSL	Rocky sandy gravelly loam		RB	Rabbitbrush ( <i>Chrysothamnus viscidiflorus stenophyllus; C. nauseosus</i> )
	RSSL	Rocky sandy clay loam		RFG	Rabbit's-foot Grass ( <i>Polypogon monspeliensis</i> )
	SCL	Silt clay loam		RO	Russian-Olive ( <i>Elaeagnus angustifolia</i> )
	SSCL	Sandy silt clay loam		RW	Western Ragweed ( <i>Ambrosia psilostachya</i> )
<b>Saturated Soil Present (SSP):</b>	Y	Yes; N - No		SC	Sweet Clover ( <i>Melilotus indicus</i> )
<b>Depth to Water in Pit (DWP):</b>	(centimeters below soil surface)			SD	Sand Dropseed ( <i>Sporobolus cryptandrus</i> )
<b>Est. Surface Area of Saturated Soils (ESASS):</b>	(meters <sup>2</sup> )			SG	Saltgrass ( <i>Distichlis spicata</i> )
<b>Presence of Hydrologic Indicators (PHI):</b>				SH	Salt Heliotrope ( <i>Heliotropium curassavicum</i> )
	CC	Cracked clay		SR	Spike Rush ( <i>Eleocharis macrostachya</i> )
	D	Debris		SW	Slender Willow ( <i>Salix exigua</i> )
	HRZ	Hydrophyte root zones		T	Tamarisk ( <i>Tamarix ramosissima</i> )
	SM	Scour marks		TM	Tansy Mustard ( <i>Descurainia pinnata glabra</i> )
	WM	Water marks		TR	Toad Rush ( <i>Juncus bufonius</i> )
<b>Presence of Hydric Soil Indicators (PHSI):</b>				WR	Wild Rose ( <i>Rosa woodsii</i> )
	OIM	Oxidized iron mottles	<b>Adjacent Vegetation Series (AVS):</b>	BB	Blackbrush
	ROL	Reduced organic layers		CB	Creosote Bursage
				PJ	Pinyon Juniper
				SAB	Sagebrush
				SB	Saltbush

## APPENDIX G.3

### NEVADA BLM SENSITIVE SPECIES LIST

Species designated by the State Director, in cooperation with the State of Nevada Department of Conservation and Natural Resources, that are not already included as BLM Special Status Species under (1) federally listed, proposed, or candidate species; or (2) species listed by the State of Nevada because of potential endangered or extinction. BLM policy is to provide these species with the same level of protection as is provided for candidate species under BLM Manual 6840.06 D.

Scientific Name	Common Name
<b>Mammals</b>	
<i>Eumops perotis californicus</i>	Greater western mastiff bat
<i>Idionycteris phyllotis</i> (= <i>Plecotus p.</i> )	Allen's big-eared bat
<i>Macrotus californicus</i>	California leaf-nosed bat
<i>Microtus montanus fucosus</i>	Pahranagat Valley montane vole
<i>Microtus montanus nevadensis</i>	Ash Meadows montane vole
<i>Myotis ciliolabrum</i>	Small-footed myotis
<i>Myotis evotis</i>	Long-eared myotis
<i>Myotis thysanodes</i>	Fringed myotis
<i>Myotis velifer</i>	Cave myotis
<i>Myotis volans</i>	Long-legged myotis
<i>Myotis yumanensis</i>	Yuma myotis
<i>Nyctinomops macrotis</i> (= <i>Tadarida m.</i> , <i>T. molossa</i> )	Big free-tailed bat
<i>Plecotus townsendii pallescens</i>	Pale Townsend's big-eared bat
<i>Plecotus townsendii townsendii</i>	Pacific Townsend's big-eared bat
<i>Sorex preblei</i>	Preble's shrew
<i>Thomomys umbrinus abstrusus</i>	Fish Spring pocket gopher
<i>Thomomys umbrinus curtatus</i>	San Antonio pocket gopher
<b>Birds</b>	
<i>Chlidonias niger</i>	Black tern
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover
<i>Centrocercus urophasianus</i>	Western sage grouse
<i>Oreortyx pictus</i>	Mountain quail
<i>Phainopepla nitens</i>	Phainopepla
<b>Reptiles</b>	
<i>Sauromalus obesus</i>	Chuckwalla
<b>Amphibians</b>	
<i>Bufo microscaphus microscaphus</i>	Arizona toad
<i>Bufo nelsoni</i>	Amargosa toad
<b>Fish</b>	
<i>Catostomus latipinnis</i>	Flannelmouth sucker
<i>Catostomus sp.</i>	Wall Canyon sucker
<i>Crenichthys baileyi thermophilus</i>	Moorman White River springfish
<i>Gila bicolor spp.</i>	Hot Creek Valley tui chub
<i>Gila bicolor isolata</i>	Independence Valley tui chub
<i>Lepidomeda mollispinis mollispinis</i>	Virgin River spinedace
<i>Oncorhynchus clarki utah</i>	Bonneville cutthroat trout
<i>Oncorhynchus mykiss gibbsi</i>	Interior redband trout

<i>Rhinichthys osculus</i> ssp.	Meadow Valley Wash speckled dace
<i>Rhinichthys osculus</i> ssp.	Oasis Valley speckled dace
<b>Snails</b>	
<i>Fluminicola merriami</i>	Pahranagat pebblesnail
<i>Oreohelix nevadensis</i>	Schell Creek mountainsnail
<i>Pyrgulopsis micrococcus</i>	Oasis Valley springsnail
<i>Pyrgulopsis wongi</i>	Wong's springsnail
<i>Pyrgulopsis</i> sp.	Red Rocks springsnail #1
<i>Pyrgulopsis</i> sp.	Red Rocks springsnail #2
<i>Tryonia clathrata</i>	Grated tryonia
<b>Clams &amp; Mussels</b>	
<i>Anodonta californiensis</i>	California floater
<b>True Bugs</b>	
<i>Pelocoris shoshone shoshone</i>	Pahranagat naucorid bug
<b>Beetles</b>	
<i>Aegialia crescenta</i>	Crescent Dune aegialian scarab
<i>Aegialia hardyi</i>	Hardy's aegialian scarab
<i>Aegialia magnifica</i>	Large aegialian scarab
<i>Aphodius</i> sp.	Big Dune aphodius scarab
<i>Aphodius</i> sp.	Crescent Dune aphodius scarab
<i>Aphodius</i> sp.	Sand Mountain aphodius scarab
<i>Miloderes</i> sp.	Rulien's miloderes weevil
<i>Pseudocotalpa giulianii</i>	Giuliani's dune scarab
<i>Serica</i> sp.	Crescent Dune serican scarab
<i>Serica</i> sp.	Sand Mountain serican scarab
<i>Stenelmis calida calida</i>	Devil's Hole warm spring riffle beetle
<i>Stenelmis calida moapa</i>	Moapa warm springs riffle beetle
<b>Butterflies and Moths</b>	
<i>Cercyonis pegala carsonensis</i>	Carson Valley wood nymph
<i>Cercyonis pegala</i> ssp.	White River wood nymph
<i>Chlosyne acastus</i>	Spring Mountains acastus checkerspot
<i>Euphilotes battoides</i> ssp.	Baking Powder Flat blue
<i>Euphilotes enoptes</i> ssp.	Spring Mountains dark blue
<i>Euphilotes palliscens</i> ssp.	Sand Mountain blue
<i>Euphydryas editha monoensis</i>	Mono checkerspot
<i>Hesperia comma</i> ssp.	Spring Mountains comma skipper
<i>Hesperia uncas</i> ssp.	Railroad Valley skipper
<i>Hesperopsis graciellae</i>	MacNeill sooty wing skipper
<i>Icaricia icarioides</i>	Spring Mountains icarioides blue
<i>Limenitis archippus lahontani</i>	Nevada viceroy
<i>Limenitis weidemeyerii nevadae</i>	Nevada admiral
<i>Phyiodes pascoensis</i> ssp.	Steptoe Valley crescent spot
<i>Polites sabuleti sinemaculata</i>	Denio sandill skipper
<i>Speyeria atlantis greyi</i>	Grey's silverspot
<i>Speyeria nokomis</i> ssp.	Carson Valley silverspot
<b>Plants</b>	
<i>Angelica scabrida</i>	Rough angelica
<i>Antennaria arcuata</i>	Meadow pussytoes
<i>Arabis bodiensis</i>	Bodie Hills rockcress
<i>Arabis falcatoria</i>	Grouse Creek rockcress



<i>Arabis falcifracta</i>	Elko rockcress
<i>Arabis ophira</i>	Ophir rockcress
<i>Arctostaphylos uva-ursi</i>	White bearpoppy; Merriam b.
<i>Asclepias eastwoodiana</i>	Eastwood milkweed
<i>Astragalus aequalis</i>	Clokey milkvetch; equal m.
<i>Astragalus amphioxys</i> var. <i>mucimonum</i>	Sheep Mountain milkvetch; crescent m.
<i>Astragalus anserinus</i>	Goose Creek milkvetch
<b>Plants</b>	
<i>Astragalus eurylobus</i>	Needle Mountains milkvetch; Peck Station m.
<i>Astragalus funereus</i>	Black woollypod; Funeral milkvetch; black m.; Rhyolite m.
<i>Astragalus gilmanii</i>	Gilman milkvetch
<i>Astragalus inyoensis</i>	Inyo milkvetch
<i>Astragalus mokiensis</i>	Mokiak milkvetch
<i>Astragalus oophorus</i> var. <i>lavinii</i>	Lavin eggvetch
<i>Astragalus remotus</i>	Spring Mountain milkvetch
<i>Astragalus robbinsii</i> var. <i>occidentalis</i>	Lamoille Canyon milkvetch; Ruby m.; Robbin's western m.
<i>Astragalus solitarius</i>	Lonesome milkvetch; weak m.
<i>Astragalus tiehmii</i>	Tiehm milkvetch
<i>Astragalus toquimanus</i>	Toquima milkvetch
<i>Astragalus uncialis</i>	Currant milkvetch
<i>Botrychium crenulatum</i>	Dainty moonwort; scalloped m.; crenulate m.
<i>Calochortus striatus</i>	Alkali mariposa lily; striped m. l.
<i>Camissonia megalantha</i>	Cane Spring evening-primrose; C.S. suncup
<i>Chrysothamnus eremobius</i>	Remote rabbitbrush; Pintwater r.
<i>Collomia renacta</i>	Barren Valley collomia
<i>Cordylantus tecopensis</i>	Tecopa birdsbeak
<i>Cryptantha schoolcraftii</i>	Schoolcraft catseye
<i>Cryptantha welshii</i>	White River catseye; Welsh c.
<i>Cusickiella quadricostata</i>	Bodie Hills draba; four-rib whitlowgrass
<i>Cymopterus goodrichii</i>	Goodrich biscuitroot; G. parsley
<i>Cymopterus ripleyi</i> var. <i>saniculoides</i>	Sanicle biscuitroot; Ripley b.
<i>Didymodon nevadensis</i>	Gold Butte moss
<i>Enceliopsis argophylla</i>	Silverlead sunray
<i>Epilobium nevadense</i>	Nevada willowherb
<i>Erigeron latus</i>	Broad fleabane
<i>Erigeron ovinus</i>	Sheep fleabane
<i>Eriogonum anemophilus</i>	Windloving buckwheat
<i>Eriogonum bifurcatum</i>	Pahrump Valley buckwheat; forked b.
<i>Eriogonum corymbosum</i> var. <i>aureum</i>	Golden buckwheat
<i>Eriogonum crosbyae</i>	Crosby buckwheat
<i>Eriogonum heermannii</i> var. <i>clokeyi</i>	Clokey buckwheat
<i>Eriogonum lewisii</i>	Lewis buckwheat
<i>Eriogonum prociduum</i>	Prostrate buckwheat; Austin b.
<i>Eriogonum robustum</i>	Altered andesite buckwheat
<i>Eriogonum tiehmii</i>	Tiehm buckwheat
<i>Frasera pahutensis</i>	Pahute green gentian; P. elkweed
<i>Galium hilendiae</i> ssp. <i>kingstonense</i>	Kingston Mountains bedstraw
<i>Glossopetalon pungens</i> var. <i>glabra</i>	Smooth dwarf greasebush
<i>Glossopetalon pungens</i> var. <i>pungens</i>	Dwarf greasebush
<i>Gratiola longepappus</i> var. <i>graniticus</i>	Long Mountain tonestus
<i>Aster caelestis</i>	Red Rock Canyon aster

<i>Ivesia aperta</i> var. <i>aperta</i>	Sierra Valley ivesia
<i>Ivesia arizonica</i> var. <i>saxosa</i>	Rock purpusia
<i>Ivesia jaegeri</i>	Jaeger ivesia
<i>Ivesia pityocharis</i>	Pine Nut Mountains ivesia; P.N.M. mousetails
<i>Ivesia rhypara</i> var. <i>rhypara</i>	Grimy ivesia
<i>Ivesia webberi</i>	Webber ivesia
<i>Jamesia tetrapetala</i>	Waxflower
<i>Lathyrus grimesii</i>	Grimes vetchling
<i>Leptodactylon glabrum</i>	Bruneau River prickly phlox; Owyhee p.p.
<i>Lomatium graveolens</i> var. <i>clarkii</i>	Clark parsley; Zion p.
<i>Lupinus holmgrenanus</i>	Holmgren lupine
<i>Mentzelia mollis</i>	Smooth stickleaf
<i>Mentzelia packardiae</i>	Packard stickleaf
<i>Oryctes nevadensis</i>	Oryctes
<i>Penstemon albomarginatus</i>	White-margined beardtongue
<i>Penstemon arenarius</i>	Nevada dune beardtongue
<i>Penstemon bicolor</i> spp. <i>Bicolor</i>	Yellow twotone beardtongue
<i>Penstemon concinnus</i>	Tunnel Springs beardtongue
<i>Penstemon floribundus</i>	Cordelia beardtongue
<i>Penstemon fruitciformis</i> ssp. <i>amargosae</i>	Death Valley beardtongue; Amargosa bush penstemon
<i>Penstemon pahutensis</i>	Pahute Mesa beardtongue
<i>Penstemon pudicus</i>	Bashful beardtongue
<i>Phacelia beatleyae</i>	Beatley scorpion plant
<i>Phacelia minutissima</i>	Lease phacelia; dwarf p.
<i>Phacelia monoensis</i>	Mono County phacelia
<i>Phacelia parishii</i>	Parish phacelia; playa p.
<i>Pinus washoensis</i>	Washoe pine
<i>Polyctenium fremontii</i> var. <i>confertum</i>	Crowded combleaf
<i>Prophyllum pygmaeum</i>	Pygmy poreleaf
<i>Potentilla basaltica</i>	Soldier Meadows cinquefoil; basalt c.; purple potentilla
<i>Potentilla cottamii</i>	Cottam cinquefoil
<i>Salvia dorrii</i> var. <i>clokeyi</i>	Clokey mountain sage; C. purple s.
<i>Sclerocactus blainei</i>	Blaine pincushion; B. fishhook cactus
<i>Sclerocactus nyensis</i>	Tonopah fishhook cactus
<i>Sclerocactus schlesseri</i>	Schlesser pincushion; S. fishhook cactus
<i>Silene nachlingerae</i>	Nachlinger catchfly; N. champion
<i>Sphaeralcea caespitosa</i>	Jones globemallow
<i>Streptanthus oliganthus</i>	Mason Mountain jewelflower; M.M. twistflower
<i>Stroganowia tiehmii</i>	Tiehm stroganowia
<i>Townsendie jonesii</i> var. <i>tumulosa</i>	Charleston grounddaisy
<i>Trifolium andinum</i> var. <i>podocephalum</i>	Currant Summit clover
<i>Trifolium leibergii</i>	Leiberg clover
<i>Viola lithion</i>	Rock violet

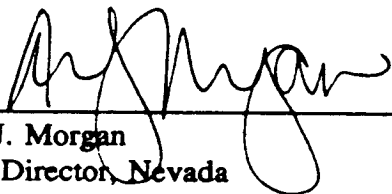
The species of animals listed below were not included on the recently approved (4/97) Nevada BLM Sensitive Species List because they are "protected" under the State of Nevada Administrative Codes (NAC), and would (it was assumed) therefore be included automatically as BLM Special Status Species under BLM's policy (6840 Manual) of being "listed or proposed for listing by a State in a category implying potential endangerment or extinction." However, the way in which NAC categorizes "protected" animal species does not fit well with the BLM's definition. For example, NAC 503.050 species all species of nongame birds "protected by provisions of federal law" as "protected" under NAC. Thus, all birds protected by the Migratory Bird Treaty Act (includes almost every native bird species in North America) would be BLM Special Status Species because they are "protected" by the State of Nevada. For other "protected" animal groups, i.e., fishes, the NAC include further categories of "sensitive," "threatened," and "endangered," which would unquestionably fit the BLM's definition. Therefore, to eliminate confusion and to ensure that only State-"protected" animal species which fit within the BLM's policy (Manual) definition are included as BLM Special Status Species, the following "protected" animal species listed in the NAC are proposed to be added to the BLM Nevada Sensitive Species List.

Please review the following list of proposed species additions (several species of birds from the Partners in Flight priority management list have been added to the previous proposed list) to the BLM Sensitive Species List for Nevada, and send comments by Friday, January 23, to Randy McNatt at the BLM State Office via GroupWise or at 702/785-6473.


Proposed Additions to Nevada BLM/s Sensitive Species List	
<i>Mammals</i>	
<i>derma maculatum</i>	Spotted bat
<i>Birds</i>	
<i>Accipiter gentilia</i>	Goshawk
<i>Aquila chrysaetos</i>	Golden eagle
<i>Asio flammeus</i>	Short-eared owl
<i>Asyndesmus lewis</i>	Lewis' woodpecker
<i>Buteo regalis</i>	Ferruginous hawk
<i>Buteo swainsoni</i>	Swainson's hawk
<i>Coccyzus americanus</i>	Yellow-billed cuckoo
<i>Dendroica petechia</i>	Yellow warbler
<i>Dolichonyx oryzivorus</i>	Bobolink
<i>Empidonax trailli</i>	Willow flycatcher
<i>Geothlypis trichas</i>	Yellowthroat
<i>Icteria virens</i>	Yellow-breasted chat
<i>Numenius americanus</i>	Long-billed curlew
<i>Opororis tolmiei</i>	MacGillivray's warbler
<i>Otus flammeolus</i>	Flammulated owl
<i>Pandion haliaetus</i>	Osprey
<i>Pelecanus erythrorhynchos</i>	White pelican
<i>Phainopepla nitens</i>	Phainopepla
<i>Speotyto cunicularia</i>	Burrowing owl
<i>Vermivora celata</i>	Orange-crowned warbler
<i>Vireo bellii</i>	Bell's vireo
<i>Vireo vicinior</i>	Gray vireo
<i>Wilsonia pusilla</i>	Wilson's warbler

<i>Reptiles</i>	
<i>Heloderma suspectum</i>	Gila monster
<i>Fish</i>	
<i>Catostomus clarki intermedius</i>	White River desert sucker
<i>Catostomus clarki</i> ssp.	Meadow Valley Wash desert sucker
<i>Fish</i>	
<i>Crenichthys baileyi albivallis</i>	Preston White River springfish
<i>Gila bicolor euchila</i>	Fish Creek Springs tui chub
<i>Gila bicolor newarkensis</i>	Newark Valley tui chub
<i>Gila bicolor</i> ssp.	Big Smoky Valley tui chub
<i>Gila bicolor</i> ssp.	Fish Lake Valley tui chub
<i>Gila bicolor</i> ssp.	Railroad Valley tui chub
<i>Gila robusta seminuda</i> (Moapa River population only)	Virgin River roundtail chub
<i>Lepidomeda mollispinis mollispinis</i>	Virgin River spinedace
<i>Relictus solitarius</i>	Relict dace
<i>Rhinichthys osculus lariversi</i>	Big Smoky Valley speckled dace
<i>Rhinichthys osculus moapae</i>	Moapa speckled dace
<i>Rhinichthys osculus velifer</i>	White River speckled dace
<i>Rhinichthys osculus</i> ssp.	Monitor Valley speckled dace

APPROVED BY

  
 \_\_\_\_\_  
 Ann J. Morgan  
 State Director, Nevada  
 Bureau of Land Management

3-31-97  
 \_\_\_\_\_  
 Date

  
 \_\_\_\_\_  
 Peter G. Morros, Director  
 Nevada Department of Conservation and  
 Natural Resources

4-3-97  
 \_\_\_\_\_  
 Date

# Appendix H

## MINORITY AND LOW-INCOME POPULATION DATA

**Table H-1. Minority and Low-Income Populations by Census Tract/Block Numbering Area (BNA)**  
(page 1 of 3)

	County	Percent Minority	Disproportionately High <sup>(a)</sup>	Percent Low-Income <sup>(b)</sup>	Disproportionately High <sup>(a)</sup>
ROI <sup>(c)</sup>	NA	24.1	---	10.4	---
Clark County	NA	24.5	---	10.3	---
Lincoln County	NA	8.2	---	13.1	---
Nye County	NA	12.0	---	10.3	---
<b>Census Tracts/BNAs</b>					
000101	Clark	22.8		8.7	
000102	Clark	18.6		11.1	Yes
000103	Clark	15.4		9.0	
000104	Clark	14.7		7.8	
000105	Clark	14.1		5.7	
000201	Clark	70.7	Yes	17.8	Yes
000202	Clark	22.3		9.5	
000301	Clark	90.3	Yes	33.3	Yes
000302	Clark	94.3	Yes	52.1	Yes
0004	Clark	49.4	Yes	25.1	Yes
000502	Clark	47.2	Yes	16.0	Yes
000503	Clark	50.9	Yes	24.4	Yes
000504	Clark	64.3	Yes	33.9	Yes
000506	Clark	26.2	Yes	6.6	
000507	Clark	31.9	Yes	10.3	
000508	Clark	33.5	Yes	5.2	
000509	Clark	29.4	Yes	9.2	
0006	Clark	29.7	Yes	19.0	Yes
0007	Clark	37.9	Yes	18.0	Yes
0008	Clark	28.3	Yes	19.2	Yes
0009	Clark	36.4	Yes	18.3	Yes
001097	Clark	13.2		6.3	
001098	Clark	10.7		4.1	
0011	Clark	62.1	Yes	28.1	Yes
0012	Clark	23.5		8.6	
0013	Clark	23.7		11.5	Yes
0014	Clark	22.9		7.7	
0015	Clark	15.4		11.9	Yes
001602	Clark	27.1	Yes	8.6	
001603	Clark	22.9		7.8	
001604	Clark	15.6		8.6	
001701	Clark	17.2		8.6	
001702	Clark	12.1		9.5	
001703	Clark	12.7		5.0	
001704	Clark	13.4		3.5	
001705	Clark	18.1		6.7	
001801	Clark	12.0		6.2	
001802	Clark	19.3		6.5	
0019	Clark	29.4	Yes	11.3	Yes
0020	Clark	19.3		12.7	Yes
002201	Clark	18.5		11.4	Yes
002202	Clark	29.0	Yes	13.1	Yes
0023	Clark	20.7		17.7	Yes

Table H-1. Minority and Low-Income Populations by Census Tract/BNA

(page 2 of 3)

	County	Percent Minority	Disproportionately High <sup>(a)</sup>	Percent Low-Income <sup>(b)</sup>	Disproportionately High <sup>(a)</sup>
002401	Clark	28.1	Yes	18.6	Yes
002402	Clark	36.2	Yes	15.0	Yes
002501	Clark	15.7		10.6	Yes
002502	Clark	23.2		14.8	Yes
0026	Clark	22.0		13.9	Yes
002701	Clark	20.4		11.4	Yes
002702	Clark	22.3		9.2	
002803	Clark	13.0		3.5	
002804	Clark	10.0		4.9	
002805	Clark	13.9		5.0	
002806	Clark	16.2		6.9	
002905	Clark	13.4		4.5	
002906	Clark	13.0		3.4	
002907	Clark	13.0		4.4	
002908	Clark	19.7		1.1	
002909	Clark	14.2		1.0	
002910	Clark	14.2		3.3	
002911	Clark	15.9		3.1	
002912	Clark	18.1		8.5	
002913	Clark	23.2		12.0	Yes
002914	Clark	13.4		7.7	
003001	Clark	12.7		5.9	
003002	Clark	14.6		3.8	
0031	Clark	16.7		4.6	
003201	Clark	7.2		3.6	
003202	Clark	11.1		2.9	
0033	Clark	8.9		4.7	
003401	Clark	39.3	Yes	18.1	Yes
003403	Clark	12.4		4.2	
003404	Clark	13.1		3.7	
003405	Clark	16.4		4.1	
003406	Clark	17.1		6.5	
003407	Clark	16.6		6.6	
0035	Clark	93.2	Yes	39.9	Yes
003601	Clark	22.6		7.8	
003602	Clark	96.4	Yes	39.9	Yes
0037	Clark	97.4	Yes	15.1	Yes
0038	Clark	75.0	Yes	31.1	Yes
003997	Clark	45.9	Yes	7.4	
003998	Clark	41.7	Yes	34.1	Yes
0040	Clark	44.9	Yes	12.5	Yes
0041	Clark	32.4	Yes	9.7	
0042	Clark	48.5	Yes	18.1	Yes
0043	Clark	65.2	Yes	24.3	Yes
0044	Clark	65.8	Yes	21.6	Yes
0045	Clark	58.6	Yes	9.5	
0046	Clark	66.0	Yes	28.4	Yes
004702	Clark	27.8	Yes	15.8	Yes

*Nellis Air Force Range Renewal LEIS*

**Table H-1. Minority and Low-Income Populations by Census Tract/BNA**  
(page 3 of 3)

	County	Percent Minority	Disproportionately High <sup>(a)</sup>	Percent Low-Income <sup>(b)</sup>	Disproportionately High <sup>(a)</sup>
004703	Clark	41.1	Yes	12.0	Yes
004704	Clark	42.4	Yes	12.0	Yes
004705	Clark	38.1	Yes	17.8	Yes
004706	Clark	21.1		10.6	Yes
004897	Clark	12.4		9.3	
004898	Clark	28.1	Yes	7.8	
004901	Clark	18.4		7.3	
004902	Clark	24.6	Yes	6.8	
004903	Clark	23.1		3.6	
005001	Clark	12.2		9.1	
005002	Clark	20.5		8.1	
0051	Clark	11.8		4.4	
0052	Clark	14.5		11.6	Yes
005301	Clark	13.1		2.2	
005302	Clark	8.6		4.5	
005401	Clark	17.7		10.8	Yes
005402	Clark	18.8		14.7	Yes
005403	Clark	9.2		6.1	
005501	Clark	4.8		7.8	
005502	Clark	5.2		3.7	
005503	Clark	6.9		10.1	
005504	Clark	6.1		4.6	
005601	Clark	20.1		7.4	
005602	Clark	9.8		9.7	
005603	Clark	13.8		11.1	Yes
0057	Clark	12.7		10.3	
005897	Clark	14.4		5.7	
005898	Clark	20.8		6.7	
0059	Clark	46.6	Yes	18.6	Yes
9501	Lincoln	8.6		9.1	
9502	Lincoln	6.9		0.0	
9503	Lincoln	6.2		16.4	Yes
9504	Lincoln	9.3		17.1	Yes
9801	Nye	18.2		5.9	
9802	Nye	10.5		9.0	
9803	Nye	11.3		16.3	Yes
9804	Nye	8.1		11.8	Yes
9805	Nye	29.5	Yes	4.7	

Notes: (a) A census tract/Block Numbering Area (BNA) is deemed to have a disproportionately high percentage of persons in minority populations and/or low-income populations if the census tract percentage is higher than the percentage in the ROI or if the minority percentage is greater than 50 percent.  
(b) Low-income is measured by identifying the number of persons below poverty level (\$12,764 for a family of four in 1989, as reported in the 1990 Census of Population and Housing).  
(c) The ROI is comprised of three counties: Clark, Lincoln, and Nye counties in Nevada.

Source: SAIC 1997; U.S. Department of Commerce 1991 and 1992.



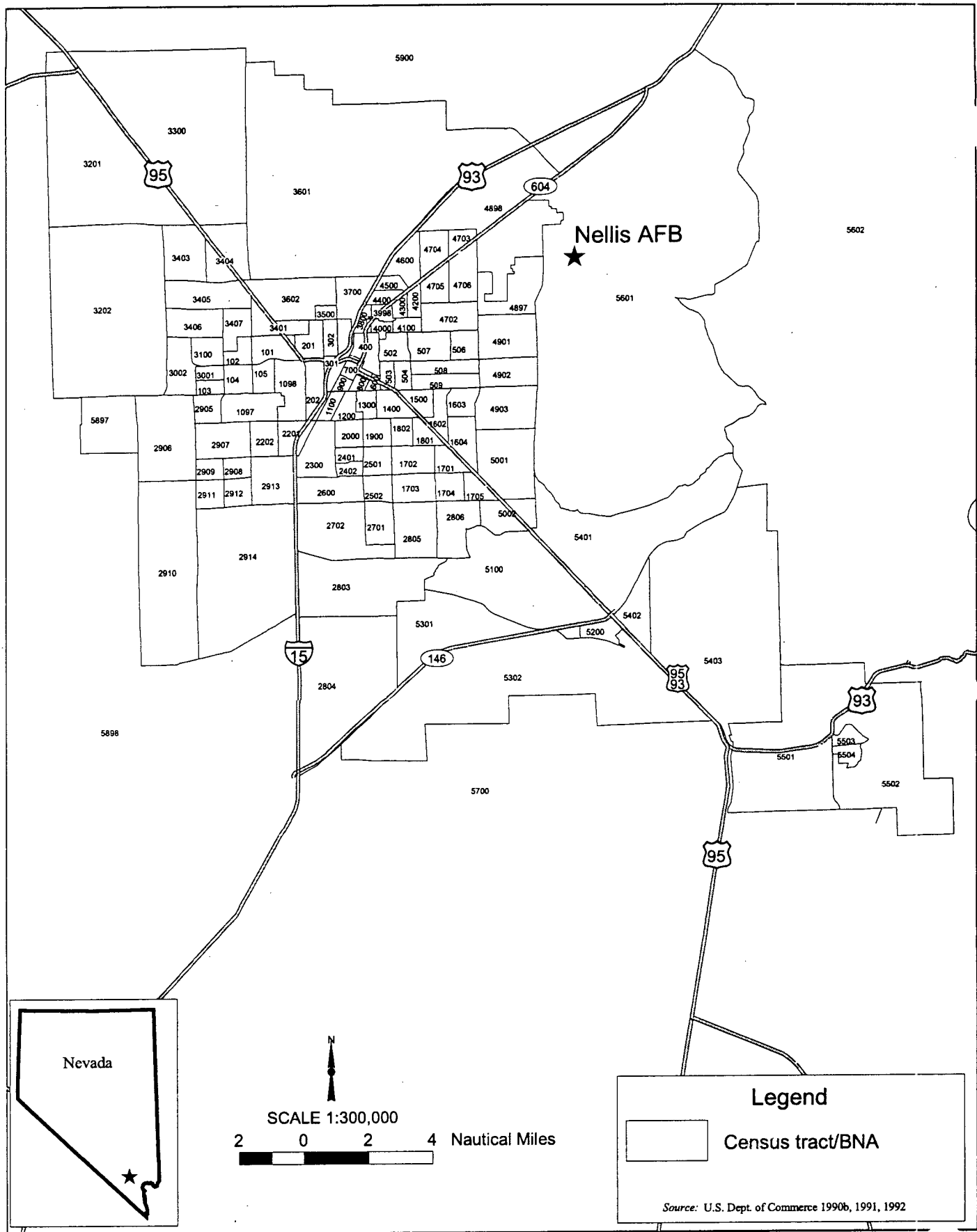


Figure H-1. Census Tract/BNAs in Clark, Lincoln, and Nye Counties (detail) (see also Figure 3.13-2)

# Appendix I

**AIR QUALITY DATA ASSOCIATED WITH OPERATION  
AND MAINTENANCE OF NELLIS AIR FORCE RANGE**

**ESTIMATED ANNUAL AVERAGE EMISSIONS ASSOCIATED WITH  
OPERATION AND MAINTENANCE OF NELLIS AIR FORCE RANGE**

**Table 1. Emissions Source Data**

Emissions Source (a)	Annual Fuel Use		Hours Per Year	Miles Per Year
	Gasoline (Gals)	Diesel (Gals)		
Generators:				
≤ 15 KW	17,180	38,516	35,088	NA
> 15 KW	NA	478,033	129,267	NA
Steam	NA	412,000	ND	NA
Vehicles:				
≤ 1 ton	1,156,792	73,838	NA	12,306,300
> 1 ton	94,361	283,083	NA	3,272,440
Notes:				
(a) Data covers Air Force, DOE, and contractor personnel ground activities, acres, targets, and roads used during the operations and maintenance of the Nellis Air Force Range (see Appendix A.6).				
NA = Not applicable.				
ND = No data.				

**Table 2. Combustion Emission Factors for Sources Associated with Operation and Maintenance of the Nellis Air Force Range**

Emissions Source	Fuel Type	Emission Factors							Source
		TOG	VOC	CO	NOx	SO2	PM	PM10	
		(Pounds per 1,000 Gallons)							
Generators: ≤ 15 KW	Gasoline	275.8	266.9	7,967.8	207.1	10.7	12.7	12.5	(a)
≤ 15 KW	Diesel	57.6	48.0	130.2	604.3	39.7	42.5	41.6	(b)
> 15 KW	Diesel	57.6	48.0	130.2	604.3	39.7	42.5	41.6	(b)
Steam	Diesel	2.3	2.2	6.6	95.6	14.2	8.4	4.0	(c)
		(Grams per Mile)							
Vehicles: ≤ 1 ton	Gasoline	NC	3.78	27.90	1.90	NC	NC	NC	(d)
≤ 1 ton	Diesel	NC	0.81	1.22	1.64	NC	NC	NC	(d)
> 1 ton	Gasoline	NC	8.99	75.47	5.93	NC	NC	NC	(d)
> 1 ton	Diesel	NC	2.14	9.59	13.40	NC	NC	NC	(d)

**Notes:**

- (a) From AP-42, Table 3.3-1, Vol. I (EPA 1993). Based on gasoline fuel with heating value of 20,300 Btu/lb, density of 6.26 lb/gal, and sulfur content of 0.2 percent.
- (b) From AP-42, Table 3.3-1, Vol. I (EPA 1993). Based on diesel fuel with heating value of 19,300 Btu/lb, density of 7.1 lb/gal, and sulfur content of 0.2 percent.
- (c) From AP-42, Table 3.1-1, Vol. I (EPA 1993). Based on diesel fuel with heating value of 19,300 Btu/lb, density of 7.1 lb/gal, and sulfur content of 0.2 percent.
- (d) Emission factors are from MOBILE5 Mobile Source Emission Model, released March 26, 1993, based on an average vehicle speed of 25 miles per hour. Combustion emissions of SO2 and particulate matter are not calculated by the model (indicated by "NC"), and are assumed to be negligible.

≤ = Less than or equal to.

> = Greater than.

NC = Not calculated.

**Table 3. Fugitive Dust Emission Factors for Sources Associated with Operation and Maintenance of the Nellis Air Force Range**

Emissions Source	Average Speed (mph)	Ave. Vehicle Weight (tons)	Ave. Number of Wheels	PM10 Emission Factor (Pounds per VMT)	
				Unpaved Road (a)	Paved Road (b)
Vehicles:					
≤ 1 ton	25	0.75	4	0.59	0.018
> 1 ton	25	5	6	2.72	0.018

**Notes:**

- (a) Based on equation 1 in section 11.2.1 of AP-42 (EPA 1993). Silt content of road surface material = 12 percent, and number of days with at least 0.01 inch of precipitation = 45.
- (b) Paved road factor obtained from section 11.2.5 of AP-42 (EPA 1993).

**Table 4. Emissions From Sources Associated with Operation  
and Maintenance of the Nellis Air Force Range**

Emissions Source	Source Type	Emissions (tons per year)				
		VOC	CO	NOx	SO2	PM10
<b>Generators:</b>						
≤ 15 KW	Gasoline	2.3	68.4	1.8	0.1	0.1
≤ 15 KW	Diesel	0.9	2.5	11.6	0.8	0.8
> 15 KW	Diesel	11.5	31.1	144.4	9.5	10.0
Steam	Diesel	0.5	1.4	19.7	2.9	0.8
<b>Vehicles:</b>						
≤ 1 ton	Gasoline	48.2	355.8	24.2	--	--
≤ 1 ton	Diesel	0.7	1.0	1.3	--	--
> 1 ton	Gasoline	8.1	68.1	5.3	--	--
> 1 ton	Diesel	5.8	25.9	36.3	--	--
<b>Vehicles:</b>						
≤ 1 ton	Road Dust	--	--	--	--	2,741.3
> 1 ton	Road Dust	--	--	--	--	3,342.2
<b>TOTAL</b>		<b>77.9</b>	<b>554.2</b>	<b>244.7</b>	<b>13.3</b>	<b>6,083.5</b>



**Appendix J**  
**DROPPED OBJECTS DOCUMENT**

# Appendix J

## Dropped Objects

### 1.0 OBJECT BEHAVIOR

While infrequent, it is possible that objects may separate from an aircraft in flight. If this occurs, there is some risk to persons and property on the ground of being struck by the object. The discussion below addresses a means to assess this risk and presents a hypothetical situation as an example to quantify this risk. The scenario described is purely hypothetical and does not reflect any actual documented events. To perform the mathematical calculations supporting this assessment, certain assumptions must be made about the physical properties of the dropped object, and about the probability of such an event even occurring. The assumptions specified are conservative and do not reflect any actual statistical data about dropped objects.

#### 1.1 Introduction

If an object separates from an aircraft in flight, there are numerous physical factors that act on the object that influence where, and with what force, the object impacts the ground. These factors include the size, shape, and weight of the object, as well as other aerodynamic forces that act on the object as it falls through the air. All of these interrelated factors determine the ballistic flight path of the object. These factors are discussed in more detail below.

#### 1.2 Ballistic Trajectory

For this discussion, three components of the object's flight path are considered in describing its ballistic trajectory. By isolating each of the components, approximations can be made of where and with what force the object could be expected to strike the ground. The three components that will first be isolated, and then integrated, are the vertical, horizontal, and lateral components.

##### 1.2.1 VERTICAL COMPONENT

When an object is dropped, it is subjected to the force of gravity, and enters free-fall toward the ground. The force of gravity, alone, is a force that creates an acceleration of approximately 32.2 feet/second<sup>2</sup>. However, acceleration is not constant. The object's shape influences the effect of aerodynamic drag forces exerted on it. These forces reduce the rate of acceleration to varying degrees such that after a period of time, the object is no longer accelerating, and has reached a state referred to as *terminal velocity*. Once terminal velocity is reached, the object would continue to fall at that velocity indefinitely. Total movement or displacement in this component, which may be considered the "Y" axis of a graph, is a function of velocity and time. Therefore, if the altitude of release is known, the time it takes the object to reach the ground may be calculated.



### **1.2.2 HORIZONTAL COMPONENT**

When an object separates from a moving body, the object is moving in the same plane and velocity as the body from which it separated. Under theoretical conditions, the object would continue to move in the same plane and with the same velocity indefinitely. However, in reality, the same aerodynamic drag forces discussed above also begin to act on the object's horizontal movement. Once the velocity created by the moving body ceases, the object will begin to decelerate to terminal velocity. Here, too, once terminal velocity is reached, the object would continue to move at that velocity indefinitely. Total displacement in this component, which may be considered as the "X" axis of a graph, is also a function of velocity and time. Since the time the object is falling is known, then total distance along the aircraft's flight path from the point of release may also be calculated.

When both the vertical and horizontal components are integrated from a given release altitude to determine total time of flight, estimates may be calculated of the ground area along the track of the aircraft potentially exposed to impact from the object. This dimension is the length of the potential impact footprint on the ground.

### **1.2.3 LATERAL COMPONENT**

Additional external environmental forces, such as wind, may also interact with the object during its free-fall. The amount of surface area of the object exposed to winds, as well as the direction of the winds relative to the object's movement through the air, will create accelerations that could move the object to the left or right of its horizontal flight path. Considering the same time factors discussed above, the lateral displacement of the object along what could be considered as the "Z" axis of a graph enable estimates to be made of how much to the left or right of the horizontal track the object may move. This dimension is the width of the potential impact footprint on the ground.

## **1.3 Trajectory Calculations**

Three broad categories of calculations are used to describe the trajectory of the object. The first considers acceleration and deceleration to terminal velocity. The second considers accelerations due to other external forces, such as wind. The third considers the kinematics associated with the displacement of the object over time. Details are presented below.

### 1.3.1 TERMINAL VELOCITY

Terminal velocity ( $V_T$ ) is calculated by:

$$V_T = \left[ \frac{2}{\rho} \left( \frac{W}{A \times C_d} \right) \right]^{0.5}$$

Equation 1

Where:  $V_T$  = Terminal Velocity (in Feet/Second)  
 $\rho$  = Nominal Air Density ( $2.378 \times 10^{-3}$  lbs-sec<sup>2</sup>/ft<sup>4</sup>)  
 $W$  = Weight (in Pounds)  
 $A$  = Surface Area Facing the Airstream (in Ft<sup>2</sup>)  
 $C_d$  = Drag Coefficient

Once the terminal velocity associated with the object's specified characteristics is known, acceleration to terminal velocity over time is calculated by:

$$v = \left( \frac{m \times g}{b} \right) \times \left( 1 - e^{-\frac{b \times T}{m}} \right)$$

Equation 2

Where:  $v$  = Velocity at a specific time (in Feet/Sec)  
 $m$  = Mass (in Slugs)  
 $g$  = Acceleration due to gravity (32.2 Feet/Sec<sup>2</sup>)  
 $b$  = Calculated constant due to Aerodynamic Drag. Derived from: ( $b = mg/V_t$ )  
 $e$  = Natural Logarithm  
 $T$  = Time Duration in Seconds

Integrating the time duration ( $T$ ) in constant intervals provides incremental velocities at given points in time. These velocities may then be used to calculate displacement over time to determine the object's incremental location. This process is further addressed below.

Calculating data to describe the object's deceleration process (i.e., negative acceleration) is indirect. It is derived based on the basic relationship that:

$$F = m \times a$$

Equation 3a

Where:  $F$  = Force (in Pounds)  
 $m$  = Mass  
 $a$  = Acceleration (in Feet/Sec<sup>2</sup>)

However, since acceleration is unknown, force may also be calculated from known values by:

$$F = (m \times g) - (b \times v)$$

Equation 3b

Where: F = Force  
m = Mass  
g = Acceleration due to Gravity  
b = Calculated Constant  
v = Velocity (in Feet/Sec)

Equation 3b calculates force using known values. Once force is calculated, it is substituted into Equation 3a and the equation is solved for acceleration. In this process, since it is deceleration that is being calculated, both force and acceleration will be negative values. By integrating these equations through specific time intervals, they provide data that enable calculations of the object's displacement in these time intervals.

### 1.3.2 LATERAL DISPLACEMENT

Lateral displacement is calculated by considering lateral acceleration. Engineering tables are available that provide levels of force per surface area (e.g., foot pounds per square foot). Once scaled to the applicable surface area involved, substitution into Equation 3a allows direct calculations of acceleration. Although aerodynamic drag could also be factored into these calculations, acceleration values are low, and the time durations involved indicate that very little variance would be introduced into the lateral movement assessment. Therefore, drag factors associated with lateral movement are not considered in this assessment.

### 1.3.3 KINEMATICS

All of the calculations discussed to this point define variables that enable the incremental calculation of displacement of the object from the point of release to points along the X, Y, and Z axes at specific points in time.

These calculations are supported by five variables. They are as follows:

a = Acceleration  
v<sub>f</sub> = Final Velocity  
v<sub>o</sub> = Original Velocity  
t = Time  
d = Displacement

Using these variables, the following five equations may be used to calculate required unknowns:

$$a = \frac{v_f - v_o}{t}$$

*Equation 4*

$$v_f = v_o + at$$

*Equation 5*

$$d = \frac{1}{2}(v_o + v_f) \times t$$

*Equation 6*

$$d = v_o t + \frac{1}{2} at^2$$

*Equation 7*

$$v_f^2 = v_o^2 + 2ad$$

*Equation 8*

Collectively, these data show where the object would be expected to be located in the vertical, horizontal, and lateral components at any given point in time.

## **2.0 RISK SCENARIO**

With these data, it is possible to develop scenarios using hypothetical data that provide a basis to assess the relative risk that may be associated with an object that has separated from an aircraft in flight. Data considered are purely hypothetical, and do not assess the probability of an object being dropped. There are no statistical data available to assess the probability of that event occurring. However, if it is assumed that it does occur, and a conservative probability is assigned to that occurrence, then scenarios may be developed to assess the relative risk to persons and property on the ground arising from such an occurrence.

Possible scenarios are infinitely variable. The following discussion is based on the factors specified. While different assumptions would produce different results, the levels of potential risk assessed would not be expected to vary significantly.

### **2.1 Assumptions**

This scenario is based on the following assumptions:

- A bolt, 0.75 inches in diameter and 5 inches long weighing 8 ounces (0.5 pound) separates from an aircraft during straight and level flight.
- The aircraft is flying at 1,000 feet above ground level (AGL), at an airspeed of 500 knots (approximately 575 miles per hour).
- Winds are blowing directly perpendicular to the flight track of the aircraft at approximately 26 knots (30 miles per hour).

## **2.2 Ballistic Path of the Object**

Once the bolt separates from the aircraft, it will follow a ballistic flight path, influenced by external environmental factors, until it impacts the ground. The path consists of vertical, horizontal, and lateral components. The vertical component involves its acceleration to terminal velocity due to gravity, but subject to aerodynamic drag. The horizontal component is based on its initial inertia (velocity), but subsequent deceleration to terminal velocity as a result of aerodynamic drag. The lateral component involves forces exerted by the cross wind.

For each of these components, the aerodynamic drag and associated acceleration/deceleration forces are a function of the surface area of the object interacting with the windstream. Since it is reasonable to assume that the object will be tumbling during its fall, it is impossible to precisely calculate the constant interaction of these factors. Therefore, for this scenario, calculations used will consider the range of effects that would result if either the maximum or minimum cross-section of the object were constantly exposed to the airstream. This considers both maximum and minimum aerodynamic drag forces, and bounds the path of the object to predict a risk-zone footprint on the ground.

Figure 2-1 illustrates the range of ground area along the aircraft's flight path potentially at risk under these conditions.

Under conditions of minimum aerodynamic drag (maximum displacement), calculations indicate that the object would travel approximately 6,133 feet along the aircraft's flight path before impacting the ground. Under conditions of maximum aerodynamic drag (minimum displacement), the distance would be approximately 3,862 feet.

Similar drag conditions, (i.e., whether the maximum or minimum cross-section of the object is exposed to the airstream) are also considered when estimating the object's potential lateral displacement (i.e., the amount of distance the wind would blow the object to the left or right of the aircraft's flight path). The range of these distances is illustrated in Figure 2-2.

Under conditions of maximum aerodynamic drag, the object is calculated to have a lateral dispersion of approximately 30 feet to the left or right of the aircraft's flight track, whereas under conditions of minimum aerodynamic drag, it could have a lateral dispersion of approximately 275 feet.

Figure 2-1  
Ground Area Along Flight Track at Risk Under  
Minimum and Maximum Aerodynamic Drag Forces

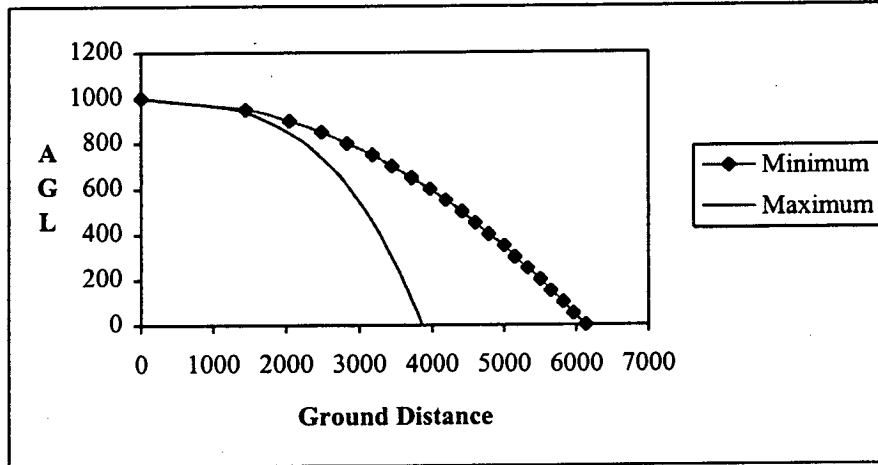
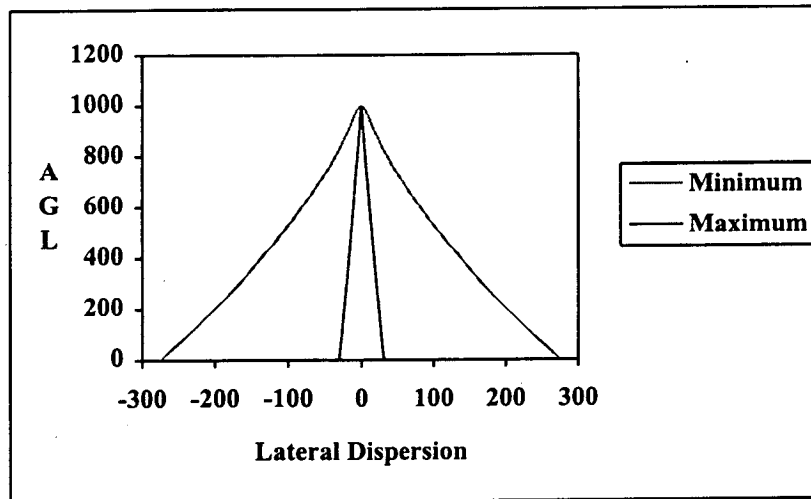


Figure 2-2  
Lateral Dispersion Based On  
Maximum and Minimum Aerodynamic Drag Forces



The combination of the range of horizontal and lateral dispersements form the basis of the risk assessment.

### **2.3 Risk Assessment**


For this scenario, it is conservatively assumed that an object may separate from an aircraft once every 1,000 sorties. Thus, the probability of the event occurring is 0.001.

It is further assumed that for the object to cause physical harm to a person, it would have to impact in an approximate 1.5 square-foot area where the person was located. To damage a structure, it would have to impact the structure. For this scenario, a 1,200 square-foot structural footprint is assumed.

Calculations defining the ground hazard risk area indicate a track of ground approximately 2,275 feet long and 245 feet wide. This area is 557,375 square feet. Thus, the probability of the object impacting in any given 1.5 square foot area is 0.000002691 ( $2.691 \times 10^{-6}$ ), or in any 1,200 square foot area is 0.00215 ( $2.152 \times 10^{-3}$ ).

When the probability of the event even occurring is assumed to be 0.001, the probability of personal injury is assessed to be 0.000000003 ( $2.691 \times 10^{-9}$ ), and the probability of structure damage is 0.00000215 ( $2.153 \times 10^{-6}$ ). Viewed another way, these probabilities mean that the chance of personal injury is one chance in 371,609,067 and the chance of structure damage is one chance in 464,479.

Finally, it should be noted that these probability estimates do not even consider the probability of people or structures even being present in the area overflown. Therefore, in sparsely populated areas, these already minuscule risk levels would be even less.



**Appendix K**  
**INITIAL DISTRIBUTION OF THE LEIS TO**  
**INTERESTED AGENCIES, ORGANIZATIONS, AND PERSONS**



## **APPENDIX K**

### **DISTRIBUTION OF THE LEIS (MARCH 1999) TO INTERESTED AGENCIES, ORGANIZATIONS, AND PERSONS**

This appendix contains an initial LEIS distribution list of tribes, agencies, repositories, organizations, and persons who have been sent a Final LEIS (March 1999).

The list is organized into three groups. The first group contains names of American Indian tribes, government agencies and officials, and repositories; the second group consists of organizations; and the third group is comprised of private businesses and individuals. The list of repositories is also located in Volume 1, Chapter 10.0.

The Final LEIS is being sent to all agencies and individuals who either received a Draft LEIS or who requested a copy of the final. Everyone providing oral or written comments on the Draft LEIS was also sent a Final LEIS unless they specifically stated they did not want one.

**AGENCIES/TRIBES/REPOSITORIES**

Alamo Branch Library  
Alamo, NV

Battle Mountain Band Council  
Battle Mountain, NV

Beatty Library District  
Beatty, NV

Board of County Commissioners  
Goldfield, NV

Boulder City Library  
Boulder City, NV

Carson City Library  
Carson City, NV

Clark County Library  
Las Vegas, NV

Community College of Southern Nevada -  
Library  
North Las Vegas, NV

Henderson District Public Library  
Henderson, NV

Indian Springs Library  
Indian Springs, NV

Inner-Tribal Council of Nevada, Inc.  
Reno, NV

Las Vegas Indian Center, Inc.  
Las Vegas, NV

Las Vegas Valley Water District  
Las Vegas, NV

Lincoln County Library - Pioche  
Pioche, NV

Nevada Division of Emergency Management  
Carson City, NV

North Las Vegas Library District  
North Las Vegas, NV

Nye County Commissioners Office  
Tonopah, NV

Pahrump Community Library  
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Pahrump Town Board  
Pahrump, NV

Reno-Sparks Indian Colony  
Reno, NV

Tonopah Public Library  
Tonopah, NV

U.S. Department of the Interior  
Washington, D.C.

United States Bureau of Mines  
Reno, NV

University of Nevada, Las Vegas  
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Washoe County Library  
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White Pine County Public Library  
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**Appendix L**  
**PUBLIC LAW 99-606**

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PUBLIC LAW 99606 [H.R. 1790]; November 6, 1986

## WITHDRAWALS OF PUBLIC LANDS FOR MILITARY PURPOSES

An Act to withdraw certain public lands for military purposes, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled.*

### SECTION 1. WITHDRAWALS.

#### a. BRAVO-20 BOMBING RANGE.

1. Subject to valid existing rights and except as otherwise provided in this Act, the lands referred to in paragraph (2) of this subsection, and all other areas within the boundary of such lands as depicted on the map specified in such paragraph which may become subject to the operation of the public land laws, are hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing and the geothermal leasing laws). Such lands are reserved for use by the Secretary of the Navy for -
  - A. testing and training for aerial bombing, missile firing, and tactical maneuvering and air support; and
  - B. subject to the requirements of section 3(f), other defense related purposes consistent with the purposes specified in this paragraph.
2. The lands referred to in paragraph (1) of this subsection are the public lands comprising approximately 21,576.40 acres in Churchill County, Nevada, as generally depicted on the map entitled "Bravo-20 Bombing Range Withdrawal--Proposed", dated April 1986, and filed in accordance with section 2.
3. This section does not affect the withdrawals of July 2, 1902

August 26, 1902 and August 4, 1904, under which the Bureau of Reclamation utilizes for flooding, overflow, and seepage purposes approximately 14,750 acres of the lands withdrawn and reserved by this subsection.

#### b. NELLIS AIR FORCE RANGE.

1. **Subject to valid existing rights and except as otherwise provided in this Act, the public lands described in paragraph (2) of this subsection are hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing and the geothermal leasing laws). Such lands 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; and**

**C. subject to the requirements of section 3(f), for other defense related purposes consistent with the purposes specified in this paragraph.**

**2. The lands referred to in paragraph (1) of this subsection are the lands comprising approximately 2,946,000 acres of land in Clark, Nye, and Lincoln Counties, Nevada, as generally depicted on the map entitled "Nellis Air Force Range Withdrawal - Proposed", dated January 1985, and filed in accordance with section 2.**

**c. BARRY M. GOLDWATER AIR FORCE RANGE**

1. Subject to valid existing rights and except as otherwise provided in this Act, the lands described in paragraph (2) of this subsection are hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing and the geothermal leasing laws). Such lands are reserved for use by the Secretary of the Air Force for -

A. an armament and high hazard testing area

B. training for aerial gunnery, rocketry, electronic warfare, and tactical maneuvering and air support; and

C. subject to the requirements of section 3(f), other defense related purposes consistent with the purposes specified in this paragraph.

2. The lands referred to in paragraph (1) of this subsection are the lands comprising approximately 2,664,423 acres in Maricopa, Pima and Yuma Counties, Arizona, as generally depicted on the map entitled "Luke Air Force Range Withdrawal--Proposed", dated January 1985, and filed in accordance with section 2.

**d. McGREGOR RANGE**

1. Subject to valid existing rights and except as otherwise provided in this Act, the public lands described in paragraph (2) of this subsection are hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing and the geothermal leasing laws). Such lands are reserved for use by the Secretary of the Army -

A. for training and weapons testing; and

B. subject to the requirements of section 3(f), for other defense related purposes consistent with the purposes specified in this paragraph.

2. The lands referred to in paragraph (1) of this subsection are the lands comprising approximately 608,384.87 acres in Otero County, New Mexico, as generally depicted on the map entitled "Mcgregor Range Withdrawal--Proposed", dated January 1985, and filed in accordance with section 2.

3. Any of the public lands withdrawn under paragraph (1) of this subsection which, as of the date of enactment of this Act, are managed pursuant to section 603 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1782) shall continue to be managed under that section until Congress determines otherwise.

**e. FORT GREELY MANEUVER AREA AND FORT GREELY AIR DROP ZONE**

1. Subject to valid existing rights and except as otherwise provided in this Act, the lands

described in paragraph (2) of this subsection are hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing and the geothermal leasing laws), under an Act entitled "An Act to provide for the admission of the State of Alaska into the Union", approved July 7, 1958 (48 U.S.C. note prec. 21), and under the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.). Such lands are reserved for use by the Secretary of the Army for -

- A. military maneuvering, training, and equipment development and testing and
  - B. subject to the requirements of section 3(f), other defense related purposes consistent with the purposes specified in this paragraph.
2. The lands referred to in paragraph (1) of this subsection are -
- A. the lands comprising approximately 571,995 acres in the Big Delta Area, Alaska, as generally depicted on the map entitled "Fort Greely Maneuver Area Withdrawal--Proposed", dated January 1985, and filed in accordance with section 2, and
  - B. the lands comprising approximately 61,590 acres in the Granite Creek Area, Alaska, as generally depicted on the map entitled "Fort Greely, Air Drop Zone Withdrawal--Proposed", dated January 1985, and filed in accordance with section 2.

**f. FORT WAINWRIGHT MANEUVER AREA.**

1. Subject to valid existing rights and except as otherwise provided in this Act, the public lands described in paragraph (2) of this subsection are hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing and the geothermal leasing laws), under an Act entitled "An Act to provide for the admission of the State of Alaska into the Union", approved July 7, 1958 (48 U.S.C. note prec. 21) and under the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.). Such lands are reserved for use by the Secretary of the Army for -
- A. military maneuvering;
  - B. training for artillery firing, aerial gunnery, and infantry tactics; and
  - C. subject to the requirements of section 3(f), other defense related purposes consistent with the purposes specified in this paragraph.
2. The lands referred to in paragraph (1) of this subsection are the lands comprising approximately 247,951.67 acres of land in the Fourth Judicial District, Alaska, as generally depicted on the map entitled "Fort Wainwright Maneuver Area Withdrawal--Proposed", dated January 1985, and filed in accordance with section 2.

**SEC. 2. MAPS AND LEGAL DESCRIPTIONS.**

- a. PUBLICATION AND FILING REQUIREMENT. - As soon as practicable after the date of enactment of this Act, the Secretary of the Interior shall -**
- 1. publish in the Federal Register a notice containing the legal description of the lands withdrawn and reserved by this Act, and**
  - 2. file maps and the legal description of the lands withdrawn and reserved by this Act with the Committee on Energy and Natural Resources of the United States Senate and with the Committee on Interior and Insular Affairs of the United States House of Representatives.**

- b. **TECHNICAL CORRECTIONS.** - Such maps and legal descriptions shall have the same force and effect as if they were included in this Act except that the Secretary of the Interior may correct clerical and typographical errors in such maps and legal descriptions.
- c. **AVAILABILITY FOR PUBLIC INSPECTION.** - Copies of such maps and legal descriptions shall be available for public inspection in the offices of the Director and appropriate State Directors of the Bureau of Land Management, the office of the commander, Bravo-20 Bombing Range; the offices of the Director and appropriate Regional Directors of the United States Fish and Wildlife Service; the office of the commander, Nellis Air Force Base, the office of the commander, Barry M. Goldwater Air Force Base, the office of the commander, McGregor Range; the office of the installation commander, Fort Richardson, Alaska, the office of the commander, Marine Corps Air Station, Yuma, Arizona; and the office of the Secretary of Defense.
- d. **REIMBURSEMENT.** - The Secretary of Defense shall reimburse the Secretary of the Interior for the cost of implementing this section.

### **SEC. 3. MANAGEMENT OF WITHDRAWN LANDS.**

#### **a. MANAGEMENT BY THE SECRETARY OF THE INTERIOR.**

- 1. During the period of the withdrawal, the Secretary of the Interior shall manage the lands withdrawn under section 1 (except those lands within a unit of the National Wildlife Refuge System) pursuant to the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) and other applicable law, including the Recreation Use of Wildlife Areas Act of 1962 (16 U.S.C. 460k et seq.), and this Act. Lands within the Desert National Wildlife Range and the Cabeza Prieta National Wildlife Refuge shall be managed pursuant to the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd et seq.) and other applicable law. No provision of this Act, except sections 4, 11, and 12, shall apply to the management of the Desert National Wildlife Range or the Cabeza Prieta National Wildlife Refuge.
- 2. To the extent consistent with applicable law and Executive orders, the lands withdrawn under section 1 may be managed in a manner permitting -
  - A. the continuation of grazing pursuant to applicable law and Executive orders where permitted on the date of enactment of this Act;
  - B. protection of wildlife and wildlife habitat;
  - C. control of predatory and other animals;
  - D. recreation; and
  - E. the prevention and appropriate suppression of brush and range fires resulting from nonmilitary activities.
- 3. (A) All nonmilitary use of such lands, other than the uses described in paragraph (2), shall be subject to such conditions and restrictions as may be necessary to permit the military use of such lands for the purposes specified in or authorized pursuant to this Act.  
  
(B) The Secretary of the Interior may issue any lease, easement, right of way, or other authorization with respect to the nonmilitary use of such land only with the concurrence of the Secretary of the military department concerned.

**b. CLOSURE TO PUBLIC.**

1. If the Secretary of the military department concerned determines that military operations, public safety, or national security require the closure to public use of any road, trail, or other portion of the lands withdrawn by this Act, the Secretary may take such action as the Secretary determines necessary or desirable to effect and maintain such closure.
2. Any such closure shall be limited to the minimum areas and periods which the Secretary of the military department concerned determines are required to carry out this subsection.
3. Before and during any closure under this subsection, the Secretary of the military department concerned shall -
  - A. keep appropriate warning notices posted and
  - B. take appropriate steps to notify the public concerning such closures.

**c. MANAGEMENT PLAN.** - The Secretary of the Interior (after consultation with the Secretary of the military department concerned) shall develop a plan for the management of each area withdrawn under section 1 during the period of such withdrawal. Each plan shall

1. be consistent with applicable law;
2. be subject to conditions and restrictions specified in subsection (a)(3) of this section;
3. include such provisions as may be necessary for proper management and protection of the resources and values of such areas; and
4. be developed not later than three years after the date of enactment of this Act.

**d. BRUSH AND RANGE FIRES.** - The Secretary of the military department concerned shall take necessary precautions to prevent and suppress brush and range fires occurring within and outside the lands withdrawn under section 1 as a result of military activities and may seek assistance from the Bureau of Land Management in the suppression of such fires. The memorandum of understanding required by subsection (e) shall provide for Bureau of Land Management assistance in the suppression of such fires, and for a transfer of funds from the Department of the Navy, Army, or Air Force, as appropriate, to the Bureau of Land Management as compensation for such assistance.

**e. MEMORANDUM OF UNDERSTANDING.**

1. The Secretary of the Interior and the Secretary of the military department concerned shall (with respect to each land withdrawal under section (1) enter into a memorandum of understanding to implement the management plan developed under subsection (c). Any such memorandum of understanding shall provide that the Director of the Bureau of Land Management shall provide assistance in the suppression of fires resulting from the military use of lands withdrawn under section 1 if requested by the Secretary of the military department concerned.
2. The duration of any such memorandum shall be the same as the period of the withdrawal of the lands under section 1.

**f. ADDITIONAL MILITARY USES.**

1. **Lands withdrawn by section 1 (except those within the Desert National Wildlife Range or within the Cabeza Prieta National Wildlife Refuge) may be used for defense related uses other than those specified in such section. The Secretary of Defense shall promptly notify the Secretary of the Interior in the event that the lands withdrawn by this Act will be used for defense related purposes other than those specified in section 1. Such notification shall indicate the additional use or uses involved, the proposed duration of such uses, and the extent to which such additional military uses of the withdrawn lands will require that additional or more stringent conditions or restrictions be imposed on otherwise permitted nonmilitary uses of the withdrawn land or portions thereof.**

#### **SEC. 4. SPECIAL WILDLIFE RULES.**

##### **a. NELLIS AIR FORCE RANGE.**

1. **Neither the withdrawal under section 1(b) nor any other provision of this Act shall be construed to amend--**
  - A. **the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd et seq.) or any other law related to management of the National Wildlife Refuge System; or**
  - B. **any Executive order or public land order in effect on the date of enactment of this Act with respect to the Desert National Wildlife Refuge.**
2. **Neither the withdrawal under section 1(b) nor any other provision of this Act shall be construed to amend any memorandum of understanding between the Secretary of the Interior and the secretary of the Air Force regarding the administration and joint use of a portion of the Desert National Wildlife Range. The provisions of the memorandum of understanding between the Secretary of the Interior and the Department of the Air Force regarding Air Force operations on the Desert National Wildlife Range in effect on March 15, 1986, shall not be amended sooner than 90 days after the Secretary of the Interior has notified the Committee on Interior and Insular Affairs of the House of Representatives, the Committee on Energy and Natural Resources of the Senate, the Committees on Armed Services of the Senate and the House of Representatives, the Committee on Merchant Marine and Fisheries of the House of Representatives, and the Committee on Environment and Public Works of the Senate of any proposed amendments to such provisions.**

##### **b. BARRY M. GOLDWATER AIR FORCE RANGE.**

1. **Neither the withdrawal under section 1(c) nor any other provision of this Act shall be construed to amend -**
  - A. **the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd et seq.) or any other law related to management of the National Wildlife Refuge System; or**
  - B. **any Executive order or public land order in effect on the date of enactment of this Act with respect to the Cabeza Prieta National Wildlife Refuge.**
2. **Neither the withdrawal under section 1(c) nor any other provision of this Act shall be construed to amend any memorandum of understanding between the Secretary of the Interior and the Secretary of the Air Force regarding the administration and joint use of a portion of the Cabeza Prieta National Wildlife Refuge. The provisions of the memorandum of understanding between the Secretary of the Interior and the Department of the Air Force regarding Air Force operations on the Cabeza Prieta National Wildlife Refuge in effect on**

March 24, 1975, shall not be amended sooner than 90 days after the Secretary of the Interior has notified the Committee on Interior and Insular Affairs of the House of Representatives, the Committee on Energy and Natural Resources of the Senate, the Committees on Armed Services of the Senate and the House of Representatives, the Committee on Merchant Marine and Fisheries of the House of Representatives, and the Committee on Environment and Public Works of the Senate of any proposed amendments to such provisions.

## **SEC. 5. DURATION OF WITHDRAWALS.**

- a. **DURATION.** - The withdrawal and reservation established by this Act shall terminate 15 years after the date of enactment of this Act.
- b. **DRAFT ENVIRONMENTAL IMPACT STATEMENT.**
  1. No later than 12 years after the date of enactment of this Act, the Secretary of the military department concerned shall publish a draft environmental impact statement concerning continued or renewed withdrawal of any portion of the lands withdrawn by this Act for which that Secretary intends to seek such continued or renewed withdrawal. Such draft environmental impact statement shall be consistent with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) applicable to such a draft environmental impact statement. Prior to the termination date specified in subsection (a), the Secretary of the military department concerned shall hold a public hearing on any draft environmental impact statement published pursuant to this subsection. Such hearing shall be held in the affected State or States in order to receive public comments on the alternatives and other matters included in such draft environmental impact statement.
  2.
    - A. For purposes of such draft environmental impact statement published by the Secretary of the Navy, the term "lands withdrawn by this Act" shall be deemed to include lands withdrawn by public land orders 275, 788, 898, and 2635 and lands proposed for withdrawal as specified in the draft environmental impact statement for the proposed master land withdrawal, Naval Air Station, Fallon, Nevada.
    - B. For purposes of this subsection, lands withdrawn by section 1(b) shall be deemed to include lands withdrawn by Public Law 9848a.
- c. **EXTENSIONS OR RENEWALS.** - The withdrawals established by this Act may not be extended or renewed except by an Act or joint resolution.

## **SEC. 6. NEVADA REPORT.**

- a. **SPECIAL NEVADA REPORT.** - No later than five years after the date of enactment of this Act, the Secretary of the Air Force, the Secretary of the Navy, and the Secretary of the Interior shall submit to Congress a joint report. In addition to the other matters required by this section, the report shall include an analysis and an evaluation of the effects on public health and safety throughout Nevada of -
  1. the operation of aircraft at subsonic and supersonic speeds;
  2. the use of aerial and other gunnery, rockets, and missiles; and
  3. the uses specified in section 1.
- d. **EVALUATION OF CUMULATIVE EFFECTS OF CONTINUED OR RENEWED WITHDRAWAL.** - Each of the military departments concerned and the Secretary of the

**Interior shall, in the report required by this section, evaluate the cumulative effects of continued or renewed withdrawal for military purposes of the military department concerned of some or all of the lands withdrawn by sections 1(a) and 1(b) on the environment and population of Nevada. In performing this evaluation, there shall be considered -**

- 1. the actual and proposed withdrawal for military and related purposes of other lands in Nevada, including (but not limited to)--**
  - A. lands withdrawn by sections 1(a) and 1(b) of this Act and by Public Law 98485 (98 Stat. 2261);**
  - B. lands withdrawn by Public Land Orders 275, 788, 898, and 2635**
  - C. lands proposed for withdrawal as specified in the draft environmental impact statement for the proposed master land withdrawal, Naval Air Station, Fallon, Nevada; and**
  - D. lands withdrawn or being considered for withdrawal for use by the Department of Energy; and**
- 2. the cumulative impacts on public and private property in Nevada and on the fish and wildlife, cultural, historic scientific, recreational, wilderness, and other values of the public lands of Nevada resulting from military and defense related uses of the lands withdrawn by sections 1(a) and 1(b) and the other lands described in paragraph (1) of this subsection.**
- c. MITIGATION MEASURES. - The report required by this subsection shall include an analysis and an evaluation of possible measures to mitigate the cumulative effect of the withdrawal of public lands in Nevada for military and defense related purposes, and of use of the airspaces over public lands in Nevada for such purposes, on people and property in Nevada and the fish and wildlife, cultural, historic, scientific, wilderness, and other resources and values of the public lands in Nevada (including recreation, mineral development, and agriculture).**

## **SEC. 7. ONGOING DECONTAMINATION.**

- a. PROGRAM. - Throughout the duration of the withdrawals made by this Act, the Secretary of the military department concerned, to the extent funds are made available, shall maintain a program of decontamination of lands withdrawn by this Act at least at the level of cleanup achieved on such lands in fiscal year 1986.**
- b. REPORTS. - At the same time as the President transmits to the Congress the President's proposed budget for the first fiscal year beginning after the date of enactment of this Act and for each subsequent fiscal year, each such Secretary shall transmit to the Committees on Appropriations, Armed Services, and Energy and Natural Resources of the Senate and to the Committees on Appropriations, Armed Services, and Interior and Insular Affairs of the House of Representatives a description of the decontamination efforts undertaken during the previous fiscal year on such lands and the decontamination activities proposed for such lands during the next fiscal year including:**
  - 1. amounts appropriated and obligated or expended for decontamination of such lands**
  - 2. the methods used to decontaminate such lands;**
  - 3. amount and types of contaminants removed from such lands**

4. estimated types and amounts of residual contamination on such lands; and
5. an estimate of the costs for full decontamination of such lands and the estimate of the time to complete such decontamination.

## **SEC. 8. REQUIREMENT FOR RENEWAL.**

### **a. NOTICE AND FILING.**

1. No later than three years prior to the termination of the withdrawal and reservation established by this Act, the Secretary of the military department concerned shall advise the Secretary of the Interior as to whether or not the Secretary of the military department concerned will have a continuing military need for any of the lands withdrawn under section 1 after the termination date of such withdrawal and reservation.
2. If the Secretary of the military department concerned concludes that there will be a continuing military need for any of such lands after the termination date, that Secretary shall file an application for extension of the withdrawal and reservation of such needed lands in accordance with the regulations and procedures of the Department of the Interior applicable to the extension of withdrawals of lands for military uses.
3. If, during the period of withdrawal and reservation, the Secretary of the military department concerned decides to relinquish all or any of the lands withdrawn and reserved by this Act, such Secretary shall file a notice of intention to relinquish with the Secretary of the Interior.

### **(b) CONTAMINATION.**

1. Before transmitting a notice of intention to relinquish pursuant to subsection (a), the Secretary of Defense, acting through the military department concerned, shall prepare a written determination concerning whether and to what extent the lands that are to be relinquished are contaminated with explosive, toxic, or other hazardous materials.
2. A copy of such determination shall be transmitted with the notice of intention to relinquish.
3. Copies of both the notice of intention to relinquish and the determination concerning the contaminated state of the lands shall be published in the Federal Register by the Secretary of the Interior.

**b. DECONTAMINATION.** - If any land which is the subject of a notice of intention to relinquish pursuant to subsection (a) is contaminated, and the Secretary of the Interior, in consultation with the Secretary of the military department concerned, determines that decontamination is practicable and economically feasible (taking into consideration the potential future use and value of the land) and that upon decontamination, the land could be opened to operation of some or all of the public land laws, including the mining laws, the Secretary of the military department concerned shall decontaminate the land to the extent that funds are appropriated for such purpose.

**c. ALTERNATIVES.** - If the Secretary of the Interior, after consultation with the Secretary of the military department concerned, concludes that decontamination of any land which is the subject of a notice of intention to relinquish pursuant to subsection (a) is not practicable or economically feasible, or that the land cannot be decontaminated sufficiently to be opened to operation of some or all of the public land laws, or if Congress does not appropriate a



sufficient amount of funds for the decontamination of such land, the Secretary of the Interior shall not be required to accept the land proposed for relinquishment.

- d. **STATUS OF CONTAMINATED LANDS.**- If, because of their contaminated state, the Secretary of the Interior declines to accept jurisdiction over lands withdrawn by this Act which have been proposed for relinquishment, or if at the expiration of the withdrawal made by this Act the Secretary of the Interior determines that some of the lands withdrawn by this Act are contaminated to an extent which prevents opening such contaminated lands to operation of the public land laws -
1. the Secretary of the military department concerned shall take appropriate steps to warn the public of the contaminated state of such lands and any risks associated with entry onto such lands
  2. after the expiration of the withdrawal, the Secretary of the military department concerned shall undertake no activities on such lands except in connection with decontamination of such lands, and
  3. the Secretary of the military department concerned shall report to the Secretary of the Interior and to the Congress concerning the status of such lands and all actions taken in furtherance of this subsection.
- e. **REVOCAION AUTHORITY.** - Notwithstanding any other provisions of law, the Secretary of the Interior, upon deciding that it is in the public interest to accept jurisdiction over lands proposed for relinquishment pursuant to subsection (a), is authorized to revoke the withdrawal and reservation established by this Act as it applies to such lands. Should the decision be made to revoke the withdrawal and reservation, the Secretary of the Interior shall publish in the Federal Register an appropriate order which shall -
1. terminate the withdrawal and reservation;
  2. constitute official acceptance of full jurisdiction over the lands by the Secretary of the Interior and
  3. state the date upon which the lands will be opened to the operation of some or all of the public lands laws, including the mining laws.

## **SEC. 9. DELEGABILITY.**

- a. **DEFENSE.** - The functions of the Secretary of Defense or of a military department under this title may be delegated.
- b. **INTERIOR.** - The functions of the Secretary of the Interior under this title may be delegated, except that an order described in section 7(f) may be approved and signed only by the Secretary of the Interior, the Under Secretary of the Interior, or an Assistant Secretary of the Department of the Interior.

## **SEC. 10. WATER RIGHTS.**

Nothing in this Act shall be construed to establish a reservation to the United States with respect to any water or water right on the lands described in section 1 of this Act. No provision of this Act shall be construed as authorizing the appropriation of water on lands described in section 1 of this Act by the United States after the date of enactment of this Act except in accordance with the law of the relevant State in which lands described in section 1 are located. This section shall not be construed to affect water rights acquired by the United States before the date of enactment of this Act.

## **SEC. 11. HUNTING, FISHING. AND TRAPPING.**

All hunting, fishing, and trapping on the lands withdrawn by this Act shall be conducted in accordance with the provisions of section 2671 of title 10, United States Code, except that hunting, fishing, and trapping within the Desert National Wildlife Range and the Cabeza Prieta National Wildlife Refuge shall be conducted in accordance with the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd et seq.), the Recreation Use of Wildlife Areas Act of 1969 (16 U.S.C. 460k et seq.), and other laws applicable to the National Wildlife Refuge System.

## **SEC. 12. MINING AND MINERAL LEASING.**

- a. **DETERMINATION OF LANDS SUITABLE FOR OPENING.** - As soon as possible after the enactment of this Act and at least every five years thereafter, the Secretary of the Interior shall determine, with the concurrence of the Secretary of the military department concerned, which public and acquired lands (except as provided in this subsection) described in subsections (a), (b), (d), (e), and (f) of section 1 of this Act the Secretary of the Interior considers suitable for opening to the operation of the Mining Law of 1872, the Mineral Lands Leasing Act of 1920, as amended, the Mineral Leasing Act for Acquired Lands of 1947, the Geothermal Steam Act of 1970, or an) one or more of such Acts. The Secretary of the Interior shall publish a notice in the Federal Register listing the lands determined suitable pursuant to this section and specifying the opening date, except that lands contained within the Desert National Wildlife Range in Nevada or within the Cabeza Prieta National Wildlife Refuge in Arizona shall not be determined to be suitable for opening pursuant to this section.
- b. **OPENING LANDS.** - On the day specified by the Secretary of the Interior in a notice published in the Federal Register pursuant to subsection (a), the land identified under subsection (a) as suitable for opening to the operation of one or more of the laws specified in subsection (a) shall automatically be open to the operation of such laws without the necessity for further action by either the Secretary or the Congress.
- c. **EXCEPTION FOR COMMON VARIETIES.** - No deposit of minerals or materials of the types identified by section 3 of the Act of July 23, 1955 (69 Stat. 367), whether or not included in the term "common varieties" in that Act, shall be subject to location under the Mining Law of 1872 on lands described in section 1.
- d. **REGULATIONS.** - The Secretary of the Interior, with the advice and concurrence of the Secretary of the military department concerned shall promulgate such regulations to implement this section as may be necessary to assure safe, uninterrupted, and unimpeded use of the lands described in section 1 for military purposes. Such regulations shall also contain guidelines to assist mining claimants in determining how much, if any, of the surface of any lands opened pursuant to this section may be used for purposes incident to mining.
- e. **CLOSURE OF MINING LANDS.**- In the event of a national emergency or for purposes of national defense or security, the Secretary of the Interior, at the request of the Secretary of the military department concerned, shall close any lands that have been opened to mining or to mineral or geothermal leasing pursuant to this section.
- f. **LAWS GOVERNING MINING ON LANDS WITHDRAWN UNDER THIS ACT.**
  1. Except as otherwise provided in this Act, mining claims located pursuant to this Act shall be subject to the provisions of the mining laws. In the event of a conflict between those laws and this Act, this Act shall prevail.
  2. All mining claims located under the terms of this Act shall be subject to the provisions of the Federal Land Policy and Management Act of 1976(43 U.S.C. 1701 et seq.).

**g. PATENTS.**

- 1. Patents issued pursuant to this Act for locatable minerals shall convey title to locatable minerals only, together with the right to use so much of the surface as may be necessary for purposes incident to mining under the guidelines for such use established by the Secretary of the Interior by regulation.**
- 2. All such patents shall contain a reservation to the United States of the surface of all lands patented and of all nonlocatable minerals on those lands.**
- 3. For the purposes of this section, all minerals subject to location under the Mining Law of 1872 are referred to as "locatable minerals".**

**h. REVOCATION.**—Notwithstanding any other provision of law, the Secretary of the Interior, if the Secretary determines it necessary and appropriate for the purpose of consummating an exchange of lands or interests therein under applicable law, is hereby authorized and directed to revoke the Small Tract Act Classification S.T.049794 in Clark County, Nevada.

**SEC. 13. IMMUNITY OF UNITED STATES.**

The United States and all departments or agencies thereof shall be held harmless and shall not be liable for any injuries or damages to persons or property suffered in the course of any mining or mineral or geothermal leasing activity conducted on lands described in section 1 of this Act.

**SEC. 14. SHORT TITLE.**

Sections 1 through 15 of this Act may be cited as the "Military Lands Withdrawal Act of 1986".

**SEC. 15. REDESIGNATION.**

The Luke Air Force Range in Arizona is hereby redesignated as the "Barry M. Goldwater Air Force Range". Any reference in any law, regulation, document, record, map, or other paper of the United States to the Luke Air Force Range shall be deemed to be a reference to the "Barry M. Goldwater Air Force Range".

**SEC. 16. BOUNDARY ADJUSTMENT TO CUYAHOGA VALLEY NATIONAL RECREATION AREA.**

Section 2 of the Act entitled "An Act to provide for the establishment of the Cuyahoga Valley National Recreational Recreation Area", approved December 27, 1974 (16 U.S.C. 460ff et seq.), is amended as follows:

1. In subsection (a), strike out "numbered 65590,001A and dated May 1978" and insert "numbered 64480,054 and dated July 1986".
2. At the end of subsection (a), insert the following:

"The recreation area shall also comprise any lands designated as 'City of Akron Lands' on the map referred to in the first sentence which are offered as donations to the Department of the Interior or which become privately owned. The Secretary shall revise such map to depict such lands as part of the recreation area."
3. In subsection (b), after the first sentence, insert the following:

"The Secretary may not acquire fee title to any lands included within the recreation area in 1986 which are designated on the map referred to in subsection (a) as 'Scenic Easement Acquisition

Areas'. The Secretary may acquire only scenic easements in such designated lands. Unless consented to by the owner from which the easement is acquired, any such scenic easement may not prohibit any activity, the subdivision of any land, or the construction of any building or other facility if such activity, subdivision, or construction would have been permitted under laws and ordinances of the unit of local government in which such land was located on April 1, 1986, as such laws and ordinances were in effect on such date".

**Approved November 6, 1986.**

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