

**FINAL**  
**Integrated Natural Resources**  
**Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**



**Naval Air Station Fallon**  
**Public Works Department, Environmental Division**  
4755 Pasture Road, #307  
Fallon, Nevada 89496



**July 2014**

Contract No. N62473-07-D-3201  
Task Order No. 0011



**FINAL**

**INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**  
**NAVAL AIR STATION FALLON**  
**FALLON, NEVADA**

**JULY 2014**

*Prepared For:*



**Naval Air Station Fallon**  
**Public Works Department**  
**Environmental Division**  
**4755 Pasture Road #307**  
**Fallon, Nevada 89496**

*Prepared by:*  
**AMEC Environment & Infrastructure, Inc.**  
**San Diego, California 92123**

*Under Contract With:*  
**Commander, Navy Region Southwest**  
**&**  
**Naval Facilities Engineering Command Southwest**  
**San Diego, California 92132**  
**Contract N62473-07-D-3201.0011**



## FINAL

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

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### **Integrated Natural Resources Management Plan Naval Air Station Fallon Fallon, Nevada**

#### APPROVAL

This Integrated Natural Resources Management Plan (INRMP) fulfills the requirements for the INRMP in accordance with the Sikes Act (16 U.S. Code [USC] 670a et seq.), as amended, U.S. Department of Defense Instruction (DoDI) 4715.03 and Chief of Naval Operations Instruction 5090.1D. This document was prepared and reviewed in coordination with U.S. Department of Interior, U.S. Fish and Wildlife Service, and Nevada Department of Wildlife in accordance with the 2006 Memorandum of Understanding for a Cooperative Integrated Natural Resource Management Program on Military Installations.

#### **Approving Official-U.S. Navy Air Station Fallon, Nevada**

Approved by:

---

**L.E. STEINBAUGH Captain, U.S. Navy  
Commanding Officer  
Naval Air Station Fallon  
Fallon, Nevada**

---

**Date**

Approved by:

---

**Mike Klapec P.E. Installation Environmental  
Program Director  
Naval Air Station Fallon  
Fallon, Nevada**

---

**Date**

Approved by:

---

**Doug Powers  
Natural Resources Program Manager  
NAVFAC SW/CNRSW  
San Diego, California**

---

**Date**

Approved by:

---

**Gary Cottle  
Installation Natural Resources Manager  
Naval Air Station Fallon  
Fallon, Nevada**

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**Date**

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**Concurring Agency-U.S. Fish and Wildlife Service**

**Approved by:**

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**Edward D. Koch  
State Supervisor  
U.S. Fish and Wildlife Service  
Reno, Nevada**

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**Date**

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**Concurring Agency-Nevada Department of Wildlife**

**Approved by:**

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**Tony Wasley  
State Director  
Nevada Department of Wildlife  
Headquarters / Western Region  
Reno, Nevada**

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**Date**



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### **Integrated Natural Resources Management Plan Naval Air Station Fallon Fallon, Nevada**

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#### **Concurring Agency-Bureau of Land Management**

**Approved by:**

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**Amy Lueders**  
**State Director**  
**Bureau of Land Management**  
**Nevada State Office Reno, Nevada**

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**Date**

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## EXECUTIVE SUMMARY

The purpose of this Integrated Natural Resources Management Plan (INRMP) is to provide Naval Air Station Fallon, Nevada (NAS Fallon) with a viable framework for future management of natural resources on lands it owns or controls. Required by the Sikes Act (16 U.S. Code [USC] § 670 et seq., as amended) for the U.S. Department of Defense (DoD), the INRMP is a long term planning document to guide the installation commander in the management of natural resources to support the installation mission, while protecting and enhancing installation resources for multiple use, sustainable yield, and biological integrity. The primary purpose of the INRMP is to maintain public access for wildlife viewing and other recreational activities on lands not closed to the public for security or public safety. Develop partnerships with federal and state agencies to cooperatively protect the quality of wildlife habitat.

NAS Fallon administers approximately 241,126 acres of lands located in the high desert region of northern Nevada. The station includes several disjunct areas of Churchill County which compose the NAS Fallon Main Station and Fallon Range Training Complex (FRTC). NAS Fallon and the FRTC are the Navy's premier integrated strike warfare training facilities supporting present and emerging National Defense requirements. The mission of NAS Fallon is to support carrier air wings preparing to deploy; and other units participating in training events, including joint and multinational training and exercises.

The installation is located on Bureau of Land Management (BLM) Carson City District (CCD), Bureau of Reclamation (Reclamation), and Navy-owned lands. In accordance with the Military Lands Withdrawal Act (MLWA), NAS Fallon consists of both open and closed lands. Open lands are withdrawn areas that remain open for public use and closed lands are restricted from public use. Within the FRTC open and closed lands, including Navy-acquired and withdrawn lands, are 96,936 and 144,191 acres, respectively.

Per the MLWA, "the Secretary of the Navy shall manage the lands withdrawn by Section 101(a)(1) and reserved for military purposes in accordance with the integrated natural resource management plan per Section 103(c)." As such, the majority of management of natural resources on NAS Fallon Navy-withdrawn land is the responsibility of the BLM. In addition to the BLMs responsibilities, the Navy has stewardship responsibilities for these lands as defined by the Sikes Act, as amended. A portion of the B-16 Range withdrawn lands are managed by Reclamation. As such, the Navy maintains the primary public safety management actions only and Reclamation shall be primary for all other management actions.

In 2006, an INRMP update was prepared, *Final Integrated Natural Resources Management Plan and Environmental Assessment for Naval Air Station Fallon* by Tetra Tech, Inc. (2006). This 2014 INRMP update integrates the recommendations of the 2006 INRMP, the Integrated Cultural Resources Management Plan (ICRMP) updated in 2012, the Integrated Pest Management Plan (IPMP) updated in 2012, the Bird/Animal Aircraft Strike Hazard (BASH) Management Plan updated in 2013, as well as updated resource studies such as the 2008 Ecological Inventory (Tierra Data, Inc. 2008) and 2011

Herpetological Study (University of California [UC] Davis 2011. Where it pertains to BLM management, this INRMP update will not supersede the 2001 Resource Management Plan Amendment (RMPA)/INRMP.

The INRMP fulfills the requirements of Chief of Naval Operations Instruction (OPNAVINST) 5090.1D, the *Environmental Readiness Program Manual*, which charges Navy installations with land and water resources suitable for conservation and management, to prepare and implement a comprehensive INRMP that fulfills the Sikes Act, as amended, and requirements of the DoD Manual (DoDM) 4715.03-M *Enclosure 8-INRMP Implementation* and follows the *INRMP Guidance for Navy Installations* (2006). The Sikes Act, as amended, requires the military services to prepare INRMPs in cooperation with the U.S. Fish and Wildlife Service (USFWS) and appropriate state fish and wildlife agencies. In Nevada, this agency is the Nevada Department of Wildlife (NDOW). An INRMP should be negotiated with the goal of achieving mutual agreement of the parties concerning the conservation, protection, and management of fish and wildlife resources. This INRMP has been prepared in accordance with the Sikes Act, as amended, and in cooperation with the USFWS and the NDOW. It has also been prepared in cooperation with the BLM in accordance with the 2007 Memorandum of Understanding (MOU) between NAS Fallon and the BLM, as the installation occurs within public lands withdrawn for military uses under the 1999 MLWA.

This INRMP defines the standard for implementing natural resources goals and objectives through a hierarchical format, starting with very broad, long-term statements (goals) defined by more specific, mid-term Focus Areas (objectives). The overall goals of this INRMP all focus on avoiding or minimizing adverse effects from military activities to the overall ecosystem and its sensitive resources; increasing interaction with federal, state, and local agencies; and ensuring compliance with environmental legislation, regulations, and guidelines. These goals will ensure the success of the military mission and the conservation of natural resources. Natural resources management of NAS Fallon must be conducted in a way that provides for sustainable land use, complies with applicable environmental laws and regulations, and provides for no net loss in the capability to support the military mission. The general philosophies and methodologies used throughout the NAS Fallon natural resources management program are focused on conducting required military mission activities while maintaining ecosystem viability.

For NAS Fallon, the overall goal is as follows, specific goals as related to each resource area are presented in Section 4:

- **GOAL:** Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of NAS Fallon while fulfilling the military mission. This will be accomplished such that natural resource conservation, restoration, and enhancement can proceed consistent with and unhindered toward internal and regional ecosystem management goals for these lands and waters, without current or future compromise or loss to the military mission.



Key objectives for natural resources management on NAS Fallon include the following:

- Ensure no net loss in the capability of the land and natural resources at NAS Fallon to support its current and future military mission;
- Ensure compliance with applicable laws and regulations as they pertain to natural and cultural resources;
- Maintain and enhance the level of biodiversity within the constraints of the military mission;
- Outlease lands that are suitable and available for agricultural production and grazing;
- Implement adaptive management techniques to provide flexible and responsive management strategies based on scientific data gathered from monitoring programs, literature, and resource experts;
- Maintain public access for wildlife viewing and other recreational activities on lands not closed to the public for security or public safety;
- Protect the quality of wildlife habitat, where feasible; and
- Maintain sufficient professionally trained natural resources personnel to implement, manage, and monitor the management strategies of the INRMP.

These general objectives are supported by several resource-specific management measures for obtaining the desired outcomes, which are described in Section 4.0, *Natural Resources Management*. Resource-specific measures were developed to guide natural resources management generally for a period of five years.

The Assistant Secretary of Navy (Installation & Environment) ASN (I&E), *DoN Policy Memo 98-06: Review of INRMPs Under NEPA*, has determined that Sikes Act requirements for INRMP implementation necessitate the preparation of National Environmental Policy Act (NEPA) statute (42 USC 4321-4370, as amended) documentation prior to INRMP approval. In compliance with the NEPA process, an Environmental Assessment (EA) was prepared for the 2006 INRMP (Tetra Tech, Inc. 2006). Since this INRMP update does not reflect significant changes to the 2006 INRMP, no NEPA analysis is necessary for the implementation of this INRMP. However, specific projects presented in the INRMP shall have NEPA review as warranted.

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All maps were compiled by AMEC Environment & Infrastructure, Inc. except if noted, using data believed to be accurate at the time of publication. However, a degree of error is inherent in all maps. The maps are distributed "AS-IS," without warranties of any kind, either, expressed or implied, including, but not limited to, warranties of suitability to a particular purpose or use. No attempt has been made in either the design or production of the maps to define the limits or jurisdiction of any federal, state, or local government. The maps are intended for use only at the published scale. Detailed on-the-ground surveys and historical analyses of sites may differ from the maps.



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## **ACRONYMS AND ABBREVIATIONS**

°C	degrees Celsius
°F	degrees Fahrenheit
ADUSD	Assistant Deputy Under Secretary of Defense
AMEC	AMEC Environment & Infrastructure, Inc.
AMP	allotment management plan
AMSL	above mean sea level
APHIS	Animal and Plant Health Inspection Service
ARNG	Army National Guard
ARR	Aerial Refueling Route
ATCAA	Air Traffic Control Assigned Areas
ASN (I&E)	Assistant Secretary of Navy (Installation & Environment)
AUM	Animal-Unit-Months
BASH	Bird/Animal Aircraft Strike Hazard
BCC	Birds of Conservation Concern
Bd	<i>Batrachochytrium dendrobatidis</i>
BLM	Bureau of Land Management
BMP	best management practices
BO	Biological Opinions
Reclamation	Bureau of Reclamation
CAS	Close Air Support
CATEX	categorical exclusion
CCD	Carson City District
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
cm	centimeters
CNIC	Commander of Navy Installations Command
CNO	Chief of Naval Operations
CNRSW	Commander, Navy Region Southwest
CO	Commanding Officer
CSAR	Combat Search and Rescue
CSG	Carrier Strike Group
CWA	Clean Water Act
CWMA	Cooperative Weed Management Area

## **ACRONYMS AND ABBREVIATIONS (Cont.)**

DEP ARC	Defense Environmental Programs Annual Report to Congress
DUSD (I&E)	Deputy Undersecretary of Defense (Installation and Environment)
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DoDI	U.S. Department of Defense Instruction
DoDM	U.S. Department of Defense Manual
DoI	U.S. Department of Interior
DoN	U.S. Department of Navy
EA	Environmental Assessment
EAP	Encroachment Action Plan
EC	electronic combat
EIR	environmental impact review
EIS	Environmental Impact Statement
EMS	Environmental Management System
EO	Executive Orders
EPA	U.S. Environmental Protection Agency
EPR	Environmental Program Requirements
ESA	Endangered Species Act
ESG	Expeditionary Strike Group
EW	Electronic Warfare
EWC	Electronic Warfare Complex
FAA	Federal Aviation Administration
FLPMA	Federal Land Policy and Management Act
FMU	Fire Management Unit
FOD	foreign object damage
FONSI	Finding of No Significant Impact
FR	Federal Register
FRTC	Fallon Range Training Complex
FRTTP	Fleet Readiness Training Plan
ft	feet
FWCA	Fish and Wildlife Coordination Act
FY	Fiscal Year

## **ACRONYMS AND ABBREVIATIONS (Cont.)**

GIS	Geographical Information System
HUC	Hydrologic Unit Code
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPMP	Integrated Pest Management Plan
IPT	Integrated Product Team
IRP	Installation Restoration Program
km	kilometers
LRMP	Legacy Resource Management Program
MBTA	Migratory Bird Treaty Act
NR Metrics	Natural Resources Metrics
MLWA	Military Lands Withdrawal Act
MOA	Memorandum of Agreement
MOA	Military Operating Areas
MOU	Memorandum of Understanding
mph	miles per hour
MTR	Military Training Route
MW	megawatt
MWR	Morale, Welfare and Recreation
NAC	Nevada Administrative Code
NAS	Naval Air Station
NAVFAC SW	Naval Facilities Engineering Command Southwest
NDAA	National Defense Authorization Act
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
nm	nautical miles
NHPA	National Historic Preservation Act
NNHP	Nevada Natural Heritage Program
NOAA	National Oceanic and Atmospheric Administration
NR	Natural Resources



## **ACRONYMS AND ABBREVIATIONS (Cont.)**

N.R.S.	Nevada Revised Statutes
NSAWC	Naval Strike and Air Warfare Center
NWI	National Wetland Inventory
O&M	operation and maintenance
OHV	off-highway vehicle
OPNAVINST	Chief of Naval Operations Instruction
USD	Office of the Under Secretary of Defense
PAO	Public Affairs Officer
PIF	Partners in Flight
PIT	Passive Integrated Transmitter
RCMP	Range Complex Management Plan
RM D&S	Reclamation Manual Directives and Standards
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
RPM	Remedial Project Manager
SAIC	Science Applications International Corporation
SECNAVINST	Secretary of the Navy Instruction
SFARP	Strike Fighter Advanced Readiness Program
SFTI	Strike Fighter Tactics Instructor
SOA	Supersonic Operating Area
SUA	Special Use Airspace
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
TCTS	Tactical Aircrew Combat Tracking Systems
TCID	Truckee-Carson Irrigation District
TDR	Transfer of Development Rights
TGP	Terra-Gen Power
UC	University of California
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture

**ACRONYMS AND ABBREVIATIONS (Cont.)**

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
U.S. Navy	U.S. Department of Navy
WAP	Wildlife Action Plan
WSA	Wilderness Study Area
WUS	Water of the United States

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## SECTION 1 OVERVIEW

### 1.1 Purpose

The purpose of this Integrated Natural Resources Management Plan (INRMP) is to provide Naval Air Station Fallon, Nevada (NAS Fallon) with a long term (10 to 20 years) planning document to guide the installation commander in the management of natural resources.

In accordance with the Sikes Act, as amended, the INRMP is intended to:

- Provide a framework for recognizing and balancing environmental stewardship with mission readiness.
- Guide the installation Commander in the management of natural resources to support the installation mission.
- Protect and enhance natural resources for multiple uses, sustainable yield, and biological integrity.
- Ensure that natural resources management measures and military operations on the installation are integrated and consistent with stewardship and legal requirements.

The INRMP is the primary means by which natural resources compliance and stewardship priorities are set and funding requirements are determined and is required by the Sikes Act (16 U.S. Code [USC] 670a-670o, 74 Stat. 1052, as amended) for the U.S. Navy. It ensures that natural resources management and military operations are integrated and consistent with stewardship and legal requirements. The INRMP facilitates compliance with natural resource laws, integrates the natural resource components of all NAS Fallon plans and Instructions, and meets the requirements of all applicable Department of Defense (DoD) and U.S. Navy regulations and policies.

This INRMP adheres to Department of Defense Instruction (DoDI) 4715.03 (18 March 2011), and Chief of Naval Operations Instruction (OPNAVINST) 5090.1D, the Environmental Readiness Program Manual, which charges Department of Navy (DoN) installations, with land and water resources suitable for conservation and management, to prepare and implement a comprehensive INRMP that fulfills the requirements of the Sikes Act, as amended, and follows the INRMP Guidance for Navy Installations (U.S. Navy 2006).

The MLWA states that “during the period of withdrawal of lands under this subtitle, the Secretary of Interior shall manage lands withdrawn by section 3011, pursuant to the Federal Land Policy Management Act of 1976 (42 USC §§ 1701-1782, as amended) (FLPMA), other applicable laws, and this subtitle”. Per the MLWA, "the Secretary of the Navy shall manage the lands withdrawn by Section 101(a)(1) and reserved for military purposes in accordance with the integrated natural resource management plan per Section 103(c). As such, the majority of management of natural resources on NAS Fallon Navy-

withdrawn land is the responsibility of the BLM. In addition to the BLMs responsibilities, the Navy has stewardship responsibilities for these lands as defined by the Sikes Act, as amended. A portion of the B-16 Range withdrawn lands are BOR. As such, the Navy maintains the primary public safety management actions only and the BOR shall be primary for all other management actions.

In 2006, an INRMP update was prepared, *Final Integrated Natural Resources Management Plan and Environmental Assessment for Naval Air Station Fallon* by Tetra Tech, Inc. (2006). This 2014 INRMP update integrates the recommendations of the 2006 INRMP, the Integrated Cultural Resources Management Plan (ICRMP) updated in 2012, the Integrated Pest Management Plan (IPMP) updated in 2012, the Bird/Animal Aircraft Strike Hazard (BASH) Management Plan updated in 2013, as well as updated resources studies such as the 2008 Ecological Inventory (Tierra Data, Inc. 2008) and 2011 Herpetological Study (University of California [UC] Davis 2011). Where it pertains to BLM management, this INRMP update will not supersede the 2001 RMPA/INRMP.

## 1.2 Authority

Secretary of the Navy Instruction (SECNAVINST) 6240.6E assigns responsibility for the development and implementation of natural resources management programs on all land and water areas of the DoN to the Chief of Naval Operations and the Commandant of the Marine Corps. The Chief of Naval Operations (CNO) provides natural resources management guidance to all Navy commands afloat and ashore via OPNAVINST 5090.1D.

This INRMP fulfills OPNAVINST 5090.1D which requires natural resource management plans to be prepared for all installations with CLASS I property (installations that have custody of both land and water) suitable for the conservation and management of natural resources. INRMPs are to include land, agriculture, forest, fish, wildlife, and outdoor recreation resources of an installation. The INRMP must also conform to the guidelines and standards of the DoN *Real Estate Procedure Manual*, Naval Facilities Engineering Command (NAVFAC) P-73. Appendix A presents a list of natural resources management legal drivers.

### ***The Sikes Act***

The Sikes Act, as amended, was enacted to “promote effectual planning, development, maintenance, and coordination of wildlife, fish, and game conservation and rehabilitation in military reservations”. The Secretary of Defense is authorized to carry out a program for the conservation and rehabilitation of natural resources on military installations consistent with the mission of the installation. To facilitate the program, each military installation shall prepare and implement an INRMP unless it is determined that the absence of significant natural resources on a particular installation makes preparation of an INRMP inappropriate or unnecessary. Elements, required as part of the INRMP, are listed in Section 1.5 Goals and Objectives. The program provides for:

- The conservation and rehabilitation of natural resources on military installations;

- Sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and non-consumptive uses; and
- Public access subject to safety requirements and military security.

The Sikes Act, as amended, has other provisions that relate to the implementation of this INRMP that include:

- Review for operation and effect of this INRMP, not less often than every five years, by internal and external stakeholders (refer to Section 1.8.1 for additional information regarding review for operation and effect).
- Priority for contracts involving implementation of this INRMP to federal and state agencies having responsibility for conservation of fish and wildlife.

In accordance with the Sikes Act, as amended, this INRMP “shall, to the extent appropriate and applicable, provide for:

- A) Fish and wildlife management, land management, and fish- and wildlife-oriented recreation;
- B) Fish and wildlife habitat enhancement or modifications;
- C) Wetland protection, enhancement, and restoration, where necessary for support of fish, wildlife, or plants;
- D) Integration of, and consistency among, the various activities conducted under the plan;
- E) Sustainable outlease management and the resources upon which such programs depend;
- F) Establishment of specific natural resources management goals and objectives and time frames for proposed action;
- G) Sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources;
- H) Public access to the military installation that is necessary or appropriate for the use described in subparagraph (F), subject to requirements necessary to ensure safety and military security;
- I) Enforcement of applicable natural resource laws (including regulations);
- J) No net loss in the capability of military installation lands to support the military mission of the installation; and
- K) Such other activities as the Secretary of the military department determines appropriate.”

### 1.3 Scope

This INRMP's scope is defined by the Sikes Act, as amended, DoDI 4715.03, and OPNAVINST 5090.1D. This INRMP is considered a long term document, with updates to be made as necessary.

The DoD is required to ensure that ecosystem management is the basis for all management of DoD lands and waters (Office of the Under Secretary of Defense [OUSD] Memorandum of August, 8 1994, *Implementation of Ecosystem Management in the Department of Defense*). Based on an ecosystem approach, this INRMP takes a large geographic view to ensure achievement of the overriding goal of protecting the properties and functions of natural ecosystems.

This INRMP provides goals and objectives for the use and conservation of natural resources that integrate regional ecosystem, military, social (community), and economic matters. It establishes planning and management strategies; identifies natural resource constraints and opportunities; provides baseline descriptions of natural resources necessary for the development of conservation strategies and environmental assessment; serves as the principal information source for the preparation of future environmental documents for proposed NAS Fallon actions; and provides guidance for annual natural resources management reviews, internal compliance audits, and annual budget submittals.

### 1.4 Responsibilities

Much of the natural resource management on NAS Fallon is shared across adjoining jurisdictions. Close collaboration and partnering is required (see Section 1.4.3) between the Navy and external stakeholders, in order to be cost effective, provide consistent management across jurisdictions, avoid redundancy, and optimize the use of scarce resources.

#### 1.4.1 Navy Roles and Responsibilities

The following is a list of roles and responsibilities of the Navy chain of command in supporting the installation and development, revision, and implementation of this INRMP. Policy leadership and liaison with non-Navy partners is provided by the Commander, Navy Region Southwest (CNRSW) N40, Naval Facilities Engineering Command Southwest (NAVFAC SW), and NAS Fallon.

Chief of Naval Operations (CNO) — CNO serves as the principal leader and overall Navy program manager for the development, revision, and implementation of this INRMP. The CNO provides policy, guidance and resources for the development, revision, and implementation of the INRMP and associated National Environmental Policy Act (NEPA) documentation. The CNO approves all INRMP projects prior to submittal to regulatory agencies for signature (DoN 2006).

Commander of Navy Installations Command (CNIC) — CNIC reviews the entire INRMP. Their role is to ensure that installations comply with DoD, Navy, and CNO policy on INRMPs and their associated NEPA documentation. They also ensure the programming of resources necessary to maintain and implement INRMPs, participate in the development and revision of INRMPs, and provide overall program management oversight for all natural resources program elements. CNIC reviews and endorses projects recommended for INRMP implementation prior to submittal for signature, and evaluates and validates Environmental Program Requirements (EPR)-web project proposals (DoN 2006).

Navy Region Southwest (NRSW) – Regional Commanders ensure that installations comply with DoD, Navy, and CNO policy on INRMPs and their associated NEPA documentation. They ensure that installations under their control undergo annual reviews and formal five-year evaluations. They ensure the programming of resources necessary to maintain and implement INRMPs, which involves the evaluation and validation of EPR-web based project proposals and the funding of installation natural resources management staff. NRSW maintains close liaison with the INRMP signatory partners (U.S. Fish and Wildlife Service [USFWS] and Nevada Department of Wildlife [NDOW]) and other INRMP stakeholders. They provide endorsement of the INRMP through the Regional Commander signature (DoN 2006).

Naval Facilities Engineering Command Southwest (NAVFAC SW) – NAVFAC SW is responsible for the planning, engineering/design, construction, real estate (including the acquisition and disposal of), environmental services, in a six state area on the West Coast. The command also provides public works services such as transportation, maintenance, utilities/energy delivery, facilities management and installation operations support to Navy and Marine Corps Installations within its geographic area of responsibility, as well as support to other federal agencies in Nevada. NAVFAC SW assists in implementing Navy policy to ensure stewardship of Navy lands and resources and compliance with natural resources laws and regulations. It also provides technical expertise to evaluate and validate funding requests for natural resources projects. NAVFAC SW provides contracting authority, technical oversight, planning documents, and contracts (including Cooperative Agreements) for installations within its jurisdiction.

#### **1.4.2 Internal Stakeholders**

The following is a list of internal stakeholders that support the development, revision, and implementation of this INRMP. Approving Officials review and approve the INRMP. Other Internal Stakeholders have the opportunity to review the INRMP.

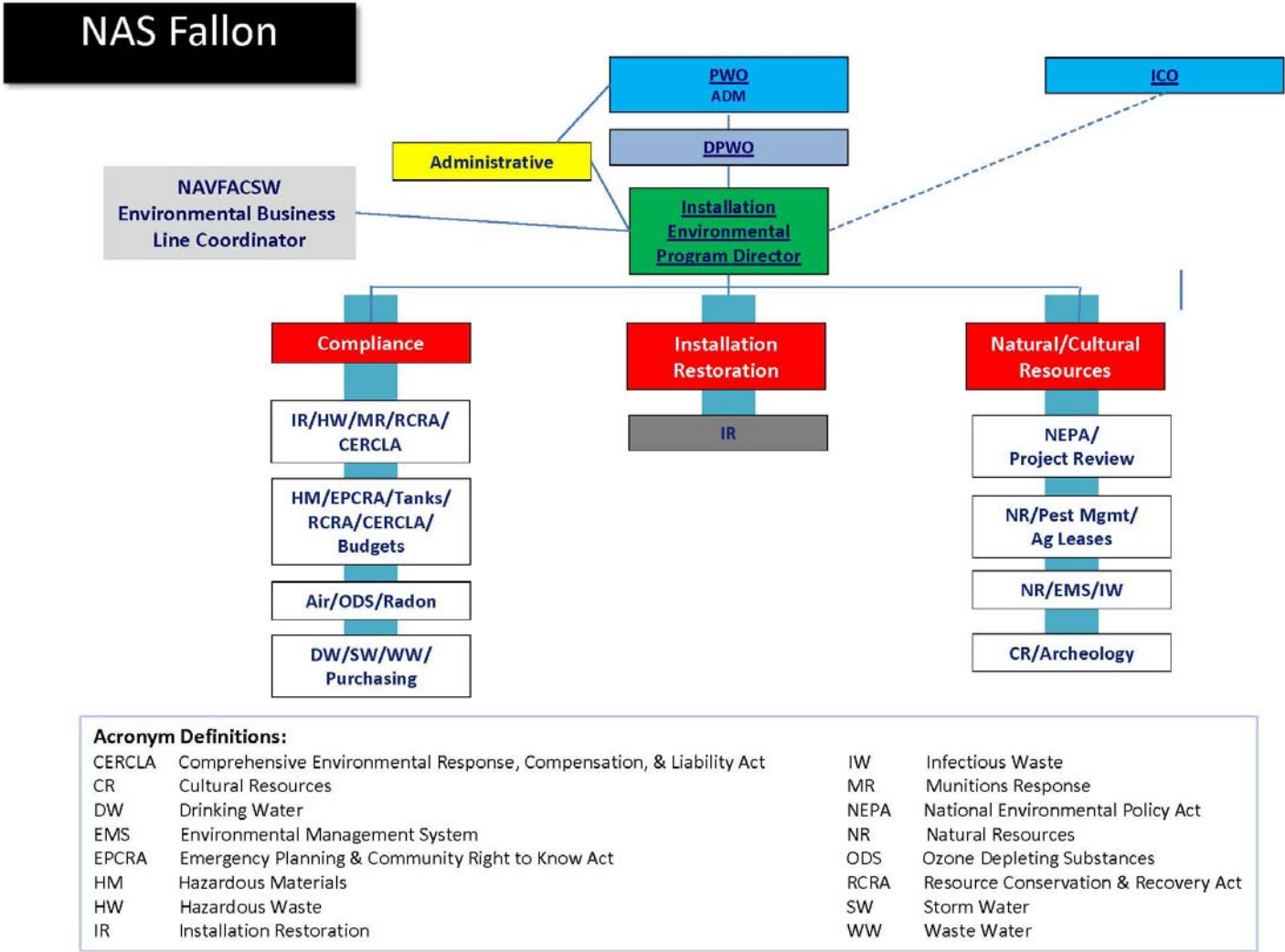
Approving Officials:

- Installation Commanding Officer
- NAVFAC SW Public Works Department Environmental Division
- NRSW Natural Resources Program
- NAVFAC SW Natural Resources Program



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Figure 1. NAS Fallon Organizational Chart



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**Other Internal Stakeholders:**

- All NAS Fallon departments
- NAS Fallon tenant commands
- N40
- NRSW Public Affairs Office
- NRSW Office of Counsel
- NAVFAC SW Public Works Department
- NAVFAC SW Office of Counsel
- NAVFAC SW Integrated Product Team (IPT)

**1.4.3 External Stakeholders**

External Sikes Act and MLWA Stakeholders review and sign the INRMP. Other External Stakeholders have the opportunity to review the INRMP.

**1.4.3.1 External Sikes Act Stakeholders**

The Sikes Act, as amended, requires the Secretary of the Navy to prepare INRMPs in cooperation with the USFWS and state wildlife agency, which in Nevada is the NDOW. An INRMP reflects mutual agreement of the parties concerning the conservation, protection, and management of fish and wildlife resources.

Mutual agreement should be the goal with respect to the entire INRMP. However, it is only required to seek mutual agreement with respect to fish and wildlife management elements. No element of the Sikes Act, as amended, is intended to either enlarge or diminish the existing responsibility and authority of the wildlife agencies concerning natural resources management on military lands. A MOU, signed in January 2006, established a cooperative tripartite agreement between the DoD, the U.S. Department of Interior (DoI), USFWS, and the state fish and wildlife agencies as represented by the International Association of Fish and Wildlife Agencies recognizing the partnerships necessary to prepare, review, and implement INRMPs on military installations. The tripartite agreement is presented in Appendix B.

This INRMP has been prepared in accordance with the Sikes Act, as amended, and in cooperation with USFWS and NDOW. Implementation of this INRMP and any major changes in planned activities will be undertaken with the cooperation and agreement of USFWS and NDOW. This INRMP is a living document and will be updated to reflect improved management practices, major changes in proposed actions within NAS Fallon and agency comments or concerns about ongoing or proposed activities. DoD policy requires installations to review INRMPs annually in cooperation with two primary parties to the INRMP (USFWS and the state fish and wildlife agency). Annual reviews facilitate adaptive management by providing an opportunity for the parties to review the goals and

objectives of the INRMP, as well as establish a realistic schedule for undertaking proposed actions. As this INRMP is considered a long term document with no set expiration date, the annual review process allows a yearly opportunity for updating the plan, if necessary.

#### **1.4.3.2 MLWA Stakeholder**

The BLM, under the MLWA 1999, has significant natural resources management responsibilities on NAS Fallon-administered lands. NAS Fallon-administered lands are within the BLM's Carson City District (CCD). The BLM manages Navy-withdrawn lands as described in the RMPA/INRMP 2001 in accordance with the FLPMA and as mandated by the MLWA. Where BLM inventory and monitoring programs on Navy-withdrawn lands are not specifically described in the RMPA/INRMP 2001 (DoN 2001), they are implemented according to the CCD Consolidated Resource Management Plan (BLM 2001) (Consolidated RMP). The BLM is currently updating the 2001 Consolidated RMP. Should the new Consolidated RMP (currently being developed) change management prescriptions identified in the RMP/INRMP 2001 document, coordination with NAS Fallon will be initiated and necessary amendments will be negotiated to this INRMP update.

The 1999 MLWA required the BLM and NAS Fallon to develop a MOU to implement the management of the lands withdrawn. The MOU was developed and agreed upon soon after the completion of the 2006 INRMP; signatures were obtained on November 27, 2007. This MOU is presented in Appendix B.

On the 1999 MLWA lands, natural resource management is defined as the responsibility of the BLM, however as the primary land user and in accordance with the Sikes Act, as amended; the NAS Fallon has stewardship responsibilities on the withdrawn lands. The exceptions to the requirements under the 1999 MLWA are on the withdrawn lands at the Shoal Site and some of the withdrawn lands considered part of the NAS Fallon Main Station, where the Navy is responsible for all or a portion of the natural resources management. In order to achieve a mutual interest in encouraging responsible and efficient management of the public lands and the resources of the U.S. in an environmentally sound manner, attain efficiencies in operation and regulatory programs the BLM and Navy have partnered to fund a BLM/Navy Liaison position at NAS Fallon. The BLM Liaison strengthens interagency policy collaboration, coordination, and understanding on key environmental issues and reduces duplication of efforts and resources.

A portion of the B-16 Range withdrawn lands are managed by Reclamation. As such, the Navy maintains the primary public safety management actions only and Reclamation shall be primary for all other management actions.

#### **1.4.3.3 Other External Stakeholders**

Additional External Stakeholders include the following:

- Churchill County
- City of Fallon

- Natural Resources Conservation Service
- Nevada Native American Tribes

## 1.5 Goals and Objectives

This INRMP defines the standard for implementing goals and objectives through a hierarchical format, starting with very broad, long-term statements (goals) defined by more specific, mid-term Focus Areas (objectives). The goals set the course towards a successful plan. They define an end outcome or result rather than an activity or process. INRMP goals should endure for 20 years, as a guideline. In contrast to a goal, an objective should be achievable within five years or so. An objective describes a desired future condition or successful outcome that reflects and tiers off of the goal statement, and includes a metric for attaining the objective such as a standard, quantity, or timeframe. To help achieve goals, actions are one-time or routinely repeated short-term items. INRMPs are required by DoDI 4715.03, *Environmental Conservation Program*, to pursue the following goals:

- Identify, protect, conserve, and manage sensitive and significant natural resources and ecosystems.
- Promote the conservation of biodiversity whenever practicable.
- Use and care for natural resources so as to best serve our Nation's present and future needs.
- Comply with all applicable Executive Orders (EOs) and federal, state, and local statutory and regulatory requirements, both substantive and procedural.
- Support the military mission by managing for the goal of no net loss to the operational carrying capacity of installation lands.
- Be flexible enough to accommodate increased military mission requirements for use of these lands.

These goals will be accomplished such that natural resource management can proceed consistent with and unhindered toward internal and regional ecosystem management priorities.

### 1.5.1 Key Goals

The overall goals of this INRMP all focus on avoiding or minimizing adverse effects from military activities to the overall ecosystem and its sensitive resources; increasing interaction with federal, state, and local agencies; and ensuring compliance with environmental legislation, regulations, and guidelines. These goals will ensure the success of the military mission and the conservation of natural resources. The general philosophies and methodologies used throughout the NAS Fallon natural resources management program are focused on conducting required military mission activities while maintaining ecosystem viability.

For NAS Fallon, the overall goal is as follows, specific goals as related to each resource area are presented in Section 4:

- **GOAL:** Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of NAS Fallon while fulfilling the military mission. This will be accomplished such that natural resource conservation, restoration, and enhancement can proceed consistent with and unhindered toward internal and regional ecosystem management goals for these lands and waters, without current or future compromise or loss to the military mission.

### 1.5.2 Key Objectives

The 2001 RMPA/INRMP, identified several key objectives for natural resources management on NAS Fallon. These objectives were identified in the 2006 INRMP and continue to be viable and will be carried forward as objectives for this INRMP update. Key objectives include the following:

- Ensure no net loss in the capability of the land and natural resources at NAS Fallon to support its current and future military mission;
- Ensure compliance with applicable laws and regulations as they pertain to natural resources;
- Maintain and enhance the level of biodiversity within the constraints of the military mission;
- Outlease lands that are suitable and available for agricultural production and grazing;
- Implement adaptive management techniques to provide flexible and responsive management strategies based on scientific data gathered from monitoring programs, literature, and resource experts;
- Provide for public access wherever possible in areas not exposed to military hazards;
- Protect the quality of wildlife habitat, where feasible; and
- Maintain sufficient professionally trained natural resources personnel to implement, manage, and monitor the management strategies of the INRMP.

These general objectives are supported by several resource-specific management measures for obtaining the desired outcomes, which are described in Section 4.0, Natural Resources Management. Resource-specific measures were developed to guide natural resources management for a period of five years.

### 1.6 Management Strategy

An integrated planning approach was used to develop the policies, guidelines, and projects for each natural resource area within the INRMP. Implementation of this management plan will support NAS Fallon's military mission while maintaining, protecting, and enhancing

the ecological integrity of the lands and the biological communities inhabiting them, thereby protecting NAS Fallon ecosystems and their components.

The typical management programs addressed in an INRMP include land management; forest management; aquatic and terrestrial habitat management; special natural area management; fish and wildlife management; special-status species management; pest management; wildland fire management; recreational resource and activity management; and agricultural program management. The INRMP is a mission-driven plan, created with a dual goal:

- To allow for the conduct of appropriate military use at levels necessary to maintain a full readiness posture for national defense and civil missions; and
- To provide for management of natural resources in an ecosystem-oriented, sustainable manner, consistent with federal, state, and local regulations.

Benefits of the INRMP to the military mission include sustained use of NAS Fallon's installation lands, better distribution of military activities, and integration of the military mission with natural resources management. The INRMP facilitates long-range, sustainable use of NAS Fallon.

This INRMP emphasizes an ecosystem management approach to natural resources management, consistent with DoD policies presented in Appendix A. Ecosystem management supports the use of natural resources on NAS Fallon for both military and other human-related values and purposes. The goal of ecosystem management is to protect the properties and functions of natural ecosystems. Ecosystems extend beyond installation boundaries, and management of NAS Fallon natural resources will include development of partnerships with neighbors. NAS Fallon mission activities are integrated and consistent with federal stewardship requirements and ensure the sustainability of quality lands to accomplish NAS Fallon's military mission.

The purpose of the INRMP is to assist NAS Fallon in achieving "no net loss" in the capability of NAS Fallon to support the military mission. The DoD faces significant challenges in achieving this goal as installation managers are under increasing pressure from many directions regarding how to use and manage resources. The implementation of the INRMP will allow NAS Fallon to support its mission, while conserving the natural resources on the installation.

## **1.7 Stewardship and Compliance**

### **1.7.1 Stewardship**

Environmental stewardship is a key component for range sustainability. The equilibrium between training requirements and a sustainable and healthy environment is called for in several instructions by making sure environmental considerations are part of the DoD decision-making processes (OPNAVINST 5090.1D, DoDI 4715.03, and SECNAV 5090.6). The purpose of environmental stewardship is to responsibly manage resources for the benefit of present and future generations. Conducting fleet-required training operations,



while at the same time meeting regulatory requirements and minimizing environmental impacts, is a goal that will ensure the sustainability of the Fallon Range Training Complex (FRTC). Meeting this goal will promote both operational and environmental sustainability.

DoDI 4715.03 *Natural Resources Conservation Program* (18 March 2011) requires that Navy installations incorporate ecosystem management as the basis for land use planning and management. Ecosystem-based management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. DoDI 4715.03 defines ecosystem management on DoD lands as:

“A goal-driven approach to managing natural and cultural resources that supports present and future mission requirements; preserves ecosystem integrity; is at a scale compatible with natural process; is cognizant of nature’s time frames; recognizes social and economic viability within functioning ecosystems; is adaptable to complex changing requirements; and is realized through effective partnerships among private, local, state, tribal, and federal interests.”

In accordance with DoDI 4715.03, principles of ecosystem management are as follows:

1. Avoid single-species management and implement an ecosystem-based multiple species management approach, insofar as that is consistent with the requirements of the Endangered Species Act (ESA).
2. Use an adaptive management approach to manage natural resources such as climate change.
  - a. Evaluate and engage in the formation of local or regional partnerships that benefit the goals and objectives of the INRMP.
  - b. Due to policy and fiscal implications, partnerships involving external stakeholders or multiple Military Services require proper advanced coordination through DoD Component chains of command.
3. Natural resources personnel must be included in the planning and implementation phases of all resulting agreements.
4. Use the best available scientific information in decision-making and adaptive management techniques in natural resource management.
5. Foster long-term sustainability of ecosystem services.

## **1.7.2 Compliance**

### **1.7.2.1 Natural Resources Laws, Regulations & Policy**

The INRMP supports the NAS Fallon military mission by ensuring compliance with federal and state laws, especially those associated with environmental documentation, wetlands, endangered species, water quality, and wildlife management. Appendix A presents a list of natural resources management legal drivers.

### 1.7.2.2 National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA) of 1969 (42 USC 4321 et seq.) is the basic national charter for the protection of the environment. It is a policy which primarily requires a clear evaluation of all federal decisions potentially affecting the human and natural environment. The NEPA statute (as amended, 42 USC 4321-4370) and the procedural Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulation [CFR] parts 1500-1508) combine to represent the requirements of NEPA.

NEPA analysis and documentation for NAS Fallon is currently performed by NAVFAC SW personnel, as follows:

- Conduct planning of mission activities having potential environmental effects by applying NEPA's requirements and policies to enhance the mission-related use and the stewardship of natural resources. Seek opportunities for streamlining environmental assessment procedures.
- Assess the environmental consequences of each proposed action that could affect the natural environment, and address the significant impact of each action through analysis, planning, mitigation, and prevention.
- Ensure that any proposed NAS Fallon action that has the potential for physical impact on the human environment undergoes or complies with the NEPA process.
- Include new activities, substantive changes in continuing actions, specific actions, or adoption of programs.

Three Environmental Impact Statements (EISs) have been prepared specific to NAS Fallon training requirements since 1998. The EIS for *Withdrawal of Public Lands for Range Safety and Training Purposes Naval Air Station Fallon, Nevada* (1998b) provided a detailed description of overall training at NAS Fallon. The *Final Legislative Environmental Impact Statement Renewal of the B-20 Land Withdrawal Naval Air Station Fallon, Nevada* (1998a) was prepared specifically to meet the requirements of Public Law 99-606 and was for the purpose of renewing the withdrawal of public lands at B-20 providing for the continued use of the range. These two documents resulted in the passage of the MLWA of 1999. This act renewed the Navy withdrawal of B-20 and authorized the withdrawal of an additional 127,365 acres.

The Navy training actions proposed for public lands were analyzed and validated by the Institute for Defense Analysis and the Navy and BLM agreed to prepare a joint EIS covering all training proposed in the Requirements Document. On April 10, 2000, the Record of Decision (ROD) for the Final EIS for *Proposed Fallon Range Training Complex Requirements Naval Air Station Fallon, Nevada* was signed. In this EIS, it was stated that in addition to addressing training requirements, this document would provide a long-range plan to federal, state, and local agencies and the general public describing the on-going and foreseeable future actions at NAS Fallon. It was also agreed that Naval Strike and Air Warfare Center (NSAWC) personnel would review the document annually and changes resulting from the reviews would be documented in follow up Requirements Documents.

The ASN (I&E) Memo of August 12, 1998, *DoN Policy Memo 98-06: Review of INRMPs under NEPA*, has determined that the Sikes Act, as amended, requirements for INRMP implementation necessitate the preparation of NEPA documentation prior to INRMP approval. In compliance with the NEPA process, an Environmental Assessment (EA) was prepared for the 2006 INRMP (Tetra Tech, Inc. 2006). Since this INRMP update does not reflect significant changes to the 2006 INRMP, no NEPA analysis is necessary for the implementation of this INRMP.

## 1.8 Environmental Management System

The DoN uses an Environmental Management System (EMS) to integrate environmental considerations into day-to-day activities across all levels and functions of Navy enterprise. It is a formal management framework that provides a systematic way to review and improve operations, create awareness, and improve environmental performance. Systematic environmental management as an integral part of day-to-day decision making and long-term planning processes is an important step in supporting mission readiness and effective use of resources. The most significant resource for every organization is their senior leadership's commitment and visibility in EMS implementation and sustainability. A robust EMS is essential to sustaining compliance, reducing pollution and minimizing risk to mission. The Navy EMS conforms to the International Organization for Standardization 14001:2004 *Environmental Management System* standard.

### 1.8.1 Review for Operation and Effect

Section 101(b)(2) of the Sikes Act [16 USC 670a(b)(2)] specifically directs that the INRMPs be reviewed "as to operation and effect" by the primary parties "on a regular basis, but not less often than every five years", emphasizing that the review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the Sikes Act, as amended, and contribute to the conservation and rehabilitation of natural resources on military installations. The Office of the Secretary of Defense (OSD) guidance (17 May 2005) states that joint review should be reflected in a memorandum or letters between "the parties" at least every five years. Informal annual reviews are mandatory to facilitate adaptive management, during which INRMP goals, objectives, and "must fund" projects are reviewed, and a realistic schedule established to undertake proposed actions. This written documentation should ideally be jointly executed or in some other way reflect whatever mutual agreement the parties may reach and summarize the rationale for any conclusions the parties have reached.

The Annual Review process is broadly guided by DoDI 4715.03 and OPNAVINST 5090.1D. The following additional policy memoranda clarified procedures for INRMP reviews and revisions:

- Deputy Undersecretary of Defense (Installation and Environment) (DUSD [I&E]) Policy Memorandum 10 October 2002, which replaced a 1998 policy memorandum.

- Assistant Deputy Undersecretary of Defense (ADUSD) for Environment, Safety and Occupational Health (ESOH) Policy (01 November 2004 Memorandum).
- ADUSD for ESOH Policy (September 2005 Memorandum).

### 1.8.2 Updates, Revisions, and Annual Reviews

DoD and DoN policy requires installations to review INRMPs annually in cooperation with the two primary parties to the INRMP (USFWS and the state fish and wildlife agency- NDOW). Annual reviews facilitate adaptive management by providing an opportunity for the parties to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions.

In accordance with the Sikes Act, as amended, and DoDI 4715.03, the DoD shall report progress toward meeting natural resources conservation program measures of merit to DUSD (I&E) at each Environmental Management Review and in the Defense Environmental Programs Annual Report to Congress (DEP ARC). Installations with significant natural resources shall report:

- Each installation's compliance with Sikes Act, as amended.
- Annual feedback received from the USFWS.
- Annual feedback received from the state fish and wildlife agency.
- Funding requirements per Fiscal Year (FY) needed to implement the INRMP: the amount required for recurring projects, and the amount required for non-recurring projects.

Per DoDI 4715.03 and DoD Manual (DoDM) 4715.03-M, Annual Reviews must verify that:

- Current information on all conservation metrics is available.
- All *must fund* projects and activities have been budgeted for and implementation is on schedule.
- All required trained natural resources positions are filled or are in the process of being filled.
- Projects and activities for the upcoming year have been identified and included in the INRMP. An updated project list does not necessitate revising the INRMP.
- All required coordination has occurred.
- All significant changes to the installation's mission requirements or its natural resources have been identified.
- The INRMP goals and objectives remain valid.

In accordance with the above guidances, NAS Fallon Environmental Division will review the INRMP annually in cooperation with the USFWS and NDOW. On an annual basis, NAS Fallon will invite the USFWS, NDOW, as well as other interested internal and

external stakeholders to attend a meeting to review the previous year INRMP implementation and discuss implementation of upcoming programs and projects. Invitations will be either by letter or email. Attendance is at the option of those invited, but at minimum the USFWS local field office and one representative of NDOW are expected to attend. The meeting will be documented with an agenda, meeting minutes and sign in roster of the attendees.

### ***Navy Natural Resources Metrics***

The Navy Natural Resources (NR) Metrics were developed to support the annual Natural Resources Program reviews between the Navy and its Sikes Act partners (USFWS and state fish and wildlife agencies). The NR Metrics are used to determine how well the DoN is doing with respect to natural resources management and INRMP implementation across Navy/Marine Corps installations. There are seven (7) Focus Areas that comprise the NR Metrics to be evaluated during the annual review of the Natural Resources Program and associated INRMP. Each Focus Area has three to seven criteria that have been established by natural resources managers and are used to help determine the status of a given functional area within natural resources. The 7 Focus Areas are described as follows:

1. **Ecosystem Integrity-** Evaluate the current status, management effectiveness, and trends of the ecosystems at the installation to support and maintain a community of organisms that have a species composition, diversity, and functional organization comparable to those in the respective region. This Focus Area is intended to define the ecosystems that occur on the installation and assess the integrity of those ecosystems. Terrestrial ecosystems are defined by Nature Serve's "*Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems*" (2003).
2. **Listed Species and Critical Habitat-** Evaluate the extent to which federally listed species have been identified and the INRMP provides conservation benefits to these species and their habitats.
3. **Recreational Use and Access-** Evaluate the availability and adequacy of public recreational use opportunities, such as fishing and hunting, and access for handicapped and disabled persons, given security and safety requirements for the installation.
4. **Sikes Act Cooperation (Partnership Effectiveness)-** Determine to what degree USFWS, state fish and wildlife agency, and when appropriate, National Oceanic and Atmospheric Administration (NOAA) Fisheries Service, partnerships are cooperative and result in effective INRMP development and review for operation and effect.
5. **Team Adequacy-** Assess the adequacy of the natural resources team (the natural resource management professional and installation support staff) in accomplishing INRMP goals and objectives at each installation.
6. **INRMP Implementation-** Evaluate the execution of actions taken to meet goals and objectives outlined in the INRMP.

7. **INRMP (Natural Resource Program) Support of the Installation Mission-** Evaluate the level to which existing natural resources requirements support the installation's ability to sustain the current operational mission, ensuring no net loss of mission capability.

The results of annual NR Metrics reviews are provided in the DEP ARC in accordance with the Sikes Act, as amended, which requires the Secretary of Defense to report annually to Congress the status of each INRMP and the amounts expended by each military installation to implement its INRMP.

This INRMP addresses and supports the requirements of the Focus Areas addressed in the NR Metrics. A copy of the most recent Navy NR Metrics questions are presented in Appendix D. Navy NR Metrics are found on the Navy Conservation website.

### 1.9 Integrating Other Plans and Preparing Prescriptions for Projects

Per DoDM 4715.03-M (14 January 2011) Enclosure (2): *Integrating Other Plans, Programs and Policies*, this INRMP has been prepared in coordination with other planning documents (e.g. installation master plans, range plans, training plans, ICRMPs, IPMPs, encroachment management plans, installation restoration plans, and installation information management systems). Information from an INRMP is incorporated into other plans and other plans help identify management priorities and potential impacts to natural resources that are incorporated into the INRMP. This INRMP is integrated with a number of NAS Fallon plans which are available in the NAS Fallon Environmental Division Library, including the following:

- **Fallon Range Complex Management Plan (RCMP)**—The Navy is in the process of developing the Fallon RCMP concurrently with this INRMP. This INRMP revision is being developed to be compatible with the goals, mission requirements, and future visions of the RCMP.
- **Bird/Animal-Aircraft Strike Hazard (BASH) Management Plan, October 2013** —The purpose of the BASH Management Plan is to identify potential areas of concern and to establish procedures to minimize the threat of bird and other animal strikes to aircrews and aircraft at NAS Fallon and the surrounding Special Use Airspace (SUA) and FRTC (managed by NSAWC). This INRMP will support the BASH Management Plan through natural resources management measures and incorporates BASH management actions into the INRMP.
- **NAS Fallon Encroachment Action Plan, 2012** —The NAS Fallon Encroachment Action Plan (EAP) identifies, quantifies, and provides mitigation strategies for the potential encroachment threats to an installation.
- **Agricultural Outlease Land Management Plan, May 2002**—The Agricultural Outlease Land Management Plan manages lands associated with the greenbelt on the NAS Fallon Main Station. This INRMP revision is compatible with and supports the objectives of this plan.

- **EA for the Management of the Greenbelt Area at NAS Fallon, Nevada, September 1994 and FONSI.** This EA guides the management of the greenbelt, including the agricultural outleases on the NAS Fallon Main Station. (The Agricultural Outlease Land Management Plan above is tiered off of this document.) Some of the acreages described in this document are no longer accurate as a result of water rights changes described in Section 3.2.2.8.
- **IPMP, September 2010**—This INRMP revision incorporates the management strategies of the IPMP by reference. **ICRMP, 2012—The ICRMP** guides the management of cultural resources on NAS Fallon-administered lands. This **INRMP revision** incorporates the ICRMP by reference and ensures that management of natural resources will support the management measures of the ICRMP for the protection of cultural resources.
- **Grazing, Vegetation, and Water Resource Management Plan for the Dixie Valley Settlement Area, Churchill County, Nevada, August 2002**—This INRMP revision incorporates many of the management measures described in this plan for the Dixie Valley area.
- **NAS Fallon Overview Plan, 2003**—This overview plan replaced the 1990 NAS Fallon Main Station Master Plan Update. This INRMP revision is compatible with the goals of the NAS Fallon Overview Plan (DoN 2003a).
- **NAS Fallon Wetlands Management Plan, 2002**—This plan is an overview of the potential regulatory restrictions and depicts wetland resources on NAS Fallon-administered lands. The resources presented in this plan are restricted to those lands surveyed during the 1996 wetland inventory study, prior to the 1999 land withdrawal. The inventory did not delineate jurisdictional versus non-jurisdictional wetlands. This INRMP incorporates the wetland management practices outlined in the Wetlands Management Plan (DoN 2002f).

## **SECTION 2**

### **NATURAL RESOURCES MANAGEMENT AND MISSION SUSTAINABILITY**

#### **2.1 Defining Impact to the Military Mission**

Under the Sikes Act, as amended, Naval Air Station Fallon, Nevada (NAS Fallon) must ensure that there is no net loss to the military mission due to implementation of this Integrated Resources Management Plan (INRMP). To do this, the link between land use and the mission of integrated strike warfare training support and the missions of other tenant users, needs to be disaggregated into component parts.

Land use and natural resource management decisions should be evaluated so that resources are protected against short-term, project-by-project impacts which could cumulatively result in significant resource changes, thereby limiting the flexibility of military mission requirements. Additionally, decisions should be considered at appropriate biological scales and time frames so that there is an inherent removal of any conflicts between natural resource management and military mission. A big picture view of the current scenario, or of any existing or future problems, should be aligned with broader ecosystem management goals.

The military will carry out its mission at NAS Fallon while practicing good stewardship of the resources. This involves protecting physical resources, visual resources, biological resources, and outdoor recreation programs. Section 4 provides the goals, objectives and management approaches to natural resources on NAS Fallon-administered lands.

Careful consideration is given to the siting of proposed actions and evaluation of potential impacts is done early in the planning process. As part of ongoing efforts to avoid and/or minimize impacts on special status species, sensitive habitat, cultural or other relevant resources, consideration will first be given to use of lower value management areas. This will assist planners in avoiding areas supporting more sensitive resources. This will, in turn, enable planners to reduce costs (in terms of funding, manpower, and time) to plan, obtain regulatory approvals, and implement proposed actions.

On NAS Fallon-administered lands there are no significant natural resources encumbrances to training. In addition to meeting military mission requirements, the lands open to public access are also managed to meet multiple use requirements by the BLM and Reclamation.

#### **2.2 Natural Resources Management Overview**

The Sikes Act, as amended, defines the purpose of natural resources management on military lands as “the conservation and rehabilitation of natural resources on military installations; the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and non-consumptive uses; and subject to safety requirements and military security, public access to military installations to facilitate the use [of these resources].”



NAS Fallon's approach to natural resources management takes a long-term view of ecosystem processes and human activities and integrating conservation and management of biological resources with the military mission of the installation. The installation's natural resources conservation and management programs are to be directed toward achieving the overarching natural resource management goals. For NAS Fallon, the general goal is as follows, specific goals as related to each resource area are presented in Section 4.0:

- **GOAL:** Provide good stewardship to protect, manage, and enhance the land, water, and wildlife resources of NAS Fallon while fulfilling the military mission. This will be accomplished such that natural resource conservation, restoration, and enhancement can proceed consistent with and unhindered toward internal and regional ecosystem management goals for these lands and waters, without current or future compromise or loss to the military mission.

This goal will ensure the success of the military mission and the conservation of natural resources. The general philosophies and methodologies used throughout the NAS Fallon natural resources management program are focused on conducting required military mission activities while maintaining ecosystem viability.

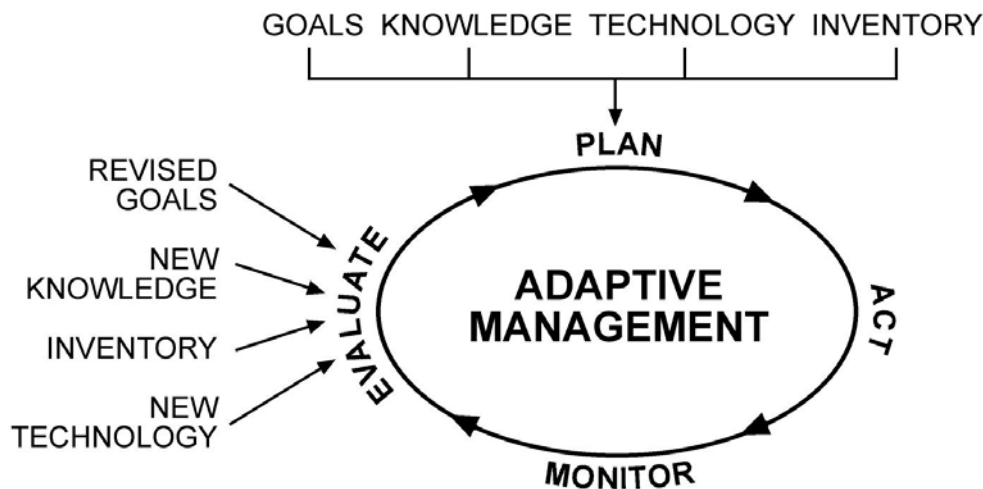
### 2.3 Ecosystem Management Approach

NAS Fallon lies within the Great Basin intermountain ecoregion which covers nearly two-thirds of the State of Nevada. This area covers essentially the dryland region between the Sierra Nevada on the west and the Rocky Mountains on the east, and between the moister Pacific Northwest, and the warmer drylands characterized by creosote (to the south). It is the core of the region in which the foothills and lowlands are largely dominated by sagebrush and Chenopodiaceous genera such as *Atriplex* and *Sarcobatus* (Cronquist et al. 1972).

According to the DoDI 4715.03, the goal of ecosystem management is to ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. Over the long term, that approach shall maintain and improve the sustainability and biological diversity of terrestrial and aquatic (including marine) ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training operations. The "Ecosystem Integrity" Focus Area of the Navy Natural Resources (NR) Metrics (refer to Section 1.8.2 and Appendix D) is intended to define the ecosystems that occur on the installation and assess the integrity of these ecosystems. The term, integrity, refers to the quality of state of being complete, unbroken condition, wholeness, entirety, unimpaired, without significant damage, good condition, or general soundness. Terrestrial ecosystems, as defined by Nature Serve's "Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems" were selected from a list and assigned to each installation. Locally-defined ecosystems were added, if necessary. The ecosystems at NAS Fallon as defined by Nature Serve are as follows:

- Inter-Mountain Basins Semi Desert Grassland
- Inter-Mountain Basins Alkaline Closed Depression
- Inter-Mountain Basins Mat Saltbush Shrubland
- Inter-Mountain Basins Montane Sagebrush Steppe
- Inter-mountain Herbaceous Wetland
- Inter-mountain Basin Greasewood Flat
- Inter-mountain Mixed Upland Wetland
- Inter-mountain Riparian, Springs

Development of this INRMP is based on the concept of adaptive management of ecosystems. Adaptive management is founded on the idea that management of renewable natural resources involves a continual learning process (Walters 1986). This approach recognizes that there is incomplete data when dealing with natural resources and that, through continued research and monitoring of the effects of management practices, new information will be developed. In addition, an adaptive management approach recognizes that protection and management actions are often implemented, by necessity, with imperfect knowledge. Recognition of this uncertainty allows development of monitoring and research approaches to progressively improve knowledge, and thus enhance decision-making and management capabilities. The adaptive management process is illustrated in Figure 2.



**Figure 2. Adaptive Management Strategy**

## 2.4 Natural Resources Consultation Requirements

NAS Fallon consults with the U.S. Fish and Wildlife Service (USFWS) and the Nevada Department of Wildlife (NDOW) to manage natural resources located within the installation. Cooperative management of the NAS Fallon's natural resources is required

under the Sikes Act, as amended, and the Fish and Wildlife Coordination Act of (FWCA) (16 USC 661-667e). The BLM and NAS Fallon have also coordinated throughout the years on natural resources management and project related National Environmental Policy Act (NEPA) issues on the 1999 withdrawn lands, Dixie Valley and NAS Fallon Main Station. Because of the close coordination between the BLM and NAS Fallon a BLM/Navy Liaison position was created with both agencies sharing the position's funding.

There are multiple natural resources consultation requirements in addition to those associated with INRMP development and review requirements as described in Section 1.8. NAS Fallon-administered lands do contain federally listed endangered, threatened, or candidate species or the potential for those species. The NAS Fallon-administered lands contain Greater sage-grouse which was placed on the list of species that are candidates for Endangered Species Act Protection in 2010. Consequently, Section 7 ESA consultation would not be required for projects on NAS Fallon-administered lands, unless there is a change in potential federally listed species. Actions that fall under the jurisdiction of Section 404 or 401 of the Clean Water Act (CWA) necessitate permitting from U.S. Army Corps of Engineers (USACE).

In addition to natural resources consultation requirements, there are National Historic Preservation Act (NHPA) and tribal consultation requirements, which are presented in full in the Integrated Cultural Resources Management Plan (ICRMP) (DoN 2012c).

## **2.5 National Environmental Policy Act Compliance**

NEPA is the basic national charter for the protection of the environment. It is a procedural planning tool which primarily requires a clear evaluation of all federal decisions potentially affecting the human and natural environment. NAS Fallon must consider the environmental consequences of its actions before a commitment is made to proceed.

For NAS Fallon projects and activities that require a NEPA analysis, NAS Fallon has developed and is using an environmental impact review (EIR) process and form to review all proposed projects for potential environmental impacts (NEPA). The EIR process uses a multipurpose form, which allows the Environmental Planner to select the appropriate NEPA documentation, usually a categorical exclusion (CATEX) from the Navy's list of CATEXs for the proposed action/project. The process allows the natural resources, cultural resources, and Environmental Planner to review for possible compliance with federal and state laws and regulations and permitting requirements, as well as interagency agreements, regarding a specific proposed action or project. The process also allows for the notification of other NAS Fallon departments and tenants of a proposed action or project.

## **2.6 Encroachment Partnering**

Non-military encroachment pressures are a result of the increasing urbanization of lands surrounding NAS Fallon. NAS Fallon's policies that support encroachment partnering include the following strategies:

- Incorporate NAS Fallon's Encroachment Action Plan (2005) into natural resource planning.
- Maintain good relations with neighbors by interacting with them regularly to ensure good cooperation.
- Support the Churchill County Transfer of Development Rights (TDR) programs that are compatible with the NAS mission and operations.

The purpose of the TDR program is to provide a voluntary, incentive based process for permanently preserving rural resources which provide significant community benefit such as agriculture, open spaces, aquifer recharge for current and future water supply (water recharge area), and a military installation buffer area. NAS Fallon has partnered with Churchill County to provide funding to purchase the conservation easements and development rights on properties within the notification area/buffer zone around the installation. The 2012 Churchill County Master Plan has adopted the following policies for open space management surrounding the installation:

- Policy OS 8.1 Coordinate land use planning in the buffer zone area around NAS Fallon to maintain low housing density in flyover areas.
- Policy OS 8.2 Support Navy projects to maintain open space in buffer areas around NAS Fallon.
- Policy OS 8.3 Support Navy projects to create bike trails, wildlife viewing areas, etc. in buffer areas.
- Policy OS 8.4 Aid the Navy in applying for funding for cooperative open space projects.

Although these encroachment partnering policies support the mission of NAS Fallon, encroachment at NAS Fallon can also potentially directly hinder the military mission. The unauthorized presence of the public prior to or during military training activities can be costly and potentially dangerous. If public use gets out of balance, associated human disturbance can have adverse effects on the natural resources. It is important to anticipate and protect against all additional encroachment on resources available for fulfilling the military mission and for protecting environmental resources.

## **2.7 Beneficial Partnerships and Collaborative Resource Planning**

Beneficial partnerships with agencies, universities, environmental organizations, and community groups are a fundamental part of natural resources management at NAS Fallon. The involvement of these groups is based on their designation as cooperating agencies and on cooperative agreements, regulatory authority, and technical assistance, as required by federal legislation and regulation. There are many benefits of regional planning partnerships, such as those described below:

- Pooling of financial resources for implementation can help spread the costs of restoration, enhancement, monitoring, and research;

- Project mitigation will be more beneficial and efficient because it is based on a consensus of prioritized need;
- Funding institutions, as well as regulatory agencies, can determine their own role in contributing to the plan's success;
- Positive relationships, partnerships, and goodwill can result among all participants in the process by fostering understanding and collaborating on a common goal;
- The public is provided a consistent message that is an accurate reflection of the status and management of NAS Fallon; and
- A more consistent and reliable regulatory process is better for everyone.

There are existing agreements and plans that should be adhered to, such as the joint 2001 Resource Management Plan Amendment (RMPA)/INRMP, and that can be built upon to enhance partnering between the Navy and other agencies involved. In particular, the Navy must continue fostering the cooperative management of natural resources with the BLM, which, in accordance with the Military Lands Withdrawal Act (MLWA), has primary natural resource management responsibilities on the majority of withdrawn lands.

### 2.7.1 Fish and Wildlife Inter-Agency Coordination

Cooperative efforts with USFWS involve identifying potential threatened and endangered (T&E) species on NAS Fallon. USFWS is a cooperating and signatory agency for implementation of this INRMP in accordance with the Sikes Act, as amended. NAS Fallon will consult informally and/or formally with the USFWS prior to implementation of any action included in this INRMP that may affect listed or proposed species. NDOW is the primary state agency responsible for managing fish and wildlife in Nevada. NDOW is a designated cooperative agency for developing this INRMP.

The USFWS and NDOW have worked on several collaborative natural resources conservation efforts on NAS Fallon including the following:

- **Dixie Valley Pond Maintenance-**The Dixie Valley Pond Maintenance Plan (USFWS 2002) was drafted in support of the cooperative weed control between the USFWS, NDOW, and NAS Fallon to protect Dixie Valley tui chub habitat. Maintenance activities included installation of exclusion fencing and removal of invasive species (Russian olives, knapweed, and cattails) in order to encourage native wetland species (willows, cottonwoods, and wild rye) to grow.
- **Western (Dixie Valley) Toad Studies-** The USFWS is currently conducting toad



**Guzzler installed on the east side of Fairview Peak in 2010. Fence was erected to keep livestock out.**

Photo credit: Gary Cottle

distribution studies (Passive Integrated Transmitter [PIT] tagging) and *Batrachochytrium dendrobatidis* (Bd) sampling to study western (Dixie Valley) toads within Dixie Meadows.

- **Spring/Guzzler Development-** NDOW and NAS Fallon have collaborated on several guzzler and spring installation and enhancement projects within the FRTC. The springs and guzzlers provide water to the desert bighorn sheep and antelope in the hot summer months.

### 2.7.2 BLM

This INRMP update will not supersede the RMPA/INRMP 2001 where it pertains to BLM management. BLM will continue to manage in accordance with the RMPA/INRMP 2001 until they decide it is necessary to further amend their management plan. The MLWA also requires that the Navy and BLM develop a MOU to implement the management of such lands. The MOU was developed and agreed upon soon after the completion of the 2006 INRMP; signatures were obtained on 27 November 2007. BLM would continue to manage Navy-withdrawn lands as described in the RMPA/INRMP 2001 in accordance with FLPMA and as mandated by the MLWA. The BLM has been identified as a major stakeholder in this INRMP update and is a coordinating agency.

The BLM, under the MLWA 1999, has significant natural resources management responsibilities on NAS Fallon-administered lands. NAS Fallon-administered lands are within the BLM's CCD. Consequently, where BLM inventory and monitoring programs on Navy-withdrawn lands are not specifically described in the RMPA/INRMP 2001 (DoN 2001), they are implemented according to the CCD Consolidated Resource Management Plan (Consolidated RMP).

### 2.7.3 State Comprehensive Wildlife Action Plan

In 2000, Congress enacted the State Wildlife Grants Program to support state programs that broadly benefit wildlife and habitats but particularly "species of greatest conservation need." This planning process was required of each state to continue to receive federal funds through the State Wildlife Grants program. As a result, NDOW was charged with the development of a statewide Comprehensive Wildlife Conservation Plan, now called Nevada's Wildlife Action Plan (WAP). Nevada's original WAP was completed and approved by the USFWS in December 2005 and was revised in 2012 (NDOW 2012a).

NDOW partnered with the original WAP team: The Nevada Natural Heritage Program (NNHP), The Lahontan Audubon Society, The Nature Conservancy, and also The Great Basin Bird Observatory to develop this revision to the plan. The revised WAP incorporated the potential impacts of emerging and expanding stressors including climate change, accelerated energy development, disease and invasive species on Nevada's fish, wildlife, and habitats. The WAP serves as a comprehensive, landscape level plan, identifying the species of greatest conservation need and the key habitats on which they depend, with the intent to prevent wildlife species from becoming threatened or endangered. The WAP contains conservation actions to provide guidance to successfully conserve 22 of Nevada's

key habitats and priority species. Many of the conservation actions within the WAP are strategies identified in this INRMP.

## **2.7.4 Bureau of Reclamation**

As previously described, the combination of acquired and withdrawn lands results in both the Navy and the U.S. Department of the Interior having natural resources management responsibilities on NAS Fallon administered lands. Joint management by Reclamation and the Navy is described in Section 101(d)(1) of the MLWA. Reclamation administers the lands around B-16 and its land status designations include both closed and open withdrawn lands. For the Reclamation withdrawn lands of the B-16 Range, the Navy is responsible for public safety management actions only and Reclamation for all other management actions. Reclamation is the regulatory authority and Navy provides technical assistance.

## **2.8 Other Land Use Plans**

There are also plans from other agencies that are relevant to NAS Fallon-administered lands, primarily, the Churchill County Master Plan (2010) and the BLM Fire Management Plan (BLM 2004). In addition to the state WAP described above, NDOW has prepared species specific conservation and management plans, including the following:

- Bighorn Sheep Management Plan (NDOW 2001)
- Nevada Bat Conservation Plan (NDOW 2006)
- Predation Management Plan (NDOW 2012b)

## **2.9 Public Access and Outreach**

### **2.9.1 Public Access and Outdoor Recreation**

Department of Defense (DoD) installations provide for sustained public access and use of natural resources for educational or recreational purposes when such access is compatible with mission activities and with other considerations such as security, safety, or resource sensitivity (DoD 1996). The security of NAS Fallon personnel, assets, facilities, natural resources, should receive priority when granting access to Navy properties.

Outdoor recreation activities are intended to support the wise stewardship of DoD natural resources. In the event of potential conflicts of use, sound biological management practices shall prevail. It is important to protect the military's ability to fulfill its mission and the area's natural resources while respecting responsible public use of areas surrounding NAS Fallon. The goal of public access and outreach is to promote compatible and sustainable outdoor recreation opportunities that enhance quality of life for military personnel, while conserving natural resources, without compromising military readiness.

Some funding for recreation programs is available via the Sikes Act, as amended. Under the Sikes Act, as amended, fees may be charged for wildlife or recreation opportunities with the money being used to enhance the resource (e.g. restocking of fish with income from user fees).

Several small parks and athletic fields exist in the housing areas on Station. On one of the Main Station's agricultural lease parcels, there is a two-acre park with a picnic area. The NAS Fallon Nature Trail also provides many recreational opportunities. The hiking trail is nearly a mile long and runs through many habitats including upland and wetland. The Nature Trail is ideal for beginning birders and families. Informational signs orient visitors to local ecology and habitats, making this hotspot also suited for visiting birders who may be unfamiliar with desert species. The trail is open daily to the public from sunrise to sunset.



**NAS Fallon Nature Trail**

Photo credit: Gary Cottle

On the FRTC, there are approximately 96,000 acres open to the public and used for outdoor recreation. Outdoor recreation on these lands includes biking, hiking, bird watching, photography, hunting, fishing, and horse-back riding. Off-highway Vehicle (OHV) use is allowed under joint BLM management in the Dixie Valley Training Area. The Navy-owned Horse Creek Campground also provides recreational opportunities for the public, as well as Navy personnel. The campground is equipped with a restroom, picnic tables, and fire pits.

### **2.9.2 Public Outreach**

It is the DoD's policy to encourage a conservation ethic by providing an understanding of the need to protect and conserve natural resources through good stewardship. The Navy seeks to earn public confidence in its stewardship of the nation's natural heritage (DoN 1994). An important objective of such programs is to gain proper public recognition of excellent stewardship. NAS Fallon's policy strategy for public outreach and education are as follows:



**Arbor Day tree planting at NAS Fallon Nature Trail  
by local school children**

Photo Credit: Gary Cottle

- Identify and evaluate settings and forums suitable for enhancing community involvement, compatible with the military mission and security.
- Apply specific conditions to ensure compatibility with the military mission and security.



- Encourage partnerships and volunteers to enhance conservation programs wherever practicable, for example: habitat enhancement, weed eradication and tree planting.

The NAS Fallon Nature Trail is located on 40 acres in the northwest corner of the Main Station. Many schools, the Audubon Society, Sierra Club, and Scouts use the trail to view wildlife. Every spring Fallon's Spring Wings Bird Festival conducts tours along the Nature Trail. The Navy hosts several organized activities open to the public as compatible with the military mission and security requirements within this area.



**Nature Trail Hike lead by NAS Fallon Environmental Division Staff**  
Photo Credit: Anna Keyzers

## SECTION 3

### CURRENT INSTALLATION CONDITIONS AND USE

#### 3.1 General Description

##### 3.1.1 Location

Naval Air Station Fallon, Nevada (NAS Fallon) administers approximately 241,126 acres of lands located in the high desert region of northern Nevada. The station includes several disjunct areas of Churchill County which compose the NAS Fallon Main Station and Fallon Range Training Complex (FRTC). NAS Fallon Main Station and FRTC are located on Bureau of Land Management (BLM) Carson City District (CCD), Bureau of Reclamation (Reclamation), and Navy-owned lands (Figure 3).



**Clan Alpine Mountains viewed from the  
Horse Creek Training Area**

Photo credit: Gary Cottle

The Main Station of NAS Fallon (8,670 acres) is approximately seven miles southeast of the City of Fallon, in the central portion of the Carson Desert, commonly referred to as the Lahontan Valley. The Main Station supports the airfield and other support facilities. Further description of the Main Station is provided in Section 3.2.2.1.

The FRTC encompasses over 234,124 acres that are divided into several disjunct parcels located generally on the valley floor in the Carson Sink, Carson Desert and Dixie Valley (Figure 3). FRTC ranges include the Bravo-16 (B-16), Bravo-17 (B-17), Bravo-19 (B-19), and Bravo-20 (B-20). FRTC training areas include the Dixie Valley, Horse Creek, and Shoal Site. Nearby mountain ranges within these areas include the West Humboldt Range, Stillwater Range, and the Clan Alpine Mountains (Figure 3). A more detailed description of the FRTC is provided in Section 3.2.2.2. Refer to Table 1 for the acreages of each training area.

#### 3.2 Land Use

##### 3.2.1 Regional Land Use

The federal and state government controls over 86 percent of the land in Churchill County (Churchill County 2010). These lands contribute to the large spans of open space throughout the county (Figure 4). The majority of the mountain ranges surrounding the Lahontan Valley are managed by the BLM, which administers approximately 68 percent of the county lands (Figure 4). The use of public land resources has been an integral part of the rural lifestyle and local economy of the county. These lands provide rangeland

resources, renewable energy resources, recreation, wildlife habitat, and viewsheds. Major land uses within the Churchill County include agriculture and grazing, geothermal energy development, and mining.

**Agriculture and Grazing-** Agriculture is an important part of life and the economy of Churchill County. The principal agricultural commodities are alfalfa hay, cattle, dairy, and to a lesser extent other grass hay, corn, winter wheat, teff and specialty table crops. Wine is now being produced in the Lahontan Valley. The county has experienced a decline in agricultural-related businesses, as the numbers of irrigated acres have declined over the years (Churchill County 2010).

The areas surrounding NAS Fallon and west toward Lahontan Reservoir have been designated by the Churchill County Land Use Plan for low-intensity uses (Figure 4).

Agricultural uses and open spaces are promoted in this area to protect the County's water resources and preserve the County's important farmlands, wildlife, and open spaces (Churchill County 2010).

The principal crop within these farmlands is alfalfa. Fallon 'Heart O' Gold'

cantaloupes, which were once distributed

throughout the nation, are now mostly grown for local consumption. Although this region is arid, farmlands are irrigated with water supplied by the Truckee-Carson Irrigation District (TCID) as a result of the Reclamation's Newlands Project. The Newlands Project, formerly the Truckee-Carson Project, was one of the first Reclamation projects.

Construction began in 1903. It provides full service irrigation water from the Truckee and Carson Rivers for about 55,000 acres of cropland in the Lahontan Valley near Fallon and bench lands near Fernley in western Nevada. In addition, water from about 14,000 acres of project land has been transferred to the Lahontan Valley wetlands near Fallon. The drainage basins contain nearly 3,400 square miles with a combined average annual runoff of about 850,000 acre-feet of water.

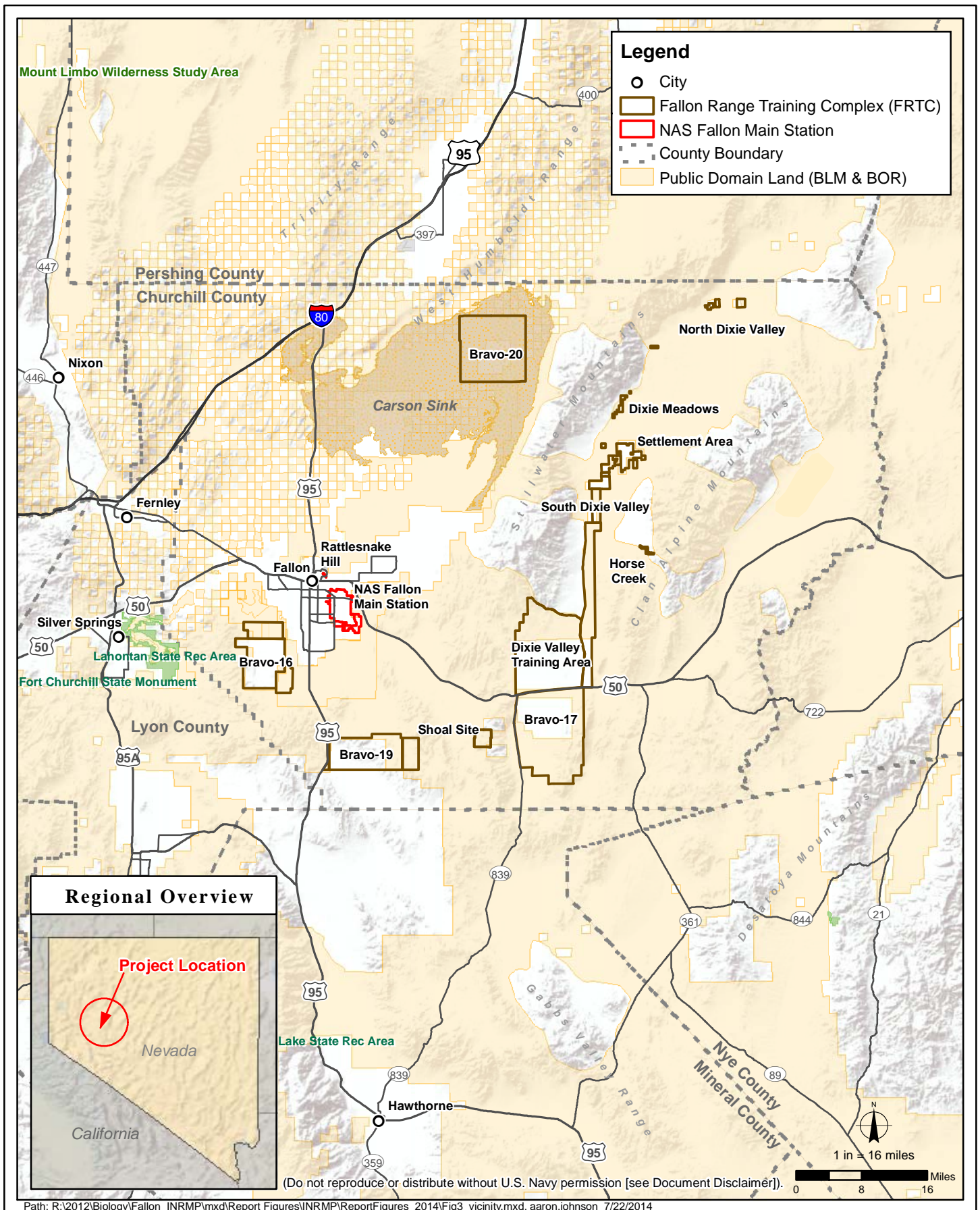
**Geothermal and Solar Energy-** Geothermal and solar energy developments are also advancing land uses within the region. In accordance with the Federal Land Policy and Management Act (FLPMA), the BLM has the delegated authority for leasing 245 million acres of public lands (including 104 million acres of National Forest managed by the U.S. Forest Service) with geothermal potential in 11 western States and Alaska. Geothermal exploration activities on BLM lands in Dixie Valley began in the 1980s, and the first power plant was constructed within this area in 1988. The Terra-Gen Power (TGP) Dixie Development Company, LLC Dixie Valley Geothermal Power Plant is located adjacent to Navy lands in northern Dixie Valley. Two additional geothermal plants (Soda Lake and Stillwater) were constructed in the Lahontan Valley to produce commercial electricity that could be sold into the grid. The Stillwater Power Station recently implemented a 24-megawatt (MW) array of solar photovoltaic panels (89,000 panels) to the existing 27-MW geothermal power plant, making this hybrid energy source the first of its kind in the U.S.



**Overgrazing in Dixie Valley**

Photo Credit: Anna Keyzers



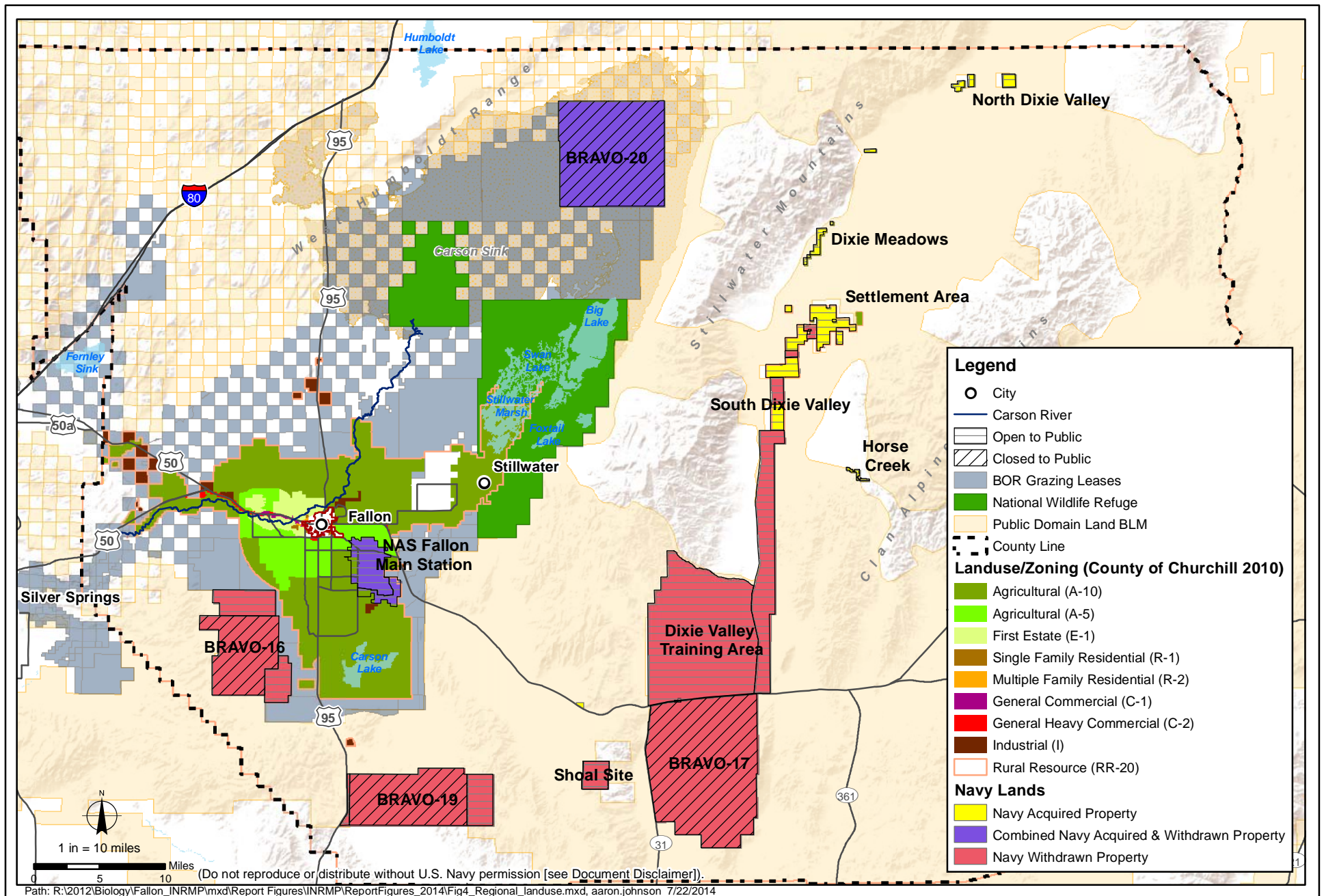


FIGURE

3

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**Regional Land Use**  
**Integrated Natural Resources Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**

**FIGURE**

**4**

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Recent Dixie Valley geothermal projects within BLM Lease Areas include the TGP *Coyote Canyon Geothermal Utilization Project* and Ormat Technologies, Inc. *Dixie Meadows Geothermal Exploration Project*. TGP proposes to construct a 70 megawatt geothermal power plant and associated production/injections wells, pipelines, and support facilities in western Dixie Valley. The BLM issued a Record of Decision for the project's Final EA in March 2011. Ormat's *Dixie Meadows Geothermal Exploration Project* consists of approximately 22,021 acres of BLM lands in northern Dixie Valley. Ormat proposes to evaluate the geothermal resources that potentially exist by exploring up to 62 sites within a 970 acre area. A Record of Decision was issued by the BLM in January 2012 for the project's Final EA. Ormat currently owns the mineral estate under the 760 acre Navy-owned parcel at Dixie Meadows and has requested to explore for geothermal on Navy property.

In July 2011, the BLM completed an Environmental Impact Statement (EIS) for the Salt Wells Energy Projects located 15 miles east of Fallon. The Salt Wells Energy Projects consist of three separate projects proposed by Sierra Pacific Power Company, Ormat, and Vulcan Power Company. This project is located on lands managed both by BLM and Reclamation. BLM is overseeing this process with concurrence from Reclamation. This proposal could result in five 30-60 megawatt geothermal power plants and a 22 mile transmission line, running south of NAS Fallon. The Records of Decision for the Salt Wells EIS were signed in September 2011.

**Mining-**The mineral industry in the region is predominantly associated with exploring for, developing, and mining metals and industrial minerals. Major metals and minerals include gold, silver, copper, mercury, manganese, nickel, tungsten, antimony, barite, and turquoise. The BLM management objectives for mineral resources encourage mineral development while mitigating potential impact to the extent possible. BLM mining districts within the area include the Fairview, Holy Cross, La Plata, Wonder, and Dixie Marsh districts.

### 3.2.2 Installation Land Use

NAS Fallon is composed of the Main Station and the FRTC (Figure 3). The Main Station is primarily developed, with areas of landscaping. The FRTC provides target areas for air-to-ground ordnance delivery training and live weapons firing and provide limited areas for integrated air and ground training. The FRTC includes the B-16, B-17, B-19, and B-20 training ranges, the Dixie Valley training areas, and the Shoal Site (Figure 5).

Table 1 shows land uses for the various areas within the NAS Fallon-administered lands. A discussion of each area is presented below. Figure 5 presents the installation areas as well as the status of ownership.

In accordance with the Military Lands Withdrawal Act (MLWA), NAS Fallon consists of both open and closed lands (Table 1, Figure 5). Closed lands may include both Navy-acquired and withdrawn lands and include 144,191 acres within the FRTC (Figure 4). Closed lands were identified by off-range ordnance sweeps and training range HAZARD modeling as containing, or having the potential to contain ordnance. Based on present

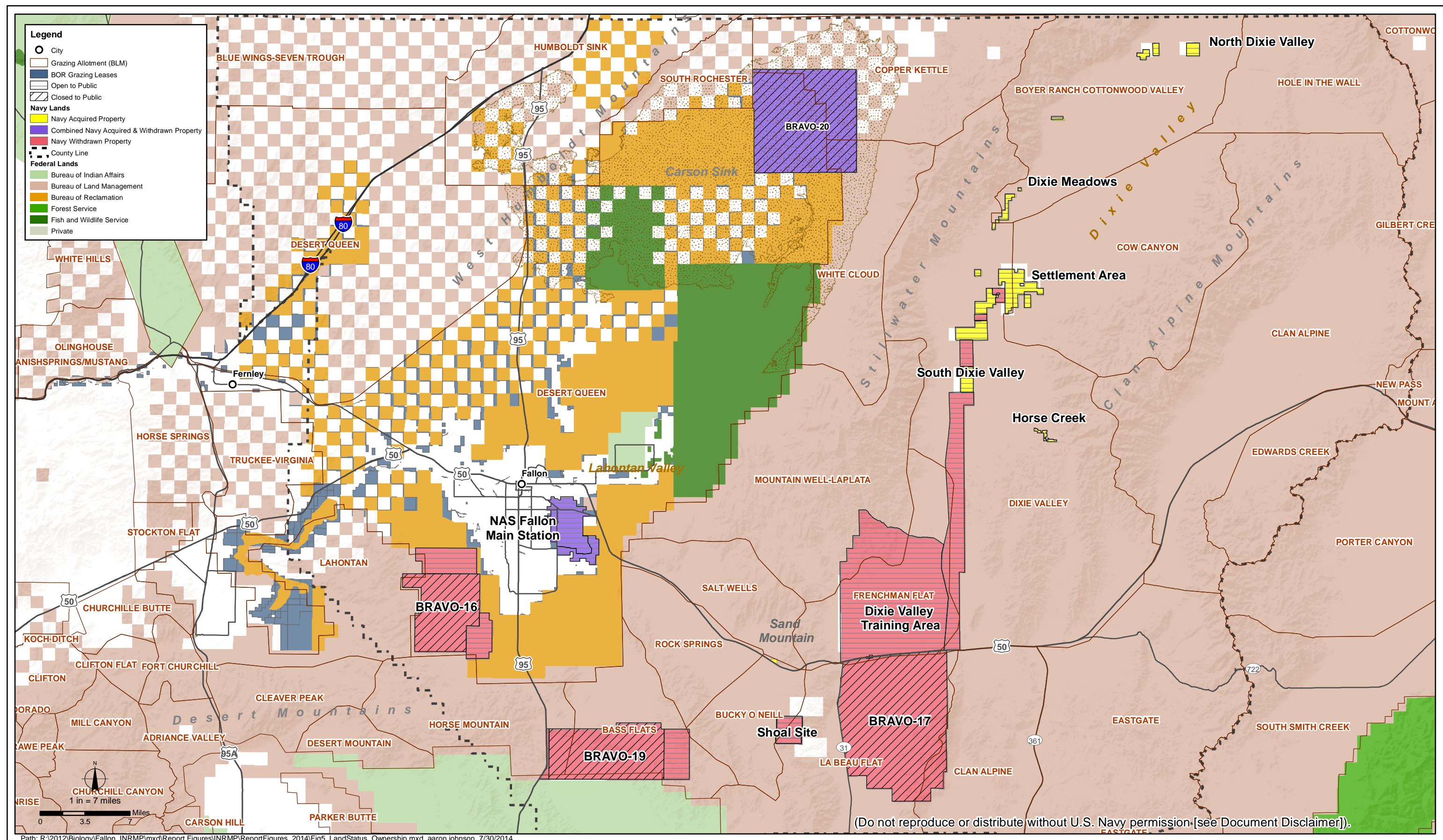


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technologies, 100 percent “sanitation” of these lands cannot be guaranteed since surface and subsurface ordnance may remain undetected in sweeps. On closed withdrawn lands, the BLM has determined that public access is not appropriate on lands identified as containing ordnance. Open lands may include both Navy-acquired and withdrawn lands and include 97,262 acres within the FRTC (Figure 5). These areas remain open for public use. Any organized activities subject to BLM, Reclamation, or Department of Energy (DOE) permitting procedures on open withdrawn lands, such as OHV races in close proximity to Navy Withdrawn and Navy acquired lands should be issued in consultation with Naval Strike and Air Warfare Center (NSAWC) and NAS Fallon.

**Table 1.**  
**Land Use on NAS Fallon-administered Lands**

Area	Land Category		Public Access Category		Land Use
	Withdrawn (acres)	Navy Acquired (acres)	Open (acres)	Closed (acres)	
NAS Fallon Main Station	3,926	4,744	35	8,670—limited access available	Aircraft runway, maintenance and support facilities, personnel housing and support facilities, and administration facilities
<b>Fallon Range Training Complex</b>					
B-16	27,253	-	9120	18,133	Integrated air-to-ground training, inert ordnance, and ground training
B-17	52,830	-	-	52,830	Integrated air-to-ground training, inert and live ordnance, ground training, Close Air Support (CAS), and visual cueing
B-19	29,276	-	5,780	23,496	Integrated air-to-ground training, inert and live ordnance, ground training, CAS, visual cueing, and small arms
B-20	21,577	19,430	-	41,007	Integrated air-to-ground training, inert and live ordnance, ground training, CAS, and visual cueing
Shoal Site	2,560	-	2,560	-	Integrated air and ground training, visual cueing, and CSAR
Dixie Valley Training Area	68,437	-	68,437	-	Integrated air and ground training, electronic combat (EC)/visual cueing, ground training, and Combat Search and Rescue (CSAR)
Dixie Valley Settlement	-	8,481	8481	-	Part of Dixie Valley Training Area
North Dixie Valley	-	1,440	1,440	-	Part of Dixie Valley Training Area
Dixie Meadows	-	760	760	-	Part of Dixie Valley Training Area
Horse Creek	-	272	272	-	Part of Dixie Valley Training Area
Frenchman Station	-	54	2	52	N/A
Sand Springs	-	86	86	-	Along Hwy 50 at entrance to Sand Mountain Recreation Area.
<b>TOTAL</b>	<b>205,860</b>	<b>35,267</b>	<b>96,936</b>	<b>144,191</b>	
<b>GRAND TOTAL</b>	<b>241,127</b>		<b>241,127</b>		



**Land Status/Ownership**  
**Integrated Natural Resources Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**

**FIGURE**

**5**

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### 3.2.2.1 Main Station

The NAS Fallon Main Station is both Navy-owned and withdrawn land and is situated six miles southeast of the city of Fallon, Nevada, and 70 miles east of Reno, Nevada (Figure 5). The Main Station occupies 8,670 acres and lies within the central portion of the Carson Desert, in an area commonly referred to as the Lahontan Valley and is surrounded by federal lands (BLM and Reclamation) and private lands.

The Main Station includes an airfield (airport) (Figure 6) with control towers, radar, and runways; industrial facilities for maintenance of aircraft and support equipment; business facilities for everyday operations; retail and recreation facilities; housing facilities for the military personnel and their families; and utility support facilities (e.g., water and sewer). The runways and aprons, comprising a flat, paved asphalt area, run in a northwest-southeast orientation through the center of the station.

The perimeter of the airfield is comprised of a greenbelt, which includes areas of irrigated agricultural lands, native range lands, and wildlife habitats that serve as noise and safety buffers (Figure 6). The Navy started acquiring adjacent lands surrounding NAS Fallon Main Station to fulfill three objectives: (1) To prevent incompatible development adjacent to the station in high noise areas, (2) To minimize public exposure to potential safety hazards associated with air operations, and (3) To protect the operational capability of NAS Fallon.

### 3.2.2.2 Fallon Range Training Complex

The following describes the FRTC ranges and training areas, as identified in Table 1 and Figure 5. These lands are composed of both open and closed lands and Navy-acquired and withdrawn lands (Figure 5). The Navy is responsible for the management of natural resources on all of its administered lands.

**Range B-16**— Range B-16 is located approximately 9 miles southwest of NAS Fallon Main Station at an elevation of 3,942 feet (ft) and is the closest of the training ranges to the Main Station (Figure 5). The BLM and Reclamation administer the lands around B-16 and its land status designations include both closed and open withdrawn lands. The northern edge of B-16 occasionally contains flooded areas depending on recent climate and precipitation. B-16 includes two conventional bull's-eye targets.

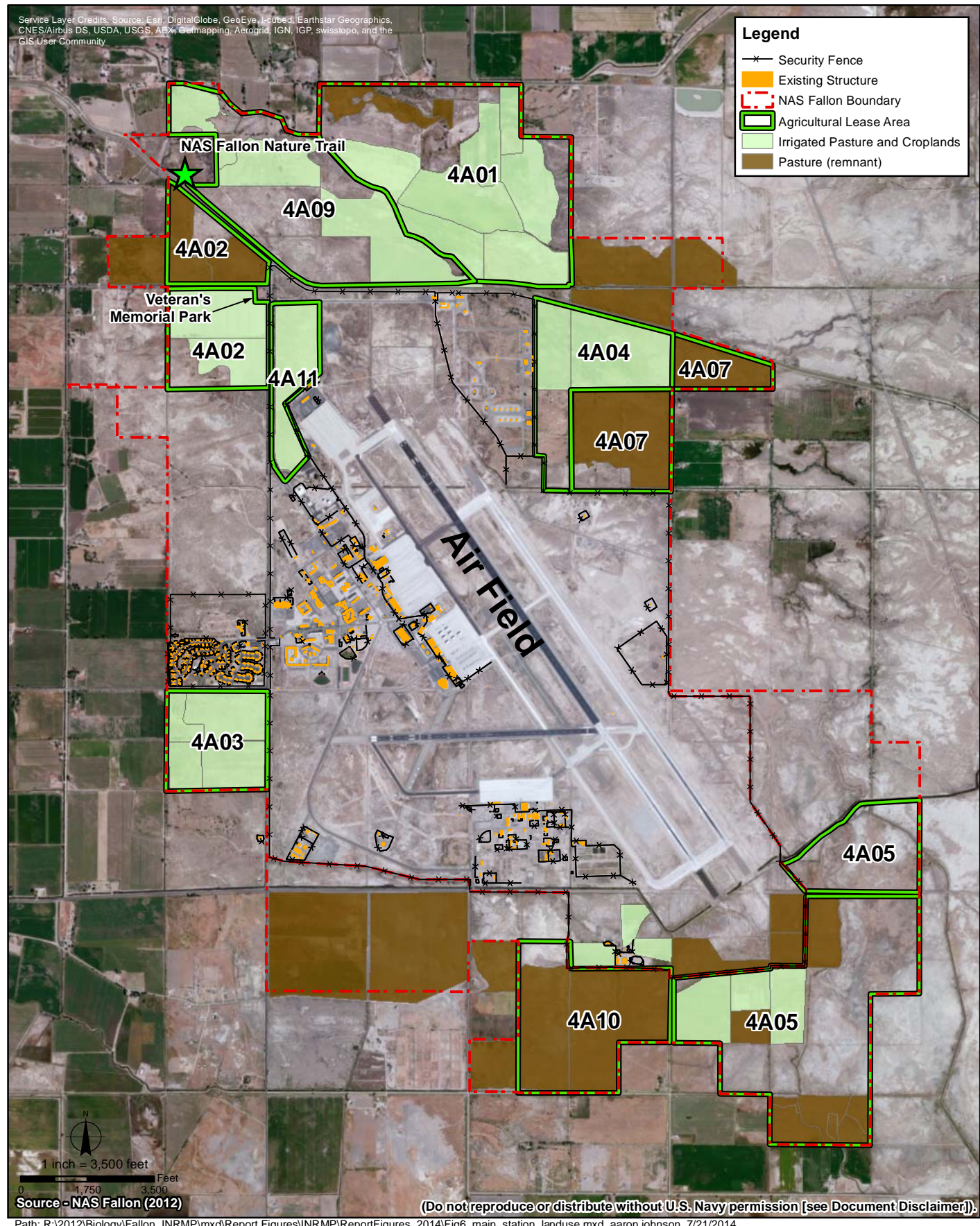
**Range B-17**— Range B-17 is located approximately 35 miles southeast of NAS Fallon Main Station at an elevation of 4,153 ft. B-17 is split into an east (B-17E) and west (B-17W) component. It is the most heavily used training range within the FRTC. All land within B-17 is closed withdrawn. B-17 also contains the Bell Canyon area. Public land primarily surrounds this range.

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### Legend

- Security Fence
- Existing Structure
- NAS Fallon Boundary
- Agricultural Lease Area
- Irrigated Pasture and Croplands
- Pasture (remnant)



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## Main Station Land Use Integrated Natural Resources Management Plan Naval Air Station Fallon Fallon, Nevada

FIGURE

6

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**Range B-19**— Range B-19 is located 16 miles south of NAS Fallon Main Station. The Blow Sand Mountains run west to east through B-19. The Walker River Indian Reservation borders the southern boundary of this range and Highway 95 borders the western boundary. There are also occasional small flooded areas at the western boundary of B-19, depending on recent climate and precipitation. Its status designations include both open and closed withdrawn lands.

**Range B-20**—The B-20 range is in the Carson Sink, approximately 17 miles east of Highway 95 and seven miles north of the Stillwater Pasture. B-20 has the largest impact area and is the most remote and the least developed of all the FRTC training ranges. Land status designations in B-20 include both closed withdrawn and lands purchased by the Navy.

### ***Shoal Site***

The Shoal Site is a 2,560-acre parcel south of U.S. Highway 50 and west of B-17. The Shoal Site is public land withdrawn by DOE. The MLWA of 1999 authorized a secondary withdrawal by the Navy for military use on the surface of a portion of the DOE site. DOE still has responsibility for past subsurface activities. Access to the site is currently unrestricted.

### ***Dixie Valley***

The Dixie Valley Training Area is north of U.S. Highway 50, approximately 35 miles east of the NAS Fallon Main Station. The Dixie Valley Training Area is composed of distinct sub areas: North Dixie Valley, Dixie Meadows, Settlement Area, South Dixie Valley, Horse Creek, and Dixie Valley Training Area (Figure 5). The Dixie Valley Training Area consists of withdrawn lands and includes approximately 79,530 acres (Table 1).

**North Dixie Valley**—North Dixie Valley properties consist of four individual plots east of Range B-20 50 miles north of Highway 50. This area consists entirely of Navy-owned lands.

**Dixie Meadows**— Dixie Meadows is approximately 760 acres and includes a small area of entirely Navy-owned land that includes cold and hot springs and two ponds and adjacent marshy meadowland. It lies approximately 5 miles north of the Settlement Area. No training occurs within Dixie Meadows.

**Settlement Area**—The Settlement Area is located approximately 40 miles east of NAS Fallon Main Station and 25 miles north of Highway 50. It includes a mixture of Navy-acquired lands and withdrawn public lands. The Settlement Area consists of former ranches and farms purchased by the Navy to mitigate potential noise impacts. These parcels are interspersed with recently withdrawn public lands and include approximately 8,481 acres.



**South Dixie Valley**— South Dixie Valley properties are located south of Settlement Area and north of Range B-17. This area consists entirely of withdrawn public lands.

**Horse Creek**— Horse Creek is a small area (approximately 272 acres) purchased by the Navy immediately adjacent to Horse Creek on the western side of the Clan Alpine Mountains. It lies toward the southern end of the Dixie Valley, still north of U.S. Highway 50.

### 3.2.2.3 Public Land Use and Access

#### *Main Station*

The NAS Fallon Nature Trail is located on 40 acres in the Northwest corner of the Main Station (Figures 5 and 6). Public access is allowed by the Navy for nature studies, wildlife viewing, photography, and picnicking. The trail is about 0.75 mile long and has 16 interpretive signs that tell about the plants and wildlife in the Carson Desert and Great Basin Region. There are many schools, Audubon Society, Sierra Club, and Scouts that have used the trail to view the wildlife. Every spring Fallon's Spring Wings Bird Festival conducts tours at the Nature Trail. The Navy hosts organized activities open to the public as compatible with the military mission and security requirements.



**NAS Fallon 2011 Earth Day Fair**

Photo Credit: Anna Keyzers

These activities may include the following:

- Arbor Day celebration;
- Air Show (last held in 2010);
- Spring Wings Bird Festival;
- Earth Day;
- Nature Tours; and
- Scouting outreach activities.

NAS Fallon Security and the Public Affairs Officer (PAO) must be contacted for organized recreation events on the Main Station such as tower and Air Park tours.

**FRTC**

Public access to FRTC lands is divided into two categories, closed and open, as shown in Figure 5. A description of each is provided below.

**Closed Lands**—Public access to closed lands is granted on a case by case basis. Access for specific purposes may be arranged through the NAS Fallon in accordance with the FRTC Range Operations Manual 3752.1 and generally requires an Explosive Ordnance Disposal escort. General public access is denied for safety reasons by fencing and posted signs. Recreational uses (organized or otherwise) are generally not permitted, with the exception of an annual bighorn sheep hunt conducted on B-17 in accordance with the NSAWC/NDOW Memorandum of Understanding (MOU) and closely coordinated through NSAWC operations.

**Open Lands**—Non-consumptive recreational activities are available to the public on open withdrawn and open Navy-acquired lands. Non-consumptive recreational activities in the area include: camping, hiking, horseback riding, bird watching, target shooting and OHV use. The Pony Express National Historic Trail corridor runs parallel to U.S. Highway 50 within the FRTC. An annual trail ride along the Pony Express route takes place in June. The trail is part of the American Discovery Trail, a coast-to-coast hiking trail (DoN 1998). The Navy will endeavor to implement no action which would interfere with public use or adversely affect the historic nature of the Pony Express Trail on open withdrawn lands (Tetra Tech, Inc. 2006).

Most recreation within the FRTC occurs in Dixie Valley, in particular the Settlement Area and Horse Creek. Several man-made ponds in the Settlement Area are suitable for fishing. Horse creek provides the only road access to the Clan Alpine Wilderness Study Area boundary on the west side of the Clan Alpine Mountain Range. NAS Fallon maintains a campground on Navy-owned lands at Horse Creek.

Areas that are used for recreation around the vicinity of the NAS Fallon-administered lands include the Stillwater Range (including the Job Peak Wilderness Study Area [WSA]), Sand Springs Range, Clan Alpine Range (including the Clan Alpine WSA), Horse Creek, Desatoya Range, Salt Cave, Sand Mountain, Stillwater National Wildlife Refuge, Carson Lake, and the Wonder mining district. The Stillwater Range, including the La Plata and Eleven mile drainages, offers high quality, undeveloped, semi-primitive, and primitive recreation opportunities.

No camping permits are required for casual use of the open withdrawn land. The BLM and Reclamation requires special recreation permits for organized competitive or commercial activities, as well as for large events.



**Sand Mountain Recreation Area**

Photo Credit: BLM

### ***Off-Highway Vehicles***

The Navy does not permit OHV use on the Main Station; however, OHV use is permitted on open Navy-acquired lands and open withdrawn lands. For example, OHV use is allowed under joint BLM management in the Dixie Valley Training Area. OHV use within these areas is limited to existing roads and trails. The Navy manages certain areas on open withdrawn lands where OHV use is prohibited, including wetlands and certain electronic warfare (EW) sites. In 2012, OHV trails and roads were mapped within selected areas (totaling approximately 221,563) of NAS Fallon (AMEC Environment & Infrastructure, Inc. [AMEC] 2013a). However, during 2013 more trails were found on B-16 and in Dixie Valley. The purpose of the mapping effort was to provide data identifying roads that need to be maintained, and to have a digital baseline of existing roads so as to enforce a “no new roads” policy at NAS Fallon (AMEC 2013a). Four different classes of roads and trails were identified in the mapping effort (dirt roads: < 6 feet wide, 6-12 feet wide, >12 feet wide and paved roads).

For each location surveyed, the numbers of miles of each class of road or trail were calculated. The majority of the roads and trails mapped were dirt roads between 6 and 12 feet wide, with an additional substantial number of miles including dirt roads greater than 12 feet wide. Fewer than 70 miles of either narrow dirt roads or paved roads were mapped during this exercise. The only paved road in the Dixie Valley Training Area is the main state highway, Highway 121. B-20, in spite of its intermediary size in acres, had the greatest number of mid-width and wide dirt roads (AMEC 2013a).

#### **3.2.2.4 Mineral Exploration**

While there are numerous small claims throughout the FRTC within BLM and Reclamation lands, there are no mineral districts on the Main Station. Some mineral areas are patented, which makes the land private property. However, the Statute of Limitations on the Navy preventing access to private mines within withdrawn property has long since expired. Unpatented claims remain public and under multiple use management, as defined by FLPMA.

***Training Ranges***—B-16 contains a portion of the Camp Gregory mining area of the northern Terrill District which lies in the northwestern corner of B-16. B-17 contains several patented mining claims. The eastern half of B-17 overlaps the Fairview/South Fairview Mining District. B-17 is considered to have moderate to high potential for small-to medium-sized silver and gold deposits, based on known deposits in the Fairview Mining District (Science Applications International Corporation [SAIC] 1991). B-19 overlaps the Cinnabar Hill Mining District, which contains hydrothermal ore deposits, including mercury, associated with the exposed, highly fractured volcanic rocks. B-19 is considered to have high potential for additional discoveries of precious metals deposits (SAIC and DRI 1991). There are no mineral districts on B-20.

***Dixie Valley Training Area***—The Dixie Valley Training Area includes the western portion of the Wonder District and a small portion of the Chalk Mountain District north of Highway 50 and just east of B-17. The La Plata and Sand Springs districts are on the west side of the Dixie Valley Training Area (DoN 1998b).

### 3.2.2.5 Energy Resources

The oil and gas potential of NAS Fallon is considered to be very low; however there is potential for geothermal production in the area. In 1991, the Navy initiated a project to commence geothermal exploratory drilling on the Main Station. The exploratory wells were completed on the southeast side of the installation. In these wells a promising formation was encountered in fractured basalt. This reservoir has sufficient porosity and temperature to be a viable source of geothermal energy for electrical power production. Water qualities encountered were good and no significant hydrogen sulfide was encountered. In 1993, the Navy drilled a 6,952-foot deep well which had a maximum temperature of 376 degree F. Since this, subsequent geophysical surveys have been conducted and additional exploratory wells have been drilled. The Navy has plans to either develop a 30 MW production facility on the southern boundary of the Main Station or provide heat to buildings base-wide by direct use of geothermal heat.

### 3.2.2.6 Agricultural Outlease

In accordance with the Sikes Act, as amended, and DoN policy, NAS Fallon promotes agricultural outleasing along with other multiple land uses to the maximum degree compatible with military operation requirements. Beginning in 1952, NAS Fallon has maintained an Agricultural Outlease Program (Greenbelt) on 9 distinct parcels spaced around the airfield. These lands have been managed primarily as a means to minimize hazards to aircraft, such as foreign object damage (FOD), according to the BASH Management Plan, and to provide a safety buffer in the event of potential accidents. The agricultural outlease program is managed in accordance with NAVFAC P-73, Volume II of the Navy's *Natural Resource Procedural Manual*, as described in the NAS Fallon *Agricultural Outlease Land Management Plan*, May 2002 (Navy 2002). A copy of this plan and the individual lease agreements are located in the NAS Fallon Environmental Division Library. Management objectives and goals associated with agricultural outleasing are presented in Section 4.11.

There were historically eleven agricultural leases (4A01-4A11). Currently, there are only six active agricultural leases numbered 4A01, 4A02, 4A03, 4A04/4A07/4A11, 4A05/4A10, and 4A09 (Figure 6). Parcels 4A06, and 4A08 were historically leased for agriculture but have since been removed from leasing for water rights-related reasons. Parcel 4A12 is not leased, but is operated as a horse stable by NAS Fallon Morale, Welfare and Recreation (MWR) Program as the May Ranch Pony Club.

Parcels are opened for bid to local ranchers with the highest bidder(s) awarded a five-year lease. The Navy retains the right to cancel any lease at any time. Included in each lease is a Soil and Water Conservation Plan with conservation objectives and other requirements to be completed by the lessee. Land use of the leased lands includes irrigation (on water-righted acres), cattle grazing, farming of alfalfa, corn, sudangrass, and hay, and combinations of these uses.

NAS Fallon converted agricultural outleases to native vegetation prior to having water rights removed. The U.S. Army Corps of Engineers (USACE) had a contract with NAS Fallon in 2003 to assess the feasibility of revegetating parcels through a revegetation test

plot project. The project included outleases 4A10 (180 acres), portions of 4A05 (50 acres), 4A06 (30 acres), 4A07 (100 acres), 4A08 (80 acres), 4A09 (15 acres) and portions of 4A02 (70 acres) (Figure 6). In addition, NAS Fallon has revegetated 300 acres of non-water righted property acquired to prevent dust hazard (the Snows property).

### 3.2.2.7 BLM and Reclamation Grazing Area

BLM manages grazing on public lands under the authority of the Taylor Grazing Act of 1934, FLPMA, and the Public Rangelands Improvement Act of 1978. Under this management, ranchers can obtain permits for an allotment of public land on which a specified number of livestock can graze. Several BLM allotments overlap NAS Fallon lands (Figure 5). Although, no grazing occurs within closed lands of NAS Fallon, active allotments occur within lands that are open to the public within the Dixie Valley (north and south), Settlement Area, and Dixie Meadows training areas and areas adjacent to the Navy owned Horse Creek property (Figure 5).

The number of permitted livestock on a particular allotment is determined by how much forage, measured in Animal-Unit-Months (AUMs), that land will produce. An AUM is defined as the amount (780 pounds) of air-dry forage calculated to meet one animal unit's (AU) requirement for one month. An AU is defined as forage consumption on the basis of one standard mature 1,000-pound cow, either dry or with calf up to 6 months old; all other classes and kinds of animals can be related to this standard (e.g., a bull equals 1.25 AU and a yearling steer equals 0.6 AU).

The BLM has range allotment management plans (AMPs) designed to stabilize or improve the ecological condition of the allotments. These plans include proper management of livestock grazing and improvements such as fences and water developments. There are 30 grazing allotments, ranging from approximately 7,600 acres to 305,000 acres and totaling 80,000 AUMs of grazing preference covered under the Lahontan Resource Management Plan and EIS (BLM 1986). Existing grazing allotments overlap NAS Fallon-administered lands in a few places, including the Dixie Valley Training Area and various open withdrawn areas.

On Navy-acquired and withdrawn lands including Dixie Valley the BLM would manage cattle grazing in a manner consistent with grazing practices on adjacent public lands, per amended BLM AMPs (Resource Management Plan Amendment/Integrated Resource Management Plan [RMPA/INRMP] 2001). The BLM consults with the Navy before constructing or removing range improvements per amended AMPs. The Navy maintains fences and gates to prohibit grazing from areas of Horse Creek and Dixie Valley. The BLM manages livestock grazing on the open withdrawn lands at the Shoal Site in a manner consistent with grazing practices on adjacent lands. In order to implement these specific management actions for Dixie Valley as expressed in the RMPA/INRMP, the *Grazing*,



**Bull on BLM Cow Canyon Allotment in Dixie Valley**

Photo credit: Gary Cottle

*Vegetation, and Water Resource Management Plan for the Dixie Valley Settlement Area, Churchill County, Nevada* was prepared in 2002 and a MOU between the Navy and BLM for the *Management of Natural Resources on Navy Administered and Withdrawn Public Lands* was signed in 2007.

Reclamation currently manages grazing by issuing annual use authorizations on withdrawn lands at B-16 and southeast of the Main Station. In 2014, in accordance with 43 CFR 429 and Reclamation Manual Directives and Standards (RM D&S) LND 08-01, Reclamation's grazing management will be revised to incorporate issuance of multi-year leases through an application process in order to manage livestock by developing long term management plans and providing better stewardship of the lands to ensure a healthy, sustainable rangeland system. Reclamation will determine the management objectives for a pasture, taking into consideration current grazing use, other uses on the land (e.g. wildlife, threatened and endangered species, recreation, etc.), and current range conditions. Reclamation will also consider what range improvements are present on the pasture, including fences and availability of water. Reclamation will establish an initial carrying capacity and determine the appropriate season-of-use. A pasture plan will be established for each pasture. The application process will be completed through a competitive use process as stipulated in RM D&S LND 08-01. This process is being utilized because Reclamation desires to authorize land uses for the purpose of fully utilizing or managing the resources. It is the general policy of Reclamation to enter into leases only by competitive means. This will be completed through an adequate advertisement for bids and award being made to the highest bidder. However, leases may be negotiated when, in the opinion of Reclamation's authorized official, such action will be in the best interest of the United States or competitive interest does not appear to be present. Competitive procedures will be used to determine the value of the lease when there is likely to be a demand from more than one party, which will result in a greater return to Reclamation unless such competition would be adverse to the public interest. Competitive leases are awarded to the highest acceptable bidder at an amount that reflects the market value of the use granted. Separate administrative costs will not be added to the awarded bid price, but will be included in the minimum acceptable bid price. If the minimum acceptable bid price is not received, a determination can be made to re-advertise.

### **3.2.2.8 Water Rights, Use and Conservation**

#### ***Water Rights***

Water rights and irrigation management at NAS Fallon is influenced by Nevada state water law, Reclamation regulations and policies and other applicable federal guidance and/or legal requirements, and TCID operating guidelines. The Newlands Project is a Reclamation project constructed and implemented by Reclamation, beginning around 1903. It provides full service irrigation water from the Truckee and Carson Rivers for about 55,000 acres of cropland in the Lahontan Valley near Fallon and bench lands near Fernley in western Nevada. In addition, water from about 14,000 acres of project land has been transferred to the Lahontan Valley wetlands near Fallon. The drainage basins contain nearly 3,400 square miles with a combined average annual runoff of about 850,000 acre-ft



of water. NAS Fallon currently maintains 1,058 water-righted acres in the Newlands Project.

Irrigation water is delivered through canals operated and maintained by the TCID. Reclamation contracted with TCID for the repayment of costs associated with the construction of the Newlands Project and TCID is the current contractor for the care, operation, and maintenance of the Project. In 2014 TCID charges \$44.90 per acre assessment of water-righted lands to deliver water. This is an annual fee to operate and maintain the irrigation system, and the fee can vary every year. The agricultural lessees at NAS Fallon pay the TCID operation and maintenance fee and an administration fee on the irrigated lands that they lease.

In the 1950s and early 1960s, NAS Fallon expanded and acquired 2,934 acres of water-righted lands within the Newlands Project to maintain the greenbelt around the airfield. The water duty within this area is a fixed 3.5 acre-ft/year and can be lowered during drought years. In 1983, NAS Fallon received authorization from Naval Facilities Engineering Command (NAVFAC) for a ten-year agricultural leasing program on these lands. The Pyramid Lake Paiute Tribe gave notice of its intent to bring suit against the Navy to enjoin the leasing and irrigation of land on NAS Fallon in November 1984. The Pyramid Lake Paiute Tribe alleged violations of the ESA and NEPA. To avoid litigation and to arrive at a mutually acceptable long-term resolution, both parties entered into a Memorandum of Agreement (MOA) in March 1985. Among the conditions to be met, the Navy would have to reduce its water entitlement by 25 percent (2,567 acre-ft) for the 1985 irrigation season and would retain the services of an independent consultant to report on alternative methods available to NAS Fallon for reducing water usage.

In response to the MOA, a Land and Water Use Assessment for the Agricultural Outlease Program at NAS Fallon was completed in November 1986 (DoN 1986). In the same year the Pyramid Lake Paiute Tribe took the Navy to court over alleged violations of Section 7 of the ESA. The Pyramid Lake Paiute Tribe proposed that the MOA be revised and that the Navy replace the irrigated fields with wheatgrass or similar cover vegetation and not irrigate the lands. In December 1987, the District Court's finding for the alleged violations of Section 7 of the ESA was rendered in favor of the Navy. The Pyramid Lake Paiute Tribe then appealed the District Court's decision to the Ninth Circuit Court of Appeals. In 1989, the Ninth Circuit Court of Appeals affirmed the lower court's findings regarding the Navy's alleged violation of Section 7 of the ESA.

Public Law (PL) 101-618, the Truckee-Carson-Pyramid Lake Water Rights Settlement Act, was signed into law in November 1990. Language was included in PL 101-618, Section 206 allowing the Navy to meet its policy for safety of flight at NAS Fallon and identify means to reduce direct surface deliveries of water to fulfill the Navy's obligation to the tribe. PL 101-618, Section 206 (c) required the Navy to identify water savings that when no longer used by the Navy can be used by the Secretary of the Interior for the benefit of fish and wildlife. In accordance with PL 101-618, Section 206 (c), NAS Fallon completed the Land and Water Use Assessment Update for the Greenbelt Area in July 1992 and completed a U.S. Department of Agriculture (USDA) Natural Resources

Conservation Service Plant Materials Trial for the cultivation and development of low-precipitation plants in September 1998 (DoN 1992b). In May 1995, an EA/FONSI for the Management of the Greenbelt Area at NAS Fallon was completed. The Navy completed the Supplemental Water Sources Feasibility Study for the Greenbelt Area, NAS Fallon, Nevada in 1996 (DoN 1996a).

Irrigation was discontinued on 1,020 acres during the 1980s due to infrastructure development, and only about 1,914 acres had been irrigated since that time. An additional 657 acres were identified in 1999 for retirement from irrigation for a total of 1,677 acres that no longer were irrigated as of this date. The MLWA states that the Navy will limit water rights to the maximum extent practicable, consistent with safety of operation, and currently not more than 4,402 acre-ft/year (which translates to 1,257 irrigated acres). The National Defense Authorization Act for FY 2000, S. 1059, states that the Navy would limit their irrigation water to not more than 4,402 acre-ft per year. The Navy removed the irrigation water on some parcels to get below the required 4,402 acre-ft limit. Only 1,257 acres in the greenbelt parcels were irrigated in 2000.



**Water Well in Dixie Valley that supports Casey Pond.**

Photo credit: Gary Cottle

An additional 859 acres were offered, but the United States Fish and Wildlife Service (USFWS) did not want the additional 859 acres of water rights since the Navy had not irrigated it for over 10 years, and Reclamation claimed they were inactive. The State of Nevada still considers these acres to have active water rights.

In 2002 the Navy transferred 818 acres of the active water rights that had been removed from agriculture to the USFWS. In 2003, NAS Fallon voluntarily gave up 90 acres of water rights to the USFWS in exchange for 320 acres of buffer land on the south side of the station. Today, there are 1,058 water-righted acres on the agricultural leases. The Navy funded the USACE to complete a revegetation program on 525 acres (described above in Section 3.2.2.6).

### ***Dixie Valley Wells***

There are approximately 20 wells and 7 springs in the Settlement Area, many of which are free flowing. Many of these wells supply water to artificial ponds. Free-flowing wells and overflow from ponds have created wet meadow areas. In 1999, the Nevada State Water Engineers Office cancelled permits for five water rights and mandated that the Navy cap and abandon certain wells in the Settlement Area. Currently, there are operational training and environmental reasons for the Navy to maintain water rights for these wells. In order



to do so, the Navy has determined how much water is needed for wildlife and vegetation in the Settlement Area.

### 3.2.3 Historic Land Use

#### 3.2.3.1 Historic Non- Military Use

There is a long record of prehistoric use of Churchill County lands. The general region has been occupied since the Late Pleistocene, at least 10,000 to 11,000 years ago, when the Humboldt and Carson Sinks were part of the vast Lake Lahontan system. Sites with long sequences of prehistoric occupation were found around the margins of ancient lakes and in the historically well-watered adjacent valleys and along the lower mountain slopes. Northern Paiute Indians, including the Fallon Paiute-Shoshone, Yomba (Shoshone) and Walker River (Paiute) tribes, inhabited the area when the first Euro Americans arrived in the mid-nineteenth century. Those Indians remain in the region, most of them on the Walker River, Fallon, and Pyramid Lake Reservations. A complete summary of the prehistoric era and the prehistoric resources of NAS Fallon are provided in the ICRMP for NAS Fallon (NAVFAC SW 2012).

For Nevada, the historic era extends from the early nineteenth century to roughly the 1950s. Historic resource activities commonly associated with the industrial technology in Nevada include transportation and communication, settlement, reclamation, ranching and farming, mining, and military. In 1861 Churchill



**The Devore Homesite adobe, constructed in the 1930s, is one of several historic ranch properties managed by NAS Fallon.**

Photo credit: Robin Michel

County was one of the nine original counties to be created to form the Nevada Territory. Several early transportation and communication corridors extended through the county. Mining was a major industry, along with small-scale farming and ranching prior to the Newlands Project. The county has had three prior locations for the seat of government, influenced by the dominant economy at the time. Fallon became the county seat in 1903, concomitant with the Newlands Project. The Newlands Project was authorized in 1903 under the Reclamation Act of 1902, as amended, required that water users repay construction costs from which they received many benefits which included the ability to irrigate area farms and ranches. Significant non-military historic resources identified in the ICRMP include several ranches in the Settlement Area.



NAS Fallon, circa 1945

Photo credit: Unknown

### 3.2.3.2 Historic Military Use

The original facilities at NAS Fallon were established in 1942 by the U.S. Army Air Corps for inland defense during World War II. The Navy took over NAS Fallon in 1943 and in 1944 the facility was commissioned as a Naval Auxiliary Air Station under the control of NAS Alameda, California. Under the National Emergency War Powers Act, the NAS Fallon training range was created in April 1944 with the temporary establishment of several training ranges, the withdrawal of which was completed by 1945.

Following World War II, NAS Fallon was deactivated to a maintenance level, placed in caretaker status, and turned over to the Bureau of Indian Affairs. The airstrip was reopened as an Auxiliary Landing Field in 1951 and in 1953 B-16, B-17, and B-19 lands was withdrawn by the Navy.

The airfield became known as Van Voorhis Field in 1958, named after Lt. Commander Bruce A. Van Voorhis, a Fallon native who received the Congressional Medal of Honor posthumously for service in the South Pacific during World War II. The airfield's most sophisticated range, the electronic warfare range, was established in 1967.

In 1972, NAS Fallon was reclassified as a major command and was upgraded to a NAS with the primary mission of training and supporting naval air groups. NAS Fallon formally established the FRTC in 1977 to provide airspace and range facilities for air warfare training. In the mid 1980s 11,000 acres of private lands in Dixie Valley were purchased for the supersonic operating range. There are 5 private parcels in the Dixie Valley Settlement Area left today. Lands within B-20 were withdrawn in 1986, formally establishing the range.

Additional lands within Churchill County were withdrawn by the Navy with the passage of MLWA in 1999. These lands included areas surrounding the existing ranges, Dixie Valley, and the Shoal Site.

The NAS Fallon Main Station includes three sets of historically significant buildings – the 800 Complex constructed in the 1960s by the Air Force as part of the SAGE (Semi-Automatic Ground Environment) System, Hangar 7 (Fallon’s one remaining World War II-era hangar) and Building 95/96, a World War II-era nighttime aircraft beacon and generator building.



**NAS Fallon Sage BUIC facility, circa 1962**

Photo credit: Unknown

### 3.3 NAS Fallon Mission

Section 101(b)(1)(I) of the Sikes Act states that each INRMP must, to the extent appropriate and applicable, and consistent with the use of the installation to ensure the preparedness of the Armed Forces, provide for “no net loss in the capability of military installation lands to support the military mission of the installation.”

The military mission of NAS Fallon is as follows:

*NAS Fallon and the Fallon Range Training Complex are the Navy's premier integrated strike warfare training facilities supporting present and emerging National Defense requirements. Our mission is to support carrier air wings preparing to deploy; and other units participating in training events, including joint and multinational training and exercises.*

**Van Voorhis Field**

Photo credit: Churchill County

### 3.4 Operations and Infrastructure

The training mission of the Navy at NAS Fallon includes advanced training for all Navy aviators whose mission is to attack enemy targets ashore or to engage enemy aircraft in air-to-air warfare. Approximately 22,000 sorties are flown out of NAS Fallon and 4,000 sorties are flown in from other locations annually, and approximately 850 tons of ordnance are dropped on the ranges annually. In addition to conducting aviator training, the Navy at NAS Fallon develops tactics and procedures that are used to employ weapons or other aircraft systems to counter threats and real world support for military activities. In support of aircrew training, integrated air and ground training occurs, including Combat Search and Rescue (CSAR) and Close Air Support (CAS). CSAR consists of integrated training with ground personnel, helicopters, and fixed-wing air support. The objective of the training is rescuing and transporting ground personnel, such as downed pilots, within enemy territory. CSAR is one of the major training activities conducted at NAS Fallon. CAS operations train pilots to assist ground units by firing on enemy ground or air units. Ground units learn how to mark targets for aircraft and how to neutralize enemy positions, including radar sites, surface-to-air missile sites, and early warning devices.



Photo credit: usmilitary.about.com



### 3.4.1 Population

There are approximately 1,450 civilian and military personnel and 70 aircraft permanently stationed at NAS Fallon. When training is being conducted, these numbers can increase by up to an additional 2,000 personnel and 90 aircraft. NAS Fallon supports approximately 1,038 active duty and 394 civilians.

### 3.4.2 Cantonment Area

NAS Fallon includes 39 officer family units; 271 family housing units; 532 unaccompanied officer units; and 1,931 unaccompanied enlisted units. There is one primary housing area at NAS Fallon, located on the west side of Pasture Road. In addition, there are personnel support facilities, including bachelor quarters, religious services/family services, MWR facilities and clubs, medical, retail services, recycling yard, and auto hobby.



Photo credit: usmilitary.about.com

### 3.4.3 Military Operations and Activities

NAS Fallon is currently the only Navy facility that supports advanced integrated Carrier Air Wing Strike training. Military aircraft from the Navy, Marine Corps, Air Force, Army, and Nevada Air National Guard all train at NAS Fallon. NAS Fallon features four (4) air-to-ground training ranges, an electronic warfare range, a 14,000-foot runway and clear flying weather for more than 300 days per year. The station is home to the NSAWC, which includes TOPGUN, the Carrier Airborne Early Warning Weapons School (TOPDOME), the Navy Rotary Wing Weapons School, the Strike Fighter Weapon Detachment, and Fighter Squadron Composite 13. The Navy SEAL's also conduct training on NAS Fallon, which includes long range land navigation, basic tactical mobility training, advanced mobility training, CAS and CSAR.

The Operations Department is responsible for the critical missions of the airfield operations, air traffic control, emergency crash operations, organizational level maintenance of three SH-60F "Seahawk" helicopters and search and rescue missions.

### 3.4.4 Training Lands

Training on NAS Fallon is primarily conducted on the FRTC. Three types of training, Live, Virtual, and Constructive are supported by Navy training ranges to create the necessary training environment. The priority at the FRTC is to conduct live Naval aviation training. Supporting capabilities, such as Airborne Early Warning and Control, airborne command and control and intelligence, surveillance and reconnaissance, and ground/surface based air defense (friendly and Opposing Force), may be conducted using combinations of live, virtual and constructive capabilities.

The FRTC provides a Tactical Aircrew Combat Tracking Systems (TCTS), an electronic warfare range, a wide variety of air-to-ground targets, and extensive airspace all contributing significantly to Fleet air training operations. Aircraft tracking service is available in the TCTS area for TCTS-capable aircraft. This complex is controlled by NAS Fallon. The acreages of NAS Fallon training lands are presented in Table 1 as well as Appendix E.

The FRTC is composed of the following targets and instrumented areas:

- Bravo 16 (R-4803)
- Bravo 17 (R-4804)
- Bravo 19 (R-4810)
- Bravo 20 (R-4802/R-4813)
- Fallon Electronic Warfare Range (Includes R-4816)

Specific training conducted within the FRTC includes the following, for a detailed description of each activity refer to Chapter 3 of the NAS Fallon RCMP.



Photo credit: Zip Upham

**Unit Level Training Events-** Typically conducted by one unit focused on individual and team training within a unit:

- Insertion/ Extraction – Fixed-wing aircraft and Helicopter
- Mobility Operations
- High-speed Anti- Radiation Missile Exercise
- Air Combat Maneuver
- Electronic Combat Operations
- Bombing Exercise (Air-to-Ground)
- Gunnery Exercise (Air-to-Ground) – Fixed-wing Aircraft and Helicopter High-Speed
- Missile Exercise (Air-to-Ground) – Fixed-wing Aircraft and Helicopter
- Close Air Support – Fixed-wing Aircraft and Helicopter
- Mission Area Training – Marksmanship
- Land Demolitions
- Combat Search and Rescue

**Coordinated Training Events**-Typically conducted by several participants of the same type (two or more air platforms for example), or several participants of different types working together on the same mission:

- Strike Fighter Advanced Readiness Program (SFARP) Training
- Strike Fighter Tactics Instructor (SFTI) “TOPGUN” Training course
- Advanced Mission Commander Course
- Hawkeye Advanced Readiness Program
- Rotary Wing Weapons Strike Syllabus Training
- Helicopter Mountain Flying Course
- Electronic Warfare Advanced Readiness Program Training
- Growler Tactics Instructor Course
- Seahawk Weapons and Tactics Instructor Course

**Major Training Exercises**- Typically conducted at the Carrier Strike Group (CSG) or Expeditionary Strike Group (ESG) level:

- Carrier Wing Events
- Desert Rescue Large Force Exercise
- Long Range Strike

The FRTC is particularly significant to the DoD because of its unique training and tactics development capabilities, extensive instrumentation and target sets, live ordnance impact areas, and its capability to provide Basic, Integration and Sustainment Phase training of Naval forces in the Fleet Readiness Training Plan. The geographic scope includes training areas and 13,000 square miles of Special Use Airspace (SUA). The SUA is comprised of the 11 Military Operations Areas (MOAs), 9 restricted areas, 10 Air Traffic Control Assigned Areas (ATCAAs), and an Aerial Refueling Route (ARR). Additionally, 17 Instrument Flight Rules Military Training Routes (MTRs), three helicopter MTRs, and 14 Low Level Visual Flight Rules MTRs transit, terminate in, or are in close proximity to the FRTC.

NAS Fallon MOAs cover an area of over 10,000 square miles. Included within these MOAs are the NAS Fallon Supersonic Operating Area (SOA) and the four bombing ranges: B-16, B-17, B-19, and B-20. The location of these ranges is depicted on Figure 5 and discussed above in Section 3.2.2.2.



**Horse Creek Training Area**

Photo credit: Gary Cottle photo credit: Zip Upham

***Dixie Valley***

A variety of training activities occur in the Dixie Valley. The FRTC offers nearly 80,000 acres of Navy-managed land within Dixie Valley for fleet units to practice non-ordnance training including integrated air and ground training, electronic combat (EC)/visual cueing, and CSAR training operations. The land within Dixie Valley is divided into six major areas: North Dixie Valley, Dixie Meadows, Settlement Area, South Dixie Valley, Horse Creek, and Dixie Valley Training Area (Figure 5). The areas used the most are Horse Creek and the Settlement Area. They are located approximately 17 miles and 20 miles respectively north Highway 50. Horse Creek is located in mountainous terrain while the Settlement Area lies on the valley floor. Areas where parcels are relatively isolated and specific training (or no training) occur are described below.

The Settlement Area parcels are interspersed with recently withdrawn public lands and consist of approximately 8,481 acres. The lands are used for ground training and CAS. The Settlement Area provides EC/visual cueing and target discrimination training in a rural environment representative of high desert areas in Europe, Africa, and the Middle East.

The Dixie Meadows is approximately 760 acres and includes the Dixie Valley Marsh, cold and hot springs, and two ponds. No training is planned or currently performed here.

The Horse Creek landholdings consist of 272 acres of lands purchased by the Navy surrounding Horse Creek on the western side of the Clan Alpine Mountains. This area is used for air-to-ground visual cueing target, temporary terrorist camp, and cave target acquisition training, as well as ground training, such as CSAR.

***Shoal Site***

NSW and CSAR training operations are conducted on the 2,560-acre Shoal Site training range.

***Small Arms Training Range***

The small arms training range is run by the Nevada Army National Guard (ARNG); a MOA exists between NSAWC, NRSW, and the Nevada ARNG for use of NAS Fallon property. Target Range B-19 contains a small arms training area. This area includes a pistol/shotgun range, a zero range, an automated-record fire range, and a rifle/machine gun range. The rifle/machine gun range accommodates M2, M60, Squad Automatic Weapon, and Sniper rifle firing.

***Electronic Warfare Complex***

The NAS Fallon Electronic Warfare Complex (EWC) consists of a series of BLM right-of-ways for fixed and mobile site locations spread through most of the FRTC. The fixed sites are centered in the Dixie Valley, 23 nautical miles (nm) east of NAS Fallon at an elevation of 4,170 ft, which is characterized as high desert, moderately vegetated by sagebrush and a variety of high desert type flora. The EWC integrates with TCTS and R-4816 to provide a variety of EC training capabilities.



### **3.4.5 Installation Restoration Sites**

NAS Fallon recognizes that potential impacts to natural resources may result from the release of hazardous substances, pollutants and contaminants into the environment. The DoN, Installation Restoration Program (IRP) is responsible for identifying Comprehensive Environmental Response, Compensation and Liability Act releases, considering risks and assessing impacts to human health and the environment, including impacts to endangered species, migratory birds, and biotic communities, as well as developing and selecting response actions when it is likely that a release could result in an unacceptable risk to human health and the environment.

When appropriate, the regional or installation's natural resources management staff will help the IRP Remedial Project Manager (RMP) identify potential impacts to natural resources caused by the release of these contaminants. Figure 7 depicts the locations of NAS Fallon's IRP sites.

Natural resources staff will also participate, as appropriate, in the decision-making process by communicating natural resource issues on the installation to the RPM, attending Restoration Advisory Board meetings as necessary, reviewing and commenting on pertinent documents (e.g. Remedial Investigation, Ecological Risk Assessment), and ensuring that response actions, to the maximum extent practicable, are undertaken in a manner that minimizes impacts to be natural resources on the installation.

## **3.5 Constraints and Opportunities**

The most significant constraints related to natural resources on NAS Fallon are related to water rights, as well as minimizing BASH risk. There are no major topographic or vegetative features that limit the military mission on NAS Fallon. There are currently no constraints from Threatened and Endangered (T&E) species. For more discussion of T&E species see Section 3.6.13. A Constraints Map is presented in Appendix F.

### **3.5.1 Internal and External Encroachment**

To avoid future constraints, the DoN and NAS Fallon engage in active encroachment management. The NAS Fallon Encroachment Action Plan (EAP) (DoN 2012b) identifies, quantifies, and provides mitigation strategies for the potential encroachment threats to an installation. Additionally, there is also an FRTC EAP that was completed in November 2012. Potential internal encroachment challenges for NAS Fallon include airborne noise, competition for airspace and land, and ordnance – unexploded ordnance/munitions. Potential external encroachment challenges for NAS Fallon include urban growth, agricultural growth, T&E species, and legislative initiatives. Section 2.6 presents NAS Fallon's encroachment partnering policies.

NAS Fallon is very supportive of the Transfer of Development Rights (TDR) program since protection of agriculture around the installation is compatible with its mission and operations. NAS Fallon has partnered with Churchill County to provide funding to purchase the conservation easements and development rights on properties within the notification area/buffer zone around the installation.



 DRAIN WITH SURFACE WATER FLOW DIRECTION

 ACTIVE SITES

 NO FURTHER ACTION SITES

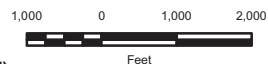
 LAND USE CONTROLS (LUC) SITES

ROADS

 NAS FALLON BOUNDARY

WWTP - WASTEWATER TREATMENT PLANT

(Do not reproduce or distribute without U.S. Navy permission [see Document Disclaimer]).



**Installation Restoration Program**  
**Integrated Natural Resources Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**

**FIGURE**

**7**

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### 3.6 Natural Resources

#### 3.6.1 Climate

The climate of the region is classified as arid continental, characterized by abundant sunshine, low humidity, and substantial diurnal variations in temperature throughout the year. The major influences on the regional climate are the Sierra Nevada mountain range to the west and elevation. Due to its location in the Great Basin and its distance from the moderating effects of the Pacific Ocean, the region experiences extreme temperature variations, both seasonally and diurnally.

The climate of NAS Fallon is warm during summer when day time temperatures tend to be in the 90s (degrees Fahrenheit [°F]) and very cold during winter when temperatures tend to be in the 40s (°F). The warmest month of the year is July with an average maximum temperature of 92.1 °F (33.4 degrees Celsius [°C]), while the coldest month of the year is December with an average minimum temperature of 17.4 °F (−8.1 °C). Temperature variations between night and day tend to be relatively large due to low humidity. During summer the difference can reach 39°F, being more moderate during winter with an average difference of 28°F. In the past 20 years the average precipitation in the Lahontan Valley was 4.12". Most of the precipitation occurs during the winter/early spring months. The climate appears to be drying and warming in northern Nevada. Fallon gets around 7-8 in (17.8-20.3 cm) of snow annually. It also can experience heavy fog in winter, known as pogonip; Paiute Indian word meaning "ice fog". Snow also falls each year during the winter months, but it is generally very light and melts within a few days, except in the mountainous regions, where several inches can fall and remain for longer periods of time.

Wind speed averages less than 7 miles per hour (mph) in the Fallon region, and the prevailing winds are from the westerly directions 70 percent of the time. Gusty winds are common at NAS Fallon, especially during the winter and spring months, with decreasing frequency in the summer. The strongest wind speed recorded in Fallon was less than 55 mph.

#### 3.6.2 Ecoregions

NAS Fallon lies within the Great Basin intermountain ecoregion (U.S. Environmental Protection Agency [EPA] 2003) which covers nearly two-thirds of the State of Nevada. This area covers essentially the dryland region between the Sierra Nevada on the west and the Rocky Mountains on the east, and between the moister Pacific Northwest, and the warmer drylands characterized by creosote (*Larrea tridentata*) to the south. It is the core of the region in which the foothills and lowlands are largely dominated by sagebrush (*Artemisia tridentata*) and Chenopodiaceous genera such as *Atriplex* and *Sarcobatus* (Cronquist et al. 1972).

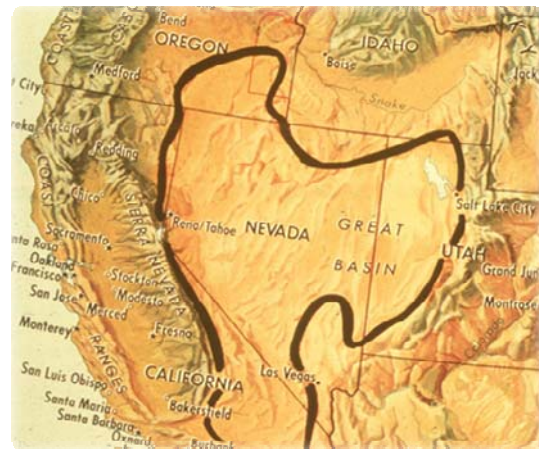


Photo credit: Unknown

Following the EPA ecoregion hierarchy, NAS Fallon is located within the Central Basin and Range Ecoregion (Level III) within the Cold Deserts Region (U.S. EPA 2003). The Central Basin and Range Ecoregion is composed of northerly trending fault-block ranges and intervening drier basins. Valleys, lower slopes, and alluvial fans are either shrub- and grass-covered, or shrub-covered. Higher elevation mountain slopes support woodland, mountain brush, and scattered forests. This area is internally drained by rivers flowing off the east slopes of the Sierra Nevada and by the Humboldt River, one of the longest internally drained river systems in North America. In western Nevada, Pleistocene Lake Lahontan inundated a large part of the area below about 4,400 ft elevation. Today, evidence of Lake Lahontan exists as extensive, nearly flat playas covered by fine textured, alkaline or saline deposits.

More specifically NAS Fallon is located within three EPA Level IV ecoregions, depending on the parcel: Lahontan Salt Shrub Basin, Lahontan and Tonopah Playas and Lahontan Sagebrush Slopes (Level IV, Bryce et al. 2003). The majority of acreage is Lahontan Salt Shrub Basin, which is an expansive dry plain that was once beneath Pleistocene Lake Lahontan. In addition to shadscale, other salt-tolerant shrubs, such as Shockley desert thorn and Bailey greasewood, cover the lower basin slopes, and distinguish the Lahontan Salt Shrub Basin and Tonopah Basin from other Nevada salt shrub ecoregions. Sand dunes occur where windblown sand accumulates against a barrier; dune complexes support a specialized plant community and diverse small mammal populations. Riparian corridors support the only trees found in the ecoregion.

Lahontan and Tonopah Playas are nearly level and often barren, containing mud flats, alkali flats, and intermittent saline lakes, such as the Black Rock Desert, Carson Sink, and Sarcobatus Flat. Marshes, remnant lakes, and playas are all that remain of Pleistocene Lake Lahontan, which was once the size of Lake Erie. Playas occur at the lowest elevations in the Lahontan Basin and represent the terminus or “sink” of rivers flowing east off the Sierra Nevada. They fill with seasonal runoff from surrounding mountain ranges during winter, providing habitat for migratory birds. Black greasewood or four-winged saltbush may grow around the perimeter in the transition to the salt shrub community, where they often stabilize areas of low sand dunes. The Lahontan and Tonopah Playas are important as wildlife habitat and for some recreational and military uses.

Lahontan Sagebrush Slopes occur in only limited areas, but consist of hills, alluvial fans, and low mountains. These areas are rock controlled and their soils lack the fine lacustrine sediments that are found in the lower parts of the Lahontan Basin. Because moisture increases and alkalinity decreases with elevation, the shrub community grades from the greasewood–shadscale community on the basin floor to a shrub community dominated by Wyoming big sagebrush and basin big sagebrush. Understory grasses increase in productivity toward the northeast, outside the rain shadow influence of the Sierra Nevada. The low hills and mountains within the Lahontan Basin experience frequent summer lightning and fire. Introduced cheatgrass tends to replace the shrub community and provides fuel for recurrent fires.

### 3.6.3 Topography and Geology

The Great Basin physiographic province is distinguished by its basin-and-range topography, the result of block faulting, and interspersed interior playas. There are more than 300 isolated mountain ranges within the Great Basin, mostly oriented north-south, with narrow, intervening valleys and playas (Nachlinger et al. 2001).

NAS Fallon Main Station lies in the central portion of the Carson Desert commonly referred to as the Lahontan Valley. The FRTC parcels are located generally on the valley floor in the Carson Sink, Carson Desert and Dixie Valley. Nearby mountain ranges include the West Humboldt Range, Stillwater Range, and the Clan Alpine Mountains (Figure 3). Elevation ranges from 4,000 to 9,800 ft (1,200 to 3,000 m). A discussion of topography and geography for the Main Station and training areas are presented below.

#### 3.6.3.1 Main Station

Main Station is within a large depression known as the Lahontan Valley, which is bordered by gently sloping alluvial foothills bordering adjacent mountains (Figure 5). The topography at Main Station is generally flat, with elevations ranging from 3,917 to 3,949 ft above mean sea level (amsl). The site slopes gently to the southeast, and is underlain by Quaternary playa, marsh, and alluvial flat deposits, which are locally eroded (DoN 1990a, 1994a, 1997; U.S. Bureau of Mines 1990).

#### 3.6.3.2 FRTC

**B-16.** This range is also in the Lahontan Valley, which is bordered by gently sloping alluvial foothills along adjacent mountains. This area is underlain primarily by Quaternary alluvial, playa, marsh, and alluvial flat deposits, with local areas of Tertiary volcanic flows (andesite, dacite, and basalt) in the southwestern portion (DoN 1990a; U.S. Bureau of Mines 1990).

**B-17.** This range is in Fairview Valley in an area underlain primarily by Quaternary alluvial, playa, marsh, and alluvial flat deposits. Tertiary volcanic rocks (welded and non-welded silicic ash-flow tuffs, rhyolite flows, and intrusives), which form the base of the Clan Alpine Mountains, underlie the southeast portion of B-17 and characterize the adjacent Fairview Peak (DoN 1990a; U.S. Bureau of Mines 1990).

**B-19.** This range is in the Rawhide Flats area at an elevation of 3,882 ft amsl. The western southwestern portion of the range is underlain primarily by Quaternary alluvial, playa, marsh, and alluvial flat deposits. The northeast portion of B-19 is underlain primarily by Tertiary volcanic rocks (andesite, dacite, and basalt) of the Stillwater Range, with local areas of alluvial sediments (DoN 1990a; U.S. Bureau of Mines 1990).

**B-20.** The B-20 target range is located in the northeastern section of the Carson Sink (a playa) and lies within the Lone Rock NSAWC working area. Lone Rock, an igneous rock formation approximately 140 ft tall, is the center of this target area. The B-20 area is 31 nm

north-northeast of the Main Station at an elevation of 4,040 ft at Lone Rock. The adjacent flats are at 3,890 ft above amsl. The eastern side of the Carson Sink is bounded by the Stillwater Mountains, which rise more than 3,000 ft above the Carson Sink. The West Humboldt Mountain Range bounds the northern and western sides of Carson Sink (DoN 1998a).

**Dixie Valley Training Area.** This area is in a long, northeast-southwest-trending valley system, which also includes the adjacent Fairview Valley to the south. Dixie Valley formed as a result of uplift and tilting of the Stillwater Range to the west and the Clan Alpine Mountains to the east, along faults located at the bases of the ranges (DoN 1997). Fault scarps are present along the base of the Stillwater Range as a result of fault movement associated with the 1954 earthquakes (DoN 1994a). The valley is underlain primarily by alluvial, playa, marsh, and alluvial flat deposits, which are locally eroded (DoN 1990a).



**Salt flats of the Carson Sink**

Photo credit: Harold Hasselbach

### 3.6.4 Seismicity

The basin and range structure is controlled by north-trending, steeply dipping, normal faults, which generally occur at the base of mountain ranges. Many of these faults are active, including those faults along the eastern front of the Stillwater Range, located approximately 28 miles east of NAS Fallon. Alluvial deposits typically conceal these faults, except along the fronts of the Stillwater Range and the Dead Camel Mountains, located approximately 11 miles southwest of NAS Fallon. No faults are known to underlie NAS Fallon (DoN 1994a, 1997; Hunt 1974).

NAS Fallon is within seismic hazard Zone 4, which indicates the highest level of seismic activity. Richter magnitude 3 and 4 earthquakes are common in this area but rarely cause damage. Four earthquakes of Richter magnitude 6.6 to 7.2 occurred in the vicinity of NAS Fallon in 1954. These earthquakes were accompanied by surface rupture at the base of the Stillwater Range in the Carson Sink area, approximately 30 miles to the northeast of NAS Fallon. Visible fault scarps in Dixie and Fairview valleys, east of the Stillwater Range, also attest to these recent seismic events. Geodetic measurements illustrate that the Stillwater Range has remained almost stationary, but Dixie Valley may have dropped 7 ft. The average frequency of earthquakes in Nevada equal to or greater than Richter magnitude 6 is approximately one in 10 years. Magnitude 7 or greater earthquakes have occurred at a rate of one in 27 years (DoN 1994a).

### 3.6.5 Soil Resources

Regionally, soil characteristics have been affected by salinity because evapotranspiration exceeds the sum of precipitation and input from floodwaters, and because drainages terminate to depressions with no outlet. Without such an outlet, incoming water evaporates inside the basin where its dissolved salts accumulate in the lowest parts. Accumulated salts crystallize and form crusts on top of the playa floor and in cracks in the surface soil. Salt flats and playas are common on NAS Fallon-administered lands.

As such, soils at NAS Fallon and the surrounding area are salt-affected, resulting in saline, sodic, alkali, alkaline, saline-alkali, and saline-sodic conditions. The NAS Fallon area includes the lake-bed sediments of Pleistocene Lake Lahontan. As an internally drained basin, the Lahontan Basin receives the dissolved solids that are the result of leaching in the watershed. As surface water from spring floods evaporates on the broad, nearly level, alluvium-filled valley floors, salts are left behind to accumulate in the soil profile. Since streams do not drain from the valleys and evaporation exceeds precipitation, the salts are not leached by natural drainage. The pH of these soils is high due to accumulation of calcium, magnesium, potassium, and especially sodium in the soil profile due to insufficient leaching (USDA 1991).

Shallow groundwater resulting from percolation of irrigation water tends to be high in dissolved salts (Tetra Tech 1996) and also contributes to high salt concentrations in the soil. These high salt concentrations in the soil occur as a result of capillary rise when the shallow groundwater rises above a well-defined critical depth (Cooke and Warren 1973; Peterson 1981). These salt accumulations can be detrimental to plant growth. Salt-sensitive plants can be affected in soils that have saturation extracts (conductivity of the saturation extract) of only 2 to 4 milliohms per cm. Saline and alkaline soils must be reclaimed before being agriculturally productive (USDA 1991).

For a detailed description of soil types located on the NAS Fallon Main Station and the FRTC, refer to Appendix G. Figure 8 illustrates the soils within NAS Fallon lands.

### 3.6.6 Landcover Types

On the Main Station, there are 1,451 improved acres, 354 semi-improved acres, 3,000 acres in the agriculture outlease program and 3,865 acres of rangeland, predominately saltbush and greasewood vegetation. The FRTC includes approximately 240,000 acres of predominately rangeland and open space, 96,000 acres of which are open to the public, with variable hillside land cover characteristic of Nevada high desert topography.

### 3.6.7 Hydrology and Watersheds

NAS Fallon is located within two surface water basins, Carson (Hydrologic Unit Code [HUC] 1605) and Central Nevada Deserts Basins (HUC 1606), both in the Great Basin Region (U.S. Geological Survey [USGS] 2011, EPA 2011). Within the Carson Basin, the western portions of NAS Fallon occur in the Central Desert Sub-Basin (HUC 16050203).



The eastern portions of NAS Fallon occur in the Dixie Valley Sub-Basin (HUC 16060001). Only a small part of B-19 occurs in the Gabbs Valley Sub-Basin (HUC 16060002). A graphical representation of watersheds is presented in Figure 9.

The Carson Desert Hydrographic Basin is the terminus subbasin of the larger Carson River Basin and commonly referred to as the Lahontan Valley Basin (Figure 9). Runoff in the basin eventually reaches wetlands at Carson Lake, the Stillwater Wildlife Management Area, and the Carson Sink. B-20 is in the northeastern portion of this basin. The B-16 training range is in the southwestern portion of this basin. The northeastern tip of B-19 is in the Carson Desert Subbasin, with most of the training range within the Rawhide Flats Hydrographic Subbasin. Training range B-17 is in the northern portion of the Fairview Valley Hydrographic Subbasin. The Dixie Valley Training Area extends from the northern end of the Fairview Valley Basin into the southern end of the Dixie Valley Hydrographic Subbasin. The Shoal Site lies on the Sand Springs Mountain Range separating the Fairview Valley Subbasin from the Carson Desert Subbasin.

Runoff occurs during major storms, with occasional high runoff from the mountain ranges to the valley flats below. Occasional springs appear in the bedrock outcrops, at or near geologic and fault zones, and in areas with high water tables. Surface water features are shown in Figure 9.

### **3.6.7.1 Regional Hydrologic Conditions**

NAS Fallon-administered lands area is mostly high desert interspersed with isolated mountain ranges. Precipitation ranges from approximately five to 20 inches per year, with the higher precipitation falling on the mountain ranges and the lower precipitation falling in the intervening valleys and flats. Evapotranspiration in the region is approximately 60 inches per year. Surface water features are shown in Figure 9.

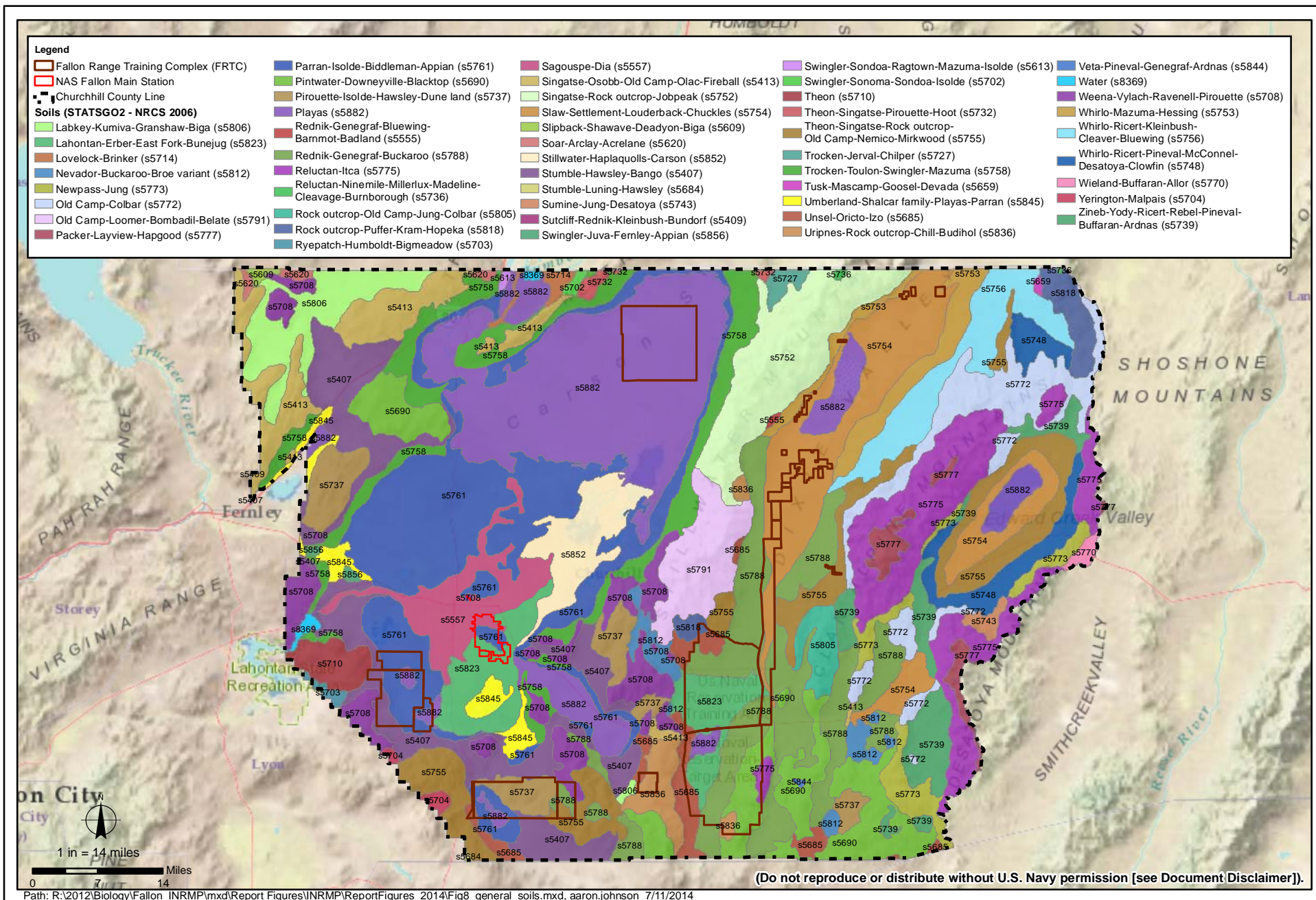
Additionally there are 55,000 irrigated acres associated with the Newlands Project, which is managed by the TCID. Irrigation canals/drains associated with the Newlands Project run through the Main Station.

### **3.6.7.2 Site-Specific Hydrologic Conditions**

Water resources are described by location below. Important water resources in the region are developed springs, wells, storage tanks for livestock, and guzzlers (water troughs) for wildlife.

#### ***Main Station***

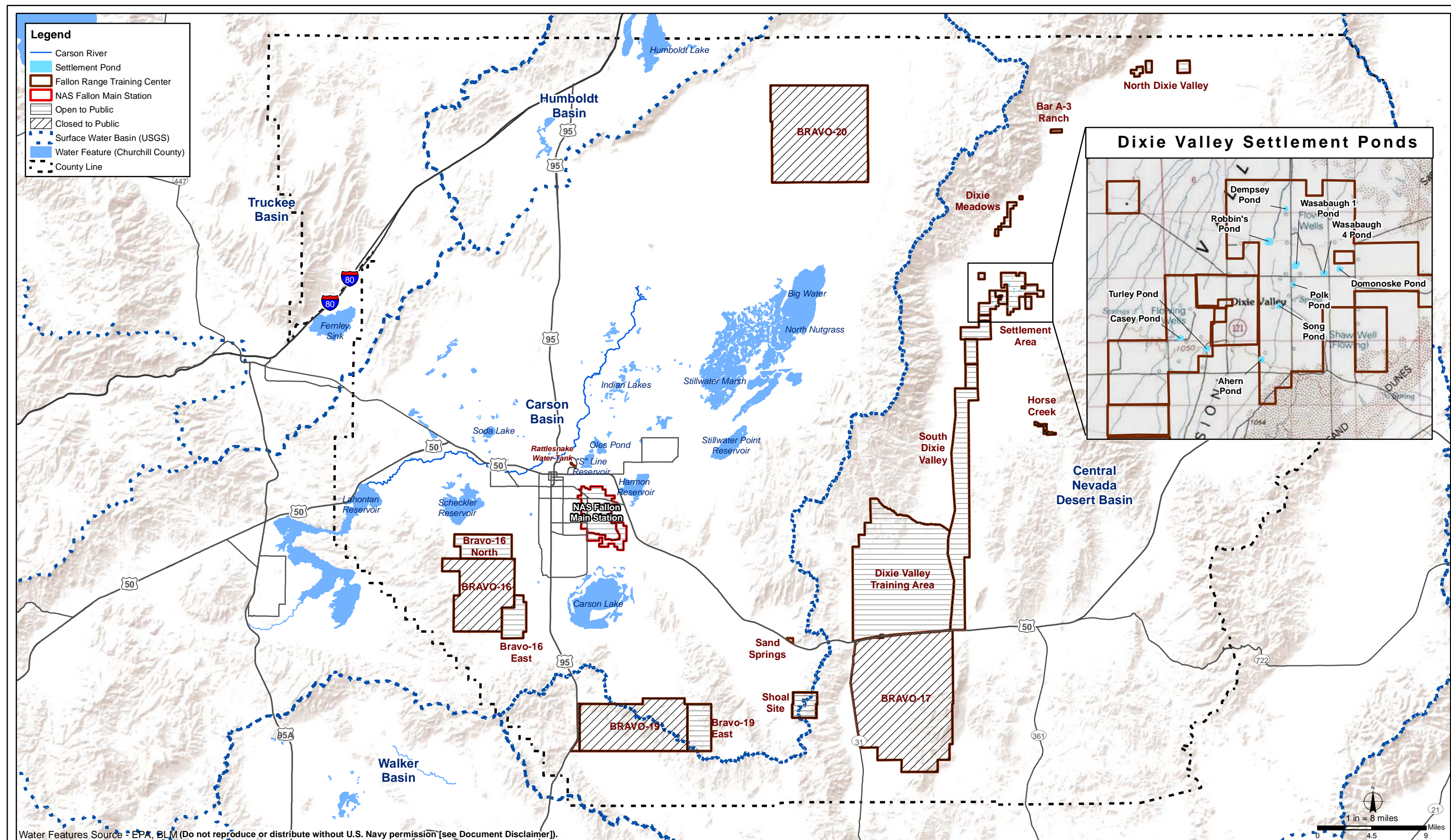
NAS Fallon was mapped for flood hazards in 1985 by the Federal Emergency Management Agency, which noted that only two areas on the eastern side of the station were subject to 100-year flooding. No flood hazard mapping has been done for the training areas outside the Main Station. Periodic flooding is expected to occur along the washes in these areas, and drainage into dry lake beds occasionally creates standing water.



**FIGURE**

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**Surface Water Features**  
**Integrated Natural Resources Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**

**FIGURE**

**9**

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**FRTC**

**B-16**—B-16 is within the Carson Desert Hydrographic Basin. Several major ephemeral stream channels converge to the northwest of B-16 and cross the training range as they flow toward Carson Lake. The area contains additional alluvial fans, valley bottomlands, alkali flats, sand dunes, and segments of three main irrigation canals. This area contains no perennial springs or streams, and no wells have been drilled for water supply. The water table beneath the bottomlands is believed to be shallow. The B-16 area is also a flood control area for Reclamation's Newlands Project due to periodic flood events.

**B-17**—B-17 is at the lower end of the Fairview Valley groundwater basin, a subbasin of the Dixie Valley Basin. The watershed of Fairview Valley is separated from the Dixie Valley by a low topographic divide that extends to the northwest from near the northeast corner of B-17. There are no perennial water bodies at B-17; however, water has been recorded as ponding on the playa within the range boundary during wet years. There are six wildlife guzzlers within the closed withdrawn lands at B-17 (Tetra Tech, Inc. 2008). Several more guzzlers are within five miles of B-17 outside the withdrawn area.

**B-19**—B-19 and surrounding Navy-withdrawn lands straddle the Blow Sand Mountains, which form the topographic divide between Rawhide Flats and the Carson Desert. Water has been recorded as ponding on the playa within the range boundary during wet years. There are seven wildlife guzzlers within five miles of B-19 (NDOW 2005a).

**B-20**—B-20 is in the watershed of the Carson Desert Hydrographic Basin, the terminal subbasin of the larger Carson River Basin. The Carson Desert is also a terminal groundwater basin, meaning that the groundwater has no outlet to another basin. There are no perennial water bodies at B-20. During wet years, water can pond on the playa on B-20. There are no water developments at B-20.

**Dixie Valley**—Navy-administered lands in the northern Dixie Valley are about eight miles north of the Humboldt Salt Marsh, the playa lake where the surface drainages of Dixie Valley terminate (Figure 9). The lands are on the alluvial fan of Cottonwood Canyon, which discharges from the Stillwater Range, and lie near the junction of Shoshone Creek and Spring Creek, the principal ephemeral drainages at this end of Dixie Valley. The USGS topographic map of the area shows several wells in the general area, at elevations of about 3,450 ft. This is about the same elevation as the toe of the alluvial fan of Cottonwood Canyon. Based on this information, it seems likely that there could be good quality groundwater at shallow depth beneath the site, above the elevation of the playa lakebed. Excluding Horse Creek, there are nine wildlife guzzlers within five miles of



**Horse Creek Flowing to Dixie Valley**  
Photo credit: Gary Cottle

Dixie Valley. There are eight wildlife guzzlers within five miles of Horse Creek, some of which are the same as those described in the vicinity of Dixie Valley.

The Dixie Valley Training Area encompasses portions of Dixie Valley and extends north to near Lovelock, Nevada. Dixie Valley is a closed hydrographic basin, which receives surface water from ephemeral streams to the north and south and subsurface water from all connected basins, including the Fairview Valley. There are approximately 20 wells in the Settlement Area, many of which are free flowing. Many of these wells supply water to artificial ponds (Figure 9). Free-flowing wells and overflow from ponds have created wet meadow areas. There are approximately 10 ponds in the Dixie Valley area, remnants of past occupation by farmers and ranchers (Figure 9). Some of the ponds contain nonnative fish, brought in by early settlers, and amphibian populations. In addition, some ponds have served as dipping ponds for fire fighters. Additionally, the 760-acre Dixie Meadows Parcel is located nine miles north of the Settlement Area. There are hot springs at the north end of the parcel and cold springs at the southern end. BLM placed warning signs near the hot springs since the water is over 160 degrees F.

**Shoal Site**— The Shoal Site is near the summit of the Sand Springs Range. The withdrawn lands encompass Gote Flat and extend northwest into the Carson Desert and east toward Fairview Valley. Precipitation can be as much as 15 inches per year. There are no permanent water bodies, springs, or streams on this site, but a major ephemeral drainage crosses the eastern portion of the site toward Fairview Valley.

### 3.6.8 Wetland Habitats

Under Section 404 of the CWA, the discharge of dredged or fill materials in Waters of the United States (WUS) requires a permit from USACE. WUS to which Section 404 of the CWA applies, are defined in the USACE regulations at 33 CFR Part 328 and include surface waters such as navigable waters and their tributaries, all interstate waters and their tributaries, natural lakes, all wetlands adjacent to other WUS, and all impoundments of these waters. Within this regulatory context, wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. This definition is incorporated into Chief of Naval Operations Instruction (OPNAVINST) 5090.1D. In addition, EO 11990 directs all federal agencies to avoid the destruction and adverse modification of wetlands whenever possible (a summary of Executive Order [EO] 11990 is provided in Appendix A).

Consistent with the above definition, wetlands are not under the jurisdiction of the USACE unless, under normal, circumstances, there is positive evidence of wetland hydrology, soils, and vegetation.

Wetland inventories were conducted on NAS Fallon in 1996-1997 and 2007 (DoN 1996, Tierra Data, Inc. 2008). The methodology employed was based on the USFWS National Wetland Inventory, which uses a classification system encompassing a broad spectrum of vegetated and non-vegetated features, only some of which are likely to be regulated as

jurisdictional wetlands (Cowardin et al. 1979). Six general wetland habitats were identified on NAS Fallon during focused inventories, corresponding to about 75 different wetland subtypes in the Cowardin system (Cowardin et al. 1979). Table 2 identifies the general wetland habitats that have been documented on NAS Fallon to date.

**Table 2.**  
**Wetland Habitats on NAS Fallon**

Habitat Type	Main Station	B-16	B-17	B-19	B-20	Horse Creek	Dixie Valley	Shoal Site
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Marshes	2.17			412 (linear feet)		0.40	392.5	
Moist saline meadows and flats	63.63	2.22	0.27	20.74		0.09	1,690.30	
Riparian Woodlands	3.50	57.18				12.5	43.50	
Natural Streams and Drainages	0.50	24.90	622,797 (linear feet)	12,303 (linear feet)		33,965 (linear feet)	40,100 (linear feet)	38.10
Ponds and Ditches	143.55	21,994 (linear feet)		4.72		0.079	1.74	
Playas	228.11	4,157.78	3,160.52	1,547.57	40,914.03		x	

Source DoN 1996, Tierra Data, Inc. 2008

NAS Fallon developed a Wetland Management Plan in 2002 that provides an overview of potential regulatory requirements and includes several maps depicting wetland resources (DoN 2002f). Pertinent management measures from the Wetland Management Plan have been incorporated into this INRMP.

Under current law and guidance, NDEP considers both the Lower Diagonal #1 Drain and Lower Deep Diagonal Drains as WUS. In accordance with Executive Order 11990--*Protection of Wetlands*, NAS Fallon will minimize the destruction, loss or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands to the greatest extent possible. Descriptions of wetland habitats located on the Main Station and FRTC are presented below. A mapbook illustrating the location of wetlands on NAS Fallon is presented in Appendix I.

### ***Main Station***

Wetland habitats on the Main Station consist predominantly of playas, manmade ponds and ditches, and moist-saline meadows and flats. Small areas of marsh and riparian habitat are also present. The NAS Fallon Nature Trail supports man-made wetlands. The water is supplied from the TCID drain ditches and irrigated lands.

### ***FRTC***

Wetland habitat on B-16 is primarily composed of playas. Patches of riparian wetland are fairly extensive in the northern part of the range. Wetland habitat on B-17 is limited to playas and drainage channels that flow into the playas. Wetland habitat is limited on B-19



to playas except in the northwestern corner, which contains marsh, meadow, and playa habitat in the outflow from Stinking Springs. Stinking Springs is a small natural pond, less than one acre, found in the northwest corner of B-19. Range B-20 consists of a playa that covers more than 40,900 acres.

Horse Creek provides a relatively small but high-quality area of riparian and freshwater marsh wetlands composed of woody and herbaceous wetland species. The Navy has installed rock gabions in the streambed of Horse Creek to help control spring high water flows.

There are several areas within Dixie Valley that have wetland habitat. Most of the area has limited habitat consisting of manmade ponds and ditches, normally dry drainage channels, and small areas of moist-saline meadows and flats. The Settlement Road area provides extensive areas of marsh and meadow and flat habitat, in close association with lesser areas of other potential wetland types. Dixie Meadows has large areas of marsh, as well as some saline meadows and flats. Additionally, as previously described, there are hot springs at the north end of the Dixie Meadows. North Dixie Valley supports a large area of moist-saline meadows and flats, in association with smaller areas of other potential wetland habitats.

A general description of each community is presented in Appendix I, as well as maps of wetland areas. Table 2 presents the location of each community within the Main Station and FRTC.

### **3.6.9 Flora**

A complete list of plant species documented on NAS Fallon-administered lands can be found in Appendix J. Upland species include Wyoming big sagebrush, bud sagebrush, common rabbitbrush, alkali sacaton, saltgrass, rubber rabbitbrush, Torrey quailbush, black sagebrush, Bailey's greasewood, black greasewood, shadscale, galleta, alkali mixed scrub, black greasewood, Indian ricegrass, fourwing saltbush, winterfat, spiny hopsage, wolfberry, ephedra, Basin wildrye, Indian ricegrass, and creeping wildrye. Wetland areas support cattail, bulrushes, sedges, and rushes.

### **3.6.10 Vegetation Communities**

Vegetation communities within NAS Fallon have been mapped using a combination of aerial photo interpretation, ground-truthing, and plot surveys during multiple efforts (DoN 1997, DoN 2004, Tierra Data, Inc. 2008). The 2008 Ecological Inventory (Tetra Tech, Inc. 2007) surveyed and mapped areas of NAS Fallon that were not assessed during the 1997 Ecological Inventory (DoN 1997) and the vegetation within the Main Station was updated in 2004 (DoN 2004). The detail of mapping and classification of vegetation was not consistent for each of these mapping efforts, thus mapping is not consistent throughout NAS Fallon lands.

In general, salt tolerant shrubs and playas prevail within the lower valley areas, while sagebrush and other shrub communities occur in the higher valleys and slopes. Pinyon and juniper woodlands occupy portions of the lower elevation mountain slopes and ranges.

In addition to vegetation communities that have been mapped on NAS Fallon (DoN 1997, DoN 2004, Tierra Data, Inc. 2008), per the NR Metrics (Appendix D) terrestrial ecosystems (Nature Serve 2003) that occur on NAS Fallon include the following:

- Inter-Mountain Basins Semi Desert Grassland
- Inter-Mountain Basins Alkaline Closed Depression
- Inter-Mountain Basins Mat Saltbush Shrubland
- Inter-Mountain Basins Montane Sagebrush Steppe
- Inter-Mountain Herbaceous Wetland
- Inter-Mountain Basin Greasewood Flat
- Inter-Mountain Mixed Upland Wetland
- Inter-Mountain Riparian, Springs

Descriptions of vegetation communities that occur within the Main Station and FRTC are presented below. Vegetation communities are also defined and illustrated in Appendix H. There are no vegetation communities considered rare or endangered on NAS Fallon.

### ***Main Station***

Main Station is situated in a large closed drainage basin, where the soils are predominantly clay, have a large content of salts and other minerals, and are low in nutrients. The Main Station is composed of a mosaic of vegetation communities including developed, fallow, agricultural, disturbed and native wetland and upland habitats (Appendix H). Native upland habitats include relatively small isolated areas of playa and sandy habitats, with some basin floor habitats in the southwestern and southeastern portions. Black greasewood is generally the dominant or co-dominant shrub. Drainages and canals within the station support wetland vegetation and riparian vegetation communities.

### ***B-16***

The central portion of B-16 is occupied primarily by piedmont slope habitats surrounded by, and sometimes interspersed with, sandy habitats on the eastern and western portions of the training range. The piedmont slope habitats include a narrow band of badlands bordered on the east by a wide band of gravelly loam slopes vegetated with desert shrub habitat that is dominated by Bailey greasewood. Bailey greasewood, fourwing saltbush, and Indian ricegrass are the dominant plant species in the sandy habitats on the western portion of B-16. Sodic sands and stable dunes dominated by black greasewood are the prevalent sandy habitats in the eastern portion of B-16.

The northern part of B-16 is comprised primarily of two distinct vegetation types - rabbitbrush and Bailey's greasewood. The southern part of B-16 is predominantly covered by unvegetated playas. The dominant vegetation type away from the playas is a mixture of black greasewood-Bailey's greasewood-seepweed.

***B-17***

B-17 has a high diversity of distinct plant communities, with 52 vegetation types. More than half of the range is covered by Bailey's greasewood either as the sole dominant or in combination with as many as 14 other species, including 3 perennial grasses. The most widely distributed vegetation consists of Bailey's greasewood-spiny hopsage-shadscale.

The predominant habitats on B-17 are classified as piedmont slope habitats. There is a large playa in the northwestern portion bordered on the east side by a small area of basin floor habitat. The basin floor habitat at this site is a sodic flat characterized by black greasewood and alkali seepweed. Sandy habitat that supports fourwing saltbush and Indian ricegrass is intermixed with piedmont slope habitats on the western half of B-17. The piedmont slope habitats are lower in elevation on the western side of the training range and gradually increase in elevation toward the east, where B-17 is bordered by Fairview Peak. The piedmont slope habitats are vegetated with a mosaic of desert shrub communities that may be dominated by Bailey greasewood, shadscale, seepweed, or a combination of these. Indian ricegrass is common in the grass and forb layer of the lower piedmont slopes on B-17. Sagebrush-dominated habitats are present in higher elevations along the eastern portion of B-17. These habitats are dominated by black sagebrush or Wyoming big sagebrush.

***B-19***

Sandy habitats, including large areas of unvegetated dunes, are prevalent on this site. There is a large playa surrounded by a moist saline flat area in the southwestern portion of B-19. Within the moist saline flat area, iodine bush, seepweed, and black greasewood are the dominant shrubs, with inland saltgrass present in the understory. The sandy habitats include sodic sands, sodic dunes, stable dunes, and sandy range sites, all of which have fourwing saltbush as dominant or co-dominant in the shrub layer. Bailey greasewood, black greasewood, seepweed, and horse brush are also present in varying amounts. Indian ricegrass is prevalent in most of the sandy habitats. Small localized piedmont slope habitats are interspersed with the sandy habitats throughout B-19. These are low elevation slopes with rocky or gravelly soils, and Bailey greasewood is the dominant shrub.

***B-20***

B-20 is situated in a large playa and near the center of the training range is Lone Rock, a volcanic outcrop surrounded by a zone of dune habitat (DoN 1998b). The dune habitat on B-20 is vegetated with desert shrubs, primarily black greasewood and seepweed.

***Horse Creek***

Horse Creek is vegetated by piedmont slope habitats on the western side of the Horse Creek parcel and grades into sagebrush-dominated habitats on the east side. At least half of the western portion of the property was historically used for agriculture and abandoned when Navy took ownership in 1986. The piedmont slope habitat is dominated by Bailey greasewood. The sagebrush-dominated habitat occurs on the alluvial terrace bordering Horse Creek and is dominated by light-gray rabbitbrush and other shrub species indicative of past disturbance. The vegetation grades into Wyoming big sagebrush and Bailey greasewood on the upper slopes. Riparian woodland and wetlands communities are associated with the Horse Creek drainage.

BLM grazing allotments occur within the Horse Creek area (Figure 5). In efforts to protect native habitats and the drainage within this area, the Navy has attempted to maintain cattle exclusion fencing. However, efforts have been impeded by vandalism of fencing and irresponsible use (gates left open). During the last few years, the cattle have grazed down the areas where the Navy reseeded the fallow agricultural lands with native species that are known to occur from the area.



**Lower Horse Creek Riparian Habitat**

Photo credit: Gary Cottle

Invasive species control efforts within the Horse Creek area have included the control of Russian knapweed which spreads throughout the fallow agriculture lands and the tamarisk which grows along the creek. The BLM continues to treat tamarisk and noxious weeds along Horse Creek as it has for approximately the past 10 years.

### ***Dixie Valley***

Dixie Valley is composed of a mosaic of vegetation communities. A significant portion of the valley is composed of remnant livestock and agricultural farmland with abandoned outbuildings. Basin habitats within the valley floor are characterized by black greasewood, Torrey quailbush, basin wildrye and seepweed. South Dixie Valley includes numerous wetlands associated with flowing wells, and isolated areas of sandy habitats. Dixie Meadows are occupied by wetlands fed by hot and cold springs.

Invasive plant species within the valley include tamarisk, whitetop, cheatgrass, knapweed, and Russian olives. The Navy has implemented a control program for the invasive plants in Dixie Valley and has removed hundreds of tamarisk and Russian olives. Approximately 500 acres of Russian knapweed and whitetop are being treated with herbicides and monitored for continued treatment.



**Dixie Valley Training Area**

Photo credit: AMEC Environment & Infrastructure, Inc.

### 3.6.11 Fauna

Fauna on NAS Fallon were inventoried in 1997 and 2008 (DoN 1997, Tierra Data, Inc. 2008); focused herpetological surveys were updated in 2011. The results of these inventories are presented below. Animal species confirmed through surveys conducted to date include: 112 invertebrates, 165 birds, 6 fish, 6 amphibians, 16 reptiles, and 37 mammals (Appendix K).

#### 3.6.11.1 Mammals

The greatest diversity of mammal species in the region is found in upland habitats. A total of 33 mammal species have been observed on NAS Fallon (see Appendix K). Eight species of small mammals were documented in 2008 (Tierra Data, Inc. 2008). These species are representative of the habitats surveyed. The most



**Bighorn Sheep at Horse Creek**

Photo credit: Gary Cottle

commonly captured species was the Merriam's kangaroo rat (*Dipodomys merriami*), which represented more than half of the total captures.

Fourteen species of bats have been recorded on NAS Fallon, including two listed as State Sensitive, two listed as State Protected, and five listed as Federal Species of Concern (eight total special-status species) (Tierra Data, Inc. 2008). Townsend's big-eared bat and the western red bat are considered at high risk by the Nevada Bat Conservation Plan (NDOW 2006). See Sections 3.6.14 of this INRMP for more details on special status species.

Mule deer is the most important big game species in the region and tends to be concentrated in adjacent mountain ranges, such as the Stillwater, Clan Alpine, and Desatoya ranges, although it is also found commonly in valleys (NDOW 1982). Bighorn sheep have been reintroduced in the Clan Alpine Range and are also found in the Sand Springs Range, Lauderback Range, Chalk Mountain, Fairview Peak/Slate Range, and the Stillwater Range. On NAS Fallon, bighorn sheep occur on B-17 and Horse Creek training areas. Other game mammals include the pronghorn antelope, mountain lion, and bobcat. NAS Fallon and NDOW have worked cooperatively to install big game guzzlers located in the Fairview Peak and Slate Mountain ranges.

#### 3.6.11.2 Birds

There is a great diversity of habitats in the Lahontan Valley, such as freshwater marshes, riparian areas, alkali playas, desert shrublands, and irrigated farmlands. Lahontan Valley wetlands are recognized as some of the most significant in the Western U.S. Carson Lake

has been designated as a site of international importance and is part of the Western Hemispheric Shorebird Reserve Network. The Lahontan Valley is also named a Globally Important Bird Area by the American Bird Conservancy. Each year 250,000 shorebirds migrate through this valley. The diverse wetlands attract more than a million waterfowl, as well as over 20,000 other shorebirds, including pelicans, egrets, herons, ibis, gulls, and terns. The irrigated agricultural lands provide important songbird habitat for migrants and breeding birds (Cottle 2005).

Waterfowl begin arriving in the area in February. Shorebirds begin arriving in March. By April, there are thousands of avocets, stilts, sandpipers, dowitchers, and other shorebird species. Songbirds begin arriving in April and peak in early May, when birds such as house and Bewick's wrens, yellow-headed blackbirds, Lazuli buntings, swallows, grosbeaks, and orioles begin breeding. By early May the large number of colony nesters, including herons and egrets, have reoccupied their colonies. By late summer large numbers of American white pelicans are feeding on the fish in the irrigation reservoirs and drains. The marshes are alive with the sights and sounds of many other species such as American bitterns, sora, marsh wrens, virginia rails, and red-winged blackbirds. In August the fall migration gets underway. There are thousands of dowitchers, phalaropes, avocets, and other shorebirds.



**Snow Geese (*Chen caerulescens*) at Carson Lake.**

Photo credit: Gary Cottle

Landbird migrants, including sage sparrows, warblers, flycatchers, and vireos, generally being migrating from mid-August through late September. In September thousands of waterfowl will stopover in the Lahontan Valley on their migration south. October brings large numbers of white-crowned sparrows, nuthatches, and chickadees into the valley. The first winter freeze pushes all but the hardiest migrants out of the area. Winter residents, including bald eagles, rough-legged hawks, and northern shrikes, arrive. During mild winters, fair numbers of ibis, egrets, herons, and shorebirds may stay in the Lahontan Valley.



**Sage sparrow  
(*Amphispiza belli*) common  
within sagebrush habitats.**

Photo credit: birds.audubon.org

The NAS Fallon ecological inventories (DoN 1997 and Tetra Tech, Inc. 2008) noted a remarkably diverse presence of avifauna species (approximately 126 terrestrial and aquatic bird species during winter and spring). Appendix K presents a list of bird species identified on NAS Fallon. Although no federally listed T&E species were observed, several species listed by the Migratory Bird Treaty Act (MBTA) federal Birds of Conservation Concern (BCC) and Nevada Natural



Heritage Program (NNHP) were detected. Appendix M lists special status bird species that have been identified within the installation.

Wetlands on NAS Fallon support the greatest diversity of birds, with 47 species observed at Horse Creek and 78 at the Settlement Area. The basin floor habitats have a high bird diversity, especially those areas within Dixie Valley.



**Yellow-headed blackbird (*Xanthocephalus xanthocephalus*) and red-winged blackbird (*Agelaius phoeniceus*) common to wetland areas within the NAS Fallon vicinity.**

Photo credit: Unknown

Playas, slopes, sandy areas and sagebrush also have suitable bird habitat but with lower density and diversity of species. Landscaped areas have bird species typically associated with urban development. Agricultural areas also have high bird diversity. Birds with high BASH risk tend to be associated with the agricultural areas and Main Station, more than other locations.

Several nonnative bird species including the house sparrow and European starling are found within developed areas of this region. These species can displace native bird species and harm other native wildlife by monopolizing food sources or breeding sites. Significant game bird species include chukars, mourning doves, and waterfowl. Small game guzzlers have been installed for chukars and mourning doves in the Sand Springs Range, Cocoon Mountains, Bell Canyon, Clan Alpine Mountains, and Lauderback Hills. Many waterfowl game species are found at Carson Lake and the Stillwater National Wildlife Refuge. These include species such as the mallard, northern pintail, and Canada goose.



**Chukar (*Alectoris chukar*)**

Photo credit: Carson Valley Chukar Club

Sage grouse have been observed within the vicinity of NAS Fallon near Horse Creek and Fairview Peak. Focused greater sage grouse (federal candidate and state sensitive species), surveys were conducted in three major areas of NAS Fallon during the 2008 ecological

inventory (Tetra Tech, Inc. 2008). Surveys focused on Fairview Peak, Horse Creek and Dixie Meadows to determine the presence of sage grouse on Navy land. The NDOW's lek maps show leks in the Clan Alpines and Stillwater Mountain Ranges. Further discussion of this species is presented in Section 3.6.13.

### 3.6.11.3 Amphibians and Reptiles

Herpetological surveys were conducted during 1997 and 2007 ecological inventories (DoN 2006; Tetra Tech, Inc. 2008), and recently updated in 2011 (UC Davis 2011). Common reptiles identified during these surveys include a wide variety of lizards and snakes adapted to the hot, dry conditions including the Great Basin gopher snake (*Pituophis catenifer deserticola*), common zebra-tailed lizard (*Callisaurus draconoides*), Great Basin whiptail (*Cnemidophorus tigris tigris*), coachwhip snake (*Masticophis flagellum piceus*), and Nevada side-blotched lizard (*Uta stansburiana nevadensis*).



**W3 Rodriguez rescues spiny lizard (*Sceloporus magister*) at Veterans Park.**

Photo Credit: Anna Keyzers

Common amphibians detected in riparian and wetland habitats within the NAS Fallon-administered lands include American bullfrog (*Lithobates catesbeianus*) and Great Basin spadefoot toads (*Spea intermontana*). Most notably, in 2011, an isolated population of boreal toad (*Anaxyrus [Bufo] boreas boreas*) that may represent a newly described species known as the western (Dixie Valley) toad (*Anaxyrus williamsi*) (UC Davis 2011). Surveys confirmed that western (Dixie



**Adult spadefoot (*Spea intermontana*)**

Photo credit: UC Davis 2011

Valley) toads are generally restricted to the Dixie Meadows area of NAS Fallon. In addition, the presence of the amphibian disease-causing chytrid fungus, *Batrachochytrium dendrobatidis* (*Bd*) in American bullfrogs were discovered from the Settlement Area during these surveys. *Bd* was not found in western (Dixie Valley) toads of the Dixie Meadows area but the proximity to infected American bullfrogs in Dixie Valley highlights the need for special precaution when traveling between and working in the two areas. *Bd* is implicated in declines and extinctions of amphibians in many parts of the world and likely poses great risk to the isolated western (Dixie Valley) toad.

During 2011 surveys, American bullfrogs were present in all permanent and non-permanent lentic systems in the Settlement Area, the Cold Springs of the Dixie Meadows, irrigation ditches throughout the Main Station of NAS Fallon, NAS Fallon Nature Pond, and adjacent agricultural fields. Bullfrog populations appeared to be at maximum carrying capacity within all occupied habitats and may be the primary reason for the absence of the



northern leopard frog from NAS Fallon lands due to competition for resources, predation, or disease. Bullfrogs from the Settlement Area tested positive for *Bd*, the fungal pathogen responsible for chytridiomycosis, an often fatal disease causing extinctions and declines of amphibian species worldwide.

American bullfrogs were determined to be quite common in the ponds at the Settlement Area; observed at all permanent ponds and temporary ponds that held sufficient water during the 2007 surveys. Bullfrogs are not native to this area, and can be problematic for native aquatic amphibians and fishes. They may consume or otherwise displace natives, impacting native biodiversity.

#### 3.6.11.4 Fishes

The year round ponds and marshes of Dixie Valley support suitable habitat for a variety of fish species. Prior to settlement in the area, it is unlikely fish existed in these shallow bodies of water; however, early settlers built holding ponds and stocked fish to control mosquitoes and provide a food source. Six species of fish documented on NAS Fallon (Tetra Tech, Inc. 2008): Dixie Valley tui chub (*Gila bicolor* sp. 9), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), mosquito fish (*Gambusia affinis*), and brook trout (*Salvelinus fontinalis*). Of these, only the Dixie Valley tui chub is considered native to the region, as well a state special status species (Refer to Section 3.6.14).

#### 3.6.11.5 Invertebrates

The insect surveys on NAS Fallon (Tetra Tech, Inc 2008) documented a total of 112 distinct insect (and related fauna) taxa in 6 orders. There are an additional 20 taxa distributed among 14 other orders, covering the full range of arthropod diversity, including, mites, spiders (and other arachnids), springtails, bristletails, grasshoppers and crickets. Appendix K presents a list of invertebrates identified within NAS Fallon.



Sagebrush checkerspot (*Chlosyne acastus*)

Photo credit: butterfliesandmoths.org

#### 3.6.12 Invasive and Pest Species

Invasive and exotic species may include plants, insects, or animals. An invasive species is defined as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.” An alien (or non-native) species is defined as a “species including its seeds, eggs, spores, or other biological material capable of propagating that species that is not native to that ecosystem (EO 13112 *Invasive Species*).”

Because of their invasive capacity, many exotic species have the ability to spread rapidly through ecosystems since their natural predators are often not present. Such species often retard natural succession and reforestation and generally cause a reduction of biological diversity in natural ecosystems.

In accordance with OPNAVINST 6250.4C and OPNAVINST 5090.1D, Chapter 17, NAS Fallon has prepared an IPMP (NAVFAC SW 2010). The IPMP ensures that pest management is conducted in compliance with county, state, federal and DoN and DoD regulations. All pest management programs at NAS Fallon are conducted in accordance with the IPMP. Per the NAS Fallon IPMP (2010), Table 3 presents pest management activities as they relate to natural resources management.

### **3.6.12.1 Invasive Plants and Noxious Weeds**

Invasive plants as defined in EO 13112 are, “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health”. The Federal Noxious Weed Act requires federal land managers to cooperate with state and federal agencies to manage undesirable plants. It defines noxious weed as, “any living stage (including seeds and reproductive parts) of a parasitic or other plant of a kind which is of foreign origin, is new to or not widely prevalent in the U.S., and can directly or indirectly injure crops, other useful plants, livestock, poultry or other interests of agriculture, including irrigation, navigation, fish and wildlife resources, or the public health”. It also mandates a program and a person be assigned to deal with unwanted plants, funding needs, cooperative agreements, and the use of integrated pest management systems. Navy Instruction, OPNAVINST 6250.4C, requires a comprehensive IPMP and discusses the need to control pest outbreaks which affect the military mission, damage property, or impact the welfare of people. All pesticide use must comply with applicable regulations to prevent pollution. In addition, DoD policy states that “noxious weeds and other objectionable plant growth shall be controlled by mowing; use of EPA registered or approved herbicides, cultivation, or other appropriate means. Pesticide use should be minimized and used in accordance with DoD policy” (DoD 2011).

Churchill County developed a Cooperative Weed Management Area (CWMA) Cooperative Agreement, which NAS Fallon signed on 4 April 2003. The purpose of the agreement is to establish the Churchill County CWMA and the terms and agreements under which the participants will cooperate, coordinate activities, and share resources necessary for the prevention and control of noxious weeds and reclamation on public, private, and tribal lands across all boundaries within the Churchill County CWMA. The area included in the CWMA is the entire County.

Weed mapping efforts on NAS Fallon have been conducted in 2008 (Tierra Data, Inc. 2008) and 2012 (AMEC 2013b). The survey conducted in 2008 covered over 185,000 acres, and weed control programs were conducted for the past five years on 34,000 acres.

**Table 3.**  
**NAS Fallon Natural Resources Management and Pest Management**

Location(s)	Natural Resource Management	Pest Management Activity
Main Station	Agricultural outlease soil and water conservation plans	<ul style="list-style-type: none"> <li>• Pest control contractor surveys and controls mosquitoes on Lease Parcels.</li> <li>• The Lessees are required to control invasive weeds on Lease Parcels.</li> <li>• Irrigation District manages the vegetation in their irrigation canals and drains.</li> <li>• Irrigation District manages vegetation in irrigation ditches.</li> </ul>
Main Station	Stormwater Pollution Prevention Plan	<ul style="list-style-type: none"> <li>• IPM practices reduce pesticide pollution</li> <li>• Spill kits and training will contain spills</li> <li>• Xeriscaping reduces pests which reduce the need for pesticides on landscaping where irrigation runoff poses a stormwater risk.</li> <li>• Lack of pesticide storage and bulk mixing on the installation reduces the risk of spills.</li> </ul>
All Areas	Visual Resources Management	<ul style="list-style-type: none"> <li>• Control of non-native invasive plants enhances the natural environment retaining the existing characteristic of the landscape.</li> </ul>
Training Range – Dixie Valley	Wetland Area Management	<ul style="list-style-type: none"> <li>• Control of noxious weeds enhances native habitats and wildlife of wetland areas.</li> </ul>
All Areas	Invasive Animals	<ul style="list-style-type: none"> <li>• Pest control contractors control pigeons, starlings, feral cats, rodents</li> <li>• A USDA biologist controls birds, coyotes, deer, and rabbits around the airfield.</li> </ul>
Main Station	Vegetation Management	<ul style="list-style-type: none"> <li>• Assist establishment of non-invasive and native vegetation by controlling non-native invasive plants.</li> </ul>
All Areas	Fire Management	<ul style="list-style-type: none"> <li>• Control of noxious weeds that increase risk of fires on wildlands and in operational areas.</li> </ul>
Range	Forestry Management	<ul style="list-style-type: none"> <li>• Control tamarisk and Russian olive trees to protect native cottonwoods and willows on the Dixie Valley Training Area and Horse Creek.</li> </ul>
Training Ranges	Invasive Plant Control	<ul style="list-style-type: none"> <li>• The vegetation management contractor controls noxious weeds per Executive Order 13112 and the Noxious Weed Control Act of 1974. NAS Fallon cooperates with other agencies to prevent and control noxious weeds with the Churchill County Cooperative Weed Management Area (CWMA).</li> </ul>
Main Station	Migratory Birds and BASH	<ul style="list-style-type: none"> <li>• Non-lethal control of birds through exclusion and habitat modification prevents bird interference with operations without harming species.</li> <li>• Lethal control of birds not protected by MBTA may be used.</li> </ul>
Main Station and Range	Contagious Wildlife Diseases	<ul style="list-style-type: none"> <li>• Disease vectors and reservoirs are controlled when they pose a risk to humans and domestic animals.</li> </ul>
Main Station	Sick, Injured or Dead Animal Management	<ul style="list-style-type: none"> <li>• Animals are removed by the Pest Control contractor.</li> </ul>

Source: NAVFAC SW 2010

A total of 14,941 acres of NAS Fallon was surveyed for weeds in designated areas in 2012, which included the Main Station, North Dixie Valley, Dixie Meadows, Settlement Area, and Horse Creek. These areas were divided into distinct polygons (345 total) according to land features and/or vegetation community type that were mapped using aerial photographs. Surveys of the polygons were then conducted in the field by vehicle or by foot, depending on accessibility. Species occurrence, density, and degree of confidence in density data were collected for each polygon. A total of 14 weed species were detected during two separate field surveys conducted in June and July of 2012. Table 4 provides a summary of the density of each species found in each survey area, and the frequency of occurrence of each species in each area based on the number of polygons in which the species was recorded. Maps of each area are presented in Appendix L.

**Table 4.**  
**NAS Fallon Invasive and Noxious Plants: Frequency of Occurrence**  
**(Percent of Polygons in Which Species Occurred)**  
**of Each Weed Species**

Scientific Name	Common Name	Nevada Noxious Weed Status	Survey Areas				
			MS	NDV	DM	SA	HC
<i>Cicuta maculata</i>	water hemlock	Category C	0	0	8.7	0	0
<i>Acroptilon repens</i>	Russian knapweed	Category B	22.7	0	0	20.0	36.6
<i>Carduus nutans</i>	musk thistle	Category B	0.6	0	0	0	0
<i>Grindella squarrosa</i> var. <i>serrulata</i>	curlycup gumweed		12.2	0	0	7.8	2.4
<i>Onopordum acanthium</i>	Scotch thistle	Category B	6.4	0	0	7.8	7.3
<i>Sonchus arvensis</i>	sow thistle	Category A	0.6	0	0	0	0
<i>Cardaria draba</i>	hoary cress	Category C	19.2	0	26.1	17.8	41.5
<i>Lepidium latifolium</i>	perennial pepperweed	Category C	8.1	0	8.7	1.1	2.4
<i>Halogeton glomeratus</i>	saltlover		2.9	100	0	46.7	26.8
<i>Salsola tragus</i>	Russian thistle		11.0	68.4	0	18.9	39.0
<i>Eleagnus angustifolius</i>	Russian olive		63.4	0	34.8	40.0	4.9
<i>Bromus tectorum</i>	cheatgrass		11.1	84.2	0	42.2	100
<i>Tamarix ramosissima</i>	saltcedar	Category C	25.6	10.5	26.1	38.9	14.6
<i>Tribulus terrestris</i>	puncture vine	Category C	0	0	0	0	2.4

Notes: \*MS = Main Station NAS Fallon; NDV = North Dixie Valley; DM = Dixie Meadows; SA = Settlement Area; HC = Horse Creek.

Category A: Weeds that are generally not found or that are limited in distribution throughout the state

Category B: Weeds that are generally established in scattered populations in some counties of the state

Category C: Weeds that are generally established and generally widespread in many counties of the state

### 3.6.12.2 Pest and Disease Vectors

Pest and disease vectors are generally managed using the IPM program (Table 3). Pest management activities on NAS Fallon are conducted by a licensed pest control contractor. Recently a contract with the USDA Wildlife Services for an Airfield Biologist was agreed to. The USDA Biologist controls wildlife around the airfield. Specific management strategies for pest animal species are described in Appendix H of the IPMP (DoN 2010). Animals associated with BASH risk are managed through the BASH program, described in BASH Management Plan (DoN 2013). Several groups of animals are considered pests and

conflict with the military mission on NAS Fallon-administered lands including birds such as the rock pigeon, European starling, house sparrow, swallows, and cowbirds. Pest mammals include mule deer, rabbits, skunk, raccoon, squirrels, coyotes, feral dogs, and feral cats. Sick, injured or dead animals are also removed in accordance with the IPMP by a pest control contractor.

### 3.6.13 Special-status Species

Special-status species include T&E species, which are listed by the federal government as threatened or endangered. Species proposed for listing by the federal government, or considered as candidates for listing, are not T&E, but are potentially T&E and are therefore also considered special-status species. Also included in the category of special-status species are BCC. The applicable federal classification system for special-status species is as follows:

- Endangered - Any species that is in danger of extinction throughout all or a significant portion of its range.
- Threatened - Any species that is likely to become an endangered species within foreseeable future through all or a significant portion of its range.
- Proposed - Any species that has been proposed for listing as threatened or endangered species.
- Birds of Conservation Concern - All Nongame birds, gamebirds without hunting seasons, subsistence-hunted nongame birds in Alaska; and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species.
- Candidate - Species for which there is sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened.
- Species of Special Concern - Species formerly under consideration by the USFWS for status changes (includes Category 1, 2, and 3 taxa). As of February 1996, the USFWS discontinued the use of these designations, but remains concerned about these species and encourage further study into their conservation status. As more information is obtained on such species, their protected status could change (USFWS 1996).

Fifteen federally threatened, 24 endangered, and 13 candidate species are listed within Churchill County (NNHP 2009; Appendix M). None of these species have been detected within NAS Fallon. Only one species, greater sage grouse, federal candidate species has potential to occur within the installation. A description of this species is provided below:

#### **Sage Grouse (*Centrocercus urophasianus*)**

NNHP has ranked this species as S3S4B (rare and local throughout its range, or with very restricted range, or otherwise vulnerable to extinction and apparently secure, though frequently quite rare in parts of its range, especially at its periphery). In 2002, USFWS received three petitions to list the greater sage-grouse range-wide. In April 2004, USFWS announced that the petitions presented substantial information that listing may be

warranted and began a full status review. On January 12, 2005, USFWS announced that it has determined listing sage grouse under the ESA is not warranted (USFWS 2005). These findings were challenged, and remanded to the USFWS for further consideration. In response, the USFWS initiated a new rangewide status review for the entire species (73 Federal Register [FR] 10218; February 26, 2008). On March 5, 2010, the USFWS found that listing of the greater sage-grouse was warranted but precluded by higher priority listing actions (75 FR 13910; March 23, 2010), and it was added to the list of candidates. NDOW is currently implementing Nevada's Sage-grouse Conservation Project, which includes a collection of projects ranging from survey and inventory to conservation planning, research and project coordination in order to obtain further information about the species within the state. A conservation plan, *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (Sage-grouse Conservation Team 2004) has also been prepared in support of a massive conservation planning effort.

Sage-grouse are considered a sagebrush ecosystem obligate species. Sagebrush species provide nesting, brood, and fall/winter cover, as well as forage throughout the year. Each year, male sage-grouse congregate in late winter through spring on leks to display their breeding plumage and to attract hens for mating. A lek is a traditional display area where two or more male sage-grouse have attended in two or more of the previous five years (Sage-Grouse Conservation Team 2004).



**Greater Sage Grouse (*Centrocercus urophasianus*)**

Photo credit: nps.org

Although suitable habitat occurs within portions of NAS Fallon-administered lands, no sage-grouse leks are known to occur on NAS Fallon. However, three leks have been documented within approximately five miles to the east of the Dixie Valley Training Area. One of these documented leks is also within five miles of Horse Creek in the Clan Alpine Range (NDOW 2005a). Sage grouse populations occur nearby in the Clan Alpine and Stillwater mountain ranges (Figure 3).

Only marginal sage grouse habitat occurs within the boundaries of the FRTC. Range B-17 includes sagebrush habitat, but lacks permanent water sources. Sagebrush communities on B-17 are mainly located on the eastern portion of the range, on the low hills of the western side of the Fairview range, and on the southern portion of the range flanking Bell Canyon. Greater sage grouse might move through B-17, but it is unlikely that they would nest there.

Horse Creek has a permanent water source, but limited sagebrush community. Grouse may use Horse Creek as a source of water in the dry months, but it is unlikely that they would use this location for leks and nests.

Dixie Meadows has no sagebrush communities and a limited amount of water. The marshes almost completely dry out during the summer months and only the hot springs remain. Grouse may move through the area, but Dixie Meadows is unsuitable for nesting.

Evidence suggests that habitat fragmentation and destruction across much of the species' range has contributed to significant population declines over the past century. If current trends persist, many local populations may disappear in the next several decades, with the

remaining fragmented population vulnerable to extinction. In accordance with DoD principles of ecosystem management (DoDI 4715.03), NAS Fallon stewardship and compliance activities (refer to Section 4.7) contribute to the conservation of sagebrush habitats within the installation to the greatest extent possible.

### 3.6.13.1 Critical Habitat

The ESA requires the federal government to designate “critical habitat” for any species it lists under the ESA. Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. Under Section 7 of the ESA, all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species, or destroy or adversely modify its designated critical habitat.

Federally designated critical habitat does not occur within NAS Fallon lands. The nearest critical habitat designation to NAS Fallon is critical habitat for the desert dace (*Eremichthys acros*) located approximately 140 miles to the northwest. As the greater sage grouse is currently a candidate species for listing under the ESA, critical habitat for this species could be designated in the future, as warranted. The National Defense Authorization Act (NDAA) for FY 2004 (PL 108-136) modified section 4(a) (3) of the ESA to preclude the designation of critical habitat on DoD lands that are subject to an INRMP prepared in accordance with the Sikes Act, as amended. As such, all DoD installations with T&E and proposed T&E listed species, candidate species, or unoccupied habitat for a listed species where critical habitat may be designated, must structure the INRMP to avoid the designation of critical habitat. The INRMP may obviate the need for critical habitat if it specifically addresses the benefit provided to the listed species and the provisions made for the long-term conservation of the species. The USFWS uses a 3-point criteria in order to evaluate the adequacy of an INRMP to obviate the need for critical habitat listing within an installation:

1. The plan provides a conservation benefit to the species;
2. The plan provides certainty that the management plan will be implemented; and
3. The plan provides certainty that the conservation effort will be effective

NAS Fallon’s greater sage grouse conservation measures which address each of these criteria are presented in Section 4.7.

### 3.6.13.2 Migratory Birds and Birds of Conservation Concern

Many of the birds that use NAS Fallon for foraging and breeding habitat are protected by federal law under the MBTA (16 USC § 703 et seq.) and EO 13186. The MBTA, enforced by the USFWS, makes it unlawful “by any means or manner, to pursue, hunt, take, capture [or] kill” any migratory bird except as permitted by regulation. The number of bird species

covered by the MBTA is extensive, includes listed and non-listed species, and is listed at 50 CFR § 10.13. The regulatory definition of “migratory bird” is broad and includes any mutation or hybrid of a listed species and includes any part, egg, or nest of such bird (50 CFR §10.12.).

To provide guidance for conflicts arising between military readiness activities and the MBTA, the USFWS issued the final rule on, "Migratory Bird Permits: Take of Migratory Birds by the Armed Forces" (50 CFR Part 21 in FR 28 February 2007, pages 8931-8950), hereinafter referred to as the Migratory Bird Rule. The Migratory Bird Rule authorizes the military to "take" migratory birds during military readiness activities under the MBTA without a permit. However, if the military determines that the activity will have a “significant adverse effect” on a population of migratory birds, they must work with the USFWS to develop and implement conservation measures to minimize and/or mitigate the effects.

Conservation measures under the Migratory Bird Rule require monitoring and record-keeping for years from the date the Armed Forces commence their conservation action. During INRMP reviews, the Armed Forces must report to the USFWS migratory bird conservation measures implemented and the effectiveness of the conservation measures in avoiding, minimizing, or mitigating take of migratory birds.

BCC are migratory and non-migratory birds that “without additional conservation actions “are likely to become candidates for listing under the Endangered Species Act of 1973” (Fish and Wildlife Conservation Act amended 1988). Per the statutory requirements of the Sikes Act, as amended, in coordination with the USFWS and NDOW, NAS Fallon is to ensure proper consideration of BCC and MBTA species.

Based on DoD policy, neotropical migratory bird programs shall be established in support of and consistent with the military mission. The DoD strategy is to focus on inventory, on-the-ground management practices, education, and long-term monitoring (DoD 2011a). Its Partnership in Flight program seeks to conserve and manage these birds and their habitat on military installations. A list of all bird species observed on NAS Fallon with their federal status is provided in Appendix K.

### **3.6.14 Sensitive Species of Regional Concern**

The NNHP has a ranking system for rare plant and wildlife species. The NNHP systematically collects information on Nevada's at risk, rare, endangered, and threatened biological features, providing the best single source of information on Nevada's imperiled biodiversity. Appendix M presents the special status species found in Churchill County, Nevada.

Although protection of non-federally-listed species is not mandatory on federal installations, management of these species contributes to the overall maintenance of their natural populations and reduces the likelihood that these species will be given additional legislative protection in the future. Ecosystem-based management is a process that considers the environment as a complex system functioning as a whole, not as a collection



of parts. Accordingly, managing for keystone species, such as these species, and their habitat also benefits other species.

### 3.6.14.1 Sensitive Flora

The following three species with NNHP sensitive rankings have been detected on NAS Fallon lands. The exact locations of each species have not been mapped within the installation.

**Sand Cholla (*Opuntia pulchella*).** Sand cholla is protected by a Nevada State Law (NRS 527.060-.120) and is categorized as sensitive and ranked S2S3 by NNHP (NNHP 2012). Sand cholla was observed at three locations in the northwestern portion of B-16 on dry sites dominated by Bailey greasewood and shadscale (DoN 1997); it would be expected in similar habitats elsewhere.

**Lahontan indigo bush (*Psoralethamnus kingii*).** The Lahontan indigo bush is categorized as sensitive and ranked as S3 by NNHP (NNHP 2012). This species is also designated as sensitive by the BLM State Office.

**Lahontan beardtongue (*Penstemon palmeri* var. *macranthus*).** Lahontan beardtongue is categorized as sensitive and ranked as S2 by NNHP (NNHP 2012).



**Sand cholla**  
*Opuntia pulchella*  
Photo credit: www.fs.fed.us



**Lahontan indigo bush**  
*Psoralethamnus kingii*  
Photo credit: www.heritage.nv.gov



**Lahontan beardtongue**  
*Penstemon palmeri* var.  
*macranthus*  
Photo credit: www.plants.usda.gov

### 3.6.14.2 Sensitive Fauna

Species present in Churchill County that are ranked at the state level for threats or vulnerability by the NNHP are listed in Appendix M. BLM sensitive species occurring in Churchill County and USFWS designations are also included in this table. NNHP habitat dependence on wetland and deep-sand habitats are included where applicable. Nineteen species with NNHP state ranks and/or BLM sensitive designations have been documented on the NAS Fallon-administered lands (DoN 1997, Cottle 2005, Tetra Tech, Inc. 2006, Tierra Data, Inc 2008). A description of each species is presented below. Figure 10 presents the location of species for which data is available.

## ***Fish***

***Dixie Valley Tui Chub.*** This genetically distinct subspecies of tui chub is endemic to Dixie Valley (UC Davis 1999) and is listed as a NNHP S1 species (critically imperiled due to extreme rarity, imminent threats, or biological factors). Dixie Valley tui chub is known to occur within three settlement ponds located in the Dixie Valley Training Area: Casey Pond, Turley Pond, and Dempsey Pond (Figure 10). These ponds are all manmade and artificially maintained. While the tui chub's origin is unclear and may be due to historical human influence, its presence is constrained by the isolation of these ponds.

Stresses on tui chub populations include, but are not limited to, cattail encroachment, altered oxygen levels as well as non-native fish and amphibian competition/predation. Bullfrogs, as tadpoles and adults, in addition to foreign fish may devour eggs, larva and juvenile tui chub. This can limit the establishment of new populations and diminish the magnitude of current inhabitants.

There are various measures of management that should be taken to ensure that these diminutive populations of tui chub persist, such as control of cattail infestations, algae intrusion, cattle extrusion, bullfrogs, and other invasive species.

Long-term conservation measures as presented in Section 4.9 of this INRMP, would preclude critical habitat designation for this species on NAS Fallon, should the tui chub become a federally listed species.



**Tui Chub (*Gila bicolor* sp. 9)**

Photo credit: Gary Cottle



**Dixie Valley Tui Chub Habitat on NAS Fallon**

Photo credit: AMEC Environment & Infrastructure, Inc.

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## Amphibians

**Great Basin Spadefoot Toad (*Spea intermontana*).** Several new populations of Great Basin spadefoot toads that had previously not been reported from NAS Fallon were identified during 2011 herpetological surveys. Great Basin spadefoot toads were detected within the following training areas: B-16, Horse Creek, and Settlement Area. Great Basin spadefoot toads are a Nevada Species of Conservation Priority (S4).



**Great Basin spadefoot toad**  
*Spea intermontana*

Photo credit: www.californiaherps.com



**Great Basin spadefoot toad breeding habitat on B-16.**

Photo credit: UC Davis 2011

**Western (Dixie Valley) Toad (*Anaxyrus [Bufo] boreas boreas*).** Western (Dixie Valley) toads are generally restricted to the Dixie Meadows area of NAS Fallon. These isolated populations of boreal toad are currently being studied, as they may represent a newly described species known as the western (Dixie Valley) toad (proposed new name, *Anaxyrus williamsi*) (UC Davis 2011). Breeding habitat was commonly identified within tire ruts located within Dixie Valley meadow habitats.



**Adult western (Dixie Valley) Toad**

Photo credit: UC Davis 2011

The disease-causing chytrid fungus (*Bd*) is known to occur in bullfrog populations located in the Dixie Meadows area (UC Davis 2011). Although, *Bd* was not found in western (Dixie Valley) toads, the proximity to infected bullfrogs highlights the need for special precaution when traveling between and working in the two areas. *Bd* is implicated in declines and extinctions of amphibians in many parts of the world and likely poses great risk to the isolated western (Dixie Valley) toad.

The western (Dixie Valley) toad is currently not protected or officially considered a subspecies. However, research is currently underway by Dr. Tracy at the University of Nevada to determine classification of this species. In addition to this research, the USFWS is currently conducting studies of toad populations in order to provide background information to propose the species for listing. Studies to be implemented include Passive Integrated Transmitter (PIT) tagging/toe clipping for a mark recapture to estimate the toad population size and further *Bd* studies (USFWS 2011).

Long-term conservation measures as presented in Section 4.9 of this INRMP, would preclude critical habitat designation for this species (refer to Section 3.1.13.1) on NAS Fallon, should the western (Dixie Valley) toad become a federally listed species.



**Tire tracks within Dixie Meadows- commonly used as Western (Dixie Valley) toad breeding habitat**

Photo credit: UC Davis 2011

## ***Mammals***

### **Bats**

**California Myotis (*Myotis californicus*)** - The California Myotis, a BLM Sensitive and NNHP G5S4 is widespread throughout Nevada, but is more common in the south. It was detected at all monitoring sites in 2007 (Nature Trail, Wasabaugh 2, Dixie Meadow, Horse Creek, Polk Pond) (Tetra Tech, Inc, 2008). It is a year-round resident and a BLM Sensitive and NNHP G5S4 species. During the 1997 surveys, this species were observed hibernating in the mines on B-17 and foraging over the Dixie Meadows, the canals on the Main Station, and at Stinking Spring on B-19 (DoN 1997).

**Western Small-Footed Myotis (*Myotis ciliolabrum*)** - The western small-footed myotis is widespread in Nevada and is a BLM Sensitive and NNHP G5S3. It was detected at all monitoring sites in 2007 (Nature Trail, Wasabaugh 2, Dixie Meadows, Horse Creek, Polk Pond). It is a year-round resident, hibernating individually or in large colonies. Small-footed myotis occupies the same habitat as California myotis and these species are often identified co-occurring.

**Townsend's big-eared bat (*Corynorhinus townsendii*)** - The Townsend's big-eared bat is classified by NNHP as a state species S3B (rare and local throughout its range or with very restricted range, or otherwise vulnerable to extinction, breeding status within the state, for breeding occurrences only). This species traditionally roosts in caves but could move into "buildings and mines, often in response to disturbance in natural caves" (DoN 1997). During 1997 surveys, individuals or signs of this species were observed at the Crazy K Ranch, the meadow at Horse Creek, the mines at Fairview Peak, and the Mizpah Mine (refer to DoN 1997).



**Pallid bat**  
*Antrozous pallidus*  
Photo credit: Robert Bloomberg



**California myotis**  
*Myotis californicus*  
Photo credit: Norman Barrett USDA



**Townsend's big eared bat**  
*Corynorhinus townsendii*  
Photo credit: www.sciencephoto.com

**Long-Eared Myotis (*Myotis evotis*)** - The long-eared myotis is found throughout Nevada, primarily associated with coniferous forest. The long-eared myotis is a BLM Sensitive and NNHP G5S4 species. Widely distributed but uncommon, this species was detected at Wasabaugh 2 and Polk Pond. It is presumed to be a year-round resident.

**Little Brown Bat (*Myotis lucifugus*)** - The little brown bat is found primarily throughout northern Nevada, but its distribution and abundance is not well understood. Regionally common, it was detected in 2007 at the Nature Trail, Wasabaugh 2, Horse Creek, and Polk Pond. Its occurrence in Dixie Valley was previously documented acoustically (P. E. Brown and R. D. Berry, personal communication, as cited in Bradley et al. 2006). The little brown bat is a BLM Sensitive and NNHP G5S3.

**Long-legged Myotis (*Myotis volans*)** - The long-legged myotis is a mid-sized myotis (a type of bat) that forages on small moths in riparian and watered areas, often near pinyon-juniper woodland or coniferous forests. This species is listed by the state as S4B (apparently secure, though frequently quite rare in parts of its range, especially at its periphery, breeding status within the state, for breeding occurrences only). They roost in rock crevices, trees, caves, mines, and occasionally buildings. During the 1997 surveys, two individuals of this species were observed in a garage in the Settlement Area (DoN 1997). In 2007, it was detected at Polk Pond and Wasabaugh 2 Pond. The long-legged Myotis is a BLM Sensitive and NNHP G5S4 species.

**Yuma Myotis (*Myotis yumanensis*)** - The Yuma myotis is known from the southern and western half of Nevada. It was detected at all monitoring sites in 2007 (Nature Trail, Wasabaugh 2, Dixie Meadow, Horse Creek, and Polk Pond). It is more tolerant of human disturbance than other bats. It is a year round resident and listed as a BLM Sensitive and NNHP G5S3S4.

**Western Red Bat (*Lasiurus blossevillii*)** - The western red bat is extremely rare in Nevada according to Bradley *et al.* (2006), yet this species was detected acoustically in three locations in 2007: the Nature Trail, Dixie Meadows, and Wasabaugh 2. It was historically



known from only two locations, one of which was the Fallon area, which yielded additional specimens in 1958 (R. Alcorn Collection, Nevada State Museum, and Las Vegas). It is thought to be migratory through much of its range, but it may be a summer resident in the Fallon and Muddy River areas (Bradley *et al.* 2006). The western red bat is a BLM Sensitive and NNHP G5S1.

**Hoary Bat (*Lasiurus cinereus*)** - The hoary bat occurs throughout Nevada but some aspects of its distribution and natural history are not well known. It was detected acoustically in 2007 at the Nature Trail, Wasabaugh 2, and Polk Pond. It is a summer resident that migrates but probably hibernates in parts of its winter range (Bradley *et al.* 2006). It is a solitary rooster in trees. Hoary bat is listed as a BLM Sensitive and NNHP G5S3.

**Silver-Haired Bat (*Lasionycteris noctivagans*)** - The silver-haired bat is widely distributed in Nevada, but primarily detected in forests, including riparian woodlands. Locally common, at least seasonally, it was detected acoustically in 2007 at the Nature Trail, Dixie Meadows, Wasabaugh 2, and Polk Pond. Its resident status and migratory patterns are not well understood. It summer roosts individually or in small groups in trees. The silver-haired bat is listed as a BLM Sensitive and NNHP G5S3 species.

**Western Pipistrelle (*Pipistrellus hesperus*)** - The western pipistrelle is found throughout most of the state, most commonly at low to middle elevations. Considered common in appropriate habitat, it was detected at all monitoring sites in 2007 (Nature Trail, Wasabaugh 2, Dixie Meadow, Horse Creek, and Polk Pond). It is a year-around resident, hibernating, and arousing on occasion to forage and drink. The western pipistrelle is a BLM Sensitive and NNHP G5S4 species.

**Big Brown Bat (*Eptesicus fuscus*)** - Found throughout Nevada, the big brown bat is widespread and regionally common. It is a year-round resident that hibernates, arousing on occasion to forage and drink. Winter hibernacula in Nevada are completely unknown, and poorly understood throughout this species range (Bradley *et al.* 2006). The big brown bat is a BLM Sensitive and NNHP G5S4 species.

**Pallid Bat (*Antrozous pallidus*)** - Nevada State Protected, BLM Sensitive, NNHP G5S3 - The pallid bat is found throughout Nevada in a wide range of habitat from low desert to coniferous forest. It was detected acoustically in 2007 at Wasabaugh 2, Dixie Meadows, Horse Creek, and Polk Pond. It is a year-round resident that hibernates, but rouses occasionally to drink and forage through the winter.

**Brazilian Free-Tailed Bat (*Tadarida brasiliensis*)** - State Protected, BLM Sensitive, NNHP G5S3S4 - The Brazilian free-tailed bat is widespread through most of Nevada, ranging from low desert to high mountains. There is a colony of Brazilian free-tailed bats located in Salt Cave, just west of B-16. Additionally, it was detected acoustically in 2007 at the Nature Trail and Dixie Meadows. It is a summer resident found in a wide range of habitats. Migrations of 1,840 km are documented for this species (Wilkins 1989).

### **Other Mammals**

**Bighorn sheep (*Ovis canadensis*)** - Bighorn sheep are considered a Nevada Species of Conservation Priority (NDOW 2012a). They are known to occur in mesic to xeric, alpine to desert grasslands or shrub-steppe in mountains, foothills, or river canyons (NDOW 2012a). On NAS Fallon, bighorn sheep occur on B-17 and Horse Creek training areas.

**Mule deer (*Odocoileus hemionus*)**- Mule deer are considered a Nevada Species of Conservation Priority (NDOW 2012a). Mule deer are known to occur throughout several habitats within NAS Fallon lands, including basin floor, wetland, and agricultural habitats.



**Desert kangaroo rat captured at B-16**  
Photo credit: Tierra Data, Inc. 2008

**Desert kangaroo rat (*Dipodomys deserti*)** - Desert kangaroo rats are found in low deserts, in sandy soil with sparse vegetation or in alkali sinks (NDOW 2012a). Desert kangaroo rat was trapped within the B-16 during 2007 surveys (Tierra Data, Inc. 2008).

### **Birds**

**American avocet (*Recuvirostra americana*)** - This species is a BCC and a Nevada Species of Conservation Priority. The American avocet is considered a Nevada Partners In Flight Priority species, it was observed around ponds in the Settlement Area (Tierra Data, Inc. 2008).

**American white pelican (*Pelecanus erythrorhynchos*)** - This species is a Nevada Species of Conservation Priority. White pelicans have been observed within the NAS Fallon lands (Main Station). Many pelicans additionally inhabit Carson Lake, 5 miles south of the Main Station.

**Bald eagle (*Haliaeetus leucocephalus*)** - This species is a Nevada Species of Conservation Priority. One or two eagles are present during winter among trees along Settlement Road and on the Agricultural Leases on Main Station (G. Cottle, *pers. comm.* 2008).

**Black-necked stilt (*Himantopus mexicanus*)**-This species is a Nevada Species of Conservation Priority. Two individuals were sighted in the Settlement Area.

**Brewer's sparrow (*Spizella breweri*)**-This species is a BCC and a Nevada Species of Conservation Priority. Found at the Settlement and Horse Creek areas.

**Burrowing owl (*Athene cunicularia*)** - This species is a BCC and a Nevada Species of Conservation Priority. Burrowing owls and burrows were observed along the Smith Ranch Gravel Road to B-16 in 2006. In 2007, one burrowing owl was observed near Bell Flat Well and another along Dempsey Road across from Polk Pond while burning tamarisk during the fall (Tierra Data, Inc. 2008).



**American avocet**  
*Recuvirostra americana*  
Photo credit: Unknown



**Brewer's sparrow**  
*Spizella breweri*  
Photo credit: Unknown



**Burrowing owl**  
*Athene cunicularia*  
Photo credit: Unknown

**Canvasback (*Aythya valisineria*)** - This species is a Nevada Species of Conservation Priority. This species is often sighted in the Dixie Meadows area.

**Cinnamon teal (*Anas cyanoptera*)** - This species is a Nevada Species of Conservation Priority. It is often sighted in the Settlement Area.

**Eared grebe (*Podiceps nigricollis*)** - This species is a Nevada Species of Conservation Priority. Eared grebes have been sighted in the Settlement Area.

**Ferruginous Hawk (*Buteo regalis*)** - This species is a BCC and a Nevada Species of Conservation Priority.



**Ferruginous hawk**  
*Buteo regalis*  
Photo credit: Unknown



**Lewis' woodpecker**  
*Melanerpes lewis*  
Photo credit: Unknown



**Long-billed Curlew**  
*Numenius americanus*  
Photo credit: Unknown

**Golden eagle (*Aquila chrysaetos*)** - This species is a BCC. It has been sighted in Horse Creek, throughout Dixie Valley, B-16, and B-17.

**Lewis' woodpecker (*Melanerpes lewis*)** - This species is a BCC and a Nevada Species of Conservation Priority. It has been documented on Horse Creek eating fruits from the orchard and perching in trees near creek.

**Loggerhead shrike (*Lanius ludovicianus*)** - This species is a BCC and a Nevada Species of Conservation Priority. It has been documented around the Settlement Area, around Dixie Meadows and on B-19 in the back dunes.

**Long-billed Curlew (*Numenius americanus*)** - This species is a BCC, Nevada Species of Conservation Priority and is considered a Priority species by the DoD Partners In Flight. It is expected to be seen in the agricultural fields around the Station and possibly in the wet fields around the ponds in the Settlement Area.

**Long-eared owl (*Asio otus*)** - This species is a BCC and a Nevada Species of Conservation Priority. It was documented on NAS Fallon at the Natural Trail east of Crook Road during 2007 surveys.

**Northern pintail (*Anas acuta*)**-This species is a Nevada Species of Conservation Priority. It has been documented in the Settlement Area.

**Phainopepla (*Phainopepla nitens*)** -This species is a Nevada Species of Conservation Priority. It has been documented in the Horse Creek area.

**Pinyon jay (*Gymnorhinus cyanocephalus*)** - This species is a Nevada Species of Conservation Priority. It has been documented on B-17 foraging on the steep hills of Bell Canyon in the southwestern part of the range.

**Prairie falcon (*Falco mexicanus*)** - This species is a BCC. It has been documented on B-16 as well as in Dixie Valley and on the Main Station.



**Pinyon jay**  
*Gymnorhinus cyanocephalus*  
Photo credit: Unknown



**Yellow warbler**  
*Dendroica petechia*  
Photo credit: Unknown



**White faced ibis**  
*Plegadis chihi*  
Photo credit: Unknown

**Sage sparrow (*Amphispiza belli*)** - This species is a BCC and a Nevada Species of Conservation. Suitable habitats occur throughout the FRTC.

**Snowy egret (*Egretta thula*)** - This species is a Nevada Species of Conservation Priority. It has been documented within the Settlement Area.

**Swainson's hawk (*Buteo swainsoni*)** - This species is a Nevada Species of Conservation Priority. It has been documented in fields around Fallon and the Settlement Area.

**White-faced ibis (*Plegadis chihi*)** - This species is a Nevada Species of Conservation Priority. The white-faced ibis is also a Nevada Partners In Flight priority species. White faced ibis are commonly seen foraging on the irrigated fields of the Main Station and on wet fields surrounding ponds in the Settlement area.

**Wilson's Phalarope (*Phalaropus tricolor*)** - This species is a BCC. Suitable habitat is marginal on FRTC although it might be expected to be seen in the salty marshes on the edge of Dixie Meadows.

**Yellow warbler (*Dendroica petechia*)** This species is a BCC and a Nevada Species of Conservation Priority. It was observed on NAS Fallon during 2007 surveys; however exact locations are unknown.

### ***Invertebrates***

Special status invertebrate species known to occur on NAS Fallon are associated with an active sand dune system located on B-19 referred to as the Blowsand Mountains sand dune system. It is thought that Blowsand Mountains and Sand Mountain dune systems to the northeast once shared a common sand source along the Walker River. Over the last 6,000 years, this sand flow has been split into two dune systems (The Nature Conservancy 2004).

This INRMP addresses only the Blowsand Mountains dune system because Sand Mountain is not on NAS Fallon-administered lands. Four sensitive invertebrate species have been documented on the Blowsand Mountains dune system: Sand Mountain aphodius scarab beetle, Hardy's aegialian scarab beetle, Sand Mountain serican scarab beetle, and Nevada viceroy. The Sand Mountain blue butterfly is known only from the nearby Sand Mountain dune system. Kearney buckwheat (*Eriogonum nummulari*), known to be the sole host plant for the Sand Mountain blue butterfly has not been observed in the Blowsand Mountains dune system since 1981 (The Nature Conservancy 1981).

### **3.6.15 Climate Change Vulnerability Assessment**

The ecosystem effects of climate change will likely be incremental and challenging to distinguish and assess for the duration of this INRMP. The analysis to assess potential impacts should be predictive in nature, relying on models to plan for probable complex and indirect changes that are likely to happen in the future. Addressing impacts to protected species and species of concern from global climate changes and developing modifications to natural resources management strategies to address them will require an adaptive process of developing, validating and improving models in the creation of forecasts needed for management.

## **SECTION 4**

### **NATURAL RESOURCES MANAGEMENT PROGRAM ACTIONS**

Resource-specific management objectives and actions are provided in this section for obtaining the desired outcomes. The actions have been further divided into compliance-based actions and stewardship-based actions, defined as follows:

- Compliance-based actions - those that are required to meet the legal regulations governing the management of Navy lands and the needs of the military mission.
- Stewardship-based actions - those that are designed to meet ecosystem-based conservation practices but that are not legally required.

Naval Air Station Fallon, Nevada (NAS Fallon) is a federal facility and, as such, is required to comply with applicable federal law and regulation. In general, actions designed to comply only with state and local law and regulation do not qualify as compliance-based actions. In some instances, federal law may require compliance with state law. In these instances, the actions are compliance-based. However, the ecosystem management approach of this Integrated Resources Management Plan (INRMP) recognizes the value of including stewardship-based management actions designed to meet the objectives of state and local natural resource law and regulation.

The resource-specific objectives and actions, presented below are expected to be implemented during the five-year tenure of the INRMP (unless otherwise noted). Because the INRMP has been developed as an adaptive management program, modifications to the resource-specific management elements are anticipated and encouraged, as additional information becomes available. Any requirement for the obligation of funds for projects in this INRMP will be subject to the availability of funds appropriated by Congress, and none of the proposed projects will be interpreted to require obligation or payment of funds in violation of any applicable federal law, including the Anti-Deficiency Act, 31 U.S. Code (USC) Section 1341, et seq.

Furthermore, this section is focused on the Navy's management responsibilities but it does identify those of the other agencies involved where appropriate. The general nature of those responsibilities and the agreements governing them are described in Section 1.4. The purpose of listing the management measures being implemented by other agencies is to provide a complete picture of natural resources management on NAS Fallon-administered lands. This INRMP is not a proposal for management changes for any agencies other than the Navy.

Based on current conditions and available data it was determined that not every resource required specific objectives. Additionally, management of Forest and Coastal/Marine environs are not presented herein, as these habitats are not relevant to NAS Fallon. NAS Fallon in general does not contain large stands of forests and as a result, does not have a formal forestry management program.

Management priorities on NAS Fallon-administered lands are associated with livestock encroachment in sensitive areas, invasive and noxious plant species control, and maintaining water rights within Agriculture Outlease and Settlement Area ponds. There are no significant natural resources encumbrances to training on NAS Fallon-administered lands. Management measures in this INRMP were generally developed to maintain the current biological diversity of terrestrial and aquatic ecosystems. In addition to meeting military mission requirements, the lands open to public access are also managed to meet multiple use requirements by the Bureau of Land Management (BLM) per their Consolidated Resource Management Plan (RMP) (2001).

#### 4.1 Soils Management

A description of NAS Fallon soil resources is presented in Section 3.6.5 and illustrated on Figure 8. The primary goals of soil resources management on NAS Fallon are to protect soil resources, to identify areas prone to soil erosion, and to prevent soil erosion and its subsequent impact on military facilities, water, and wildlife habitat quality. Because of the topography of NAS Fallon, soil resources are susceptible to erosion from hydraulic forces, particularly during the winter rainy season.

Erosion control and soil conservation are important natural resource issues at NAS Fallon because dust poses a significant FOD risk and requires active management as described in the Dust Control Plan (DoN2004).

In addition, the Navy has implemented management measures and associated strategies to protect and enhance the soil resources at NAS Fallon which are provided below.

Objective 1: Prevent and control soil erosion and reduce likelihood of sedimentation of drainages and associated wetlands from existing and future erosion.

##### ***Primary Regulatory Drivers***

- Clean Water Act
- DoDI 4715.03
- EO 11990
- OPNAVINST 5090.1D, Ch. 9
- Soil Conservation Act
- NAVFAC P-73 Vol. II
- EO 13148

##### ***Compliance and Stewardship Actions:***

- Develop new or use proven Best Management Practices (BMPs) to prevent and control erosion and protect sensitive resources and habitats.
- Ensure incorporation of BMPs in the preliminary engineering, design, and construction of facilities involving ground disturbance (Chief Naval Operations Instruction [OPNAVINST] 5090.1D).
- Use the specific guidance for selecting BMPs as presented in the *Nevada Contractors Field Guide for Construction Site Best Management Practices (BMPs)* (Nevada Division of Environmental Protection [NDEP] 2008), *Nevada Department of Transportation (NDOT) Storm Water Quality Manuals* (NDOT 2006a, 2006b), the National Stormwater BMPs Database and other proven techniques.



- Minimize fugitive dust emissions to minimize impacts to soil sedimentation.
- Continue enforcement and implementation of the NAS Fallon Agricultural Outlease Program which required leases to develop and implement Soil and Water Conservation Plans to reduce dust control. Irrigated crops on leases are to be maintained at a height of 3 inches or more from October through January.
- Continue to maintain and manage access roads on training ranges in order to control dust and soil erosion. Activities may include spread of gravel on dirt roads, installation of water bars to drain roadways, installation and maintenance of culverts, and watering of gravel roads for soil erosion control as necessary.

## 4.2 Water Management

Water resources are a fundamental part of not only natural resources management but facility management generally at NAS Fallon due to the desert ecosystem and very limited water availability. Not only does that make the water resources essential to ecosystem services, protecting biodiversity and native species, but essential to the long-term sustainability of the military mission at NAS Fallon. Wetlands and aquatic habitats are some of the most productive habitats, and often provide important migration corridors for a variety of species. For a complete summary of water resources on NAS Fallon, including streams, ponds and floodplains, refer to Section 3.6.7. Management measures and associated strategies to protect and enhance the water and soil resources at NAS Fallon are provided below.

### **Objective 1: Minimize impacts to water resources and comply with all laws pertaining to water resources.**

#### ***Compliance and Stewardship Actions:***

- Seek funding to make application to move water rights to wells that are not permitted but are desired for retention for wildlife or other beneficial use.
- Continue to close water wells in Dixie Valley that are not legally permitted by the State of Nevada.
- Maintain water rights associated with the Agricultural Outlease Program.
- Maintain existing fencing to protect water resources and associated wildlife habitat.
- Minimize water use and maintain native plant communities and species diversity in landscaped areas.

#### ***Primary Regulatory Drivers***

- Sikes Act
- Clean Water Act
- OPNAVINST 5090.1D
- DODI 4715.03
- EO 11990
- EO 13423
- EO13514

- Reduce the potential for water pollution by reducing fertilizer and pesticide use, using integrated pest management techniques, recycling green waste, and minimizing runoff.

**Objective 2: Manage new landscaping for the benefit of water conservation.**

***Compliance and Stewardship Actions:***

- Implement low maintenance plant requirements as a criterion for selection of any new tree, shrub, perennial, vine, ground cover, or ornamental grass, Appendix H presents a list of plant species that are suitable for planting on NAS Fallon.
- Replace thirsty lawn areas, where they are not needed for recreation, with drought-tolerant plantings. Appropriate "water-wise" plants for new or replacement landscaping should be selected from a list of plants suitable for the local climate.
- Minimize fertilizer runoff by efficiently conserving water and fertilizer runoff into the wetlands and drainage channels.
- Evaluate timing of watering needs based on the amount of water the sprinkler systems apply per minute, which should be measured directly.
- Adjust irrigation systems, particularly with automatic timers, and adjust to the actual water needs so that excess water is not applied.
- Water at night or early morning to reduce evaporation loss.
- Use mulches around shrubs and trees to decrease surface evaporation and subsequent water loss by up to 70 percent.

### **4.3 Wetlands Management**

A description of NAS Fallon's non-jurisdictional wetland resources is presented in Section 3.6.8 and illustrated on figures presented in Appendix I. Non-jurisdictional wetlands on NAS Fallon are primarily associated with streams, channels and ponds. Wetlands provide essential breeding, spawning, nesting, and wintering ground for numerous wildlife species. Wetlands also enhance the quality of surface waters by impeding erosive forces moving water and trapping waterborne sediment and associated pollutants. Per Executive Order (EO) 11990, *Protection of Wetlands*, federal agencies are required to: "*take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.*" It is also Navy policy to avoid adverse impacts on existing aquatic resources and to offset those adverse impacts that are unavoidable (OPNAVINST 5090.1D). Management measures and associated strategies to protect and enhance the wetland resources at NAS Fallon are provided below.

**Objective 1: Manage non-jurisdictional wetlands on NAS Fallon in compliance with federal laws and EOs.**

***Compliance and Stewardship Actions:***

- Inventory and map wetland and non-wetland waters of the U.S. every five years. Maintain a comprehensive Geographical Information System (GIS) geodatabase that includes the extent of these resources.
- Support the mitigation policy of avoidance, minimization, and compensation for any wetland losses, as mandated by EO 11990, *Protection of Wetlands*. Perform wetland delineations prior to conducting activities in areas identified as potentially jurisdictional wetlands.
- Enhance wetland habitat by annually eradicating and removing nonnative and invasive wetland plant species. Target species should include high priority species such as tamarisk. Removal activities should be conducted outside of riparian bird breeding season (15 March through 31 August).
- Restore native wetland/riparian plant habitats that have been significantly disturbed by weed control activities. Revegetate these areas with appropriate native species that are known from the local region.
- Monitor wetland community plant species composition and relative cover. Paying particular attention to invasion by noxious weeds and cover aquatic vegetation.
- Evaluate proposed projects for impacts to wetlands and riparian areas.
- Protect the riparian zone and stream banks by maintaining vegetative cover.
- Reconcile wetland classification systems used in the 1997 and 2008 wetland inventories.

**Objective 2: Maximize biodiversity and ecosystem functions associated with wetland resources.**

***Compliance and Stewardship Actions:***

- Reduce the amount of vegetative debris in Dixie Valley Settlement Ponds.
- Maintain fencing for the protection of existing natural and manmade aquatic and riparian habitats including, but not limited to areas of the Settlement Area Ponds, Horse Creek, and Dixie Meadows.
- Continue conducting monthly monitoring of wetland and riparian areas using a Dixie Valley inspection report form. During these inspections, evaluate the presence of cattle, fencing condition, pond condition, well maintenance and status, wildlife observed.

***Primary Regulatory Drivers***

- Sikes Act
- Clean Water Act
- OPNAVINST 5090.1D
- DoD Directive 5090
- DODI 4715.03
- EO 11990
- EO 13112

- Maintain water rights for wells within Settlement Area. Provide evidence of beneficial use for wildlife by conducting monthly monitoring of these wells.
- Evaluate proposed projects for wetland habitat fragmentation; ensure avoidance of fragmentation while supporting military mission

#### 4.4 Vegetation Management

A description of NAS Fallon's vegetation resources is presented in Section 3.6.10 and Appendix H. These communities provide wildlife habitat, support and contribute to biodiversity, and can serve as indicators of ecosystem health. Natural plant communities within the site include upland shrub dominant, tree dominant, and herbaceous cover types, as well as riparian/wetland habitats (Appendix H).

Department of Defense (DoD) policy calls for restoring and rehabilitating adversely altered or degraded habitats. Native plant species and communities shall also be maintained, enhanced, and restored to conserve their biodiversity and health (DoD 2011). The following management measures are intended to conserve and maintain natural plant communities and habitats within NAS Fallon.

**Objective: Manage natural habitats for the benefit of native plant and wildlife species without increasing Bird/Animal Aircraft Strike Hazard (BASH) risk.**

##### *Compliance and Stewardship Actions:*

- Conserve, protect, maintain, and manage areas of high biological value (i.e. sagebrush and riparian/wetland habitats).
- Educate visiting units that conduct ground training activities about sensitive habitat areas (sagebrush and riparian/wetland habitats) and avoidance of such areas during training activities.
- Conduct habitat restoration activities: 1) Restore and revegetate upland/wetland areas that have been significantly disturbed by training or noxious weed control activities with appropriate native species that are known from the local region; 2) enhance existing habitats by removing nonnative grasses and forbs and replanting with appropriate native species that are known from the local region.
- Continue to coordinate with appropriate federal, state and local government agencies to inventory, evaluate, control and remove undesirable vegetation.
- Use cottonwood and willow pole plantings to restore and sustain the cottonwood and willow trees on the Main Station per the Cottonwood Management Plan on the Main Station.

##### ***Primary Regulatory Drivers***

- Sikes Act
- OPNAVINST 5090.1D
- DoD Directive 5090
- DODI 4715.03
- EO 11990
- EO 11988
- EO 13112
- EO 11987

- Continue to implement revegetation activities per the Agricultural Outlease Program.
- Reconcile classification systems used in the 1997 and 2008 vegetation inventories.
- Monitor the condition and trend of vegetation communities. Update the installation's vegetation mapping every five years and maintain a GIS geodatabase.

#### 4.5 Invasive Species & Integrated Pest Management

Pest management programs at NAS Fallon are conducted under an Integrated Pest Management Plan (IPMP) (2010) in accordance with DoD Instruction (DoDI) 4150.07 and OPNAVINST 6250.4C. The Noxious Weed Control Act requires federal land managers to cooperate with federal and state agencies to manage undesirable plants. It also mandates a program and a person be assigned to deal with unwanted plants, funding needs, cooperative agreements, and the use of integrated pest management systems. In addition, DoD policy states that “noxious weeds and other objectionable plant growth shall be controlled by mowing; use of U.S. Environmental Protection Agency (EPA) registered or approved herbicides, cultivation, or other appropriate means. Pesticide use should be minimized and used in accordance with DoD policy (DoD 2011). Weeds listed by the State of Nevada that are designated as noxious weeds requiring control are listed in Nevada Administrative Code (NAC) 555.010.

##### **Primary Regulatory Drivers**

- Sikes Act
- Federal Noxious Weed Act
- National Aquatic Invasive Species Act
- OPNAVINST 5090.1D
- OPNAVINST 6250.4C
- DoDI 4715.03 and 4150.07
- EO 11990
- EO 13112
- EO 11987

Section 3.6.12 discusses invasive species that occur within the NAS Fallon. Invasive species management measures and associated strategies are provided below.

**Objective 1: Eradicate invasive plant species that have potential to alter native plant communities.**

##### ***Compliance and Stewardship Actions:***

- Conduct an inventory of noxious weeds; identify and prioritize areas that are dominated by invasive species that are considered high priority by the State of Nevada.
- Maintain a comprehensive noxious and invasive plant species list and GIS geodatabase for these data per the GIS Management Program detailed below in Section 4.13.
- Based on the results of the noxious weed inventory, identify management goals and strategies for the control of high priority noxious and invasive plant species.

- Annually eradicate or control the spread and introduction of nonnative and invasive plant species with emphasis on those with greatest potential for negative impacts while ensuring current BMPs are implemented.
- Ensure the Noxious Weed Management Plan addresses the following details related to noxious weed management:
  - The extent and identity of the invasive species present at NAS Fallon.
  - Species-specific physical, biological, and herbicide control methods that may be appropriate for management use.
  - Native, special status species and natural habitat protection measures.
  - A revegetation plan to replace the exotic wetland vegetation.
- Continue to remove tamarisk and Russian olive trees to protect native cottonwoods and willows at Dixie Valley and Horse Creek.
- Coordinate invasive species removal with NAS Fallon's current IPMP (2010) to control noxious plants in conjunction with aquatic plant pests, as required by OPNAVINST 6250.4C.
- Remove all sprayed/dead material and brush in their entirety in a controlled manner to minimize any potential distribution of the remaining seedbank.
- Replace invasive plant species with native vegetation that occurs in the local area.

**Objective 2: Control of pest species that pose a nuisance, significant property damage, or potential health hazard to a tolerable level, without jeopardizing the survival of the pest species or any incidental take of non-target wildlife.**

***Compliance and Stewardship Actions:***

- Identify threats that invasive terrestrial and aquatic wildlife species (i.e. European starling and bullfrog, etc.) may pose to native songbird and aquatic species (i.e. predation, competition and nest parasitism).
- Control identified pest species that pose a nuisance, significant property damage, or potential health hazard to a tolerable level, without jeopardizing the survival of the pest species or any incidental take of non-target wildlife.
- Ensure pesticide/herbicide applications will not negatively affect terrestrial or aquatic wildlife species by complying with all federal, military, state, and local environment standards and obtain necessary permits (contractors) for pesticide/herbicide application.
- Comply with all federal, military, state, and local environment standards and obtain necessary permits (contractors) for pesticide/herbicide application.
- Ensure implementation of Navy agriculture lessees Soil and Water Conservation Plans which state that the lessees are responsible for preventing and controlling pests on the leased parcels.

## 4.6 Fish and Wildlife Management

Fish and wildlife management at NAS Fallon focuses on maintaining and restoring natural habitat favorable for endemic fish and wildlife in a manner consistent with the military mission and all applicable laws and regulations. The wildlife management program provides for the management of wildlife populations and their habitats consistent with accepted scientific principles, in compliance with the ESA and other applicable laws and regulations, in harmony with the total natural resources program. Nevada Department of Wildlife (NDOW) and U.S. Fish and Wildlife Service (USFWS) provide assistance to NAS Fallon in management of wildlife.

Wildlife management includes, but is not limited to habitat protection, special status species surveys, population trends, and habitat improvement projects. Information pertaining to fish and wildlife species known to occur on NAS Fallon is included in Section 3.6.11. In addition to general fish and wildlife management, there are additional management needs associated with minimizing air strikes and BASH-related risk. Management measures have been identified in order to preserve and protect wildlife resources at NAS Fallon, these measures and associated goals and strategies are provided below.

### Objective 1: Protect wildlife and associated habitats from adverse human impacts.

#### *Compliance and Stewardship Actions:*

- Develop educational materials in order to inform military training personnel about NAS Fallon's wildlife species and habitats.
- Implement natural habitat exclusion areas by providing signage within these areas.
- Educate NAS Fallon grounds maintenance personnel and about sensitive habitat areas (such as riparian and wetland habitats) to be excluded from landscape maintenance activities with the exception of invasive weed removal.

#### ***Primary Regulatory Drivers***

- Sikes Act
- Endangered Species Act
- OPNAVINST 5090. 1
- DDoDI 4715.03
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- EO 13186

**Objective 2: Promote a sustainable and diverse wildlife community for NAS Fallon-administered lands through habitat stewardship, population protection and monitoring, invasive species removal, and wildlife damage control compatible with the facility's mission and location.**

#### *Compliance and Stewardship Actions:*

- Conduct a basewide wildlife inventory every five years and maintain a comprehensive list of species that have been identified within the installation. Conduct focused surveys for specific species (i.e. bats, small mammals, herpofauna etc.) as necessary.



- Promote and integrate surveys conducted by local birders and groups such as the Audubon Society.
- Conduct nest surveys prior to conducting construction, landscape maintenance, and pest control activities in areas that have potential to support breeding bird populations. Ensure protection of roosting sites as necessary.
- Evaluate the potential for nest enhancement activities such as the installation of nest boxes within and adjacent to riparian and marsh habitats in order to encourage breeding habitat for species (determined by box placement and size).
- Maintain effective separation, defined as spatial or temporal separation between wild sheep or goats to minimize the potential for association and probability of transmission of disease between species. Utilize best available science, resource knowledge, BMPs, guidelines, and other information when making effective separation determinations.
- Continue to monitor wildlife and their habitat for overpopulation and disease in coordination with NDOW and USFWS.
- Implement predator control programs, as necessary, in order to benefit native wildlife populations.
- Maintain records of injured wildlife cases to monitor extent of problem.
- Conduct an annual evaluation of the effectiveness of fish and wildlife management activities through the Naval Facilities Engineering Command (NAVFAC) Annual INRMP Metrics Builder.

**Objective 3: Promote and participate in beneficial partnerships with other agencies to implement wildlife management.**

***Compliance and Stewardship Actions:***

- Continue to coordinate with NDOW to implement guzzler and spring improvement projects.
- Provide NDOW and access for hunters once coordinated through the Naval Strike and Air Warfare Center (NSAWC) range office for the annual bighorn sheep hunt on closed withdrawn lands at B-17.
- Coordinate with NDOW to assess Horse Creek for potential fish habitat enhancement projects.
- Review and/or develop baseline migratory bird population data for Navy lands during peak migration periods for B-20 and Dixie Valley.
- Continue to coordinate with USFWS to study the distribution of western (Dixie Valley) toad.
- Coordinate with Animal and Plant Health Inspection Service (APHIS) and the BLM for coyote control.

- Continue to coordinate with NDOW on sport fish pond habitat and recreation enhancement projects.

#### 4.7 Special-status Species Management

DoD policy states that federally threatened and endangered (T&E) species and their habitats shall be protected and managed according to the ESA and implementing USFWS regulations and agreements. Descriptions of federal protection categories are provided in Section 3.6.13. DoD components with land management responsibilities shall maintain records of funds expended for T&E species management. When compatible with military mission and USFWS requirements and recommendations, DoD components shall cooperate in studies, programs, plans, and experiments designed to enhance populations of T&E species.

##### ***Primary Regulatory Drivers***

- Sikes Act
- Endangered Species Act
- OPNAVINST 5090.1
- DDoDI 4715.03
- Migratory Bird Treaty Act

No T&E were observed within NAS Fallon during ecological inventories that have been conducted to date. Only one federal candidate species for potential T&E listing, the greater sage grouse, has the potential to utilize habitats present within the installation. This sagebrush obligate bird is a candidate for federal listing and has not been documented regularly or recently on NAS Fallon (DoN 2008). B-17 contains suitable habitat but no permanent water sources. Greater sage grouse may use NAS Fallon occasionally, especially B-17, Horse Creek and Dixie Meadows. The following general compliance and protection objectives will assist in implementing and achieving the management goals for these species. If ESA listing is warranted for this species, NAS Fallon shall re-evaluate the conservation measures in support of conservation. Further, this INRMP may obviate the need for greater sage grouse critical habitat listing if it is determined that the conservation measures presented herein meet the USFWS 3- point criteria (refer to Section 3.16.13.1) that is used to evaluate the adequacy of an INRMP to obviate the need for critical habitat listing within an installation. Ecologically based and focused sage grouse conservation measures are presented below.

#### **Objective 1: Determine presence of suitable habitat for greater sage grouse**

##### ***Compliance and Stewardship Actions:***

- Delineate sagebrush within the boundaries of the installation every five years in order to evaluate the presence of suitable breeding habitat for the species.
- Reduce pinyon and juniper encroachment into sagebrush.
- Maintain permanent water sources, such as Horse Creek and Dixie Meadows.

#### **Objective 2: Determine presence of sage grouse leks and manage for this species accordingly.**

***Compliance and Stewardship Actions:***

- Perform protocol-level surveys for greater sage grouse using accepted methods if basewide surveys determine that this species is present onsite.
- Monitor and map leks during protocol-level surveys.
- Continue to coordinate with BLM and NDOW to assess the presence or potential for sage grouse within NAS Fallon-administered lands.

**4.8 Migratory Bird and Birds of Conservation Concern Management**

All neotropical migratory birds, which include many of the species found at the facility, are generally protected from "take" under the MBTA (50 CFR 10). BCC are migratory and non-migratory birds that without additional conservation actions are likely to become candidates for listing under the ESA. MBTA and BCC species are listed in Appendix M.

The DoD has an established network of 25 biologists to represent DoD in various technical bird management working groups. Through the participation in Partners in Flight (PIF) program, the DoD actively manages its natural resources to support mission needs, and flight safety goals. The DoD PIF has a list of priority bird species and 16 species are on Navy lands in Nevada (refer to Appendix K for DoD PIF species on NAS Fallon).

***Primary Regulatory Drivers***

- Sikes Act
- Endangered Species Act
- OPNAVINST 5090.1D
- DoDI 4715.03
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- EO 13186

Management objectives and conservation actions for migratory birds, DoD PIF listed, and BCC are provided below.

**Objective: Enhance, conserve, and monitor MBTA species and associated habitat within the installation.**

***Compliance and Stewardship Actions:***

- In conjunction with other agencies review and/or develop baseline migratory bird population data for Navy lands during peak migration periods.
- Monitor the suitable habitat within the installation every five years for the presence of MBTA species.
- Develop and maintain a bird checklist for migratory and resident species that use the Installation.
- Evaluate proposed activities and construction projects for their likelihood to kill, injure, or significantly disturb migratory birds and mitigate potential impacts via BMP implementation or amended approaches, as feasible.

- Provide notice to USFWS in advance of conducting any action that is intended to take migratory birds and ensure that the environmental analysis of actions required by NEPA, or other established environmental review processes; evaluate effects of actions and plans on migratory birds.
- Participate in DoD's PIF program to conserve and manage neotropical birds and their habitat.

#### 4.9 Sensitive Species of Regional Concern Management

Several state “sensitive” species are known to utilize the habitats within the installation for roosting or breeding habitat. A description of these species is presented in Section 3.6.14; Appendix M lists each species and their listing status.

**Objective: Protect, enhance, and conserve habitat areas utilized by sensitive species, particularly wetlands and ponds.**

##### *Compliance and Stewardship Tasks:*

- Conduct habitat enhancement in ponds with tui chub to promote population persistence.
- Regular monitoring of pond stability, cattail infestations, algae intrusion, bullfrogs, and other invasive species.
- Implement bullfrog control programs within the tui chub settlement ponds.
- Continue to collaborate with the USFWS to conduct *Bd* studies of the western (Dixie Valley) toad populations.
- To prevent any risk of unintended *Bd* introduction to the populations of western (Dixie Valley) toads, follow sterile protocols when human or vehicular movement occurs between the Settlement Area and Dixie Meadows.
- Maintain an inventory and GIS geodatabase of species of regional special concern that have been identified through focused surveys.
- Avoid sensitive habitat areas (i.e., wetland and riparian areas) during training and project permitting, preventing damage to sensitive areas, and rehabilitating damaged areas.

##### ***Primary Regulatory Drivers***

- Sikes Act
- OPNAVINST 5090.1D
- DoDI 4715.03

#### 4.10 Bird/Animal Aircraft Strike Hazard Management

The BASH Management Plan (DoN 2013) identifies potential areas of concern and establishes procedures to minimize the threat of bird and other animal strikes to aircrews and aircraft at NAS Fallon and the surrounding Special Use Airspace (SUA) and training ranges. No single solution exists for BASH problems, and a variety of techniques and organizations are involved in the management program. Thus, the program encompasses all actions that may identify, reduce, or eliminate bird or other wildlife hazards to aviation.

This includes bird avoidance and bird control through harassment, grounds maintenance, habitat modification, and depredation. The following measures are presented in the BASH Management Plan:

- Remove broad-leaved weeds and their seeds near the runways which have the potential to attract birds.
- Remove dead vegetation, brush piles, and grass clippings as soon as possible to reduce cover for birds.
- Fill the low areas and standing water near the runways to reduce wildlife habitat and BASHs. Piping or filling within Reclamation jurisdiction would not occur without appropriate authorization.
- Crops known to be very attractive to birds should be evaluated on a case-by-case basis for each Agricultural Outlease and crop selection will be made considering Federal Aviation Administration (FAA) guidelines. Leases require irrigated crops to be maintained at a height of three inches or more from October through January to minimize BASH potential.
- Control invertebrates and rodents periodically in accordance with the IPMP.
- Discourage mammals such as deer and coyotes from utilizing land near the airfield.
- Inspect drainage ditches regularly to keep them clear of barriers that could cause ponding of water.
- Design new structures and retrofit existing structures with appropriate management techniques to reduce BASH risk.

#### 4.11 Agricultural Outleasing and Grazing Management

The Navy manages six (6) agricultural leases within 9 parcels under its Agricultural Outlease Plan of 2000, as directed in Chapter 19 of NAVFAC P-73 Vol II. A Soil and Water Conservation Plan was written for each lease, and the lessee is required to complete conservation projects. Management objectives and compliance actions that have been identified to promote sustainable agricultural outlease programs within NAS Fallon are provided below. These objectives additionally incorporate grazing management conservation efforts associated with active BLM allotments that overlap NAS Fallon training areas (Figure 5).

##### *Primary Regulatory Drivers*

- Sikes Act
- OPNAVINST 5090.1D
- DoDI 4715.03

**Objective 1: Promote compatible, sustainable agricultural outlease programs (refer to Figure 6) and opportunities that are compatible with mission requirements and state laws.**

***Compliance and Stewardship Action:***

- Monitor and enforce conservation projects associated with lease agreements, including but not limited to: fence and gate maintenance; pest management; fire prevention; debris removal; erosion control; crop height management (3 inches or more from October-January) and tree management.
- Construct/maintain fences to exclude livestock from wet habitats.

**Objective 2: For areas outside of the NAS Fallon Agricultural Outlease Program, promote sustainable grazing management that is compatible with NAS Fallon mission requirements and BLM livestock grazing permits and plans.**

***Compliance and Stewardship Actions:***

- Manage grazing according to the Grazing Management Plan or BLM Grazing Allotment Plan, depending on location.
- Continue to prohibit domestic sheep grazing on Navy lands within nine miles of desert bighorn sheep habitat. These areas would likely include B-17 and Horse Creek.
- Construct/maintain gates and fences to exclude livestock from wildlife habitat, including, but not limited to the Horse Creek area.
- Coordinate with BLM to amend the existing permits for livestock grazing on lands closed to public access by the Military Lands Withdrawl Act (MLWA) of 1999. This amendment would consist of a livestock management decision to reduce AUMs as a percentage of the allotment converted to closed status.
- Maintain fencing around B-17 to prevent encroachment from livestock onto the range. Assess the need for additional “drift” fencing along the south and southeast portions of B-17 to prevent encroachment from areas where gaps in the fencing exists. If necessary additional fencing would be added.

**4.12 Outdoor Recreation Management**

According to the Sikes Act, as amended, the Navy is required to provide outdoor recreation and interpretive opportunities to the public but only when it is compatible with military needs and security. Outdoor recreation activities are intended to support the wise stewardship of DoD’s natural resources. In the event of potential conflicts of use, sound biological management practices shall prevail.

***Primary Regulatory Drivers***

- Sikes Act
- OPNAVINST 5090.1D
- DoDI 4715.03
- Outdoor Recreation - Federal/State Programs Act

The Navy manages recreation where compatible with the military mission in accordance with the Sikes Act, as amended, DoDI 4715.03, and Navy Regulations and Policies. In general, the Navy considers hunting and OHV use to be incompatible with the military mission on the Main Station. NDOW regulates, enforces, and licenses all fishing and hunting on all lands in Nevada. Public access is prohibited on closed withdrawn and closed Navy-acquired lands (open and closed lands are defined in Section 3.2.2), which precludes outdoor recreation on those lands.

Outdoor recreation opportunities on the Main Station of NAS Fallon are centered on NAS Fallon Nature Trail. Current recreation activities include picnicking, walking, jogging, and wildlife watching. Although the area is used by other wildlife, birds are the most numerous and are often easier to view by casual observers. Birds also use the wetland and agricultural outlease areas for feeding, nesting, resting during migration, and refuge during the hunting season. Watchable Wildlife programs and similar programs that facilitate the public's ability to view wildlife in a natural setting are encouraged on Navy lands. However, military security is top priority on NAS Fallon. Note that there is no military security outside the NAS Fallon Airfield located on the Main Station. The natural resources staff patrols areas outside of the Airfield and calls the County Sheriff to report crimes. Funding is required to hire a County Sheriff Deputy or NDOW Game Warden to patrol the Navy's ranges.

The Navy does not permit OHV use on the Main Station. OHV use areas and management responsibilities on the FRTC are predominantly a function of land status. Generally, no OHV use occurs in closed lands. However, the Navy does periodically use OHVs on closed lands for range maintenance and training. OHV designation on open withdrawn and Navy-acquired lands is limited to existing roads and trails. The Navy will maintain OHV designations in cooperation with BLM to ensure consistent designations within an area.

Generally public access is restricted by Navy Security requirements. However, public access to DoD properties for outdoor recreation may be allowed whenever compatible with mission activities and other considerations such as security, safety, or resource sensitivity.

**Objective 1: Promote compatible, sustainable outdoor recreation opportunities compatible with mission requirements.**

***Compliance and Stewardship Actions:***

- Maintain the current level of public access to open withdrawn lands as compatible with the military mission.
- Continue to maintain the campgrounds at Horse Creek.
- Maintain/improve the NAS Fallon Nature Trail to benefit the public and natural resources.
- Encourage wildlife watching for both serious and casual observers by participating in public outreach programs and maintaining partnerships with organization such as the Audubon Society.



- Continue to provide accessible recreation opportunities for disabled veterans, disabled Americans, and their families.
- Create recreational maps that will facilitate quality recreation outings by avoiding conflicts with military facilities and activities while protecting the environment.
- Continue to allow access to the eight maintained ponds in Dixie Valley. Fishing rules and regulations are established and enforced by the NDOW.
- Replace signage at Horse Creek as necessary notifying public users that the area is used by NAS Fallon for training purposes; include contact info.
- Continue to provide access for the annual bighorn sheep hunt on closed withdrawn lands at B-17 per agreement with NDOW.
- Coordinate other federal, state and local governments and groups to develop cooperative agreements when applicable for the joint development of recreation trails (OHV, bicycle, horse, hiking, wildlife viewing, recreation sites, etc.).
- Inventory and map existing OHV roads on open Navy-acquired lands to develop baseline data.
- Coordinate with NSAWC to create approved areas or zones for travel off existing roads and trails on closed/open Navy-owned and withdrawn lands. Create a comprehensive Travel Management Plan to aid in the promotion of wildlife recreation activities, while protecting impacts from OHV travel.

#### 4.13 Data Management

NAS Fallon uses GIS to manage information about the installation's environment and resources. GIS allows users to store and manipulate temporal and spatial data (e.g., maps, aerial photos, satellite images). It deals with data in vector (lines, points, and polygons) and raster (imagery) formats. Data can be displayed and manipulated to create maps. More importantly, GIS data are used to process and analyze information used in natural resources management. Primary GIS software consists of ArcGIS. The following goals and strategies have been developed for the management of the installation's GIS Program:

##### **Primary Regulatory Drivers**

- Sikes Act
- OPNAVINST 5090.1D
- DoDI 4715.03

**Objective: Ensure the technically sound, practical, and appropriate uses of library and computer technology to manage, analyze, and communicate natural resource information in support of management decisions.**

##### ***Compliance and Stewardship Actions:***

- Development and use of the current military use map that shows environmental considerations as well as military facilities.
- Upgrade GIS capabilities, gain access to satellite data, either by subscription or agreement with other agencies.

- Store, analyze and maintain data for research and survey projects involving natural resources on NAS Fallon, making the information accessible and readily available to multiple users. Data shall be maintained in a Spatial Data Standards for Facilities, Infrastructure, and Environment compliant manner.
- Integrate GIS data between agencies, particularly BLM.
- Develop an MOU for data sharing, identify administrative aspects such as vertical datum and coordinate system.

#### 4.14 Wildland Fire Management

BLM integrates all Navy closed and open lands, except the Main Station, into its Fire Management Plan (BLM 2004). The BLM will assist the Navy in developing and implementing fire prevention measures pursuant to the MLWA of 1999. Pursuant to the Navy and BLM mutual aid agreement (BLM and Navy 1999), both agencies would conduct air and ground suppression activities where they are determined to be necessary and safe. BLM Fire management units are described in the Fire Management Plan (BLM 2004).

The Navy and BLM will coordinate with the State of Nevada and Churchill County for fire suppression activities. The responsibility for fire-fighting costs and damages are determined in accordance with 43 CFR 9239.1-2. All Navy withdrawn and owned lands would match fire management objectives on adjacent BLM lands. Fire Management Units (FMUs) adjacent to Navy lands includes Lahontan Basin (FMU-NV-030-09), Churchill Ranges (FMU-NV-030-11), and Churchill Basin (FMU-NV-030-12).

##### ***Primary Regulatory Drivers***

- Sikes Act
- OPNAVINST 5090.1D
- DoDI 4715.03

On lands designated as Navy-owned, NAS Fallon will ensure sound fire management practices and shall incorporate such practices in a Fire Management Plan specific to these lands. Additionally, there is a Cooperative Fire Protection Agreement between NAS Fallon and BLM in Carson City.

#### 4.15 Climate Change and Regional Growth

Scientific research indicates that global warming will have long-term, irreversible, adverse consequences on natural resources, including terrestrial and aquatic habitats. The Nevada Wildlife Action Plan identifies climate change as one of four primary stressors affecting wildlife, along with growth and development, water management conflicts, and invasive species, and makes recommendations to include climate change science in restoration work. Models are the only way to project future changes for the NAS Fallon and the surrounding region, and to evaluate needed research, data collection, and potential

##### ***Primary Regulatory Driver***

- OPNAVINST 5090.1D

management strategies. However the use of models to explore the potential implications of climate change is rife with uncertainty. A range of scenarios is possible using accepted models, and local data sets need to be developed and integrated through collaboration and consensus.

The recently updated guidance for Navy INRMPs (OPNAVINST 5090.1D) added a requirement to address climate change in INRMPs. It states that “the evidence for climate change is extensive and has generated consensus in the scientific community. Addressing climate change poses a new challenge for natural resources managers who will need to understand changes in ecosystem structure and function anticipated from climate change, in addition to understanding ecosystems as they function now and as they have in the past.” The guidance continues with a framework for addressing climate change issues, and this is incorporated in the strategies outlined below.

**Objective: Adapt and mitigate the adverse impacts of climate change through annual goal setting based on science-based scenarios, targets, collaborative planning, and adaptive management.**

***Compliance and Stewardship Actions:***

- Identify species and communities resilient/vulnerable to climate change impacts by collaborating, as feasible, with partners in conducting climate change vulnerability assessments.
- Improve the application of models through data collection and validation (as feasible and needed) and for using such science based models in environmental and natural resource management planning.
- To the extent necessary, improve the graphical depiction of the potential impacts of climate change scenarios for NAS Fallon to address anticipated shifts in species ranges and population abundances in climate change vulnerability assessments.
- Provide for the management of threatened, endangered, and other special status species such that changes in distribution and abundance may be understood in the context of climate change.
- Establish partnerships for collaboratively addressing climate change issues, as needed and feasible.

#### **4.16 Conservation Law Enforcement Management**

Conservation law enforcement responsibilities on the training ranges and surrounding lands are shared by five agencies: DoN, BLM, NDOW, USFWS and Churchill County. The Navy would be interested in cooperating with these entities to develop an agreement for possible shared law

##### ***Primary Regulatory Drivers***

- Sikes Act
- OPNAVINST 5090.1D
- DoDI 4715.03

enforcement responsibilities on open withdrawn and Navy-acquired lands. The Navy does not have enough security personnel to patrol the ranges and lands outside the airfield. Funding is needed to hire a County Sheriff Deputy or NDOW Game Warden to patrol the ranges and protect the natural and cultural resources that occur within NAS Fallon.

Fire response on the Main Station is handled by the NAS Fallon Fire Department. The Navy has mutual aid agreements with BLM and Churchill County for use when necessary. The NAS Fallon Fire Department will continue to determine appropriate times and methods for prescribed burning of weeds and irrigation ditches. Monthly and quarterly inspections would continue to be performed by fire inspectors to assess fire potential. Maintained defensible space is typically 50 ft or greater surrounding fuel storage areas ammunition magazines; and 30 ft surrounding other structures. Additionally, the Navy maintains gravel roads on FRTC.

## SECTION 5 IMPLEMENTATION

### 5.1 Prescription Preparation

Naval Air Station Fallon, Nevada (NAS Fallon) depends on natural resources for the sustainability of many mission-related programs (i.e., aesthetics and recreation for military personnel, stormwater collection and transport, etc.) and will manage natural resources to ensure sustainable use. This INRMP is not intended to impair the ability of NAS Fallon to perform its mission. However, the Integrated Natural Resources Management Plan (INRMP) does identify usage restrictions on sensitive attributes such as environmentally sensitive habitat areas. Appendix F provides natural resources Constraints Map for the installation.

Implementation of this updated INRMP will be realized through the accomplishment of specific goals and objectives as measured by the completion of projects described herein (Refer to Appendix O). An INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for “must fund” projects and activities;
- Ensures that sufficient numbers of professionally trained natural resources management staff are available to perform the tasks required by the INRMP;
- Coordinates annually with cooperating agencies;
- Documents specific INRMP action accomplishments undertaken each year.

Appendix O (Table 1) presents a summary of the management measures for this INRMP to be implemented in-house and may not require funding. Appendix O, Table 2 presents a summary of the management measures for this INRMP that have project numbers and will require funding to implement. Only those measures where the Navy plays a role in management responsibility are presented in these two tables.

### 5.2 Natural Resources Priorities and Funding Classifications

Management programming and budgeting priority levels are detailed in Department of Defense (DoD) Instruction (DoDI) 4715.03, *Environmental Conservation Programs*, which implements policy, assigns responsibilities, and prescribes procedures for funding the integrated management of natural and cultural resources on property under DoD control. Budget priorities are also described in Chief of Naval Operations Instruction (OPNAVINST) 5090.1D. Budget priorities for federally threatened and endangered (T&E) species management, especially compliance with Biological Opinions (BOs), receive the highest possible budgeting priority, and supports the need to avoid critical habitat designations under Section 4(b)(2) of the ESA, or Section 4(a)3 of the ESA (exemption from critical habitat designations for national security reasons). The budgeting plan for the INRMP is based on programming and budgeting priorities for conservation programs described in DoDI 4715.03. Funds will be requested for tasks within the INRMP,

with priority given to Class I, II, and III projects, in that order, based on this guidance. The DoDI 4715.03 document defines classes of conservation programs; compliance activities fall into the first three classes and stewardship activities fall into the fourth class. Accordingly, the projects recommended in this INRMP have been prioritized based on compliance and stewardship criteria.

For the purposes of this INRMP, the terms compliance and stewardship have specific meanings as criteria for implementing project lists. Overall project or activity rankings are aligned with CNO N45 Environmental Readiness Levels (ERLs) to ensure the installation's highest priorities are promoted in future budget cycles. The highest priority ERL4 is assigned to projects or activities based compliance with legal requirements, such as under the ESA, CWA, or Migratory Bird Treaty Act (MBTA). Alternatively, a project or activity may be considered good land stewardship but is not considered a legal obligation, and this investment may yield only undefined future benefits.

Four programming and budgeting priority levels are detailed, with the first three classified as "Compliance" and the fourth as "Stewardship." Funding is routinely programmed three years in advance of project implementation. The DoN funding classes per DoDI 4715.03 are presented below:

### **Compliance**

1. Class 0: Recurring Natural and Cultural Resources Conservation Management Requirements. These are activities needed to cover the recurring administrative, personnel, and other costs associated with managing DoD's conservation program that are necessary to meet compliance requirements (federal and state laws, regulations, EOs, and DoD policies) or that are in direct support of the military mission. Also included are environmental management activities associated with the operation of facilities, installations, and deployed weapons systems.
2. Class I: Current Compliance. These projects and activities are needed because an installation is currently out of compliance (has received an enforcement action from a duly authorized federal or state agency, or local authority); has a signed compliance agreement or has received a consent order; has not met requirements based on applicable federal or state laws, regulations, standards, Presidential Executive Orders (EOs), or DoD policies; and/or are immediate and essential to maintain operational integrity or sustain readiness of the military mission. This also includes projects and activities needed that are not currently out of compliance (deadlines or requirements have been established by applicable laws, regulations, standards, EOs, or DoD policies, but deadlines have not passed or requirements are not in force) but shall be if projects or activities are not implemented in the current program year.
3. Class II: Maintenance Requirements. These are projects and activities needed that are not currently out of compliance (deadlines or requirements have been established by applicable laws, regulations and standards, EOs, or DoD policies, but deadlines have not passed or requirements are not in force), but shall be out of compliance if projects or activities are not implemented in time to meet an established deadline beyond the current program year.

**Stewardship**

4. Class III: Enhancement Actions, Beyond Compliance. These are projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required under regulation or EO and are not of an immediate nature.

The Navy assigns an additional assessment level to projects to assist in recognizing appropriate funding sources in Environmental Program Requirements exhibits. The following descriptions of Navy Assessment Levels are summarized from the Navy Environmental Requirements Guidebook (Chief Naval Operations 2004). After each description is the approximate equivalent DoD Class.

- Level 1 (federal and state regulation). Level one requirements are those prescribed by existing laws, regulations, and EOs. These projects/ongoing efforts include responding to applicable federal, state and local laws and regulations. Level one also includes costs of ongoing compliance, such as: manpower, training, travel, and program management. [same as DoDI 4715.03 Classes 0 & I]
- Level 2 (Navy Policy). Requirements derived from DoD and/or Navy policy. These projects/proposed efforts are not mandated by law or other federal, state or local regulations/orders, but reflect implementation of Navy and DoD policy decisions and initiatives [same as DoDI 4715.03 Class I]
- Level 3 (Pending Regulation). Requirements derived from pending federal, state or local regulations under development (where publication is scheduled). Using, if available, model state regulation/permit standards. [same as DoDI 4715.03 Class I]
- Level 4 (Future Requirements). Requirements derived from future potential federal, state or local legislation. These requirements are speculative in nature. [same as DoDI 4715.03 Class II]
- Level 5 (Leadership Initiatives). Requirements based on local proactive Navy initiatives not mandated by law, regulation, EO or policy. [same as DoDI 4715.03 Class III]

Budget priorities for T&E species management, especially compliance with BOs, receive the highest possible budgeting priority, and supports the Installation's need to avoid critical habitat designations under Section 4(b)(2) of the ESA, or Section 4(a)3 of the ESA (exemption from critical habitat designations for national security reasons).

**5.3 Funding**

Implementation of this updated INRMP is subject to the availability of annual funding. The installation requests project validation and funding through a variety of resources. Funding for the staff and standard supplies comes from direct funding sources. The Navy and NAS Fallon intend to implement recommendations in this INRMP within the



framework of regulatory compliance, national Navy mission obligations, anti-terrorism and force protection limitations, and funding constraints. The execution of any of the INRMP projects will be dependent on the availability of appropriate funding sources. Any requirement for the obligation of funds for projects or actions in the INRMP shall be subject to the availability of funds appropriated by Congress, and none of the proposed projects or actions shall be interpreted to require obligations or payment of funds in violation of any applicable federal law, including the Anti-Deficiency Act, 31 U.S.C. § 1341.

High priority compliance projects to comply with legal obligations are generally funded within annual budget constraints, but future federal budgets could decrease available funding for both compliance and lower ranked stewardship projects. Annual funding for all conservation projects are ranked on a regional basis and each project must compete for available funds among multiple Navy installations. It's the Navy's policy to promote long term mission and environmental sustainability measures, including good stewardship practices, and all valid compliance and stewardship requirements are submitted for consideration during budget programming cycles.

Environmental compliance funds are special operations and maintenance (O&M) funds that are funded by DoD, but still subject to O&M funds restrictions. Compliance with laws is the key to acquiring environmental compliance funding. The program heavily favors high priority funding projects that will create compliance with federal or state laws, especially if noncompliance is backed by Notices of Violation or other enforcement agency action.

The following discussion of funding options is not all-inclusive of funding sources. Since many funding sources rely on a variety of grant programs, award criteria and amounts can change considerably from one year to another. Funding through grant programs can occur on a one-time award, annually, or in multiples of years.

### ***Department of Defense Funds***

The Natural Resources Branch of the NAS Fallon Environmental Division designs natural resource conservation projects and seeks funding. The costs of executing INRMP actions may be funded from a variety of DoD sources. The primary funding sources to Navy natural resources programs include:

1. O&M Environmental Funds. Environmental funds are a subcategory of O&M funds. Environmental funds are primarily used for compliance-related needs. The majority of natural resource projects are funded with O&M environmental funds. These appropriated funds are the primary source of resources to support just-in-time environmental compliance, i.e. Navy Level 1 projects. O&M funds are generally not available for Navy Level 2 thru 5 projects.

2. The DoD Legacy Resource Management Program (LRMP) is a special congressionally mandated initiative to fund military conservation projects. Although the LRMP was originally only funded from 1991 to 1996, funds for new projects have continued to be available through this program. The LRMP can provide funding for a variety of conservation projects, such as regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, monitoring and predicting migratory patterns of birds and animals, and national partnerships and initiatives.
3. Fish and Wildlife Fees. These fees are associated with fishing and hunting permits that are collected by the installation. NAS Fallon does not collect any fishing or wildlife permit fees.
4. Recycling Funds. Installations with a Qualified Recycling Program may use proceeds for some types of natural resource projects. NAS Fallon does not have a Qualified Recycling Program.
5. Agricultural Outlease Funds. Money collected by leasing Navy-owned property for agricultural use is directed back into the natural resources program and reallocated throughout the Navy by NAVFAC HQ. These are the broadest use funds available exclusively to natural resource managers. However, proceeds must be used exclusively to fund natural resources management requirements and the administrative expenses of agricultural and grazing leases.
6. Forestry Funds. Revenues from the sale of forest products on Navy lands are a source of funding for natural resources management programs. Forestry revenues provide funds for the annual Navy forestry funds and the DoD Forestry Reserve Account.

Table 6 includes cost estimates, funding classification, and projected timeframes for the implementation of projects that are proposed in accordance with this INRMP. Detailed tables of prescriptions that drive the INRMP projects are also included in Table 6.

#### **5.4 Use of Cooperative Agreements**

Use of Cooperative Agreements (i.e., Memorandum of Agreement [MOA] and MOU) are legal relationships between the Navy and cooperative states, local governments, institutions of higher education, hospitals, non-profit organizations or individuals. The principal purpose of the relationship is to transfer a thing of value to the state, local government, or other recipient to carry out a public purpose of support or stimulation authorized by a law of the U.S. instead of acquiring (by purchase, lease, or barter) property or services for the direct benefit or use of the U.S. Government. In order to use a Cooperative Agreements, substantial involvement is expected between the Navy and the state, local government, or other recipient when carrying out the activity contemplated in the agreement. Cooperative Agreements provide a mutually beneficial means of acquiring, analyzing, and interpreting natural resources data, which can then be used to inform natural resources management decisions. Cooperative Agreements are funded by the Navy and produce information that can be used to help resource managers achieve project-specific

compliance with environmental laws. Authorization for Cooperative Agreements is arranged through NAVFAC. A memorandum of agreement (MOA) or cooperative agreement is a document written between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective. The purpose of an MOA is to have a written understanding of the agreement between parties. The MOA can also be a legal document that is binding and hold the parties responsible to their commitment or just a partnership agreement. Similarly a MOU is a legal document describing a bilateral agreement between parties. It expresses a convergence of will between the parties, indicating an intended common line of action, rather than a legal commitment. It is a more formal alternative to a gentlemen's agreement, but generally lacks the bind power of a contract. Table 5 presents a list of NAS Fallon Cooperative Agreements.

**Table 5.**  
**NAS Fallon Cooperative Agreements Related to Natural Resources Management**

MOU/MOA Purpose/Service	Date	Duration
Navy and U.S. Bureau of Land Management (BLM) MOU for the Management of Natural Resources on Navy Administered and Withdrawn Public Lands	Nov 27, 2007	Until Cancelled
Navy Aircraft Mishaps and the Accidental Release of Toxic Substances on Public Lands	July 15, 2002	Indefinite
Cooperative Management of Nelson Bighorn Sheep on Slate Mountain and the Sand Springs Range	Sept. 20, 2000	Until Cancelled
Maintenance Agreement of a Wildlife Water Catchment Within Public Land Withdrawal Area Surrounding Bombing Range B-17	Aug. 03, 1994	Until Cancelled
Fire Protection Agreement Between NAS Fallon and BLM	June 10, 1998	Indefinite
Churchill County Cooperative Weed Management Area Cooperative Agreement.	February 2003	Until Cancelled
MOA Concerning Off Range Military Ordnance and Nonmilitary Explosives. Supports training/range.	August 4, 2003	Expired (Update in Process)
Grazing, Vegetation, and Water Resource Management Plan for the Settlement Area, Churchill County, Nevada. Supports natural resource management in Dixie Valley training area.	August 2002	Indefinite
Cooperative agreement between NSAWC and BLM for CSAR Training on public lands. Agreement provides specific locations and stipulations for the use of public lands for CSAR training.	May 15, 1998	Indefinite
MOA Among Reclamation, Navy, and U.S. Fish and Wildlife Service (USFWS) To Deliver Treated Effluent To the Stillwater Wildlife Refuge	August 21 2009	25 years or until amended
MOA between NSAWC, NAS Fallon and BLM to Provide Procedures for Air Operations Within the Fallon Range Training Complex (FRTC).	Jan 27, 2005	Indefinite
MOA between USFWS and NAS Fallon to Coordinate on Land and Water Purchases within the Vicinity of NAS Fallon.	Jan 16, 2004	Until Cancelled
MOA between Reclamation, Navy, and Truckee-Carson Irrigation District (TCID) for the Payment of Assessments, Use of Project Water for Agricultural Uses, and Management of Lands within the NAS Boundaries and the Newlands Project.	April 29, 1965	Indefinite
MOU between DoD, USFWS, and Association of Fish and Wildlife Agencies for Cooperative Integrated Natural Resource Management Program on Military Installations.	July 29, 2013	10 years

## 5.5 Staffing

The management of natural resources requires a specialized skill set on the part of personnel. NAS Fallon supports two full time staff within the Natural Resources Department. Additional staffing is available through contractors support.

### 5.5.1 Professional Development and Natural Resources Training

Adequate training of natural resource personnel is important to the success of military sustainability and land management. OPNAVINST 5090.1D (Chapter 28) requires that Navy commands develop, implement, and enforce the management plan through personnel with professional training in natural resources. Natural resources programs shall support military readiness and sustainability, and commands shall assign specific responsibility, provide centralized supervision, and assign professionally trained personnel to the program. Natural resources personnel shall be provided an opportunity to participate in natural resource management job training activities and professional meetings. The Sikes Act (Section 670g) also addresses this need, as does DoDI 4715.03.

The professional development of natural resources management staff will greatly enhance the effectiveness of this INRMP. This requires maintaining staff knowledge through training and participation in conferences and workshops.

## 5.6 Natural Resources Metrics Update

The DoN has also developed a set of Metrics to provide a standard method for the collection and reporting of business metric information for Natural Resources programs. The Metrics are used to determine how well the DoN is doing with respect to natural resources management and INRMP implementation across Navy/Marine Corps installations. The Metrics is comprised of seven Focus Areas for which each installation is to evaluate the effectiveness of the INRMP on an annual basis. As presented in Section 1.8.2 of this INRMP, these Focus Areas include:

1. **Ecosystem Integrity-** Evaluate the current status, management effectiveness, and trends of the ecosystems at the installation to support and maintain a community of organisms that have a species composition, diversity, and functional organization comparable to those in the respective region. This Focus Area is intended to define the ecosystems that occur on the installation and assess the integrity of those ecosystems. Terrestrial ecosystems are defined by Nature Serve's "*Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems*" (2003).
2. **Listed Species and Critical Habitat-** Evaluate the extent to which federally listed species have been identified and the INRMP provides conservation benefits to these species and their habitats.

3. **Recreational Use and Access-** Evaluate the availability and adequacy of public recreational use opportunities, such as fishing and hunting, and access for handicapped and disabled persons, given security and safety requirements for the installation.
4. **Sikes Act Cooperation (Partnership Effectiveness) -** Determine to what degree USFWS, state fish and wildlife agency, and when appropriate, NOAA Fisheries Service, partnerships are cooperative and result in effective INRMP development and review for operation and effect.
5. **Team Adequacy-** Asses the adequacy of the natural resources team (the natural resource management professional and installation support staff) in accomplishing INRMP goals and objectives at each installation.
6. **INRMP Implementation-** Evaluate the execution of actions taken to meet goals and objectives outlined in the INRMP.
7. **INRMP (Natural Resource Program) Support of the Installation Mission-** Evaluate the level to which existing natural resources requirements support the installation's ability to sustain the current operational mission, ensuring no net loss of mission capability.

Each Focus Area has three to seven criteria that have been established by natural resources managers and are used to help determine the status of a given functional area within natural resources. This INRMP addresses and supports the requirements of those issues addressed in DoN Metrics.

Each installation must complete an evaluation of the effectiveness of its INRMP on annual basis. The INRMP Annual Review process will also generate Navy conservation program metrics to measure effects of the conservation program on the installation mission and the status of our relationship with the wildlife agencies. The annual evaluation must be completed in cooperation with the appropriate field-level offices of the USFWS and NDOW. The cooperating partners will work together to measure both the successes and issues resulting from INRMP implementation. Appendix D presents the results of the annual review.

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## **APPENDIX A**

### **LIST OF NATURAL RESOURCES MANGEMENT LEGAL DRIVERS**

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### **Legislation, Executive Orders, Regulations, and Instructions**

#### **Legislation Related To Natural Resources**

##### **Antiquities Act of 1906**

The Antiquities Act of 1906 (Public Law [PL] 59-209; 16 U.S. Code [USC] §§ 431 et seq., 1982) authorizes the President to designate as National Monuments historic and natural resources of national significance located on federally owned or controlled lands. The act further provides for the protection of all historic and prehistoric ruins and objects of antiquity located on federal lands by providing criminal sanctions against excavation, injury, or destruction of such antiquities without the permission of the Department having jurisdiction over such resources. The Secretaries of the Interior, Agriculture, and Defense are further authorized to issue permits for archaeological investigations on lands under their control to recognized educational and scientific institutions for the purposes of systematically and professionally gathering data of scientific value.

##### **Archaeological and Historic Preservation Act of 1974**

The Archaeological and Historic Preservation Act of 1974 (Moss-Bennett Act; 16 USC §§ 469 et seq.) provides for the protection of historic and archaeological sites threatened by federal or federally funded or assisted construction projects.

##### **Archaeological Resources Protection Act of 1979**

The Archaeological Resources Protection Act of 1979 (16 USC §§ 470 et seq., 1982) sets up penalties for destruction or removal of archaeological materials from federal land without the proper permits. Requirements for obtaining these permits are also established by this regulation.

##### **Bald Eagle Protection Act**

The Bald Eagle Protection Act (Bald and Golden Eagles Act; PL 95-616; 16 USC §§ 668 et seq.) provides for protection of the bald eagle and the golden eagle by prohibiting taking, possession, and commerce in the birds.

##### **Clean Air Act**

The Clean Air Act (CAA; 42 USC §§ 7401 et seq.) mandates the prevention and control of air pollution from stationary and mobile sources. Requires the establishment of: National Ambient Air Quality Standards (NAAQS) to regulate primary and secondary concentrations for six priority air pollutants; New Source Performance Standards (NSPS) to provide ceiling emission standards for certain new industrial sources; and National Emission Standards for Hazardous Air Pollutants (NESHAP) to control pollutants, not covered under NAAQS, which may increase mortality rates or cause serious irreversible illness.

##### **Clean Water Act**

The Clean Water Act (PL 92-500, as amended; 33 USC §§ 1251 et seq.). “The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” (Section 101a). The Clean Water Act has three major approaches to water pollution control:

1. Construction grants for reducing municipal discharges;
2. National Pollution Discharge Elimination System (NPDES) permits for control of point source (storm water and waste water) discharges; and
3. Water quality management planning for nonpoint source (NPS) control from diffuse natural origins such as sediment.



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In 1972 Congress adopted a “zero-discharge” goal, and a focus on “preventable causes of pollution,” to emphasize the source of contamination rather than controls at the outfall or water body itself. Water quality “standards” include a legal designation of the desired use for a given body of water and the water quality criteria appropriate for that use. The “criteria” are specific levels of water quality which are expected to make a water body suitable for its desired use. “Effluent limitations” are restrictions on quantities, rates, and concentrations in wastewater discharges measured at the discharger’s outfall pipe. (Goldfarb 1984)

Section 404 deals with discharge of dredge or fill material into waters of the U.S. Regulatory authority has been delegated by the Environmental Protection Agency to the U.S. Army Corps of Engineers (USACE) for Sec. 404. Discharges are any material that results in a change in the bottom elevation of a water body or wetland, including grading, road fills, stream crossings, building pads, and flood and erosion control on streambanks. Vernal pools are considered non-tidal waters that are isolated wetlands under Sec. 404. There are 26 more or less generic nationwide permits that preauthorize certain minor discharges as long as they meet certain conditions (e.g. construction of outfall structures, backfill or bedding for utility lines, fill for bank stabilization, and minor road crossings). The nationwide permit system is currently being modified. If a discharge would cause the loss of or substantially modify one to 10 acres of water, including adjacent wetlands, then the nationwide permit may not apply. Work cannot begin until USACE notifies the U.S. Navy that the nationwide permit applies.

The individual permit process is much more complex and time-consuming. It requires consultation, an Environmental Assessment prepared by USACE, Public Interest Review and a 404(b)(1) Evaluation. If significant impacts are found, then an Environmental Impact Statement (EIS) must be prepared. These regulations apply to vernal pools. USACE is attempting to formalize requirements particular to vernal pools. A Memorandum of Agreement between USACE and U.S. Environmental Protection Agency (USEPA) dated February 7, 1990 states that all potential impacts must first be shown to have been avoided, minimized and then compensated for. Compensation is considered a last resort only, which involves the creation of a habitat to replace a similar habitat unavoidably eliminated at a project site. The concerned agencies must be completely convinced that the proposed compensation will completely mitigate the lost habitat. Any activity in a wetland will require at least an EA.

Penalties: A Class I or civil penalty may not exceed \$10,000 per violation, with the maximum amount of \$25,000. Class II civil penalty may not exceed \$10,000 per day as each violation continues, with the maximum amount not to exceed \$125,000.

### **Comprehensive Environmental Response, Compensation, and Liability Act of 1980**

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA; 42 USC §§ 9601 et seq.) establishes programs for the cleanup of hazardous waste disposal and spill sites to ensure protection of human health and the environment. Designates the President as trustee for federally protected or managed natural resources.

### **Conservation Programs on Military Reservations**

The Conservation Programs on Military Reservations (PL 90-465; 16 USC §§ 670 et seq.) amend PL 86-797 to include outdoor recreation programs on military lands.

### **Defense Environmental Restoration Program**

The Defense Appropriations Act of 1991 Legacy Program (10 USC § 2701) provides for the stewardship of biological, geophysical, cultural and historic resources on Department of Defense (DoD) lands.

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### **Conservation and Rehabilitation Program on Military and Public Lands**

The Conservation and Rehabilitation Program on Military and Public Lands (PL 93-452; 16 USC §§ 670 et seq.) amends PL 86-797 by providing for fish and wildlife habitat improvements, range rehabilitation, and control of off-road vehicles on federal lands.

### **Endangered Species Act**

The Endangered Species Act (PL 93-205; 16 USC §§ 1531 et seq.), ESA, of 1973 requires that all federal agencies undertake programs for the conservation of endangered and threatened species. These agencies are prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its “critical habitat” (Section 7). Critical habitat is usually designated concurrently with a listing. Section 9 prohibits the “taking” of endangered fish or wildlife, including direct killing, harming, harassing, or destruction of habitat that may be important to the species’ survival or recovery. Prohibitions against threatened species are discretionary on the part of the Secretary of the Interior, but can be as restrictive as those protecting endangered species. Lists are maintained by the Secretary of the Interior. Monitoring of candidate species (Category 1 and Category 2) is required, with adoption of emergency listing when there is significant risk (Section 4). For plants, collection or removal of seed material or whole plants of a threatened or endangered species, even for revegetation or monitoring purposes, requires a U.S. Fish and Wildlife Service (USFWS) collection permit. There is no general taking prohibition for plants that compares to that which applies to animals (Bean et al. 1991).

If an area is designated “critical habitat,” physical and biological features of the environment must be protected for the purposes of conserving the listed species. “Incidental takes” are permissible only if an “incidental take statement” is issued by the Secretary of the Interior / USFWS with a Biological Opinion (BO) after agency consultation. Management options will likely be limited as a requirement for minimizing the taking.

Coordination regarding threatened and endangered species is addressed in Section 7 of this Act. In particular, Section 7(a) requires a federal agency to consult with USFWS on any proposed action if the agency has reason to believe that an endangered or threatened species could be directly or indirectly affected by the action. Species under review and those of “special concern” are also included. A Biological Assessment (BA) by the lead agency is required under Section 7(c) if listed species or critical habitat may be affected by a major construction activity. The purpose of a BA is to evaluate potential effects of the action on listed species and/or critical habitat, and to assist USFWS in rendering a BO.

A consultation consists of one or more of these steps: 1) Informal; 2) Formal; or 3) Further Discussion. An informal consultation is an optional process that includes all discussions and correspondence between the USFWS and the federal agency to determine whether a formal consultation or conference is required. A formal consultation is a process between the USFWS and the federal agency that commences with federal agency’s written request for consultation and concludes with the USFWS’s issuance of a BO.

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A BO must include: 1) a summary of the information on which the opinion was based (the information is to be provided by the federal agency), 2) a detailed discussion of the effects of the action on listed species or critical habitat, and 3) the USFWS opinion on whether the action is likely to jeopardize the continued existence of a listed species or adversely modify critical habitat. The BO may include an incidental take statement that specifies: 1) the amount of “take” that is allowed, 2) reasonable and prudent measures that the USFWS considers necessary or appropriate to minimize such a “take”, and 3) the terms and conditions that must be complied with to implement the reasonable and prudent measures.

The Navy must take measures to assure that no irreversible or irretrievable commitment of resources is authorized, funded or carried out by them that will likely jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify designated critical habitat, until the Consultation process is complete. The Navy is to provide leadership in identifying and protecting habitat that is critical for any threatened or endangered species.

Navy installations are required to carry out the following:

1. Maintain liaison with local governmental agencies and organizations having an interest in endangered and threatened species protection;
2. Delineate boundaries of the habitat areas of endangered and threatened species on maps;
3. Initiate consultation with the USFWS or National Marine Fisheries Service (NMFS) per cooperative agreement procedures when a proposed action or program has been identified that may affect listed species or their habitat;
4. Perform a BA for any action that may adversely affect the continued existence of endangered and threatened species or result in the destruction or adverse modification of habitat of such species (The EA should contain the final BO of the USFWS or NMFS) following the consultation process);
5. Cooperate with the USFWS or NMFS during development and implementation of a recovery plan for listed species occurring on the installation.

### **Endangered Species Act 1973 Amendments**

The Endangered Species Act of 1973 (1978 Amendments), (PL 95-632; 16 USC §§ 1531 et seq.) provides for the conservation and protection of endangered and threatened species of fish, wildlife, and plants and expands the consultation process.

### **Federal Flood Disaster Prevention Act**

The Federal Flood Disaster Prevention Act (PL 93-234; 42 USC §§ 4001 et seq.) established the Federal Flood Insurance Program, which has provided some incentives for construction outside flood-prone areas. To a limited degree, this has reduced destruction of riparian vegetation by developments. President Carter issued two executive orders in a related effort: Executive Order (EO) 11988 (Floodplain Protection) directed federal agencies to avoid construction in flood-hazard areas and to seek restoration and preservation of the natural and beneficial values of floodplains; EO 11990 (Protection of Wetlands) directed federal agencies to minimize the destruction, loss, or degradation of wetlands.

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### **Federal Insecticide and Rodenticide Act**

The Federal Insecticide and Rodenticide Act (FIFRA) (7 USC §136 et seq.) The FIFRA provides for federal regulation of pesticide distribution, sale, and use. All pesticides distributed or sold in the United States must be registered (licensed) by USEPA. Before USEPA may register a pesticide under FIFRA, the applicant must show, among other things, that using the pesticide according to specifications "will not generally cause unreasonable adverse effects on the environment." FIFRA defines the term "unreasonable adverse effects on the environment" to mean: "(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under section 408 of the Federal Food, Drug, and Cosmetic Act.

### **Federal Land Policy and Management Act of 1976**

The Federal Land Policy and Management Act of 1976 (FLPMA; 42 U.S. C §§ 1701-1782, October 21, 1976, as amended) is a federal law that governs the way in which public lands are administered and managed. The National Forest Service, National Park Service, and the Bureau of Land Management (BLM), are commissioned in FLPMA to allow a variety of uses on their land (of greater concern for the BLM, who is the least restrictive in terms of uses) while simultaneously trying to preserve the natural resources in them.

### **Federal Noxious Weed Act of 1974**

The Federal Noxious Weed Act of 1974 (7 USC § 2814) provides for the management of undesirable plants on federal lands.

### **Noxious Weed Control and Eradication Act of 2004**

The Noxious Weed Control and Eradication Act of 2004 (PL 106-224) authorizes the Secretary of Agriculture to establish a program to provide financial and technical assistance to public and private landowners for the control or eradication of noxious weeds.

### **Federal Water Pollution Control Act Amendments of 1972**

The Federal Water Pollution Control Act Amendments of 1972 (see Clean Water Act; PL 92-500; 33 USC §§ 1251 et seq.) sets up a federal permit and license system to carry out certain pollution discharge activities in navigable waters. In order to receive a grant for in-lake restoration under this Program, all point sources of pollution must be treated or have treatment planned under Section 201 and 402 of the Clean Water Act.

### **Fish and Wildlife Conservation Act of 1980**

The Fish and Wildlife Conservation Act of 1980 (PL 96-366; 16 USC §§ 2901 et seq.) provides for conservation, protection, restoration and propagation of certain species, including migratory birds threatened with extinction.

### **Fish and Wildlife Conservation and Military Reservations Act**

The Fish and Wildlife Conservation and Military Reservations Act (Sikes Act; 16 USC § 670) applies to any installation in the U.S. with land or water suitable for conservation of fish and wildlife. It requires that fish and wildlife be part of and integrated into a multiple-use program for managing natural resources. This includes a requirement to develop a cooperative management plan with state and federal fish and wildlife conservation agencies. The law sets the guidelines for charging user fees and retaining the funds to benefit the activity, such as improving habitat or restocking a fish pond. The Fish and Wildlife Conservation and Natural Resources Management Programs on Military Reservations amends the Sikes Act to require that trained professionals be used to integrate fish and wildlife into a balanced natural resource program.

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### **Fish and Wildlife Conservation and Natural Resource Management Programs on Military Reservations**

The Fish and Wildlife Conservation and Natural Resource Management Programs on Military Reservations (PL 96-561) amend the Sikes Act above to require that trained professionals be used to integrate fish and wildlife into each base's resource program.

This amendment allows net receipts from timber sales to be used for fish and wildlife management instead of going into the general treasury.

### **Fish and Wildlife Coordination Act**

The Fish and Wildlife Coordination Act (PL 85-624; 16 USC §§ 661 et seq.) is a law which mandates that wildlife conservation receive equal consideration and be coordinated with other features of water resource development. The intent is to prevent loss or damage of wildlife and provide for development and improvement of wildlife in conjunction with water development projects. Federal agencies proposing to impound, divert or control surface waters are required to consult with the USFWS and Nevada Department of Wildlife (NDOW), to include and give full consideration to the recommendations of these agencies, and to provide justifiable means and measures for benefiting wildlife in project plans. USACE must coordinate permit applications with USFWS and Nevada Department of NDOW. Like National Environmental Policy Act (NEPA), implementation of this Act is essentially procedural in that no particular outcome is mandated. The Act authorizes project modification, land acquisition, and other measures necessary to protect wildlife.

### **Historic Sites Act of 1935**

The Historic Sites Act of 1935 (PL 74-292; 16 USC §§ 461 et seq., 1982) establishes as national policy the preservation for public use of historic resources by giving the Secretary of the Interior the power to make historic surveys and to document, evaluate, acquire, and preserve archaeological and historic sites across the country. The act led to the eventual establishment within the National Park Service of the Historic Sites Survey, the Historic Buildings Survey, and the Historic Sites Engineering Record.

### **Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (PL 65-186, as amended; 16 USC §§ 703 et seq.) protects most birds, whether or not they migrate. Birds, their nests, eggs, parts or products may not be killed or possessed. Game birds are listed and protected except where specific seasons, bag limits, and other features govern their hunting. Exceptions are also made for some agricultural pests, which require a USFWS permit (yellow-headed, red-winged, bi-colored red-winged, tri-colored red-winged, Rusty and Brewer's blackbirds, cowbirds, all grackles, crows and magpies).

Penalties: Violations of this act can cost an individual or organization up to \$5,000 and \$10,000, respectively, and up to six months imprisonment for a misdemeanor. Felony violations may result in fines of up to \$250,000 for individuals, \$500,000 for organizations, and up to two years' imprisonment.

### **Military Construction Authorization Act- Leases; Non-excess property**

The Military Construction Authorization Act- Leases; Non-excess property (10 USC § 2667) provides for the outleasing of public lands.

### **Military Construction Authorization Act - Military Reservation and Facilities-Hunting, Fishing and Trapping**

The Military Construction Authorization Act - Military Reservation and Facilities-Hunting, Fishing and Trapping (10 USC § 2671) requires that all hunting, fishing, and trapping on military installations follow Fish and Game laws of the state in which it is located, and be issued appropriate state licenses for these activities.

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### **Military Lands Withdrawal Act of 1999**

The Military Lands Withdrawal Act of 1999 (MLWA) declares that the public lands withdrawn and reserved by the MLWA are necessary to ensure the preparedness of this Nation's armed forces. It is further the policy of the U.S that these public lands remain available for public use to the extent practicable, consistent with the military uses for which this withdrawal and reservation is established. Recognizing that these lands are withdrawn from all forms of appropriation under the general land laws, and shall be available for return to the public domain following their period of military use, the statutory principles under which public lands are managed by the Secretary of the Interior shall be given due consideration during the period of withdrawal and reservation. The MLWA, provides for six military training ranges that are the key components of the National Defense training base: Barry M. Goldwater Air Force Range, Arizona; Ft. Greely Maneuver Area, Alaska; Ft. Wainwright Maneuver Area, Alaska; McGregor Range, New Mexico; Nellis Air Force Range, Nevada; and Naval Air Station Fallon, Nevada (NAS Fallon).

### **National Environmental Policy Act of 1969**

The National Environmental Policy Act of 1969 (42 USC §§ 4321-4347, January 1, 1970, as amended 1975 and 1994), evolved over 10 years from the desire of Congress to have a cohesive statement of the national environmental policy. Agencies must assess, in detail, the potential environmental impact of any proposal for legislation or other major federal action that has the potential for significantly affecting the quality of the human environment. The Act is intended to help public officials and citizens make decisions that are based on understanding of environmental consequences and take action that protects, restores and enhances the environment.

### **National Defense Authorization Act for Fiscal Year 2004**

The National Defense Authorization Act for Fiscal Year 2004 (Public Law No. 108-136) amended the ESA to address designation of military lands as critical habitat. Specifically, section 4(a)(3)(B)(i) of the ESA (16 USC 1533(a)(3)(B)(i)) now provides: *"The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 USC 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation."*

### **National Heritage Policy Act of 1979**

The National Heritage Policy Act of 1979 (House of Representatives [HR] 6502) authorizes location and establishment of a register of natural land and cultural areas and requires consideration of alternatives prior to taking actions that would adversely affect them.

### **National Historic Preservation Act of 1966**

The National Historic Preservation Act of 1966 (PL 89-665; 16 USC §§ 470 et seq.) expands the National Register of Historic Places, provides a list of significant historic and prehistoric sites and districts, and gives them formal protection. Section 106 requires that federal agencies with direct or indirect jurisdiction over such properties identify them for the Federal Register. It further directs agencies to consider historic and archaeological resources during planning, and allows the Advisory Council on Historic Preservation, established by this Act, an opportunity to comment when a federal undertaking could affect historic properties.

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<b>National Trails Systems Act of 1968</b>	The National Trail Systems Act of 1968 (16 USC § 1271) promotes development of recreational, scenic, and historic trails for persons of diverse interest and abilities.
<b>Native American Graves Protection and Repatriation Act of 1990</b>	The Native American Graves Protection and Repatriation Act of 1990 (PL101-601; 25 USC §§ 3001 et seq.) provides requirements for treatment, determination of ownership, control of, and repatriation of human remains and cultural items on federal or tribal lands. The term “Indian Tribe” refers to any Tribe, band, nation, or other organized Indian group or community that is on the current list of recognized Indian Tribes published by the Bureau of Indian Affairs. “Human remains” refers to all Native American human remains.
<b>Noxious Plant Control Act</b>	The Noxious Plant Control Act (PL 90-583; 43 USC § 1241) provides for the control of noxious plants on lands under control or jurisdiction of the federal government.
<b>Oil Pollution Act of 1990</b>	The Oil Pollution Act of 1990 (OPA; 33 USC §§ 2701 et seq.) provides that the National Contingency Plan (NCP) include planning, rescue, and minimization of damage to fish and wildlife in responding to oil pollution.
<b>Outdoor Recreation-Federal/State Program Act</b>	The Outdoor Recreation-Federal/State Program Act (PL 88-29; 16 USC §§ 460(L) et seq.) provides for the management of lands used for outdoor recreation. Requires consultations with U.S. National Park Service regarding management.
<b>Resource Conservation and Recovery Act</b>	The Resource Conservation and Recovery Act (RCRA; 42 USC §§ 6901 et seq.) establishes a comprehensive program which manages solid and hazardous waste. Subtitle C, Hazardous Waste Management, sets up a framework for managing hazardous waste from its initial generation to its final disposal. Waste pesticides and equipment/containers contaminated by pesticides are included under hazardous waste management requirements.
<b>Safe Drinking Water Act</b>	<p>The Safe Drinking Water Act (SDWA; 42 USC §§ 300(f) et seq.), SDWA, prescribes treatment and distribution control strategies for abating contamination of drinking water and also requires the establishment of a permit program to regulate injection of liquids into underground strata.</p> <p>The SDWA provides for direct control of underground injection of fluids that may affect groundwater supplies. States may assume the predominant role in executing groundwater protection programs. The USEPA has direct responsibility only if a state chooses not to participate in an underground injection control (UIC) program.</p>
<b>Sikes Act</b>	Sikes Act (16 USC 670a-670o, 74 Stat. 1052) was enacted into United States law on September 15, 1960. It provides for cooperation by the Department of the Interior and Department of Defense with state agencies in planning, development and maintenance of fish and wildlife resources on military reservations throughout the United States.
<b>Soil Conservation Act</b>	The Soil Conservation Act (PL 74-46; 16 USC § 590A) provides for application of soil conservation practices on federal lands. Requires federal agencies to control and prevent soil erosion and preserve natural resources in managing federal lands.



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**Wild and Scenic River Act**                      The Wild and Scenic River Act (PL 90-542; 16 USC § 1274) requires identification and protection of any river or stream that qualifies under the act.

**Youth Conservation Corps Act of 1972**                      The Youth Conservation Corps Act of 1972, amended (PL 93-408, as amended; 16 USC § 1701) expands and make a permanent the Youth Conservation Corps (YCC) program and establishes objectives for youth employment and conservation work on public lands.

### **Executive Orders Relevant To Natural Resources**

**Exotic Organisms**                      The Exotic Organisms Executive Order (EO 11987) restricts federal agencies in the use of exotic plant species in any landscape and erosion control measures.

**Floodplain Management**                      The Floodplain Management Executive Order (EO 11988) specifies that “Agencies shall encourage and provide appropriate guidance to applicants to evaluate the effects of their proposals in floodplains prior to submitting applications”. This order includes wetlands that are within the 100-year floodplain and especially discourages filling.

**Invasive Species**                      The Invasive Species Executive Order (EO 13112) was issued on February 3, 1999 to enhance federal coordination and response to the complex and accelerating problem of invasive species. The EO directs federal agencies to work together [as stated in the Preamble] to “... *prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.*” EO 13112 defines invasive species as “...*an alien (or non-native) species whose introduction does, or is likely to cause economic or environmental harm or harm to human health*”. Only a small proportion of non-native species are invasive.

**Off-Road Vehicles on Public Lands**                      The Off-Road Vehicles on Public Lands Executive Order (EO 11989) provides for closing areas to use where soil, wildlife, or other resources are adversely affected.

**Responsibility of Federal Entities to Protect Migratory Birds**                      EO 13186 directs federal agencies taking actions with a measurable negative effect on migratory bird populations to develop and implement a Memorandum of Understanding with the U.S. Fish and Wildlife Service that promotes the conservation of migratory bird populations.

**Protection and Enhancement of the Cultural Environment**                      Protection and Enhancement of the Cultural Environment (EO 11503) directs federal agencies to take a leadership role in preserving, restoring, and maintaining the historic and cultural environment of the Nation. Federal agencies must locate, inventory, and nominate to the National Register all historic resources under their jurisdiction or control. Until these processes are completed, agency heads must exercise caution to ensure that potentially qualified federal property is not inadvertently transferred, sold, demolished, or substantially altered. When planning projects, agencies are urged to request the opinion of the Secretary of the Interior as to the eligibility for National Register listing of properties whose resource value is questionable or has not been inventoried. Agencies are directed to institute procedures, in consultation with the President’s Advisory Council on Historic Preservation, to ensure that federal plans and programs contribute to the preservation and enhancement of non-federally owned historic resources. Protection of National Register historic and Archaeological sources is achieved by

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the Marine Corps through implementation of the Historic and Archeological Resources Protection (HARP) Plan. The plan facilitates compliance by providing management goals, priorities, and standard operating procedures for site protection.

### **Protection and Enhancement of Environmental Quality**

Protection and Enhancement of Environmental Quality (EO 11514) directs issuance of instructions and guidelines relative to preparation of environmental impacts. This order created the Council on Environmental Quality to oversee the implementation of NEPA, mediate disputes and develop environmental policy.

### **Protection and Enhancement of Environmental Quality**

Protection and Enhancement of Environmental Quality (EO 11991) amends EO 11514 to require Council on Environmental Quality to issue regulations to make environmental impact statements more effective.

### **Protection of Wetlands**

The Protection of Wetlands Executive Order (EO 11990) directs all federal agencies to “take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands”. This applies to the acquisition, management, and disposal of federal lands and facilities; to construction of improvements undertaken, financed, or assisted by the federal government; and to the conduct of federal activities and programs which affect land use. Section 4 of the EO requires that when federally owned lands are leased and easement is assigned, or when disposed of to a non-federal party, a reference be included in the conveyance to identify any wetlands and indicate those uses which are restricted in such areas.

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### **Federal Regulations, Directives, and Instructions**

#### **Federal Regulations**

**32 Code of Federal Regulations (CFR) 188.** Environmental Effects in the United States of DoD Actions.

**32 CFR 190.** Natural Resources Management Program. Provides goal, policy, and procedural information for managing natural resources on all DoD lands, including those of the DoN. It requires the preparation of integrated natural resources management plans for DoD installations.

**32 CFR 775.** Procedures for Implementing the National Environmental Policy Act. Dept. of Navy policy to supplement DoD regulations (32 CFR 214) by providing policy and assigning responsibilities to the Navy and Marine Corps for implementing CEQ regulations and implementing NEPA.

**33 CFR 330.** Dredge & Fill Nationwide Permit Program.

**36 CFR 60.** National Register of Historic Places.

**36 CFR 65.** National Historic Landmarks Program.

**40 CFR 141-143.** USEPA National Drinking Water Regulations.

**40 CFR 150-186.** USEPA Regulations for Pesticide Programs.

**40 CFR 162.** USEPA Regulations on Insecticide, Fungicide, and rodenticide Use.

**40 CFR 230.** USEPA Interim Regulations on Discharge of Dredged or Fill Material into Navigable Waters.

**40 CFR 1500.** Council on Environmental Quality Regulations. Defines the methods of implementing NEPA.

**43 CFR 7.** Archaeological Resources Protection Act of 1979; Uniform Regulations.

**50 CFR 10.13.** List of Migratory Birds.

**50 CFR 17.11 and 17.12.** Fish and Wildlife Service List of Endangered and Threatened Wildlife.

**50 CFR 402.** Interagency Cooperation - Endangered Species Act of 1973.

**Federal Register 58(188):51144-51190 (1990; also 50 CFR 17).** Plant taxa for listing as endangered or threatened species; Notice of review.

**Federal Register 70(199): 800 (15 October 1985).** Protection of historic and cultural properties.

#### **Department of Defense Directives and Instructions**

**DoD Directive 4150.7 of 29 May 2008.** DoD Pest Management Program Natural Resources Conservation and Management.

**DoD Directive 4700.1 of 6 November 1978.** Not to all (NOTAL). Provides for management of renewable natural resources on military lands.

**DoD Directive 4700.2 of 15 July 1988.** Secretary of Defense Award for Natural Resources and Environmental Management.

**DoD Directive 4710.1 of 21 June 1984.** Archeological and Historic Resources Management. Establishes policies, procedures, and assigns responsibilities for the management of archeological and historic resources located in and on waters and lands

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under DoD control. This Directive implements these guidelines consistent with federal law, Executive orders, and other DoD directives that deal with archeological and historic preservation issues.

**DoD Directive 6050.1 (1979).** Environmental Effects in the U.S. of DoD Actions.

**DoD Instruction 4700.1.** Instructs the Department of the Navy to implement and maintain natural resource management programs.

**DoD Instruction 4715.1 of 24 February 1996.** Environmental Security.

**DoD Instruction 4715.03 of 18 March 2011.** Environmental Conservation Program. Implements policy, assigns responsibilities, and prescribes procedures under DoD Instruction 4715.1 for the integrated management of natural and cultural resources on property under DoD control.

**DoD Instruction 5000.13 of 13 December 1976.** Natural Resources the Secretary of Defense Natural Resource Conservation Award. Delineates procedures for participating in completion for Secretary of Defense Conservation Award.

### Department of the Navy Manuals and Instructions

**NAVFACINST 6250.3H.** Applied Biology Program Services and Training. Requires the use of an integrated pest management approach to minimize the use of herbicides.

**NAVFAC P-73. Real Estate Manual P-73.** This manual sets forth the authority of the Commander, Naval Facilities Engineering Command (NAVFACENGCOM), for outgrant of Navy controlled real property. Responsibility for administration, management, and utilization of Navy real property lies with the Commanding Officer, and his superiors, of the installation to whose plant account the property belongs. NAVFACENGCOM does not have general responsibility for management of Navy real property, except for lands of installations under its command. However, NAVFACENGCOM has a technical responsibility for real estate action on lands which have been determined temporarily or partially excess.

**NAVFACINST MO-100.4.** Guidance on Special Interest Areas.

**NAVFACINST 11010.63B.** Planning Services for Navy and Marine Corps Shore Activities.

**OPNAVINST 5090.1D.** Department of the Navy Environmental Readiness Program Manual. Chapter 24, Natural Resources Management, describes requirements, guidelines, and standards for conserving natural resources on Navy lands. Summarizes the natural resources management (NRM) program to include management of waters, forests, fish and wildlife, and outdoor recreation.

**OPNAVINST 6250.4C.** Pest Management Programs. Requires the Navy to have a comprehensive Pest Management Plan. Discusses the need to control pest outbreaks which affect the military mission, damage property, or impact the welfare of people.

**SECNAVINST 6240.6E.** Implementation of DoD directives under DoD Instruction 4700.4 Assigns the responsibility of developing and implementing natural resources programs to the Chief of Naval Operations and the Commandant of the Marine Corps.

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### **APPENDIX A ACRONYMS**

BA	Biological Assessment
BO	Biological Opinion
BLM	Bureau of Land Management
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation
CFR	Code of Federal Regulations
CLP	Clean Lakes Program
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
FIFRA	Federal Insecticide and Rodenticide Act
FLPMA	Federal Land Policy and Management Act
HARP	Historic and Archeological Resources Protection
HR	House of Representatives
MLWA	Military Lands Withdrawal Act
NAAQS	National Ambient Air Quality Standards
NAS Fallon	Naval Air Station Fallon
NAVFACENGCOM	Commander, Naval Facilities Engineering Command
NCP	National Contingency Plan
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMFS	National Marine Fisheries Service
NOTAL	not to all
NPDES	National Pollution Discharge Elimination System
NPS	nonpoint source
NRM	Natural Resources Management
NSPS	New Source Performance Standards
OPA	Oil Pollution Act
PL	Public Law
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SDWA	Safe Drinking Water Act
SWRCB	State Water Resources Control Board
UIC	Underground Injection Control
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
YCC	Youth Conservation Corps

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**APPENDIX B**

**AGREEMENTS AND NATURAL RESOURCES  
COORDINATOR'S APPOINTMENT LETTER**



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**MEMORANDUM OF UNDERSTANDING  
AMONG  
THE U.S. DEPARTMENT OF DEFENSE  
AND  
THE U.S. FISH AND WILDLIFE SERVICE  
AND  
THE INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES  
FOR A  
COOPERATIVE INTEGRATED NATURAL RESOURCE MANAGEMENT PROGRAM  
ON MILITARY INSTALLATIONS**

**A. PURPOSE**

The purpose of this Memorandum of Understanding (MOU) is to establish a cooperative relationship between the U.S. Department of Defense (DoD), the U.S. Department of the Interior, Fish and Wildlife Service (FWS), and the State fish and wildlife agencies as represented by the International Association of Fish and Wildlife Agencies (TAFWA) in preparing, reviewing, and implementing integrated natural resource management plans (INRMPs) on military installations.

**B. BACKGROUND**

In recognition that military lands have significant natural resources, Congress enacted the Sikes Act in 1960 to address wildlife conservation and public access on military installations. The 1997 amendments to the Sikes Act require the DoD to develop and implement an INRMP for each military installation with significant natural resources. The INRMP must be prepared in cooperation with the FWS and the State fish and wildlife agency (States) and reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources on military lands.

INRMP provided for the management of natural resources, including fish, wildlife, and plants. They incorporate, to the maximum extent practicable, ecosystem management principles and provide the landscape necessary for the sustainment of military land uses. INRMPs allow for multipurpose uses of resources, including public access necessary and appropriate for those uses provided such access does not conflict with military land use requirements. Effective partnering among the DoD, the FWS, and the States, initiated early in the planning process at national, regional, and the military installation levels, is essential to the development and implementation of comprehensive INRMPs. When such partnering involves the participation of all parties and synchronization of INRMPs with existing FWS and State natural resource management plans, the mutual agreement of all parties is achieved more easily. Consistent with the use of military installations to ensure the readiness of the Armed Forces, the purpose of INRMPs is to provide for the conservation and rehabilitation of natural resources on military lands. Thus, a clear understanding of land use objectives for military lands should enable DoD, the FWS, and the States to share a common understanding of land management requirements while preparing and reviewing INRMPs.

This MOU addresses the responsibilities of the Parties to facilitate optimum management of natural resources on military installations. It replaces a DoD-FWS MOU on "Ecosystem-based Management of Fish, Wildlife and Plant Resources on Military Lands" which expired May 17, 2004.

### **C. AUTHORITIES**

This MOU is established under the authority of the Sikes Act, as amended. 16 U.S.C. 670a-610f, which requires the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations in cooperation with the FWS and the State fish and wildlife agencies. The DoD's primary mission is national defense. DoD manages approximately 30 million acres of land and waters under the Sikes Act to conserve and protect biological resources while supporting sustained military land use.

The FWS manages approximately 96 million acres of the National Wildlife Refuge System, and administers numerous Fish and wildlife conservation and management statutes and authorities, including: the Fish and Wildlife Coordination Act, the Migratory Bird Treaty Act of 1918, the Endangered Species Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, the Anadromous Fish Conservation Act, the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, the Federal Noxious Weed Act, the Alien Species Prevention Enforcement Act of 1992, the North American Wetland Conservation Act, and the Coastal Barrier Resources Act,

The States in general possess broad trustee and police powers over fish and wildlife within their borders. Including - absent a clear expression of Congress' intent to the contrary - fish and wildlife on Federal lands within their borders. Where Congress has given Federal agencies certain conservation responsibilities, such as for migratory birds or species listed as threatened or endangered under the Endangered Species Act, the States, in most cases, have cooperative management jurisdiction.

The Sikes Act (16 U.S.C. 670(b)) allows the Secretary of a military department to enter into cooperative agreements with States, local governments, nongovernmental organizations, and individuals to provide for the maintenance and improvement of natural resources, or to benefit natural and cultural resources research on DoD installations.

The Sikes Act (16 U.S.C. 670f(b)) also encourages the Secretary of Defense, to the greatest extent practicable, to enter into agreements to use the services, personnel equipment, and facilities, with or without reimbursement, of the Secretary of the Interior in carrying out the provisions of this section.

The Economy Act (31 U.S.C. 1535 and 1536) allows a Federal agency to enter into an agreement with another Federal agency for services, when those services can be rendered in a more convenient and cost effective manner by another Federal agency.

The Intergovernmental Cooperation Act of 1968 (P.L. 90-577 (82 Stat. 1098)) allows the "improvement of the administration of grants-in-aid to the States, to permit provision of reimbursable technical services to State and local government

#### **D. RESPONSIBILITIES**

The Parties to this agreement hereby enter into a cooperative program of INRMP development and implementation with mutually agreed-upon fish and wildlife conservation objectives to satisfy the goals of the Sikes Act.

- 1. The DoD, tile FWS and IAFWA (the Parties) mutually agree, in accordance with all applicable Federal, State and local laws and regulations:**
  - a. To meet at least annually to discuss implementation of this MOU. The DoD will coordinate the annual meeting and any other meetings related to this MOU. Proposed amendments to the MOU should be presented in writing to the parties at least 15 days prior to the annual meeting. The terms of this MOU and any proposed amendments may be reviewed at the annual meeting. The meeting may also review mutual Sikes Act accomplishments, research and technology needs, and other emerging issues.
  - b. To establish a Sikes Act Tripartite Working Group consisting of representatives from the Parties. This Working Group will meet at least quarterly to discuss and develop projects and documents to .assist in the preparation and implementation of TNRMPs and to discuss Sikes Act issues of national importance.
  - c. The Sikes Act Tripartite Working Group will encourage the establishment of INRMP Development and Implementation Teams to facilitate early communication during preparation, review, revision or implementation of an INRMP and to ensure that such INRMPs are comprehensive and implemented as mutually agreed.
  - d. Supplemental Sikes Act MOUs or other agreement~ may be developed at the regional and/or State level.
  - e. To recognize the current DoD and FWS Sikes Act Guidelines on <http://www.fws.gov> and <http://www.denix.osd.mil> as the guidance for communication and cooperation of the Parties represented by this MOU.
  - f. That none of the Parties to the MOU is relinquishing any authority, responsibility, or duty as required by Jaw, regulation, policy, or directive.

- g. To engage in sound management practices for natural resource protection and management pursuant to this MOU with due regard for military readiness, the welfare of the public, native fish and Wildlife, threatened and endangered species, and the environment.
- h. Consistent with DoD's primary military mission and to the extent reasonably practicable, to promote the sustainable multipurpose use of natural resources on military installations, to include hunting, fishing, trapping, and nonconsumptive uses such as wildlife viewing, boating, and camping.
- i. To designate the individuals listed below as the national representative from each signatory to participate in the activities pursuant to this MOU. Representatives may also be designated at the: regional and local levels to participate in similar Sikes Act planning or coordination activities.
- i. DoD: Conservation Team Leader, ODUSD (I&E) EM, 1225 Clark Street Suite 1500, Arlington, VA 22202-4336
- ii. FWS: National Sikes Act Coordinator, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 400, Arlington, VA 22203.
- iii. IAFWA: Executive Vice President, IAFWA, 444 North Capitol Street, NW, Suite 544. Washington, DC 20001.

**2. DoD agrees to:**

- a. Communicate the establishment of this MOU to all DoD Components.
- b. Take the lead in the development of policies related to INRMP development and implementation and seek the cooperation of the FWS and the State fish and wildlife agencies during development, review, and implementation.
- c. Ensure distribution of the DoD and revised FWS Sikes Act Guidelines to all appropriate DoD offices at every level of command.
- d. Encourage military installations to invite appropriate FWS and State fish and wildlife agency offices to participate in developing and updating the INRMPs. AU such invitations should be extended well in advance of the needed date for the product or work in order to facilitate meaningful participation by all three Parties.
- e. Encourage military installations to take advantage of FWS and State fish and wildlife agency natural resources expertise through the use of Economy Act transfers and cooperative agreements. Priority should be given to projects that:

- i. Sustain the military mission;
  - ii. Consider the strategic planning priorities of the FWS and the State fish and wildlife agency; and
  - iii. Effectively apply the principles of ecosystem management
- f. Encourage military installation to identify INRMP project requirements and give priority to those that:
  - i. Ensure conservation of natural resources while sustaining military mission activities;
  - ii. Achieve compliance with Federal, State, and local laws; and
  - iii. Provide adequate staffing for the development and implementation of the INRMP.
- g. Discuss with the FWS and the State fish and wildlife agencies all issues of mutual interest related to the protection, conservation, and management of fish and Wild life resources on DoD installations, and obtain the mutual agreement of the FWS and the States regarding all INRMP provisions related to activities within their legal jurisdiction.
- h. Subject to mission, safety and security requirements, provide public access to military installations to facilitate the sustainable multipurpose use of its natural resources.
- i. Identify DoD natural resource research need, and develop research proposals with input from FWS and/or the IAFWA.
- j. Encourage the Military Services to establish natural resources management liaisons to facilitate:
  - i. Coordination and mutual agreement of INRMPs;
  - ii. Development and implementation of cooperative regional and local natural resource conservation partnerships and conservation initiatives with FWS and State fish and wildlife agency offices; and
  - iii. Natural Resources conservation technology transfer and training initiatives between the Military Services, Federal land management agencies, and State fish and wildlife agencies.

**G. AMENDMENTS**

This MOU may be amended at any time by mutual agreement of the parties in writing.

**II. TERMINATION**

Any party to this agreement may remove itself from this MOU upon sixty (60) days written notice to the other parties.

**I. EFFECTIVE DATE AND DURATION**

This MOU will be in effect upon date of final signature and will continue for five years from date of final signature. The parties will meet 6 months prior to the expiration of this MOU to discuss potential modifications and renewal terms.

1/31/06

Date

Alex A. Buchler

Assistant Deputy Under Secretary of Defense  
(Environment, Safety and Occupational Health)  
U.S. Department of Defense

1/31/06

Date

A. Dale Hall

Director  
Fish and Wildlife Service  
U.S. Department of Interior

1/31/06

Date

Carol S. Smith

Executive Vice-President  
International Association of Fish and Wildlife Agencies

**MEMORANDUM OF UNDERSTANDING  
BETWEEN  
NAVAL AIR STATION FALLON  
AND  
THE BUREAU OF LAND MANAGEMENT, CARSON CITY FIELD OFFICE**

3000  
NASF-BLM

Subj: MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN THE  
NAVAL AIR STATION FALLON (NASF), NEVADA AND THE BUREAU  
OF LAND MANAGEMENT CARSON CITY FIELD OFFICE (BLM/CCFO)  
FOR THE MANAGEMENT OF NATURAL RESOURCES ON NAVY  
ADMINISTERED AND WITHDRAWN PUBLIC LANDS

- Ref: (a) Final Integrated Natural Resource Management Plan (INRMP) and  
Environmental Assessment (EA) for Naval Air Station Fallon, Nevada,  
March 2006.
- (b) Bureau of Land Management and Navy Resource Management Plan for  
Certain Federal Lands in Churchill County, Nevada, Navy Integrated  
Natural Resource Management Plan, Amendment to the BLM Lahontan  
Resource Management Plan, and Environmental Assessment, September  
2001.
- (c) Military Lands Withdrawal Act of 1999 (MLWA), P.L. 106-65, Enacted 5  
October 1999, Section 3011, Withdrawals (a) Naval Air Station Fallon,  
Nevada, Ranges.
- (d) Final Integrated Cultural Resources Management Plan for 2007-2012,  
Naval Air Station, Fallon, Nevada, Volume I and II, March 2007.

This Memorandum Of Understanding (MOU) is entered into between NASF and the  
BLM/CCFO (hereinafter referred to as "the Parties") to implement the management of  
withdrawn lands per references (a), (b) and (c).

1. Purpose. Reference (c) states "during the period of the withdrawal of lands under  
this subtitle, the Secretary of the Interior shall manage the lands withdrawn by section  
3011, pursuant to the Federal Land Policy and Management Act (FLPMA) of 1976  
(43 USC 1701 et seq.), other applicable laws and this subtitle". As such, management  
of natural resources on Navy withdrawn lands under the Military Lands Withdrawal  
Act (MLWA) of 1999 is the responsibility of the BLM/CCFO. However the Navy



has a stewardship responsibility for the 1999 withdrawn lands as defined by the Sikes Act Improvement Act (SAIA). The purpose of this MOU is to ensure that natural resource conservation measures and military operations at NASF are coordinated, integrated, and consistent with stewardship and legal requirements. Reference (c) required the two agencies to enter into a MOU to implement the management plan for the withdrawn lands.

The Fallon Range Training Complex (FRTC) NASF-administered lands include Navy-acquired lands and withdrawn lands, i.e., public lands withdrawn for military uses under reference (c). This combination of acquired and withdrawn lands results in both the Navy and the BLM having joint natural resource management responsibilities on NASF-withdrawn lands. Because much of natural resource management is shared across adjoining jurisdictions, close collaboration and partnering is required between the Navy and BLM/CCFO in order for this to be cost effective, provide consistent management, avoid redundancy, and optimize the use of scarce resources.

2. Background. NASF administers approximately 241,033 acres of withdrawn and acquired land at the Naval Air Station and the training ranges (indicated as "all areas" in this MOU). Natural resources management on NASF-administered lands is guided by reference (a); the BLM/CCFO is a signatory/concurring agency for reference (a). The BLM/CCFO will continue to manage natural resources according to reference (b).

NASF and BLM/CCFO have identified several general objectives in references (a) and (b). These objectives include the following:

- a. Ensure no net loss in the capability of the land and natural resources at NASF to support its current and future military mission.
- b. Ensure compliance with applicable laws and regulations as they pertain to natural and cultural resources.
- c. Maintain and enhance the level of biodiversity within the constraints of the military mission.
- d. Implement adaptive management techniques to provide flexible and responsive management strategies based on scientific data gathered from monitoring programs, literature, and resource experts.

- e. Provide for public access wherever possible in areas not exposed to military hazards.
- f. Protect the quality of wildlife habitat, where feasible.

3. Responsibilities. The agency or agencies responsible for natural resource management on NASF-administered lands are determined through an assortment of laws, regulations, and cooperative agreements. In general, -natural resources on NASF administered lands are managed by the Navy and/or BLM. Other agencies, including Bureau of Reclamation (BOR), U.S. Department of Energy (DOE), and Nevada Department of Wildlife (NDOW) have specific management responsibilities on NASF-administered lands. The following section presents Navy and BLM natural resource roles and responsibilities for management per reference (a).

All Navy actions proposed in reference (a) and discussed below are subject to the availability of funds properly authorized and appropriated under federal Law. Nothing in reference (a) is intended to be, nor must be considered to be in violation of the Anti-deficiency Act (31 USC 1341 et sec.).

a. NASF will:

(1) Maintain gravel roads on the training ranges where necessary to control dust and soil erosion.

(2) Apply for gravel extraction permits for all areas from the BLM as appropriate.

(3) Assess the purchase of patented existing mining claims on closed lands, contingent upon Congress approving funds.

(4) Manage natural resources on the Naval Air Station for both Navy-acquired and withdrawn lands, with the exception outlined in Item 3(b) (1) of this MOD.

(5) Manage Agricultural Outlease water resources on the Naval Air Station in a manner consistent with Nevada Water Law, Title 48 (Chapters 533 and 534), Truckee-Carson-Pyramid Lake Water Settlement Act (Public Law 101-618), Reclamation and other federal law, and Truckee Carson Irrigation District (TCID) operating guidelines. Current surface water rights at the Main Station are limited to 4021 acre feet per year which meets the reference (c) required limit of 4,402 acre feet per year.

(6) Continue to maintain wells in Dixie Valley Navy acquired lands in accordance with State of Nevada Water Law. Currently, this includes 20 wells, 8 of which supply water necessary to maintain ponds.

(7) Gather data on baseline conditions of surface and underground water quality in Dixie Valley Navy-acquired lands. Portions of this management measure have been completed: the United States Geological Survey (USGS) has completed a study of Dixie Valley water and these water resources also have been studied in a Churchill County Water Resource Management Plan.

(8) Update the wetland and riparian inventory by conducting a survey of wetlands on all NASF-administered lands.

(9) Continue to maintain the fencing for the protection of riparian habitat at Stinking Springs in the closed lands of B-19, in Dixie Valley to maintain or enhance wildlife habitat and to keep cattle grazing out of wetland areas (including the 8 Dixie Valley ponds and Horse Creek), and in the Dixie Meadows area (760 acres) to protect the existing natural aquatic and riparian conditions.

(10) Continue to conduct noxious weed control in wetland and riparian areas of Dixie Valley, including Horse Creek. Continue to remove tamarisk and Russian olive trees to protect native cottonwoods and willows on the Dixie Valley Training Range and Horse Creek.

(11) Continue conducting periodic monitoring of wetland and riparian areas in Dixie Valley.

(12) Continue to close water wells in Dixie Valley that are not legally permitted by the State of Nevada.

(13) Establish noninvasive vegetation (native plant species where appropriate) and prevent or minimize erosion at the Naval Air Station.

(14) Manage the irrigated fields and grazing on Navy Agricultural Lease Parcel 4B03 in Dixie Valley according to the associated soil and water conservation plan.

(15) Control the buildup of flammable vegetation in the areas surrounding operations, where possible, and conduct vegetation surveys to assess fire potential.

(16) Determine appropriate times and methods for prescribed burning of weeds and irrigation ditches in the Naval Air Station.

(17) Use cottonwood and willow pole plantings to restore and sustain the cottonwood and willow trees on the Naval Air Station.

(18) To the extent possible/practicable, maintain fencing around B-17 to prevent encroachment from livestock onto the range. Assess the need for additional "drift" fencing along the south and southeast portions of B-17 to prevent encroachment from areas where gaps in the fencing exists.

(19) Continue to monitor wildlife for overpopulation and disease in all areas.

(20) Continue to allow NDOW access to the wildlife guzzlers. Access is required at least annually at B-17. Provide access for the annual bighorn sheep hunt on closed withdrawn lands at B-17, per agreement with NDOW.

(21) In conjunction with NDOW and US Fish and Wildlife Service (USFWS), update and complete the ecological inventory for training ranges and identify data gaps for the purposes of developing management actions.

(22) In conjunction with other agencies, review and/or develop baseline migratory bird population data at B-20 and Dixie Valley during peak migration periods.

(23) Manage recreation on Navy-acquired open lands in Dixie Valley where compatible with the military mission in accordance with the Outdoor Recreation - Federal/State Programs Act, 16 USC 3B, the Sikes Act, and Navy regulations and policy. Compatible recreation activities may include bird watching, horseback riding, hiking, wildlife viewing, and photography.

(24) Maintain the current level of public access to the withdrawn lands as compatible with the military mission in Dixie Valley. The Navy would open its lands to public access to the extent compatible with the military mission.

(25) Continue to allow access to the eight maintained ponds in Dixie Valley as outlined in reference (a). Fishing rules and regulations are established and enforced by NDOW.

(26) Evaluate and cooperate with NDOW in providing access and water to the Dixie Valley Robbin's Pond for potential future development of a warm water fish facility.

(27) Permit hunting on open withdrawn lands in the FRTC. Hunting rules and regulations are established and enforced by NDOW.

(28) Prohibit hunting within the fenced areas on the Naval Air Station since it is incompatible with security and mission requirements.

(29) Inventory and map existing roads on open Navy acquired lands at the FRTC to develop baseline data to facilitate Off Highway Vehicle (OHV) trail mapping.

(30) Continue to work closely with other federal, state, and local governments and groups to develop cooperative agreements, when applicable, for the joint development of recreation trails (e.g., OHV, bicycle, horse, hiking, wildlife viewing, and recreation sites).

(31) Continue to ensure that the Pony Express National Historic Trail remains open to public access on FRTC lands.

(32) Manage areas along national and historic trails at B-16 and B-17 in accordance with BLM Visual Resources Management (VRM) classifications.

(33) Ensure that consultation with the Nevada State Historic Preservation Office (SHPO) on Navy-withdrawn lands would follow BLM state protocols, as described in the letter from SHPO dated August 17, 2004.

(34) Coordinate with Native American tribes and individuals in accordance with Navy policy on Navy-acquired lands, as described in reference (d).

(35) Coordinate with Native American tribes and individuals on withdrawn FRTC lands in accordance with BLM consultation policy.

(b) BLM will:

(1) Retain and manage the mineral estate on two of the four withdrawals at the Naval Air Station (two of these withdrawals are open for mineral leasing by the BLM/CCFO).

(2) Coordinate with the Navy when assessing potential well locations on the training ranges to ensure compatibility with current and future training range requirements.

(3) Notify the Navy when grazing is to occur in the Navy's designated retention areas in Dixie Valley.

(4) Continue allotment management programs on BLM's three grazing allotments in Dixie Valley and adjust Animal Unit Months (AUMs) as necessary to protect vegetation conditions.

(5) Continue to manage grazing in accordance with its Grazing Allotment Management Plans and in a manner that is compatible with current and future military training requirements on Navy-acquired and withdrawn lands.

(6) Consult with the Navy before constructing or removing range improvements per amended allotment management plans.

(7) Manage wild horses and burros in all areas according to the Wild Free-Roaming Horse and Burro Act.

(8) Continue to manage the Clan Alpine Herd Management Area (HMA), a portion of which includes the Dixie Valley training area, in a manner compatible with current and future military training requirements.

(9) Manage organized recreation activities on open withdrawn lands adjacent to the FTRC in consultation with the Navy. BLM may issue special recreation permits for activities including, but not limited to, road rallies, OHV endurance rides, and dirt bike races. The Pony Express Trail ride is permitted by the BLM State Office.

(10) Provide data and assist with OHV trail mapping on FRTC withdrawn lands.

(c) NASF and BLM will:

(1) Manage mineral resources on Navy-acquired and withdrawn lands in accordance with all applicable federal acts, regulations, and laws.

(2) Manage lands consistent with VRM management designations as determined by BLM for surrounding areas

providing such management does not impact the military mission. Per BLM/CCFO, affected public lands surrounding NASF administered lands are assumed to be designated Class III for visual resources.

(3) Not allow access to the subsurface at the Shoal Site by drilling, or any other means, and/or removal of any subsurface material from the Shoal Site without thorough evaluation and coordination with the DOE. Only the DOE can authorize subsurface activity.

(4) Manage lands in all areas to protect or enhance wetlands and riparian areas under Section 404 of the Clean Water Act. This includes evaluating proposed projects for impacts to wetlands and riparian areas and conducting wetland delineations to determine whether Clean Water Act jurisdiction applies on a project by project basis.

(5) Manage vegetation and grazing in Dixie Valley per the Grazing, Vegetation, and Water Resource Management Plan for the Dixie Valley Settlement Area, Churchill County, Nevada. This plan shows the locations of water sources that would remain for livestock and the management of vegetation to be protected for wildlife habitat and Navy training purposes.

(6) Manage the eight identified ponds in Dixie Valley (low cost methods) with the goal of maintaining the existing ecological values. These areas would be fenced to exclude livestock, but they may be opened for grazing for short periods if determined to benefit management.

(7) Monitor for the presence and spread of invasive, exotic weed species in all areas. Manage all areas for the control and removal of noxious weeds per their respective Pest Management Plans.

(8) Continue to coordinate with appropriate federal, state, and local government agencies to inventory, evaluate, control, and remove undesirable vegetation in all areas.

(9) Pursuant to the Navy and BLM mutual aid agreement, conduct air and ground fire suppression activities in all areas where they are determined to be necessary and safe. The BLM would assist the Navy in developing and implementing fire prevention measures.

(10) Coordinate with the appropriate agencies (e.g., State of Nevada and Churchill County) for fire suppression activities in all areas.

(11) Continue to evaluate the potential for noxious weed colonization in all areas prior to surface-disturbing activities. If there is a high potential for colonization, the site would be monitored after the project, and weed control measures would be implemented. Revegetate the area with native plants, where necessary and feasible, after natural or significant human disturbance.

(12) Continue to review proposed projects to ensure compliance with all applicable state and federal Fish and Wildlife Management laws and regulations.

(13) Jointly coordinate with US Department of Agriculture (USDA) Animal Plant Health Inspection Service (APHIS) for coyote control.

(14) Continue to prohibit domestic sheep grazing on Navy lands within nine miles of desert bighorn sheep habitat. These areas would likely include B-17, Dixie Valley, and Horse Creek.

(15) Continue to coordinate to assess the potential for sage grouse at B-17 and Dixie Valley. Data to be maintained and/or collected would include: GIS layer of sage grouse habitat, sage grouse presence, and population data, if applicable.

(16) Comply in all areas with the 31 July 2006 Department of Defense (DOD) and USFWS MOU to Promote the Conservation of Migratory Birds; and the Final Rule, Migratory Bird Permits: Take of Migratory Birds by the Armed Force, 50 CFR Part 221. If the Navy determines that a proposed or an ongoing military readiness activity may result in a significant adverse effect on the sustainability of a population of a migratory bird species of concern, then the Navy would confer and cooperate with the USFWS to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects.

(17) Continue to limit OHV use on Navy-owned and withdrawn lands at the FRTC to existing roads and trails.

(18) Continue to maintain the vault toilet and improve the campground at Horse Creek.



(19) Pursue renewal of the expired MOA between the Navy, the BLM and NDOW for the management of the Horse Creek Ranch Property.

(20) Share natural resource law enforcement responsibilities on the training ranges and surrounding lands with NDOW, USFWS, and Churchill County.

(21) Continue to implement the programmatic agreement document between the Navy, BLM, and the SHPO, which defines how NASF and BLM will implement the National Historic Preservation Act (NHPA). Ensure proposed BLM and Navy activities on withdrawn lands are subject to NHPA Section 106 review.

(22) If possible, avoid significant cultural properties. Take appropriate measures to mitigate project effects where cultural resources cannot be avoided. Protect sites eligible for the National Register of Historic Places by identifying those sites for full fire suppression. Prepare treatment options for contextual studies on withdrawn lands. Perform research projects to aid contextual studies on withdrawn lands. Share cultural resource information on withdrawn lands.

#### 4. Agreement/understanding.

(a) This MOD does not change or alter requirements associated with the Migratory Bird Treaty Act (MTBA), Endangered Species Act, NEPA, Sikes Act, other statutes or legal authority.

(b) The responsibilities established by this MOD may be incorporated into existing DOD actions; however, DOD may not be able to implement some responsibilities identified in the MOU until DOD has successfully included them in the formal planning process. This MOU is intended to be implemented when new actions are initiated as well as during the initiation of new, or revisions to, INRMPs, Pest Management Plans, Carson City Field Office Consolidated Resource Management Plan, and nonmilitary readiness elements of Bird Aircraft Strike Hazard plans.

(c) This MOD in no way restricts either Party from participating in similar activities with other public or private agencies, governments, organizations, or individuals.

(d) An elevation process to resolve any dispute between the Parties regarding a particular practice or activity is in place

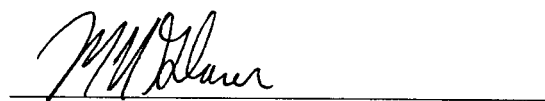
and consists of first attempting to resolve the dispute with the DOD military installation and the responsible Department of Interior Field Office. If there is no resolution by these offices, the dispute may be elevated by either Party to the headquarters office of each party.

(e) This MOU is neither a fiscal nor funds obligation document. Any endeavor involving reimbursement, contribution of funds, or transfer of anything of value between the Parties will be handled in accordance with applicable laws, regulations, and procedures, including those for government procurement and printing. Such endeavors will be outlined in separate agreements that shall be made in writing by representatives of the Parties and shall be independently authorized by appropriate statutory authority.

(f) The parties will schedule periodic meetings to review progress and identify opportunities for advancing the principles of this MOU.

5. Changes. Changes/amendments may be made to this agreement by mutual written consent of both parties, and will be recorded and published as addenda to this agreement.

6. Termination. This agreement may be terminated by mutual consent of both parties. This agreement will remain in effect until superseded or terminated. Either party may terminate this agreement upon 60 days' prior written notification to the other party.



M. H. GLASER  
Captain, US Navy  
Commanding Officer  
Naval Air Station Fallon



11/27/2007  
DATE

DONALD T. HICKS  
Carson City Field Office  
Manager  
Bureau of Land Management

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DEPARTMENT OF THE NAVY

NAVAL AIR STATION FALLON  
4755 PASTURE ROAD  
FALLON, NV 89496-5000

1200  
N0000CF  
22 May 14

From: Commanding Officer, Naval Air Station Fallon  
To: Mr. Gary R. Cottle, Environmental Division, Naval Air  
Station Fallon

Subj: NAVAL AIR STATION FALLON NATURAL RESOURCES COORDINATOR  
APPOINTMENT

Ref: (a) OPNAVINST 5090.1C CH-1

1. Per reference (a), you are hereby appointed as the Naval Air Station Fallon Natural Resources Coordinator.
2. This appointment will remain in effect unless revoked or upon my detachment from this command.

  
L. E. STEINBAUGH

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**FINAL**

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

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## **APPENDIX C**

### **AGENCY INRMP REVIEW LETTERS**

**FINAL**

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

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BRIAN SANDOVAL  
*Governor*

STATE OF NEVADA  
**DEPARTMENT OF WILDLIFE**

1100 Valley Road  
Reno, Nevada 89512  
(775) 688-1500 • Fax (775) 688-1595

KENNETH E. MAYER  
*Director*

RICHARD L. HASKINS, II  
*Deputy Director*

PATRICK O. CATES  
*Deputy Director*

December 3, 2012

Gary R. Cottle  
NAS Fallon  
Natural Resources Specialist  
4755 Pasture Road Bldg 307  
Fallon, NV 89496

Dear Mr. Cottle:

The Nevada Department of Wildlife (NDOW) appreciates the opportunity to review and comment on the Naval Air Station Fallon (NASF) draft Integrated Natural Resource Management Plan (INRMP). NDOW understands and supports the military's mission on NASF land and withdrawn lands with the hope that we can provide information and make recommendations that help guide this land use planning effort. Furthermore, it is our desire to ensure that habitat benefits for wildlife are incorporated into this planning document. As a cooperating agency, NDOW supports your land use planning efforts and offers the following recommendations for consideration and incorporation into the INRMP. The comments in this letter address broad, overarching items while comments provided in the enclosure address specific information contained in the draft INRMP. To preface these comments, we thank the NASF, through the INRMP process, for being excellent and accommodating partners in managing habitat for wildlife and hope this relationship can continue in a paramount fashion.

### **Project Permitting**

NDOW acknowledges and understands that NAS Fallon will continue permitting projects. Our hope is that projects avoid important habitat areas such as in the Dixie Meadows area. Additionally, we hope that when project permitting occurs measures are taken to minimize, mitigate, and compensate for impacts to wildlife habitat commensurate the magnitude and scale of the impacts. Lastly, we hope that geothermal sump permitting incorporates those items discussed and handed out at the October 17<sup>th</sup>, INRMP meeting.

### **Hydrology**

NDOW request that the integrity of water sources be preserved for wildlife. As stated in NRS 533.367, "Before a person may obtain a right to the use of water from a spring or water which has seeped to the surface of the ground, the person must ensure that wildlife which customarily uses the water will have access to it". Furthermore, we encourage appropriate monitoring of water sources and establishing a contingency/mitigation plan in the event that water source impacts occur to the detriment of wildlife. An example of this occurred in the Big Springs



Mine Exploration Project where springs and streams were dewatered during drilling activities using standard well abandonment methods.

### **Travel Management**

Increased off-highway vehicle (OHV) use and unauthorized user-created road establishment has the potential to negatively impact wildlife resources as OHV travel is becoming more common on the NAS Fallon lands. It is NDOW's desire to promote wildlife recreation opportunities (e.g. hunting, fishing, wildlife viewing) while balancing resource protection needs. Therefore, we encourage the Navy to develop a comprehensive travel management plan addressing OHV issues. Items we recommend addressing in the travel management plan include:

- Permanent Road Closures: We support the closure of duplicate destination roads, no longer used mine exploration grid roads, and mitigation of resource impacting or degrading routes. Increased road densities have been proven to impact wildlife through habitat loss and fragmentation, increased stress levels demanding higher energy requirements, and direct mortality. We encourage closed roads to be reclaimed. We discourage the elimination of sole source access that provides a road option for wildlife recreationists.
- Temporary Road Closure/Seasonal Restriction: We encourage temporary seasonal restrictions to occur on roads to avoid wildlife resource impacts. For example, seasonal restrictions may be necessary near lambing areas.
- Overland travel and unauthorized user-created roads: We understand and support the need to control the ever expanding network of new trails created by individuals into areas without roads. As such we recommend inventorying and marking "closed" roads and trails as such and leaving "open" roads un-marked. Signage is a direct way to inform users of closure and is not dependent upon the individual having a travel management map in their possession.
- Game Retrieval: We support allowing challenged hunters the opportunity for game retrieval.
- Law Enforcement: We encourage increased law enforcement activities to address unauthorized use. Additionally, we encourage unauthorized use reporting. Furthermore, we support an agreement between law enforcement agencies to enforce illegal off-road travel and other illegal activities as it is our expectation that some of the violations will be documented by NDOW wardens who have no enforcement authority over federal regulation pertaining to travel restrictions. Such a cooperative approach will improve resource management.
- Education: We encourage educating the public and OHV user groups about the potential wildlife impacts that are associated with unauthorized travel. We also encourage working cooperatively with OHV groups to build trust, ensuring participation and increasing unauthorized use reporting.

**ACEC**

Following the October 18, 2012 INRMP meeting it became apparent that an Area of Critical Environmental Concern (ACEC) designation isn't applicable. As such we request that management objectives are incorporated for the Dixie Valley meadows as outlined in the June 27, 2012 letter.

Sincerely,



Mark Freese  
Supervisory Habitat Biologist

Enclosure



Comments/Response Matrix  
DRAFT INRMP 09/2012  
Naval Air Station Fallon

#	Page	Line(s)/ Section	Reviewer (initials)	<i>Comment</i>	<i>Response</i>
1	m3-8	/appendix m	NDOW	Section 2.6.14.2 does a good job describing species that are "Species of Conservation Priority" as designated in the Nevada Wildlife Action Plan. However, such designations are missing from Appendix M. We recommend including these designations in a column in Appendix M to allow the reader to easily identify "Species of Conservation Priority".	
2	4-6	2/4.3	NDOW	We recommend including the words "avoid, mitigate, and compensate for" under the water management objective. Therefore the objective would read, "Avoid, minimize, mitigate, and compensate for impacts to water resources...". We encourage the INRMP to incorporate this language so that in the event that water resources are impacted, the NAVY will have the ability to require appropriate avoidance, mitigation, and/or compensation measures/offsets. We recommend that mitigation and compensation be equivalent to offset the size and scale of the impact similar to that of the guidance for wetlands as is described in the "Wetland Management" section.	

Comments/Response Matrix  
DRAFT INRMP 09/2012  
Naval Air Station Fallon

3	4-8	8/4.4	NDOW	We recommend including another bullet under "Compliance and Stewardship Tasks" for Objective 2 ("Maximize biodiversity and ecosystem functions associated with wetland resources") that describes habitat fragmentation avoidance. We hope that projects permitted near wetlands aren't allowed infrastructure to fragment these valuable habitats.	
4	4-9	/4.6	NDOW	We recommend including a bullet stating, "the most current BMP's will be implemented".	
5	4-11	23/4.7	NDOW	We recommend replacing the word "indigenous" with "endemic" to be consistent with definitions used in NDOW policy (i.e. Commission Policy Number 22).	
6	4-11	33/4.7	NDOW	We recommend including the following language, "Wildlife management includes <b>but is not limited to</b> habitat protection,..." This wording acknowledges that other wildlife and fisheries management activities occur such as fishing and hunting.	
7	4-16	23/4.10	NDOW	We recommend modifying this bullet by including the following <b>bold-faced</b> language "Avoid sensitive habitat areas (i.e. wetland and riparian areas) during training and <b>project permitting</b> , preventing damage to sensitive areas, and rehabilitating damaged areas.	

Comments/Response Matrix  
DRAFT INRMP 09/2012  
Naval Air Station Fallon

8	4-13	1/4.7	NDOW	We recommend modifying this bullet to read: "Maintain effective separation, defined as spatial or temporal separation between wild sheep and domestic sheep or goats to minimize the potential for association and probability of transmission of diseases between species. Utilize the best available science, resource knowledge, BMP's, guidelines, and other information when making effective separation determinations.	
9	4-13	4/4.7	NDOW	We recommend modifying this statement to state: "Continue monitoring wildlife and their habitat for overpopulation and disease in coordination with NDOW and FWS".	
10	4-13	/4.7	NDOW	We recommend including a bullet stating "Continue coordinating and partnering on Sport Fish Pond Habitat and Recreation Enhancement Projects"	
11	4-18	11/4.12	NDOW	We recommend modifying this bullet to read: "Prohibit domestic sheep grazing on Navy lands <b>where effective separation will not be maintained</b> ".	
12	4-19	/4.13	NDOW	We commend your efforts to address OHV and travel management issues; however it is our opinion that simply designating roads as open (i.e. limited to existing roads and trails) and conducting an inventory doesn't go far enough to address travel management issues. We recommend developing a comprehensive travel management plan, incorporating items discussed in the letter under "Travel Management" into the INRMP providing greater wildlife habitat conservation.	

Comments/Response Matrix  
DRAFT INRMP 09/2012  
Naval Air Station Fallon

	4-14	/4.8	NDOW	NDOW can assist in efforts to identify sage-grouse habitat. Currently, we have a habitat categorization map which identifies essential and irreplaceable habitat, important habitat, habitat of moderate importance, low value habitat and transitional range, and unsuitable habitat. Currently, only a small portion of NAS Fallon lands is designated as "unsuitable habitat". GIS shapefiles are available upon request.	
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**FINAL**

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

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## **APPENDIX D**

### **NAVY NATURAL RESOURCES METRICS AND RESULTS OF ANNUAL REVIEW**



**FINAL**

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

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## **Overview of the Navy Natural Resources Metrics by Focus Area**

### **Introduction**

The Navy Natural Resources (NR) Metrics were developed to support the annual Natural Resources Program reviews between the Navy and its Sikes Act partners, the U. S. Fish and Wildlife Service, state fish and wildlife agencies and when applicable National Oceanic and Atmospheric Administration Fisheries Service . There are seven (7) Focus Areas that comprise the NR Metrics to be evaluated during the annual review of the Natural Resources Program and associated Integrated Natural Resources Management Plan (INRMP).

1. Ecosystem Integrity
2. Listed Species and Critical Habitat
3. Fish and Wildlife Management for Public Use
4. Partnership Effectiveness
5. Team Adequacy
6. INRMP Project Implementation
7. INRMP Impact on the Installation Mission

Each of the seven Focus Areas contains a series of questions. The questions are slightly weighted, with responses to questions having different values, ranging from 0.0 to 1.0. Each Focus Area is scored, using a rating scheme of **Green (1.0-0.67)**, **Yellow (0.66-0.34)**, and **Red (0.33-0.0)**, the final report summarizes the scorecards for all focus areas evaluated for each Navy installation.

### Focus Area 1: Ecosystem Integrity

Note: This Focus Area is intended to define the ecosystems that occur on the installation and assess the integrity of those ecosystems. Terrestrial ecosystems, as defined by Nature Serve's "[Ecological Systems of the United States: A Working Classification of US Terrestrial Systems](#)" and marine ecosystems, as defined by NOAA's "[Coastal and Marine Ecological Classification Standard](#)".

Question	Response 1	Response 2	Response 3	Response 4	Responses 5 & 6
<b>Q1:</b> To what extent is the ecological system on the installation fragmented due to land conversion? (0-5)	Ecosystem fragmentation is the result of five (5) of the phenomena (0)	Ecosystem fragmentation is the result of four (4) of the phenomena (0.20)	Ecosystem fragmentation is the result of three (3) of the phenomena (0.40)	Ecosystem fragmentation is the result of two (2) of the phenomena (0.60)	Ecosystem fragmentation is the result of one (1) of the phenomena (0.80)
					No fragmentation (1.00)
<b>Q2:</b> Is the ecosystem effectively managed to sustain viable populations of species? (0-3)	Not effectively managed (0)	Minimally effective management (0.33)	Moderately effective management (0.67)	Effectively managed (1.00)	
<b>Q3:</b> To what degree is the ecological system vulnerable to stressors? (0-5)	Completely Vulnerable (0)	Severely Vulnerable to Stress (0.20)	Highly Vulnerable to Stress (0.40)	Moderately Vulnerable to Stress (0.60)	Slightly Vulnerable to Stress (0.80)
					Not Vulnerable to Stress (1.00)
<b>Q4:</b> To what degree has the installation's INRMP/NR Program provided an overall benefit to ecological integrity? (0-3)	0 = No Benefit (0)	Minor Benefit (0.33)	Moderate Benefit (0.67)	Significant Benefit (1.00)	

## Focus Area 2: Listed Species & Critical Habitat

Question	Response 1	Response 2	Response 3	Response 4	Response 5
<b>Q1:</b> To what extent do INRMP projects & programs provide a benefit to this species? (0-4, NA)	No benefit (0.0)	Minor benefits (0.25)	Moderate benefit (0.50)	Major benefit (0.75)	Significant benefit (1.00)
<b>Q2:</b> To what degree have projects been funded in support of this species? (0-4, NA)	No funding (0.0)	1% to 25% funded (0.25)	26% to 50% funded (0.50)	51% to 75% funded (0.75)	76% to 100% funded (1.00)
<b>Q3:</b> To what extent are quantifiable goals, parameters, and monitoring requirements in place to assess conservation effectiveness? (0-4, NA)	None (0.0)	Minimal (0.25)	Moderate (0.50)	Good (0.75)	Excellent (1.00)
<b>Q4:</b> Do existing surveys provide adequate data on habitat conditions? (Y/N)	Yes (1.0)	No (0.0)			
<b>Q5:</b> Do existing surveys provide adequate data on population presence and numbers? (Y/N)	Yes (1.0)	No (0.0)			

### Focus Area 3: Fish and Wildlife Management for Public Use

Question	Response 1	Response 2	Response 3	Response 4	Response 5
<b>Q1:</b> Are recreational opportunities available on the installation? (Y/N)	Yes (1.0)	No (0.0)	Not Applicable (landscape doesn't support recreational opportunities)		
<b>Q2:</b> If recreational opportunities are available, are they limited and/or restricted for security reasons? (Y/N/NA)	Yes (1.0)	No (0.0)	Not Applicable (recreational opportunities are not available)		
<b>Q3:</b> If recreational opportunities are available, are they offered to the public? (Y/N/NA)	Yes (1.0)	No (0.0)	Not Applicable (recreational opportunities are not available)		
<b>Q4:</b> If recreational opportunities are available, are they offered to DoD personnel?	Yes (1.0)	No (0.0)	Not Applicable (recreational opportunities are not available)		
<b>Q5:</b> If recreational opportunities are available, are they accessible by disabled veterans/Americans?	Yes (1.0)	No (0.0)	Not Applicable (recreational opportunities are not available)		

### Focus Area 3: Fish and Wildlife Management for Public Use

Question	Response 1	Response 2	Response 3	Response 4	Response 5/6
<b>Q6:</b> Are Sikes Act fees collected for outdoor recreational opportunities? (Y/N/NA)	Yes (1.0)	No (0.0)	Not Applicable - (recreational opportunities do not include hunting or fishing)		
<b>Q7:</b> Is there an active natural resources law enforcement program on the installation? (Y/N/NA)	Yes (1.0)	No (0.0)	Not Applicable - (recreational opportunities do not include hunting or fishing)		
<b>Q8:</b> Are sustainable harvest goals addressed in the INRMP and effective for the management of the species' population? (0-4, NA)	Not effective (0)	Minimal effectiveness (0.25)	Moderate effectiveness (0.50)	Effective (0.75)	Highly effective (1.00)
					NA (recreational opportunities do not include hunting and fishing)
<b>Q9:</b> Is public outreach/educational awareness provided? (0-4, NA)	No public outreach provided (0)	Low outreach (0.25)	Moderate outreach (0.50)	Good outreach (0.75)	Excellent outreach (1.00)
					Not Applicable

#### Focus Area 4: Partnership Effectiveness

Purpose: The purpose of this Focus Area is to determine to what degree partnerships are cooperative and result in effective implementation of the INRMP.

Question	Response 1	Response 2	Response 3	Response 4	Response 5
<b>Q1:</b> Does your Natural Resources program support the regional conservation efforts of the USFWS?	Yes (1.0)	No (0.0)			
<b>Q2:</b> Does your Natural Resources program support State conservation goals identified in State Wildlife Action Plans (SWAPs)? (Y/N)	Yes (1.0)	No (0.0)			
<b>Q3:</b> Does your Natural Resources program support regional NOAA/NMFS conservation objectives/efforts? (Y/N/NA)	Yes (1.0)	No (0.0)	Not Applicable		
<b>Q4:</b> Does your Natural Resources program support other Conservation Initiatives? (Y/N)					

## Focus Area 5: Team Adequacy

Purpose: The purpose of this Focus Area is to assess the effectiveness and adequacy of the Navy natural resources team in accomplishing the goals and objectives of the INRMP and Natural Resources Program at each installation. “Team” in this section refers to the Navy staff only

Question	Response 1	Response 2	Response 3	Response 4	Response 5
<b>Q1:</b> Is there a Navy professional Natural Resources Manager assigned by the Installation Commanding Officer? (Y/N)	Yes (1.0)	No (0.0)			
<b>Q2:</b> Is there an on-site Navy professional Natural Resources Manager? (Y/N)	Yes (1.0)	No (0.0)			
<b>Q3:</b> Is HQ and Regional support adequate, e.g. reach back support for execution, policy support, etc.)? (0-4)	No support (0)	Minimal support (0.25)	Satisfactory support (0.50)	Well supported (0.75)	Very well supported (1.00)
<b>Q4:</b> Is there adequate Natural Resources staff to properly implement the INRMP goals and objectives? (Y/N)	Yes (1.0)	No (0.0)			



### Focus Area 5: Team Adequacy (Continued)

Question	Response 1	Response 2	Response 3	Response 4	Responses 5/6
<b>Q5:</b> The team is enhanced by the use of contractors. (0-4)	Disagree (0)	Somewhat agree (0.25)	Neutral (0.50)	Agree (0.75)	Strongly Agree (1.00)
<b>Q6:</b> The team is enhanced by the use of volunteers. (0-4, NA)	Disagree (0)	Somewhat agree (0.25)	Neutral (0.50)	Agree (0.75)	Strongly Agree (1.00)
					Not Applicable
<b>Q7:</b> The Natural Resources team is adequately trained to accomplish its duties to ensure compliance. (0-4)	Disagree (0)	Somewhat agree (0.25)	Neutral (0.50)	Agree (0.75)	Strongly Agree (1.00)

### Focus Area 6: INRMP Project Implementation

Note: The purpose of this Focus Area is to assess how the goals and objectives of the INRMP have been met through the projects implemented during the previous fiscal year.

Question	Response 1	Response 2	Response 3	Response 4	Responses 5
<b>Q1:</b> Is project accomplishment on	Yes (1.0)	No (0.0)			

schedule? (Y/N)					
<b>Q2:</b> What is the Project Status? (0,1)	On-Hold (0.0)	Funds Not Yet Received (0.0)	In EPRWeb; In POM; or Emergent Project (1.0)	Funding Received; SOW Prepared, Awarded/Executed (1.0)	Now In-Progress; Project Completed (1.0)
<b>Q3:</b> Which Natural Resources Program Area was most benefitted from the project? (0,1)	0 = None (0)	1 = Flora; Fauna; At Sea; INRMP; Wetlands; Listed Species; Forestry; Invasive Mgmt; Soils; Erosion Control; Outdoor Recreation; Training; Other (1.0)			
<b>Q4:</b> The project design met the goals and objectives of the INRMP. (0-4)	Disagree (0)	Neither agree nor disagree (0.25)	Somewhat Agree (0.50)	Fully Agree (0.75)	Strongly Agree (1.00)

**Focus Area 7: INRMP Impact on Installation Mission**

Question	Response 1	Response 2	Response 3	Response 4	Responses 5
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<b>Q1:</b> Has Coordination between natural resources staff and other installation departments and military staff been successful/effective?(0-4)	No coordination (0)	Minimal coordination (0.25)	Satisfactory coordination (0.50)	Effective coordination (0.75)	Highly effective coordination (1.0)
<b>Q2:</b> To what extent has the INRMP successfully supported other mission areas? (e.g. encroachment, BASH, range support, port operations, air operations, facilities management, etc.) (0-4)	Not supported (0)	Minimally supported (0.25)	Satisfactorily supported (0.50)	Well supported (0.75)	Very well supported (1.0)
<b>Q3:</b> To what extent has there been a net loss of training lands or mission-related operational/training activities? (0-4)	Mission activities are fully impeded; training activities cannot be conducted (0)	Mission/Training activities are somewhat impeded with workarounds (0.25)	Neutral (0.50)	No loss occurred (0.75)	Mission has seen benefits (1.0)
<b>Q4:</b> Does the Natural Resource program effectively consider current mission requirements? (0-4)	Strongly disagree (0)	Disagree (0.25)	Neutral (0.50)	Agree (0.75)	Strongly Agree (1.0)

**Terms and Definitions:**

**Compliant INRMP** - A compliant INRMP is defined as “a complete plan that meets the purposes of the Sikes Act (§101(a)(3)(A-C)), contains the required plan elements (§101(b)(1)(A-J)), and has been reviewed for operation and effect within the past 5 years (§101(2)(b)(2)).” Therefore, a compliant INRMP must be Sikes Act compliant and less than 5 years old. If the INRMP is greater than 5 years old, then it must have undergone a review for operation and effect within the past 5 years.

**Review for Operation and Effect** - A review for operation and effect is defined as “a comprehensive review by the Parties, at least once every 5 years, to evaluate the extent to which the goals and objectives of the INRMP continue to meet the purpose of the Sikes Act, which is to carry out a program that provides for the conservation and rehabilitation of natural resources on military installations.

**Ecosystem Integrity** - The term Ecosystem Integrity refers to the quality of state of being complete, unbroken condition, wholeness, entirety, unimpaired, without significant damage, good condition, or general soundness.



**MINUTES**  
**NAS FALLON INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**  
**STAKEHOLDERS MEETING**

**DATE AND TIME:** October 17, 2012, 1300-1345

**LOCATION:** NAS Fallon, Command Conference Room, Bldg 350

**ATTENDEES:** CDR E.M. Woodruff, NASF Executive Officer  
CDR J.A. Dryden, NASF Public Works Officer  
Rowdy Yates, NASF  
Debora E. Waxer, NASF IEPD  
Ed Rybold, NASF N5  
Gary Cottle, NASF ENV  
Anna Keyzers, NASF ENV  
Becky Kurtz, NASF ENV  
Kathy Aguilar, NASF ENV  
Shannon Shea, CNRSW  
Cece Dahlstrom, NAVFAC SW  
Colleen Sievers, BLM  
Mark Freese, NDOW  
Jason Salisbury, NDOW  
Kris Urquhart, NDOW  
Carl Lunderstadt, USFWS Stillwater Refuge  
Zack Bowers, USDA/APHIS/Wildlife Services  
Ron Hoffman, NSAWC Range Office  
Chris Scott COMNAVFLT Range Coordinator

**ENCLOSURES:** (1)Power Point Presentation

**AGENDA:**

2006 INRMP Update Status

Resource Management Projects completed this year by Navy and Stakeholder Agencies; BLM, USFWS and NDOW.

FY13 Proposed Projects

Potential Future Projects

INRMP METRICS Data Call with input from NDOW and USFWS

**DISCUSSION AND ACTION ITEMS:**

**2006 INRMP Update:** A contractor, AMEC, was hired to update the INRMP in 2011. The 2012 Draft INRMP is currently being reviewed by Navy and Agencies USFWS, BLM, and NDOW. Agencies have 60 days

to review or until December 4<sup>th</sup>. A meeting will be scheduled in middle of November with agencies to discuss Draft INRMP review. See attached handout.

**RESOURCE MANAGEMENT PROJECTS:**

Off Highway Vehicle (OHV) GIS Mapping of Navy lands will be completed in spring, 2013.

Dixie Valley Weed Control: The Navy's weed control contractor worked on a project in Dixie Valley. They controlled tamarisks, thistles, knapweed and Russian olives on 100 acres.

Bat Species Habitat Protection: Metal gates to allow access for bats were installed on abandoned mines on B-17 and B-19. On B-17 there were 3 mines gated and 2 fenced. On B-19 there were 6 mines gated.

Dixie Valley Water Well Management: A water well at Ft. Apache Training Site, EW-70, was repaired and a fence installed around the cow pond to restrict cattle south of Navy lands on the BLM Grazing Allotment.

Dixie Valley Habitat Protection: Cattails were removed from 6 of the ponds in the Dixie Valley Settlement Area. The ponds are used by the public for fishing and hunting. Russian olives were also removed from around the ponds. Livestock exclusion fencing was repaired/replaced around the ponds and at Horse Creek. Bullfrog exclusion fencing was installed at two ponds. Sensitive habitat warning signs will be installed and 4 miles of old barbed wire fencing will be removed in November.

Dixie Valley Water Well Management: To comply with State water right regulations a contractor was hired to measure the monthly well flows from 14 artesian wells for a year. The water from the wells is used to sustain wildlife habitat in this area. The contractor will also submit a feasibility study of the water well use on an old agricultural lease area and alternative energy systems for the well pumps.

**In-House Projects:** Range Department personnel improved the entrance gate to the Navy's Horse Creek Parcel. NDOW used their excavator and cleaned out the mud and vegetation on three areas along the creek to improve the habitat.

Nature Trail: This area is open to the public for hiking wildlife viewing and educational tours. Area is maintained by NASF Environmental Staff. Last summer Boy Scouts repaired handrail, roof on gazebo and applied wood stain to tables and handrails.

Tree Planting: Pole planting was used to plant 50 cottonwoods and willows around wetland habitat.

**NDOW:** Kris Urquhart stated that the Tui Chubs are doing well. Non-native Bull frogs and mosquito fish need to be removed from the Tui Chub ponds. There are a lot of Tui Chubs in Casey and Dempsey Ponds to restock Turley pond when we dredge it out. There were good numbers of toads in the springtime, lots of reproduction. No updates regarding toad sub-species data from UNR.

Jason Salisbury informed the attendees that at an area East of Fairview and North of the Centroid, they are noticing more spent ammo/brass and new trails from military vehicles. Mark Freese provided information about wildlife crossings that are needed in the barbed wire fences in Dixie Valley and Horse Creek.

**BLM:** Colleen Sievers stated the Update of the BLM Resource Management Plan (RMP) is underway. They have had public scoping meetings and are planning meetings with cooperating agencies. They are also collecting information on roads and trails to help implement a comprehensive travel system for all modes of travel (motorized and non-motorized) as part of the (RMP) effort. The BLM held workshops to provide information on the travel management planning process and obtain input from the public and other stakeholders. The ORMAT Geothermal Exploration pending right-of-way is on hold. The Earthquake Road Fuels Project is done for this year. They are trying to remove the cheatgrass and planted a 10 mile long strip along Earthquake Faults Road east of Fairview Peak to create a vegetative firebreak. Theft and damage levels are down at the Range. Sheriff's Department is stopping all metals trucks. It was stated that there are fewer cattle in Dixie Valley due to the drought.

**USDA APHIS Wildlife Services** Biologist Zach Bowers was hired last year to control wildlife near the airfield. He is also working on a Wildlife Hazard Assessment for NAS Fallon.



**FY13 Proposed Projects :**

Dixie Valley Water Management: Close two wells and repair valves on 4 wells. State water right applications for 5 artesian wells need to be completed for wildlife habitat enhancements.

Tui Chub Pond Maintenance: Clean out cattails and deepen two Tui Chub ponds in Dixie Valley. Non-native bullfrog and mosquito fish control in the ponds.

Dixie Valley Weed Control: Control weeds such as tamarisk, Russian knapweed, and thistles. Remove non-native invasive Russian olives from along roads and wetland habitat.

Vegetation Mapping: The vegetation maps of the Navy lands need to be updated and data installed on a computer GIS.

Inhouse rangeland reseeding project with Legacy Program Funding this fall.

Construct Fairview Peak firebreak along east side of B-17.

Water development for pronghorns in southern Dixie Valley.  
Water guzzler construction for big game animals in Bell Canyon.  
Install wildlife crossings in the fencelines at Horse Creek and along Dixie Valley Road, BLM Allotment Fence.

Tree planting on areas with water rights in the Dixie Valley Training Area to improve training scenarios.

The meeting was adjourned at 1345. USFWS and NDOW went to the NASF Environmental Office to work on the 2012 Natural Resources Program Metrics data call for NAS Fallon.

# NR Metrics 2012 NAS Fallon - NAS FALLON NV (Main Site)

*Note: Click on the links to the right to jump to a focus area. Please click "Save" to add your draft answers to the database. If you leave and are logged out of the system, your answers will be retained the next time you log in.*

## Assignment Information

**Assigned To:** [Anna Keyzers](#), [Gary Cottle](#)

**Special Area(s):** DIXIE VALLEY, FAIRVIEW PEAK, NAS FALLON NV (Main Site), SHOAL SITE, TARGET B-16, TARGET B-17, TARGET B-19, TARGET B-20

**Due Date:** **Status:** Ready for Review

**Sent:** 9/24/2012 **Sent By:** [Matt Hawkins \(DoD\)](#)

**Modified:** 10/30/2012 **Modified By:** [Gary Cottle](#)

**Completed:** 10/30/2012 **Completed By:** [Gary Cottle](#)

**Reviewed:** **Reviewed By:**

*Select "New Item" to add an attendee*

## Attendees

Name	Organization	Phone	Email	Lead
Carl Lunderstadt	USFWS, Stillwater NWR	(775) 423-5128	<a href="mailto:Carl_Lunderstadt@fws.gov">Carl_Lunderstadt@fws.gov</a>	No
Kris Urquhart	NDOW	(775) 423-3171	<a href="mailto:kurquhart@ndow.org">kurquhart@ndow.org</a>	No
Mark Freese	NDOW	(775) 688-1145	<a href="mailto:markfreese@ndow.org">markfreese@ndow.org</a>	No
Shannon Shea	CNRSW	(619) 532-4265	<a href="mailto:shannon.shea1@navy.mil">shannon.shea1@navy.mil</a>	No
Carol Dahlstrom	NAVFACSW	(619) 532-2269	<a href="mailto:carol.dahlstrom@navy.mil">carol.dahlstrom@navy.mil</a>	No
Anna Keyzers	NASF	(775) 426-2922	<a href="mailto:anna.keyzers@navy.mil">anna.keyzers@navy.mil</a>	No
Gary Cottle	NASF	(775) 426-2956	<a href="mailto:gary.cottle@navy.mil">gary.cottle@navy.mil</a>	Yes

## Navy INRMP Status Check/Data Call

1. Has the site been surveyed to determine if significant natural resources exist?

**SIGNIFICANT** - sources identified as having special importance to an installation and/or its ecosystem. Natural resources may be significant on a local, regional, national, or international scale. All threatened, endangered and at-risk species are significant natural resources that normally will require an INRMP. Installations that actively manage or execute projects for fish and wildlife, forestry, vegetation and erosion control, agricultural outleasings or grazing, or wetlands protection should be evaluated for significance, but normally will require an INRMP. An evaluation for significance should also consider the degree of active management, special natural features, aesthetics, outdoor recreational opportunities, and the ecological context of the installation. (DoDI 4715.03)

*Options: Yes, No*

Yes

1a. If the site has been surveyed, were significant natural resources found?

*Options: Yes, No*

Yes

1b. If the site has not been surveyed, please explain why a survey has not been conducted.

2. If significant natural resources were found, is there a compliant INRMP that covers this site?

**COMPLIANT INRMP** - A complete plan that meets the purposes of the Sikes Act (§101(a)(3)(A-C)), contains the required plan elements (§101(b)(1)(A-J)), and has been reviewed for operation and effect within the past 5 years (§101(2)(b)(2)).

*Options: Yes, No*

Yes

**3. If there is a compliant INRMP for the site, then please enter the name and date of the INRMP that covers this site**

*Please upload the INRMP and Signature Page to the Conservation Website. Go to the Natural Resources Program Overview page and select the Documents tab.*

3a. Name of INRMP

NAS Fallon INRMP

3b. Date of INRMP

3/1/2006

4. If there is no INRMP for the site, has funding been requested to develop an INRMP?

*Options: Yes, No*

Comment:

N/A We have an INRMP.

4a. If funding has been requested, what is the expected date to receive funding?

11/29/2011

Comment:

Funding received last year to Update the 2006 NASF INRMP.

4b. If no funding has been requested, please explain.

5. Has a 5-year INRMP review for operation and effect been completed for this INRMP?

**REVIEW FOR OPERATION AND EFFECT** – A comprehensive review by the Parties, at least once every 5 years, to evaluate the extent to which the goals and objectives of the INRMP continue to meet the purpose of the Sikes Act, which is to carry out a program that provides for the conservation and rehabilitation of natural resources on military installations. The outcome of this review will assist in determining if the INRMP requires a revision (§101(f)(1)(A)). The annual review can qualify for the 5-year review for operation and effect, which is legally required by the Sikes Act, if mutually agreed upon by both partners (i.e. USFWS and State).

*Options: Yes, No*

Yes

5a. If a 5-year INRMP review for operation and effect been completed, did the review result in a revision of the INRMP?

**REVISION** – A substantive change to an INRMP that requires coordination and mutual agreement by the Parties. [List examples of things that would trigger a revision – Navy needs to review current list.] A revision is not minor changes to the INRMP text, work plans, or projects. Rather, these changes are updates that should be made as a result of annual reviews per DoD policy, to ensure the INRMP reflects the current condition of the natural resources and program goals and objectives. (CNO-N45)

*Options: Yes, No*

No

Comment:

Our INRMP revision was already underway.

5b. If yes, when was State concurrence received?

8/6/2012

5c. If yes, when was USFWS regional concurrence received?

8/8/2012

5d. If yes, when was Installation Commanding Officer approval received?

7/18/2012

5e. If no, please explain why a review for operation and effect has not been completed.

1. Ecosystem Integrity

**Focus Area Purpose:** Evaluate the current status, management effectiveness, and trends of the ecosystems at the installation to support and maintain a community of organisms that have a species composition, diversity, and functional organization comparable to those in the respective region.

**Instructions:** The list below contains the ecosystems occurring on the site(s) that were selected during the FY11 NR Metrics data call. Please review the list and update as necessary. Select the red 'X' to delete an ecosystem from the list. Select "New Item" to add an ecosystem and begin answering questions. Select the name of the preloaded ecosystem to answer the questions for the current reporting period. Note: The "Comment on my

response" option is available for each question and can be used to (1) provide supplemental information about how you answered a question for future reference or (2) provide feedback to HQ if you have any questions/concerns about a question.

#### Assessment of ecosystem integrity

Ecosystem	Fragmentation	Stressors	Species Populations	Condition
Inter-Mountain Basins Semi-Desert Grassland	No fragmentation	Highly Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...
Inter-Mountain Basins Alkaline Closed Depression	No fragmentation	Highly Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...
Inter-Mountain Basins Mat Saltbush Shrubland	No fragmentation	Highly Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...
Inter-Mountain Basins Montane Sagebrush Steppe	No fragmentation	Severely Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...
Inter-mountain Herbaceous Wetland	No fragmentation	Severely Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...
Inter-mountain basin greesewood flat	No fragmentation	Highly Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...
Inter-mountain Mixed Upland Wetland	No fragmentation	Severely Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...
Inter-mountain Riparian, Springs	No fragmentation	Severely Vulnerable to Stress	Moderately effective management	Condition is similar both on and off the installat...

Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.

If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

Are conservation easements, or buffers, in place to provide an ecosystem integrity benefit on the installation?

Options: Yes, No = opportunity exists, but easements/buffers have not been pursued, N/A = no opportunity, development is immediately adjacent to installation

Yes

#### Findings

There are about 3,000 acres of agricultural lease parcels on the airfield safety buffer zone that provides wildlife habitat. The Navy has conservation easements on private lands surrounding the airfield where the land is to remain in agriculture and no subdivisions may be built.

#### Recommendations

## Section Score: 0.76

### 2. Listed Species & Critical Habitat

**Focus Area Purpose:** Evaluate the extent to which federally listed species have been identified and the INRMP provides conservation benefits to these species and their habitats.

The list below contains the federally listed species occurring on the site(s) that were selected during the FY11 NR Metrics data call. Species that are not protected under the federal Endangered Species Act (e.g. marine mammals protected solely under MMPA, state listed species, Birds of Conservation Concern, etc.) have been removed from the list. INRMP coverage, status, management of non-federally listed species should be addressed or discussed in

the Ecosystem Integrity and/or INRMP Implementation Focus Areas.

**Instructions:** Please review the list and ensure that it is correct. To **ADD** a species select "New Item" and search for the species list. Select the name of the preloaded species to answer the questions for the current reporting period. To **ADD** species that are not on the pre-populated list or to **DELETE** species from the list please contact Mr. Matt Hawkins ([matt.hawkins@navy.mil](mailto:matt.hawkins@navy.mil)). Note: The "Comment on my response" option is available for each question and can be used to (1) provide supplemental information about how you answered a question for future reference or (2) provide feedback to HQ if you have any questions/concerns about a question.

**Status codes include:**

**E** = endangered. A species in danger of extinction throughout all or a significant portion of its range.

**T** = threatened. A species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

**Assessment of Federally Listed Species and Critical Habitat**

<b>Species</b>	<b>Beneficial Surveys (Habitat)</b>	<b>Beneficial Surveys (Population)</b>	<b>Goals</b>	<b>Critical Habitat</b>	<b>Exemption/Exclusion</b>
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*Unoccupied Critical Habitat Questions*

1. Has unoccupied critical habitat for any federally listed species been designated on the installation?

Options: Yes, No, N/A

No

1a. For which species?

**User selects from preloaded federal species list.**

2. Have management projects addressing unoccupied critical habitat been clearly identified in the INRMP?

Options: Yes, No, N/A

N/A

3. Have management projects addressing unoccupied critical habitat been clearly identified in the EPRWeb?

Options: Yes, No, N/A

N/A

**Candidate Species / Species of Special Concern**

**Sub-Focus Area Purpose:** Evaluates the extent to which USFWS candidate species and NMFS species of special concern species have been identified and the INRMP addresses these species and their habitats or the ecosystems in which they are found.

**Instructions:** The list below should include all USFWS candidate species and NMFS species of special concern species, including USFWS Candidate Notice of Review (CNOR) and Work Plan (WP) lists, which have been documented or are likely to occur on your installation. Please add all species that have been documented or are likely to occur on your installation. To **ADD** a species select "New Item" and search for the species list. Select the name of the preloaded species to answer the question regarding which management approach benefits the species. To **ADD** species that are not on the pre-populated list or to **DELETE** species from the list please contact Mr. Matt Hawkins ([matt.hawkins@navy.mil](mailto:matt.hawkins@navy.mil)). Note: The "Comment on my response" option is available for each question and can be used to (1) provide supplemental information about how you answered a question for future reference or (2) provide feedback to HQ if you have any questions/concerns about a question.

**Select "New Item" to add a candidate species and begin answering questions.**

Candidate Species / Species of Special Concern

**Candidate Species**

Greater sage-grouse (*Centrocercus urophasianus*)

**Conservation Benefit**

Yes

*Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.*

*If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.*

**Findings**

While suitable habitat is present at Horse Creek and Fairview Peak, the sage grouse has not been observed on the B-17 or Dixie Valley training ranges.

**Recommendations**

Continue ecosystem mgmt to benefit all species. Conduct sage grouse surveys in the sagebrush habitat surrounding Horse Creek and Fairview Peak.

**Section Score: 1.00**

**3. Recreational Use and Access**

**Focus Area Purpose:** *Evaluate the availability and adequacy of public recreational use opportunities, such as fishing and hunting, and access for handicapped and disabled persons, given security and safety requirements for the installation.*

**1. Are recreational opportunities available on the installation?**

*Options: Yes, No: landscape doesn't support recreational opportunities, N/A: security constraints limit/prohibit recreational opportunities*

Yes

Comment:

Recreational areas are available at many locations, but portions of B-16, B-17, B-19 are closed to public access because these are bombing ranges. B-20 is entirely closed to public access.

**2. If recreational opportunities are available, are they offered to the public?**

*Options: Yes, No, NA: Recreational opportunities are not available due to landscape or security constraints.*

Yes

**3. If recreational opportunities are available, are they offered to DoD civilian personnel?**

*Options: Yes, No, NA: Recreational opportunities are not available due to landscape or security constraints.*

Yes

**4. If recreational opportunities are available, are they accessible by disabled veterans/Americans?**

*Options: Yes, No, N/A: Recreational opportunities are not available due to landscape or security constraints.*

Yes

**5. Are Sikes Act fees collected for outdoor recreational opportunities?**

*Options: Yes, No, N/A: Recreational opportunities do not include hunting and fishing.*

No

**6. Are recreational areas and facilities in good condition?**

*Options: Yes, No, NA: Recreational opportunities are not available due to landscape or security constraints.*

Yes

**7. Is there an active natural resources law enforcement program on the installation?**

*Options: Yes, No, N/A: recreational opportunities do not include hunting and fishing*

No

Comment:

NDOW Game Wardens provide enforcement of bag limits in areas open to the public that are part of the installation.

8. Are sustainable harvest goals in the INRMP effective for the management of the species' population?

Options: *Not effective, Minimal effectiveness, Moderate effectiveness, Effective, Highly effective, N/A: Recreational opportunities do not include hunting and fishing*

N/A: Recreational opportunities do not include hunting and fishing

Comment:

NASF does not manage hunting or fishing on NASF lands. The Navy defers to NDOW

9. To what extent did the installation develop and provide public outreach/educational awareness, e.g. environmental educational opportunities, natural resource field trips/tours, pamphlets?

Options: *No public outreach provided, Low outreach, Moderate outreach, Good outreach, Excellent outreach, N/A*

Excellent outreach

Comment:

We provide tours at the Nature Trail to school children of all ages. We host an annual Earth Day Fair open to the civilians, military and their families, and the public. We also participate in the USFWS annual Spring Wings event by giving tours and hosting a booth. Other events we participate in to provide educational outreach are the National Recycling Day and Navy Day.

*Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.*

*If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.*

Findings

Recommendations

## Section Score: 0.75

### 4. Sikes Act Cooperation (Partnership Effectiveness)

**Focus Area Purpose:** *Determine to what degree USFWS, State Fish and Wildlife Agency, and when appropriate, NOAA Fisheries Service, partnerships are cooperative and result in effective INRMP development and review for operation and effect.*

1. Was the USFWS invited to participate in the annual INRMP/Natural Resources Program review?

Options: *Yes, No*

Yes

1a. By what method was the USFWS invited to participate in the annual INRMP/Natural Resources Program review?

Options: *Telephone call, Electronic mail, Official letter, Multiple methods, Other, NA (USFWS was not invited)*

Multiple methods

1b. Did the USFWS respond to the invitation to participate in the annual INRMP/Natural Resources Program review?

Options: *Yes, No, N/A*

Yes

1c. How many attempts were made to invite the USFWS to participate in the annual INRMP/Natural Resources Program review?

Options: *0-3, 4-6, 7-10, >10, NA (USFWS was not invited)*

0-3

1d. Did the USFWS participate in the annual INRMP/Natural Resources Program review?

Options: *Yes, No*

Yes

1e. If the USFWS participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect?

Options: Yes, No

Yes

1f. If the USFWS did not participate in the annual review, what type of correspondence was received from the USFWS to inform the installation that they were not able to participate?

Options: Telephone call, Electronic mail, Official letter, Multiple methods, Other, NA (USFWS did participate)

NA (USFWS did participate)

1g. If the USFWS did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect? When?

**When?** User enters date in comment text box below question.

Options: Yes, No

1h. Was a report of the previous year's annual review submitted to the USFWS during this reporting period?

Options: Yes, No

No

2. Was the State Fish and Wildlife Agency invited to participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No

Yes

2a. By what method was the State Fish and Wildlife Agency invited to participate in the annual INRMP/Natural Resources Program review?

Options: Telephone call, Electronic mail, Official Letter, Multiple methods, Other, NA (the State Fish and Wildlife Agency was not invited)

Multiple methods

2b. Did the State Fish and Wildlife Agency respond to the invitation to participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No, N/A

Yes

2c. How many attempts were made to invite the State Fish and Wildlife Agency to participate in the annual INRMP/Natural Resources Program review?

Options: 0-3, 4-6, 7-10, >10, NA (the State Fish and Wildlife Agency was not invited)

0-3

2d. Did the State Fish and Wildlife Agency participate in the annual INRMP/Natural Resources Program review?

Options: Yes, No, N/A

Yes

2e. If the State Fish and Wildlife Agency participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect?

Options: Yes, No, N/A

Yes

2f. If the State Fish and Wildlife Agency did not participate in the annual review, what type of correspondence was received from the State Fish and Wildlife Agency to inform the installation that they were not able to participate?

Options: Telephone call, Electronic mail, Official letter, Multiple methods, Other, NA (State did participate)

NA (State did participate)

2g. If the State Fish and Wildlife Agency did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect? When?

**When?** User enters date in comment text box below question.

Options: Yes, No, N/A

N/A

2h. Was a report of the previous year's annual review submitted to the State Fish and Wildlife Agency during this reporting period?

Options: Yes, No, N/A

No

3. Was NOAA Fisheries Service invited to participate in the annual INRMP/Natural Resources Program review, if applicable?

Options: Yes, No, N/A

N/A



3a. By what method was NOAA Fisheries Service invited to participate in the annual INRMP/Natural Resources Program review, if applicable?

*Options: Telephone call, Electronic mail, Official letter, Multiple, Other, N/A*

N/A

3b. Did NOAA Fisheries Service respond to the invitation to participate in the annual INRMP/Natural Resources Program review, if applicable?

*Options: Yes, No, N/A*

N/A

3c. How many attempts were made to invite the NOAA Fisheries Service to participate in the annual INRMP/Natural Resources Program review, if applicable?

*Options: 0-3, 4-6, 7-10, >10, N/A*

N/A

3d. Did NOAA Fisheries Service participate in the annual INRMP/Natural Resources Program review, if applicable?

*Options: Yes, No, N/A*

N/A

3e. If NOAA Fisheries Service participated in the annual INRMP/Natural Resources Program review, was it recognized as a review for operation and effect, if applicable?

*Options: Yes, No, N/A*

N/A

3f. If the NOAA Fisheries Service did not participate in the annual review, what type of correspondence was received from the State Fish and Wildlife Agency to inform the installation that they were not able to participate? When?

**When?** User enters date in comment text box below question.

*Options: Telephone call, Electronic mail, Official letter, Multiple methods, Other, NA (was not invited)*

NA (was not invited)

3g. If NOAA Fisheries Service did not participate in the annual INRMP/Natural Resources Program review, was a separate meeting held/correspondence sent as a review for operation and effect? When?

**When?** User enters date in comment text box below question.

*Options: Yes, No, N/A*

N/A

3h. Was a report of the previous year's annual review submitted to NOAA Fisheries Service during this reporting period, if applicable?

*Options: Yes, No, N/A*

N/A

4. What is the level of collaboration/cooperation between Sikes Act partners ?

**Sikes Act partners:** USFWS, State Fish and Wildlife Agency, and NOAA Fisheries Service, if applicable.

*Options: None, Minimal collaboration/cooperation, Satisfactory collaboration/cooperation, Effective collaboration/cooperation, Highly effective collaboration/cooperation*

Highly effective collaboration/cooperation

5. How well are installation natural resource management goals and objectives aligned with conservation goals of Sikes Act partners, e.g. USFWS/NOAA Fisheries Service regional goals and State Wildlife Action Plans (SWAPs)?

*Options: Not aligned, Somewhat aligned, Completely aligned, N/A: Option for NOAA only*

Somewhat aligned

*Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.*

*If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.*

Findings

Recommendations

**Section Score: 0.80**

□

5. Team Adequacy

**Focus Area Purpose:** Asses the adequacy of the natural resources team (the natural resource management professional and installation support staff) in accomplishing INRMP goals and objectives at each installation.

1. Is there a Navy professional Natural Resources Manager designated by the Installation Commanding Officer?

COs of shore activities holding Class 1 plant accounts shall appoint, by letter, an installation Natural Resources Manager/Coordinator whose duties include ensuring that the CO is informed regarding: natural resources issues, conditions of natural resources, objectives of the INRMP, and potential or actual conflicts between mission requirements and natural resources mandates. Designated installation POC's are responsible for the inherently governmental decisions made on behalf of the installation and CO with regard to Sikes Act compliance. [OPNAVINST 5090.1C]

Options: Yes, No

Yes

2. Is there an on-site Navy professional Natural Resources Manager?

Options: Yes, No

Yes

2a. Please enter the GS grade level and job series code

Enter the GS grade level and job series code (i.e. GS-0401-12) of each on-site Natural Resources Manager

GS-12 0401

3. Is there adequate installation staff assigned or available to properly implement the INRMP goals and objectives?

**staff assigned or available:** Defined as NR staff or other reach back EV staff.

Options: Yes, No

Yes

3a. Please enter the GS grade level and job series code

Enter the GS grade level and job series code (i.e. GS-0401-12) of each installation staff member assigned or available to assist the Natural Resources Manager in implementing the INRMP goals and objectives.

GS-12 0401

4. How well do higher echelon offices support the installation natural resources program, e.g. reach back support for execution, policy support, etc.?)

Options: No support, Minimal support, Satisfactory support, Well supported, Very well supported

Satisfactory support

5. The team is enhanced by the use of contractors.

**Contractors:** Defined as supplemental staff to the onsite NR staff, not contractors working in support of contracted projects.

Options: Disagree, Somewhat agree, Neutral, Agree, Strongly agree, N/A

Agree

6. The team is enhanced by the use of volunteers.

Options: Disagree, Somewhat agree, Neutral, Agree, Strongly agree, N/A

Agree

7. The Natural Resources team is adequately trained to implement the goals and objectives of the INRMP.

Options: Disagree, Somewhat agree, Neutral, Agree, Strongly agree

Somewhat agree

Comment:

Because of our 'over the horizon' status, training and professional conference opportunities are extremely limited.

Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.

If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

Findings

Recommendations

**Section Score: 0.76**

■

6. INRMP Implementation

**Focus Area Purpose:** Evaluate the execution of actions taken to meet goals and objectives outlined in the

INRMP.

**Supplemental Information:** The intent of this Focus Area is to assess how well actions are being implemented to execute the goals and objectives of the INRMP. Actions can include projects submitted via EPRWeb, as well as activities executed with alternative funds, not programmed through EPRWeb, or carried out by the use of volunteers or cooperative partnerships with other entities. Only include actions that occurred fully or partially during the CURRENT REPORTING PERIOD, e.g. the PREVIOUS FISCAL YEAR.

**Instructions:** Select a project from the list below (imported from EPRWeb) to begin answering questions. Select the red 'X' to delete a project, if a preloaded project doesn't apply to the site (s) or is not a project that occurred during the current reporting period. In addition, any INRMP actions, e.g. emergent projects, non-funded actions, projects involving volunteers, etc., not preloaded in the table should be entered manually in order to be assessed. Select "New Item" to add additional INRMP actions or missing EPRWeb projects, and begin answering questions. Note: Conservation recommendations identified during regulatory consultations (e.g. ESA Section 7, EFH, etc.), over the past year, may have resulted in the development of emergent requirements. These projects should also be evaluated during this annual review.

#### Assessment of INRMP Implementation

FY	Project #	Title	Spent (\$)	Met INRMP Goals	On Schedule	Status	Ecosystem Benefited
<b>(#12101) Flora, Fauna and Habitat</b>							
<input type="checkbox"/>	2012 60495NR141	Sensitive Bat Species Protection	\$156,533.00	Fully Agree	Yes	Completed	Inter-Mountain Basins Mat Saltbush Shrubland
<input type="checkbox"/>	2012 6049501052	Weed Control Program	\$50,871.00	Fully Agree	Yes	Completed	Inter-Mountain Basins Mat Saltbush Shrubland
<b>(#12105) Wetlands</b>							
<input type="checkbox"/>	2012 60495NR304	Dixie Valley Well Mgmt	\$83,839.00	Fully Agree	Yes	Now In-Progress	Inter-mountain Herbaceous Wetland
<input type="checkbox"/>	2012 60495NR403	Dixie Valley Wetlands Protection	\$134,296.00	Fully Agree	Yes	Now In-Progress	Inter-mountain Riparian, Springs

For each INRMP action executed during the reporting period for the installation, provide the amount of funding spent on listed species related-actions. Note: If a single project benefitted multiple listed species, please break out the funding amount spent per species, e.g. add the same INRMP action for each listed species benefitted. Select "New Item" to add federally listed species that benefitted from various INRMP projects/actions.

#### Assessment of Listed Species Benefitted by INRMP Implementation

Action	Species	Spent
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#### General INRMP Implementation Questions

1. Do the goals and objectives of the INRMP/Natural Resources Program support other conservation partnerships/initiatives?

Options: Yes, No

Yes

2. Which conservation partnerships/initiatives are supported?

Select all that apply

National Military Fish and Wildlife Association (N...

Comment:

Other partnerships include USFWS Spring Wings, UC Davis, USFWS/NDOW partnership to protect the DixieValley tui chub and toad.

3. To what level are Natural Resource program executions meeting USFWS conservation management expectations?

Options: Dissatisfied, Minimally satisfied, Somewhat satisfied, Completely satisfied, More than satisfied

Completely satisfied

4. To what level are Natural Resource program executions meeting State Fish and Wildlife Agency conservation management expectations?

Options: *Dissatisfied, Minimally satisfied, Somewhat satisfied, Completely satisfied, More than satisfied*  
More than satisfied

5. To what level are Natural Resource program executions meeting NOAA Fisheries Service conservation management expectations, if applicable?

Options: *N/A: Not supported, Minimally supported, Satisfactorily supported, Well supported, Very well supported*

N/A: Not supported

6. To what extent has the INRMP/Natural Resources program successfully supported other mission areas? (e.g. encroachment, BASH, range support, port operations, air operations, facilities management, etc.)

Options: *Not supported, Minimally supported, Satisfactorily supported, Well supported, Very well supported*  
Well supported

7. Are Cooperative Agreements used to execute natural resources program requirements?

Options: *Yes, No*

No

8. Describe any obstacles to INRMP implementation

Lack of security on Navy lands outside the fenceline, weak BLM grazing mgmt, and natural resource management project funding.

*Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.*

*If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.*

Findings

Recommendations

## Section Score: 0.81

### 7. INRMP (Natural Resource Program) Support of the Installation Mission

**Focus Area Purpose:** *Evaluate the level to which existing natural resources requirements support the installation's ability to sustain the current operational mission, ensuring no net loss of mission capability.*

Mission statement

NAS Fallon is the Navy's premier graduate level tactical air warfare training facility. It's mission is to provide the most realistic integrated air warfare training support available to carrier air wings, tenant commands and individual units participating in training events including joint and multinational exercises.

1. The Natural Resources program effectively considers current mission requirements.

Options: *Strongly disagree, Disagree, Neutral, Agree, Strongly agree*

Strongly agree

2. What is the level of coordination between natural resources personnel and other installation departments and military staff?

Options: *No coordination, Minimal coordination, Satisfactory coordination, Effective coordination, Highly effective coordination*

Effective coordination

Comment:

We regularly meet and work with Range Office, SEALs, and other departments at installation.

3. To what extent has the INRMP successfully supported other mission areas? (e.g. encroachment, BASH, range support, port operations, air operations, facilities management, etc.)

Options: *Not supported, Minimally supported, Satisfactorily supported, Well supported, Very well supported*  
Satisfactorily supported

4. To what extent has there been a net loss of training lands or mission-related operational/training activities?

Options: Mission is fully impeded; training activities cannot be conducted due to regulatory requirements,  
Mission/Training activities are somewhat impeded with workarounds due to regulatory requirements, Neutral,  
No loss occurred, Mission has seen benefits

No loss occurred

Please enter Findings and Recommendations in the space provided below. Findings and Recommendations are required if the score for this focus area results in a Yellow or Red score. You will be unable to proceed to the next focus area until Findings and Recommendations have been entered.

If your score is Green, Findings and Recommendations serve as additional clarification to the answers provided for this Focus Area, and they are encouraged in order to provide a better understanding of existing activities, issues to be addressed, and unique circumstances.

Findings

Recommendations

## Commanding Officer Signature

Name

R.M. Wilke IV

Rank

Captain, Commanding Officer NAS Fallon

## Section Score: 0.76

□

### Summary

1. As a result of this year's annual review, have any additional actions, such as management recommendations related to regulatory drivers (ACOE permits, EFH Issues, etc.), been identified that should be considered for incorporation into the INRMP?

The purpose of this question is to assess whether the INRMP needs to be updated, either in content or projects to be implemented, as a result of the outcome of the annual review for operation and effect that was conducted.

Options: Yes, No

No

Comment:

Projects suggested as partnership actions with NDOW and USFWS, but not based on regulatory drivers.

2. In addition to any findings submitted in the 7 Focus Areas please provide any additional or general findings?

3. In addition to any recommendations submitted in the 7 Focus Areas please provide any additional or general recommendations?

**4. List the top three accomplishments for the Natural Resources Program during this reporting period.**

4a. [1st accomplishment]\*

Sensitive Bat Species protection: This project was conducted as a preventative measure to protect bat species from the spreading white-nosed syndrome, a fungus specifically affecting bats. Bats use abandoned mines situated at B-17 and B-19. These abandoned mines attract cavers, explorers, and gold miners. The gates prevent entry of people that may carry the fungus on their gear. Secondly, the gates eliminate the extreme hazard these mine shafts pose to ground training troops, and any other person that may be interested to attempt entry.

4b. [2nd accomplishment]\*

Dixie Valley Wetlands Protection: This project accomplished multiple goals; 1) Removal of cattail overgrowth and pond cleanout. This improves habitat for waterfowl and Dixie Valley tui chub while maintaining breeding and cover habitat; 2) Install bullfrog exclusion fences. This keeps the invasive bullfrog from entering ponds containing the Dixie Valley tui chub preventing their predation by the bullfrogs; 3) Fence and gate repair. This excludes cattle from entering sensitive riparian areas; 4) Signage to warn people of sensitive habitat.

4c. [3rd accomplishment]\*

Public outreach: Partners agencies (NDOW, USFWS) indicated that our cooperative efforts and public outreach surpasses all other entities they work with. The Environmental Office works well with the many tenant commands at NASF and reaches out to the community throughout the year.

## Scorecard

Focus Area

Final

	Focus Area	Final
▢	1. Ecosystem Integrity	0.76
▢	2. Listed Species & Critical Habitat	1.00
▢	3. Recreational Use and Access	0.75
▢	4. Sikes Act Cooperation (Partnership Effectiveness)	0.80
▢	5. Team Adequacy	0.76
▢	6. INRMP Implementation	0.81
▢	7. INRMP (Natural Resource Program) Support of the Installation Mission	0.76
		<b>0.81</b>

**Legend:** Green (1.00-0.67), Yellow (0.66-0.34), Red (0.33-0.0)

To finalize your scorecard, please save this form, and then select the Submit button above.



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## **APPENDIX E**

### **TRAINING AREA ACREAGES**



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Acreage of Lands Administered by NAS Fallon							
				Withdrawn Lands		Public Access	
Location	Total Acreage	Lands own in fee (acres)	Total Withdrawn (acres)	Withdrawn prior to 1999 (acres)	Add'l lands withdrawn by the Military Lands Withdrawn Act of 1999 (acres)	Lands owned in fee or Withdrawn - <u>Closed</u> to the Public (acres)	Lands owned in fee or Withdrawn - <u>Open</u> to the Public (acres)
Mainstation	86,70.54	4743.97	3,926.57	3,926.57		8,670.54	
B-16	27,252.76		27,252.76	17,280	9,972.76	18,132.76	9,120
B-17	52,830.35		52,830.35	21,400	31,430.35	52,830.35	
B-19	29,276.4		29,276.4	17,332	11,944.4	23,496.4	5,780
B-20	41,007	19430	21,577	2,1577		41,007	
Shoal Site	2,560		2,560		2,560		2,560
Dixie Valley Training Area	68,437		68,437		6,8437		68,437
Dixie Valley Settlement	8,480.67	8480.67					8,480.67
Dixie Valley North <i>(Bonek, Lamb, Goeinger, Brinkerhoff)</i>	1,440	1440					1,440
Dixie Valley Hot Springs	760	760					760
Horse Creek	272	272					272
Frenchman Station	54	54				54	
Sand Springs	86	86					86
Total by category		35,266.64	205,860.08	81,515.57	124,344.51	144,191.05	96,935.67
				Total W/drawn	205,860.08	Total lands	241,126.72
Total all lands	241,126.72						

As of 20 Aug 08



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## **APPENDIX F**

### **CONSTRAINTS MAP**

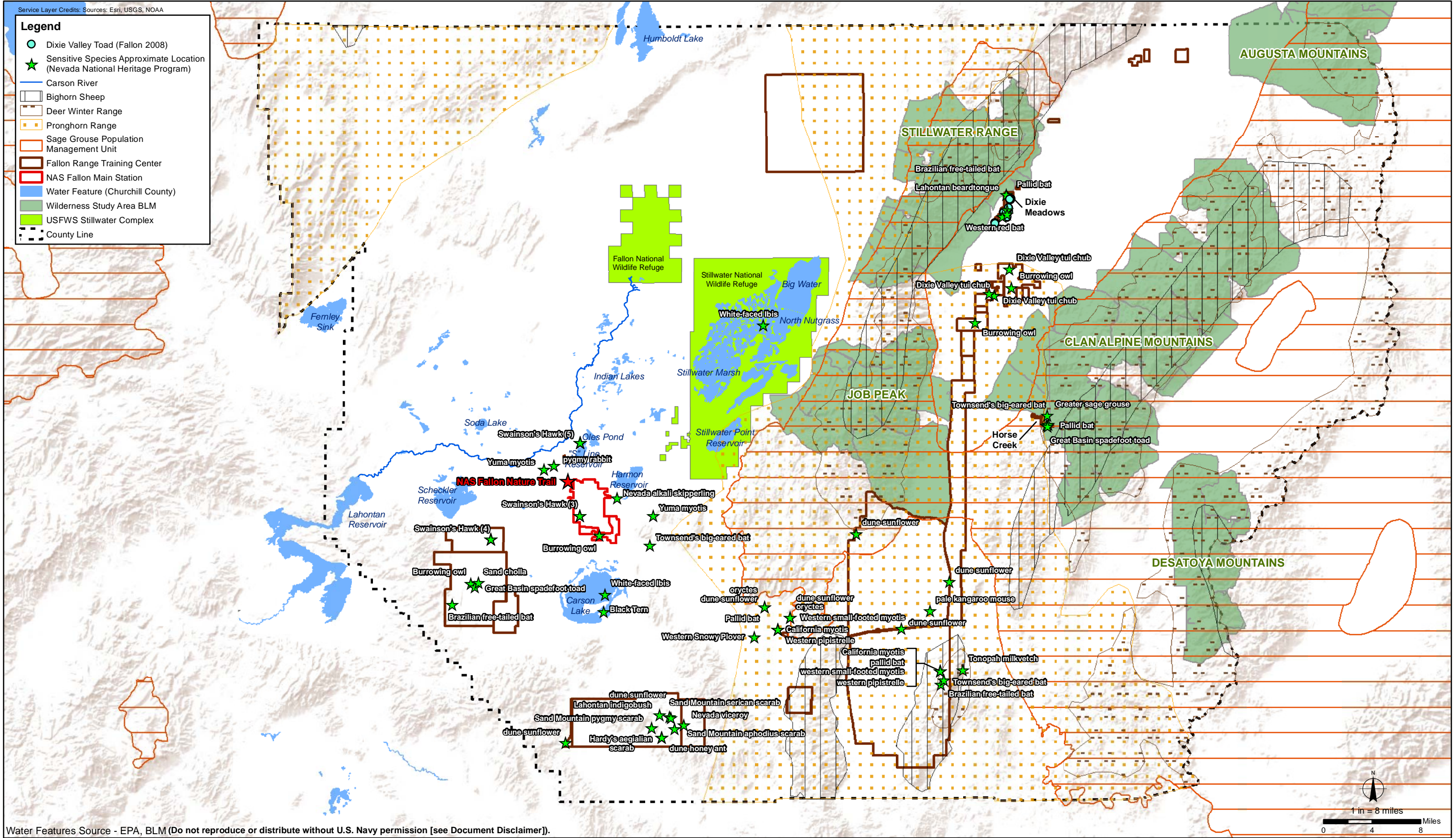
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## **APPENDIX G**

### **SOIL TYPES**

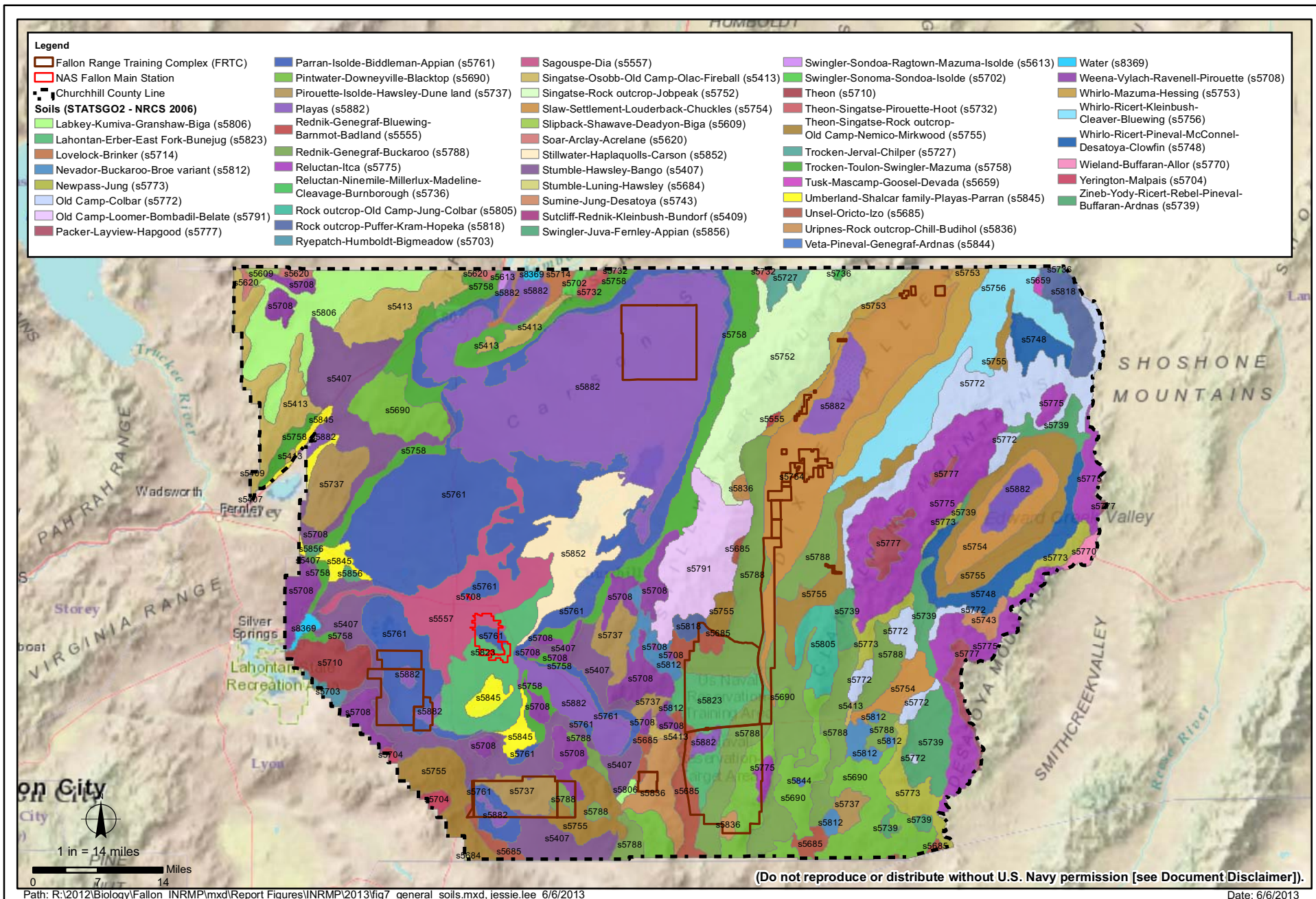


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**Soil Types**  
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**Appendix G**



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### General NAS Fallon Soil Descriptions

#### *Main Station*

Main Station is underlain primarily by lacustrine deposits (deposits that formed when the area was covered by regional lakes that expanded and contracted during the geologic past), interlayered with recent basalt flow deposits. Chemical reactions and weathering have created a complex assemblage of soil types and interbedded layers (US Navy 1994a; SAIC 1991). Main Station soils consist primarily of sandy loam, clay loam, and clay substratum. These soils correspond to the basin floor and sandy generalized vegetative habitats, although most of the area is classified as agricultural, disturbed, or residential/industrial. Soils underlying most of the main runways and buildings consist primarily of sodic sandy loam and fine sand (Appian Association [As, Ap]), which are located on smooth, low lake terraces of Pleistocene Lake Lahontan. These soils generally are moderately to very strongly alkaline; have rapid permeability to a depth of one to four feet and slow permeability below these depths; consist of stratified sand at a depth of one to four feet; have moderate shrink-swell potential; are somewhat poorly-drained; are slightly saline; and have low available water capacity. Portions of the auxiliary runways in the southwest portions of NAS Fallon are underlain by clay loam (Bunjug Association [Bt], Stillwater Association [Sn]), which is strongly saline-alkali affected, somewhat poorly drained, and has moderately slow to slow permeability available (USDA 1975; US Navy 1997).

The perimeter of the airfield is comprised of a greenbelt, which includes areas of irrigated agricultural production, native range lands, and wildlife habitats. The northwest portion of the greenbelt consists primarily of sandy alluvium (Fernley [Fn], Fallon [Fa, Fc, Fd], and Dia [Da, Dc] Association). These soils, which are found on smooth low stream terraces and flood plains, are generally slightly to moderately saline-alkali affected, deep, stratified, moderately coarse textured, and typically somewhat poorly-drained.

With the exception of steep slopes of irrigation ditches and drains, erosion hazards range from none to slight. Other soils in this area formed on low lake terraces (Appian-Tipperary Complex) are moderately fine- to fine-textured and moderately well- to well-drained. Local areas of excessively well-drained soil create conditions suitable for crops only if the soil is reclaimed and water is available (US Navy 1994a, USDA 1975).

The northeast section of the greenbelt consists of alluvial deposits derived from flooding and low lake terraces (Dia [Dc], East Fork [Ec], Fallon [Fe, Fc], and Sagouspe [Sb] Association) (Figure G-1). These soils range from moderately coarse- to fine-textured, are slightly to moderately saline-alkali affected, are highly stratified, and are poorly-drained. Runoff is slow, and the hazard of erosion is none to slight. These soils are suitable for irrigated crops (US Navy 1994a, USDA 1975).

The west side of the greenbelt consists of sandy alluvium formed on low terraces (Dia [Da], Fernley [Fn], Sagouspe [Sb], Ragtown [Rc], and Stillwater [Sm, Sn] Associations) (Figure G-1). These soils are slightly (but locally strongly) saline-alkali affected, deep, have moderately-fine to

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fine texture, and are poorly to moderately well-drained. Runoff is slow; permeability is generally slow (locally rapid in the upper portions due to stratification); and the hazard of erosion is slight. These soils are generally suitable for irrigation (US Navy 1994a; USDA 1975).

Soils in the southeast section of the greenbelt developed in floodplain and deltaic deposits derived from mixed sources (Fallon [Fc], Fernley [Fn], Stillwater [Sm, Sn], Bunejug [Bt], Carson [Ch, CM], Erber [Ee, Eg, En], and Swope [Sw] Association) (Figure G-1). These soils generally consist of very deep, locally clay-rich, moderately fine- to medium-textured, poorly drained soils.

Permeability varies from very slow to rapid (generally rapid in lower portions), runoff is very slow, and the hazard of erosion is none to slight. The soils are generally slightly to moderately saline-alkali affected and are therefore suitable for agriculture; however, the Carson-Stillwater Complex (CM), Sn, and BT soils in this portion of the greenbelt are strongly affected by saline-alkali, which makes the soil difficult to reclaim (US Navy 1994a; USDA 1975).

### ***FRTC***

#### **B-16**

Soils at B-16 follow a characteristic progression from the steep slopes on the west to the playa deposits at the center of the basin, located in the eastern portion of the range (Figure G-1). The soils on the summits of hills and plateaus, and the adjoining slopes, are typically thin rocky soils derived from volcanic rocks. These soils consist primarily of extremely stony to very cobbly, very fine to fine sandy loams (Pirouette-Osobb-Celeton-Rock Outcrop Association), which have a silica-cemented hardpan overlying basalt, at a depth of 1.0 to 1.5 feet. The permeability of these soils is very low, the shrink-swell potential is low, and the alkalinity is moderate. Local areas are devoid of soil accumulations due to areas of badland topography and exposures of hard basalt bedrock.

Farther downslope, the soils near the base of the slopes consist of reworked alluvium, lakebed, and dune sand deposits (Figure G-1). Soils in this area consist primarily of gravelly loam, loamy sand, fine sand, and silty clay (Biddleman Association, Isolde-Parran-Appian Association, Bango-Stumble Association). The sandy soils are generally characterized by rapid permeability, moderately low available water capacity, strong alkalinity, low to high sodicity, and low to high salinity. The clay deposits of the sodic flat areas typically are strongly alkaline; have low to high sodicity and salinity; have a high shrink-swell potential, and the hazard of erosion (water) is none to slight. Fine-grained materials within these deposits results in impermeable soil conditions; however, these soils tend to be friable and subject to wind erosion.

Soils in the northeast and south portions of the range contain a higher proportion of dune sand (Figure G-1). The permeability of these soils is very high. Toward the center of the basin, the soils have formed on low lake terraces and are characterized by a thin, impermeable subsurface layer that occurs at a depth of approximately 6 inches (Appian-Playas Association). Lacustrine clays and precipitated salts in this layer cement the sand grains together when dry. These

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deposits are moderate to very strongly alkaline but are low in sodicity. Below this layer, the soil consists of loose, highly permeable coarse sand. Playa deposits underlie the deepest portions of the basin. These soils are fine-grained, poorly drained, saline deposits that do not support vegetation (USDA 1991, 1984, 1975; US Navy 1997, 1998a).

Soils in this area support primarily sandy and piedmont slope habitats. In addition, badland areas are present on B-16.

### **B-17**

Soils in the vicinity of B-17 are similar to those in the vicinity of B-16, including local variations that are dependent upon whether the areas are located on steeply sloping upland, alluvial fans and fan piedmonts, or valley floors (US Navy 1997) (Figure G-1). The southeastern and northwestern sloping portions of the range consist primarily of gravelly to very gravelly, sandy loam derived from volcanic rocks (Steval-Old Camp-Singatse Association [map unit 731], Downeyville-Gabbvally Association [map unit 1013], Trocken Series). These soils are mildly to moderately alkaline; have low sodicity and salinity; have moderately slow permeability; and have a slight to moderate erosion potential.

These soils grade downhill into very gravelly sandy loam and loamy sand derived from alluvial fan deposits (Genegraf-Rednik-Trocken Associations). These soils have low salinity; low to moderate sodicity; are moderately to strongly alkaline; have a low to moderate shrink-swell potential; and have a slight erosion hazard.

The soils on the hillsides grade downhill into soils consisting of sand, fine sand, stony loamy sand, and gravelly sandy loam, typically present on gentle slopes (Hawsley-Juva, Bluewing-Inmo Associations) (Figure G-1). These soils are generally low in salinity and sodicity, moderately to strongly alkaline, very deep, and well-drained deposits that formed in sandy alluvium derived from mixed rock. Permeability is moderately rapid to very rapid; runoff is slow; and the hazard of erosion is slight to moderate. These soils are locally used for irrigated crops where water is available.

These alluvial soils grade into basin floor, lake plain terrace soils derived from alluvial, stratified lacustrine, and Lake Terrace deposits (Appian and Appian-Juva-Bango Association). These soils consist of loamy fine sand, sandy loam (clay substratum), loamy sand, and silt loam, which are slightly saline and sodic, moderately to very strongly alkaline, very deep, and well-drained. Permeability is moderately slow in the surface layer and in the subsoil and very rapid in the substratum. Runoff is slow, and the hazard of erosion is slight to moderate. These soils are suitable for crops if water is available and they are reclaimed. In the center of the basin lie the playa deposits, which are fine-grained, poorly drained, saline deposits that do not support vegetation (USDA 1975, 1985; US Navy 1997, 1998a).

Soils in this area support basin floor (including playa), sandy, piedmont slope, and sagebrush-dominated habitats.

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### B-19

Soils in the vicinity of B-19 are similar to those in the vicinity of B-16 and B-17, including local variations that are dependent upon whether the areas are on steeply sloping upland, alluvial fans and fan piedmonts, or valley floors (US Navy 1997) (Figure G-1). The soils on the southeast and southwest portion of B-19 consist primarily of sand, fine sand, stony loamy sand, and gravelly sandy loam typically present on gentle slopes, and locally in badland areas (Hawsley-Isolde Association, Theon Association, Pirouette- Osobb-Isolde Association, and Bango-Appian Association). These soils generally have low to moderate salinity and sodicity; are moderately to strongly alkaline; and are very deep, well-drained deposits that formed in sandy alluvium derived from mixed rock. Permeability is moderately rapid to very rapid; runoff is slow; and the hazard of erosion is slight to moderate. These soils are locally used for irrigated crops where water is available.

The hillside soils grade northward (and downhill) into loamy fine sand, sandy loam, stony fine sandy loam, very gravelly sandy loam, very gravelly loamy sand, and clay substratum, typically found on low lake terraces (Isolde-Parran-Appian Association, and stabilized dunes [Dune land-Isolde-Pirouette Association) (Figure G-1). Soils in these areas consist of very deep, mildly to moderately alkaline, well-drained soils that formed in loamy alluvium. Salinity and sodicity of these soils varies from low to high. Permeability is moderately slow in the clay-rich soils and is very rapid in the sandy materials. Runoff varies from slow to rapid, and the hazard of erosion is moderate. These sediments grade into the playa deposits, which have not developed characteristics of soil. These sediments consist primarily of fine-textured, clay-rich materials that are strongly to very strongly alkaline and do not support vegetation (USDA 1975, 1985; US Navy 1997, 1998a).

Soils in this area support basin floor (including playa), sandy, and piedmont slope habitats. In addition, dune and badland areas are present on B-19.

### B-20

With the exception of a small area in the vicinity of Lone Rock in the central portion of B-20, playa deposits underlie the entire training range (Figure G-1). The playa deposits consist of fine-textured sediments, which have not developed characteristics of soil. Soils in the vicinity of Lone Rock consist primarily of soils derived from alluvial and dune deposits. Alluvial-derived soils consist primarily of fine sand and silty clay [Isolde, Parran, Appian, and Typic Torriorthents Association [map unit 171)]. These soils are deep and well-drained.

Available water capacity is moderate. These soils have low to high salinity and sodicity; are strongly to very strongly alkaline; permeability is moderately slow to moderately rapid; surface runoff is very slow; and ponding occurs in the winter and early spring. Potential for sheet and rill erosion is slight. Soils occurring on partially stabilized sand dunes are deep to very deep and are excessively drained. Available water capacity is low. A seasonal water table occurs at a depth of greater than 60 inches. Permeability is very rapid; surface runoff is very slow; potential for sheet and rill erosion is slight; and wind erosion is high in disturbed areas (USDA 1987; USDA 1986).

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### *Dixie Valley*

**North Dixie Valley.** Soils within North Dixie Valley exhibit the typical characteristics found in the internally drained valleys of the Basin and Range Province (Figure G-1). Similar to NAS Fallon, these soils have a high pH and are high in soluble salts, because runoff is slow on the broad, nearly level valley floor. The soils in the upper piedmont slope (slope at the base of a mountain) are also alluvial in origin. These soils, which are generally gravelly, occupy the fan remnant and inset fan landforms. Although the piedmont slope soils are generally less salty than those on the valley floor, these soils may accumulate considerable salts from pedo-chemical weathering. Similar to the soils of the valley floor, these soils lack sufficient water and drainage to leach salts from the soil profile (USDA 1991).

**Dixie Meadows.** Soils in these areas are similar to those on the South Dixie Valley, Settlement Area, generally consisting of gravelly loam, sodic flat soils, and deep sodic flat soils (Figure G-1). Soil units in these areas not included in Settlement Area the Bluewing-Pineval Association, which is a coarse-grained, gravelly soil; the Kolda-Umberland Association, which consists of silty clay loam and silt loam; and the Slaw-Mazuma-Hessing Association, which consists of silt loam and gravelly sandy loam.

Soils in this area support basin floor, piedmont slope, and sandy habitats. In addition, inactive agricultural, disturbed, and wetlands areas are present in the Dixie Valley Meadows and North Dixie Valley areas.

**Settlement Area.** Soils in the Settlement Area consist primarily of sodic dunes, sodic flats, deep sodic fans, and playa deposits (Figure G-1). These soils are composed primarily of silty clay, silt loam, sand, and sandy loam (primarily Settlement-Louderback-Rustigate Association, Settlement-Chuckles-Rustigate Association, Slaw-Chuckles Association, and Louderback-Rustigate-Isolde Association, with lesser amounts of Isolde-Parran-Appian Association). The northwestern most soils in the area consist of silt loam, gravelly loam, gravelly loamy sand, stony loamy sand, and silt loam (Slaw-Trocken-Chuckles Association). Playa deposits are locally present in the northern portion of the valley, in addition to silty clay loam, silt loam, and sand (Chuckles-Playas-Slaw Association).

These soils principally support basin floor habitats. In addition, inactive agricultural areas, wetlands, and sandy habitat areas are present in the Settlement Area.

**South Dixie Valley.** Soils in the South Dixie Valley consist primarily of sodic sands, deep sodic fans, and playa deposits. Soils on the Kyle Lane (Dearing property) of the Dixie Valley are composed of sandy loams and fine sands (Bango-Playas-Chuckle Association) and silty loam, loamy sand, sandy loam, and silty clay loam (Slaw-Juva-Wholan Association) (Figure G-1). Soils on the Cattle Road property consist primarily of Slaw-Chuckles Association and gravelly loamy sand, very cobbly loam, and gravelly loamy sand (Chuckles-Bango Association).

These soils support piedmont slope and sandy habitats. In addition, inactive agricultural areas and localized basin floor and disturbed areas are present in the South Dixie Valley area.



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**Horse Creek.** Soils in the Horse Creek area consist of loamy slopes, including gravelly sandy loam, gravelly loamy sand, gravelly very fine sand, and very stony loam (Cleaver-Bundorf Association, Genegraf-Buckaroo-Bluewing Association, Rednick-Trocken-Genegraf Association) and local areas of slopes with volcanic rock outcrops (Theon-Mirkwood-Rock Outcrop Association) (Figure G-1).

These soils predominantly include piedmont slope and sagebrush-dominated habitats. Horse Creek, a perennial stream through a portion of the Navy property but intermittent through the easternmost reaches, supports forested riparian and wetland habitats. In addition, inactive agricultural areas are present in the Horse Creek area.

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**APPENDIX H**

**VEGETATION COMMUNITIES AND ACREAGES: LANDSCAPING  
PLANT SPECIES FOR NAS FALLON**

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### ***Black Sagebrush Dominant***

Black sagebrush (*Artemisia nova*) occurs as a dominant shrub species on B-17 only covering 3,320 acres total. Additional species found in this vegetation community include James' galleta grass (*Hilaria jamesii*), cheatgrass (*Bromus tectorum*), shadscale, and rabbitbrush. Mean shrub cover is approximately 40 percent and mean herbaceous cover is approximately 20 percent. Substrate is primarily rocky or rocky sand with some located in a wash on gravelly sand. Topography ranges from flats to steep slopes.

### ***Big Sagebrush Dominant***

Big sagebrush (*Artemisia tridentata*) is dominant on 5,470 acres total on B-17, Dixie Valley, Shoal Site, and Horse Creek. Additional species found in this vegetation community include Indian ricegrass (*Achnatherum hymenoides*), James' galleta grass, Sandberg bluegrass, cheatgrass, shadscale, rabbitbrush, burrobrush (*Hymenoclea salsola*), Nevada jointfir (*Ephedra nevadensis*), Bailey's greasewood (*Sarcobatus vermiculatus* var. *baileyi*), and spiny hopsage (*Grayia spinosa*). Mean shrub cover is approximately 40 percent and mean herbaceous cover is approximately 30 percent. Substrate is primarily gravelly sand, rocky sand, and rocky gravel with some located in a sandy wash. Topography ranges from flats to steep slopes.

### ***Fourwing Saltbush/Shadscale (Atriplex spp.) Dominant***

Fourwing saltbush and/or shadscale (*Atriplex* spp.) are dominant (or co-dominant) on 2,589 acres on B-16, B-17, B-19, Dixie Valley, and Horse Creek. Additional species found in this vegetation community include cheatgrass, mustard, Russian thistle (*Salsola tragus*), desert wheatgrass (*Agropyron desertorum*), burrobush, Bailey's greasewood, and bud sagebrush (*Picrothamnus desertorum*). Mean shrub cover is approximately 30 percent and mean herbaceous cover is approximately 10 percent. Substrate is primarily sand or loamy sand flats, gravelly clay playas, gravelly slopes and clay soils. Topography ranges from flats to medium slopes.

### ***Rabbitbrush Dominant***

Rabbitbrush (*Chrysothamnus nauseosus*) is the dominant shrub species on 2,996 acres total on B-16, B-17, Dixie Valley, Settlement Area, and Horse Creek. Additional species found in this vegetation community include James' galleta grass, cheatgrass, basin wildrye (*Leymus cinereus*), saltbush, black greasewood (*Sarcobatus vermiculatus* var. *vermiculatus*), burrobush, and green molly (*Kochia americana*). Mean shrub cover is approximately 40 percent and mean herbaceous cover is less than 10 percent. Substrate is primarily sandy clay flats, gravelly sandy flats, sandy flats, coarse sand, rocky gravelly washes. Topography ranges from flats to steep slopes.

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### ***Ephedra Dominant***

*Ephedra* species, in particular Nevada jointfir (*Ephedra nevadensis*) and Mormon tea, (*Ephedra viridis*), are dominant on 1,595 acres on B17, B19, and Dixie Valley. Additional species found in this vegetation community include Indian ricegrass, lemon scurf-pea (*Psoralidium lanceolatum*), Nevada jointfir, Bailey's greasewood, veiny dock (*Rumex venosus*), Bottlebrush squirreltail (*Leymus elymoides*), James' galleta grass, dwarf goldenbush (*Ericameria nana*), burrobrush, spiny hopsage, black sagebrush, rabbitbrush, and cheatgrass. Mean shrub cover is approximately 25 percent and mean herbaceous cover is approximately 33 percent. Substrate is primarily sandy flats, gravelly sandy washes, gravelly sandy clay and rocky steep slopes. Topography ranges from flats to steep slopes.

### ***Bailey's Greasewood Dominant***

Bailey's greasewood (*Sarcobatus vermiculatus* var. *baileyi*) occurs as a dominant shrub species on 83,569 total acres on B16, B17, B19, Dixie Valley, Shoal Site, Settlement, and Horse Creek. Additional species found in this vegetation community include cheatgrass, Indian ricegrass, James' galleta grass, Sandberg bluegrass, saltlover (*Halogeton glomeratus*), Nevada dalea (*Psoralea polydenia*), Russian thistle, mustard, Bailey's greasewood, black sagebrush, Mormon tea, big sagebrush, bud sagebrush, fourwing saltbush, rabbitbrush, shadscale, spiny hopsage, winterfat, alkali seepweed, and burrobrush. Mean shrub cover is approximately 25 percent and mean herbaceous cover is approximately 15 percent. Substrate is primarily clay playas, sandy clay, loamy sandy flats, coarse sand, gravelly sandy flats, gravelly sandy clay, gravelly loamy sandy flats, rocky loamy sand, rocky sand, rocky sandy clay, rocky gravelly flats, and rocky steep slopes. Topography ranges from flats and washes to ridge tops and steep slopes.

### ***Black Greasewood Dominant***

Black greasewood (*S. vermiculatus* var. *vermiculatus*) is a dominant shrub on 4,441 total acres on B-16, B-19, Settlement, and Horse Creek. Additional species found in this vegetation community include Indian ricegrass, cheatgrass, Russian thistle, mustard, Bailey's greasewood, alkali seepweed, rabbitbrush, and basin wildrye. Mean shrub cover is approximately 50 percent and mean herbaceous cover is less than 5 percent. Substrate is primarily rocky loam, loamy sandy flats, sandy clay flats, gravelly sandy flats, sandy mounds, gravelly loamy sand, gravelly sandy washes, and rocky loamy flats. Topography ranges from flats and washes to low mounds.

### **Other Shrub-Dominant Types**

Dwarf goldenbush (*Ericameria nana*) is the sole dominant shrub species on 258.2 acres on B-17 with James' galleta grass and cheatgrass. Mean shrub cover is approximately 25 percent and mean herbaceous cover is less than 25 percent. Substrate is primarily gravelly loamy soils on low slopes.

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Burrobrush (*Hymenoclea salsola*) is a dominant shrub on 2,282.8 total acres on B-17, B-19, Dixie Valley, Shoal Site, and Horse Creek. Additional species found in this vegetation community include Indian ricegrass, cheatgrass, and Nevada jointfir. Mean shrub cover is approximately 20 percent and mean herbaceous cover is less than 10 percent. Substrate is primarily sandy loam, sandy washes, coarse sandy washes, gravelly sandy washes, rocky loamy sandy washes, rocky gravelly sandy flats, and rocky washes. Topography ranges from medium to steep slopes.

Winterfat (*Krascheninnikovia lanata*) is a dominant shrub on 48.2 acres total on B-17 and B-19. Additional species found in this vegetation community include Russian thistle, cheatgrass, Bailey's greasewood, shadscale and Nevada jointfir. Mean shrub cover is approximately 25 percent and mean herbaceous cover is approximately 40 percent. Substrate is primarily sandy flats and rocky loamy sand. Topography ranges from low slopes.

Alkali seepweed (*Suaeda moquini*) occurs as the sole dominant shrub species on 63 acres of B-16 on clay playas with identified Brassicaceae.

Fourpart horsebrush (*Tetradymia tetrameres*) is a dominant shrub species on 1,169 total acres on B-19. Additional species found in this vegetation community include Indian ricegrass, burrobrush, Nevada dalea, and fourwing saltbush. Mean shrub cover is approximately 40 percent and mean herbaceous cover is less than 5 percent. Substrate is primarily sandy dunes. Topography ranges from low slopes.

### **Communities with Trees Dominant**

There are few areas on NAS Fallon where tree species are the dominant component of the overall canopy (i.e. trees comprising 50 percent or more cover). However, there are areas, especially in B-17, where trees such as single-leaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*) are a prominent addition to the shrub-dominated communities described above.

Single-leaf pinyon pines) are found on 1,137 acres in the mountains on the eastern side of B-17, occurring in either more-or-less closed stands or open woodlands over a predominantly shrub and/or grassland community. Additional species found in this vegetation community include Utah juniper (*Juniperus osteosperma*), James' galleta grass, black sagebrush and mormon tea. Mean shrub cover is approximately 35 percent and mean herbaceous cover is less than 5 percent. Substrate and topography are primarily rocky steep slopes sandy dunes. Topography is generally low slopes.

Fremont cottonwood (*Populus fremontii*)-Willow (*Salix* sp.) riparian woodlands are found on 13 acres only at Horse Creek along the stream that runs east to west through the site. Additional species found in this vegetation community include roses (*Rosa* sp.), stinging nettle (*Urtica dioica*), milkweed (*Asclepias* sp.), and willow dock (*Rumex salicifolius*). In the Settlement Area there are many cottonwoods and willows. There are two very small stands (0.4 acres) of cottonwoods on a remote stretch of streambed in the extreme north end of Dixie Valley.

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There are hundreds of cottonwoods and willows on the Main Station along the irrigation canals and ditches. There are also cottonwoods and willows around the wetlands in the Dixie Valley Settlement Area. Russian olives are spreading in the wetland areas also. Russian olives were mapped in the 2007 weed survey on the Main Station, Horse Creek, and the Settlement Area 1,507 acres. Saltcedar(Tamarisk) 1395 acres.

Saltcedar (*Tamarisk* spp.) occurs in one location over 1.2 acres with saltgrass (*Distichlis spicata*) was mapped in a sandy clay wash in B-16. Saltcedar also occurs in other communities but not as a dominant plant. There is also a small stand (0.9 acres) of non-native trees at the picnic area in Horse Creek. These were large, mature trees, most likely locust, pear and apple.

### ***Communities Dominated by Perennial Herbaceous Species***

While most areas on NAS Fallon are characterized by the dominant shrub species present, some areas have no shrub species present at more than trace levels (<5 percent total shrub cover). Such areas are of limited extent, but represent some very unique community types, being dominated by perennial grasses and forbs.

Indian ricegrass occurs as the sole dominant perennial species on sandy flats in B-17 and Dixie Valley. Additional species found in this vegetation community include cheatgrass and Russian thistle.

Indian ricegrass-Lemon scurfpea was found in combination only on the flat areas on the active dunes in B-19. Indian ricegrass and lemon scurfpea (*Psoralea lanceolata*) were the most prominent species present, making up at least two-thirds of the overall herbaceous cover of 60 percent. Additional species found in this vegetation community include shortspine horsebrush (*Tetradymia spinosa*), fourwing saltbush, needle-and-thread grass (*Heterostipa comata*), phacelia (*Phacelia* sp.), an annual buckwheat (*Eriogonum* sp.), and Russian thistle.

Basin wildrye-salt grass occurs only in the Settlement Area, where they occur at 11 percent total cover on sandy clay flats.

Bottlebrush squirreltail-James' galleta grass occurs on 15 acres in B-17 was mapped with 50 percent total herbaceous cover plus some cheatgrass. Mormon tea and rabbitbrush were present but at very low cover on a rocky slope.

### ***Communities Dominated by Annual Herbaceous Species***

There are also large areas with no prominent perennial shrubs or herbaceous species. Some of these annual species are also included in the weed mapping efforts (e.g. Russian thistle and saltlover) and are presented with invasive species.

Cheatgrass is found on 5,133 acres as a dominant species on B-17, B-19, Dixie Valley and Horse Creek. Additional species found in this vegetation community include shadscale, big sagebrush, rabbitbrush, bud sagebrush, Bailey's greasewood, saltlover and Russian thistle. Mean shrub

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cover is less than 5 percent and mean herbaceous cover is approximately 30 percent. Substrate and topography are primarily sandy clay flats, loamy sand, gravelly sandy flats, rocky steep slopes and wash benches. Topography is generally flats and low slopes.

Russian thistle is found on 4,983 acres on B-17 and Dixie Valley. Additional species found in this vegetation community include fourwing saltbush, Bailey's greasewood, mustard, and Russian thistle. Mean shrub cover is less than 5 percent and mean herbaceous cover is approximately 20 percent. Substrate and topography are primarily loamy sandy flats. Topography is generally flats and low slopes.

Mustard (unidentified species) occurs in some areas at fairly high densities as the sole dominant species on approximately 575 acres on Dixie Valley and B-17.

### *Miscellaneous Cover Types*

The following cover types have little or no vegetation but are unique habitats.

- Playas with little or no vegetative cover comprise approximately 2,123 ac in NAS Fallon on B-16, B-17, B-19, and Dixie Valley. Playas have clay soils and are seasonally wet. Bailey's greasewood, black greasewood, and alkali seepweed are the most commonly seen shrubs in these areas but at low cover. Although playa habitat occurs on B-19, a large rock formation "Lone Rock" occurs within the central portion of the Range, which is not considered Playa habitat.
- Barren hills are found on 28 acres in B-16 and are small, steep-sided hills of loamy sand with little vegetation aside from a few small stunted forbs and grasses.
- Sand dunes cover almost 700 acres in B-19 with expansive, active sand dunes with little or no vegetation aside from a few scattered shrubs and sparsely distributed grasses and forbs.
- Sparsely vegetated areas are found in a few small areas in Dixie Valley totaling approximately 24 acres. They are not much more than gaps amidst the surrounding Bailey's greasewood stands. These areas tend to be near roads and show other signs of past disturbance.
- Disturbed/weedy flats occur on 12 acres in several small patches near roads in Shoal Site with clear indications of ground disturbance.



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<b>TREES</b>									
<i>Catalpa bignonioides</i> ‘Nana’ (sold as <i>C. bungei</i> ) Umbrella Catalpa	25	Rounded	Slow	D	M	M	A	Verticillium wilt	Small, neat form, no flowers or fruit
<i>Catalpa speciosa</i> Western Catalpa	40-70	Tall/ Irregular	Mod.	D	M	M	M,S,A	Leaf tatter, Verticillium wilt	Fruits a long capsule, some leaf tatter from wind
<i>Celtis occidentalis</i> * Common Hackberry	45	Upright/ spreading	Fast	D	M	M	S,M,W	Moderate pest problems	Late to leaf out, tolerates wind, heat, poor soils
<i>Fraxinus pennsylvanica</i> Green Ash	50	Spreading	Mod.	D	L	L	M,A	Ash whitefly	Less foliage burn than other ashes. Foliage turns yellow in fall. Winged fruit may create a litter problem if both male and female trees present
<i>Gleditsia triacanthos</i> ‘Halka’ Honey Locust	30	Spreading	Fast	D	M	M	A	Numerous insects and disease, none serious	Shade Trees, Strong horizontal branches
<i>Gleditsia triacanthos</i> ‘Moraine’ Moraine Locust	40	Upright	Fast	D	M	M	A	Many, but none serious	Green color, yellow fall foliage
<i>Gleditsia triacanthos</i> ‘Shademaster’ Honey Locust	40	Upright	Fast	D	M	M	A	Many, but none serious	Faster growing than ‘Moraine’
<i>Gymnocladus dioica</i> * Kentucky Coffee Tree	50	Narrow	Slow	D	M	L	A,W,M	Few pest problems	Tolerant of alkaline soil, heat, and cold; yellow fall foliage, does not attract birds
<i>Juniperus monosperma</i> * (N) One-Seeded Juniper	40	Broad/ Pyramidal	Slow	E	H	M	M,W,H, N	Spider mites, phomopsis blight	Blue-green foliage
<i>Juniperus occidentalis</i> * Western Juniper	12	Spreading Pyramidal	Slow	E	H	M	M,W,H, N	Spider mites, phomopsis blight	Dusty, olive green to green
<i>Juniperus osteosperma</i> * (N) Utah Juniper	30	Pyramidal	Mod.	E	H	M	M,W,H, N	Spider mites, phomopsis blight	Yellow-green
<i>Juniperus scopulorum</i> * Rocky Mountain Juniper	30	Pyramidal	Mod.	E	H	M	A,M,W, H	Spider mites, spittle bugs, phomopsis blight, borers	Numerous cultivars available, species not grown

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<i>Juniperus scopulorum</i> 'Blue Heaven' ('Blue Haven')* Blue Heaven Juniper	20	Pyramidal	Mod.	E	H	M	A,M,W, H	Spider mites, spittle bugs, phomopsis blight, borers	Gray-blue foliage
<i>Juniperus scopulorum</i> 'Cologreen'* Colgreen Juniper	15-20	Pyramidal	Mod.	E	H	M	A,M,W, H	Spider mites, spittle bugs, phomopsis blight, borers	Bright green column
<i>Juniperus scopulorum</i> 'Mofettii'	15-20	Pyramidal	Mod.	E	H	M	A,M,W, H	Spider mites, spittle bugs, phomopsis blight, borers	Silver-green foliage
<i>Juniperus scopulorum</i> 'Pathfinder' Pathfinder Juniper	20	Pyramidal	Mod.	E	H	M	S,M,W, H	Spider mites, spittle bugs, phomopsis blight, borers	Bluish-gray foliage in flat sprays
<i>Juniperus scopulorum</i> 'Wichita Blue'* Wichita Blue Juniper	15	Broad Pyramidal	Mod.	E	H	M	S,M,W, H	Spider mites, spittle bugs, phomopsis blight, borers	Silver-blue, broad pyramidal juniper
<i>Juniperus virginiana</i> 'Pyramidalis'* Pyramid Juniper	30	Pyramidal	S-M		H	M	M,W,H, P	Spider mites, spittle bugs, borers, minor disease problems	Purple-green winter foliage
<i>Juniperus virginiana</i> 'Skyrocket'* Skyrocket Juniper	15	Columnar	S-M	E	H	M	M,W,H, P	Spider mites, spittle bugs, borers, minor disease problems	Blue-gray spire
<i>Malus (sp)</i> <i>Crabapple</i>	15-20	Round	M	D	M	M	A	Fungal Diseases	Many Varieties, Pink white, red flowers. Use disease resistant variety
<i>Morus alba</i> 'Fruitless'* Fruitless Mulberry	35	Spreading	Fast	D	M	M	A,S	Sooty canker	Fast growing shade tree, tolerates heat and alkaline soil
<i>Morus alba</i> 'Kingan'* Kingan Fruitless Mulberry	35	Spreading	Fast	D	M	M	A,S	Sooty canker	Fast growing shade tree, tolerates heat and alkaline soil
<i>Morus alba</i> 'Stribling'* Stribling Fruitless Mulberry	35	Spreading	Fast	D	M	M	A,S	Sooty canker	Fast growing shade tree, tolerates heat and alkaline soil

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<i>Platanus x acerifolia</i> London Plane Tree	75-100	Spreading	Mod.	D			W,M	Anthrachnose, powdery mildew	Strong wood, handsome peeling bark
<i>Platanus occidentalis</i> American Sycamore	70	Upright	Fast	D	L	M	A,M	Prone to anthracnose	Attractive, white shedding bark
<i>Populus angustifolia</i> * (N) Narrowleaf Cottonwood	<60	Spreading	Fast	D	Only if deeply rooted	M	W,M,N	Cottonwoods and poplars have wet wood, cankers, root rots, crown galls, aphids, leaf miners, and galls including cytospora canker that shorten lifespan	Short-lived species Cottonwoods and poplars grow rapidly, have many diseases. Use as nurse crops to protect downwind windbreak planting. Root suckers may be invasive
<i>Populus deltoides</i> * Eastern Cottonwood	60-95	Spreading	Fast	D	Only if deeply rooted	M	W,M	Cottonwoods and poplars have wet wood, cankers, root rots, crown galls, aphids, leaf miners, and galls including cytospora canker that shorten lifespan	Short-lived species Cottonwoods and poplars grow rapidly, have many diseases. Use as nurse crops to protect downwind windbreak planting. Root suckers may be invasive
<i>Populus fremontii</i> * (N) Fremont Cottonwood	60-100	Spreading	Fast	D	Only if deeply rooted	M	W,M,N	Cottonwoods and poplars have wet wood, cankers, root rots, crown galls, aphids, leaf miners, and galls including cytospora canker that shorten lifespan	Short-lived species Cottonwoods and poplars grow rapidly, have many diseases. Use as nurse crops to protect downwind windbreak planting. Root suckers may be invasive

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<i>Populus trichocarpa</i> (N) Black Cottonwood	80-125	Spreading	Fast	D	Only if deeply rooted	M	W,M	Cottonwoods and poplars have wet wood, cankers, root rots, crown galls, aphids, leaf miners, and galls including cytospora canker that shorten lifespan	Short-lived species Cottonwoods and poplars grow rapidly, have many diseases. Use as nurse crops to protect downwind windbreak planting. Root suckers may be invasive
<i>Prunus blireiana</i> Blireiana plum	25	Upright	Mod.	D	L	L	A	Unknown	Reddish-purple leaves, showy, fragrant flowers, needs heavy pruning
<i>Prunus cerasifera</i> ‘Antropurpurea’	25	Rounded	Mod.	D	L	L	A	Unknown	Purple leaves, white flowers
<i>Prunus cerasifera</i> ‘Krauter Vesuvius’	20	Upright	Mod.	D	L	L	A	Unknown	Dark purple-black leaves, pink flowers
<i>Prunus cerasifera</i> ‘Thundercloud’	20	Rounded	Mod.	D	L	L	A	Unknown	Dark coppery leaves, red fruit
<i>Prunus virginiana demissa</i> (N) Western Chokecherry	25	Irregular	Mod.	D	L	M	A		Good fall color, tolerates heat and aridity
<i>Pyrus calleryana</i> Flowering Pear	20	Pyramidal	Mod	D	M	M	A	Fire Blight Fungal diseases	White flowers in spring.
<i>Robinia ambigua</i> ‘Idahoensis’ Idaho Locust	40	Spreading	M-F	D	M	L	A,S,M	Brittle wood, not many serious pests	Spreading tree, rose-pink flowers in June
<i>Salix amygdaloides</i> (N) Peach Leaf Willow	30	Round	Fast	D	L	M	N		
<i>Salix gooddingii</i> (N) Gooding Willow	40	Spreading	Fast	D	L	M	M,W	Numerous diseases and insect pests	Low branching or multiple trunks
<i>Salix matsudana</i> ‘Alba’ Austree Willow	60-80	Upright	Fast	D	L	M	A,M,W	Numerous diseases and insect pests	Wood not brittle, likes moisture, shallow rooted
<i>Thuja occidentalis</i> Eastern Arborvitae	30-40	Pyramidal	Slow	E	L	L	A,H,F,M	Many, but none serious	Numerous cultivars, need protection from wind and cold

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<i>Ulmus parvifolia</i> * Chinese Elm	40	Vase shaped	M-F	D			S	Resistant to Dutch elm disease, elm leaf beetle	Excellent hardy, beautiful shade tree
<i>Ulmus parvifolia</i> * 'Dynasty' Dynasty Elm	30	Vase shaped	Mod.	D			S	Resistant to Dutch elm disease, elm leaf beetle	Excellent hardy, beautiful shade tree
<i>Ulmus parvifolia</i> * 'Emerald Isle' Emerald Isle Elm	30	Spreading	Mod.	D			S	Resistant to Dutch elm disease, elm leaf beetle	Excellent hardy, beautiful shade tree
<i>Ulmus parvifolia</i> * 'Emerald Vase' Emerald Vase Elm	50	Upright/ Spreading	M-F	D			S	Resistant to Dutch elm disease, elm leaf beetle	Excellent hardy, beautiful shade tree
<i>Zelkova serrata</i> Japanese Zelkova	50	Upright/ Spreading	M-F	D			S	Resistant to Dutch elm disease, elm leaf beetle	Excellent hardy, beautiful shade tree; wine-red fall foliage
<i>Zelkova serrata</i> 'Green Vase'	60	Upright/ Spreading	M-F	D			S	Resistant to Dutch elm disease, elm leaf beetle	Bronze-red fall foliage
<i>Zelkova serrata</i> 'Haika'	50	Upright/ Spreading	M-F	D			S	Resistant to Dutch elm disease, elm leaf beetle	Yellow fall foliage
<i>Zelkova serrata</i> 'Spring Grove'	50	Upright/ Spreading	M-F	D			S	Resistant to Dutch elm disease, elm leaf beetle	Wind-red fall foliage
<i>Zelkova serrata</i> 'Village Green'	60	Upright/ Spreading	M-F	D			S	Resistant to Dutch elm disease, elm leaf beetle	Wine-red fall foliage
<b>SHRUBS</b>									
<i>Artemisia cana</i> Silver Sagebrush	2-4	Shrub	Mod.	E	H	M	F	Unknown	Tolerates alkaline soils and standing water, silver foliage
<i>Artemisia tridentata</i> ** (N) Great Basin sagebrush	3-5	Shrub	Mod.	E	H	M	A,N		

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<i>Atriplex canescens</i> ** (N) Four-wing Saltbush	3-8	Spreading	Mod.		H	H	M,W,N	None	Native shrub, tolerates poor soils
<i>Atriplex torreyi</i> (N) Torrey's Quail Bush	<10	Shrub	Mod.	D			F	Unknown	Native shrub, tolerates poor soils
<i>Berberis julianae</i> Wintergreen Barberry	6	Rounded	Slow	D	L	L	H,F,A		Reddish fall color and bluish blackberries. Thorns provide formidable barrier
<i>Berberis thunbergii</i> Japanese Barberry	6	Rounded	Slow	D	M	M	H,F,A		Bright red berries in fall and through winter. Hedge or barrier plant
<i>Berberis thunbergii</i> 'Autropurpurea' Red-Leaf Barberry	6	Rounded	Slow	D	M	M	H,F,A		Bronzy red to purplish foliage in full sun. Hedge or barrier plant
<i>Berberis thunbergii</i> 'Crimson Pigmy' Dwarf Barberry	2	Rounded	Slow	D	M	M	H,F,A		Mature leaves are bronzy blood red. Must have full sun to develop leaf color
<i>Buxus m.j.</i> 'Winter Gem' Japanese Boxwood	4	Upright	Slow	D	L	M	H,F,M		Needs protection from drying winds. Tolerates heavy pruning
<i>Caragana arborescens</i> * (N) Siberian Pea Shrub	15	Upright	Fast	D			W,H,F	Few, none serious	Tolerate of adverse soil conditions
<i>Caragana arborescens</i> * 'Nana' Dwarf Siberian Pea Shrub	5	Rounded	Fast	D	H	H	W,M,N	Few, none serious	Tolerant of adverse soil conditions
<i>Chrysothamnus nauseosus</i> * (N) Rubber Rabbitbrush	<4	Shrub	Mod.	D	H	H	F,M,N	Unknown	Native shrub, tolerant to saline alkaline soils
<i>Chrysothamnus viscidiflorus</i> * (N) Douglas' Rabbitbrush	<4	Shrub	Mod.	E	H	H	F	Unknown	More tolerant of saline alkaline soils than above
<i>Cotoneaster acutifolius</i> Peking Cotoneaster	10	Spreading	Mod.	D	L	L	W,H,M		Attractive red-brown pubescent bark with black fruit
<i>Cotoneaster apiculatus</i> Cranberry Cotoneaster	4	Spreading	Mod.	D	L	L	H,F,M		Maroon red fall color with bright red fruit in clusters. Good hedge plant
<i>Elaeagnus commutata</i> Silverberry	10	Shrub	Mod.	D,S	H	M	M,W	Verticillium wilt, scale, aphids	Silver berries attract birds, tolerant of poor soils
<i>Elaeagnus multiflora</i> * Cherry Olive	10	Shrub	Mod.	D,S	H	M	M,W	Verticillium wilt, scale, aphids	Red berries attract birds, soil and moisture adaptable

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<i>Forsythia intermedia</i> Golden Bells	8	Upright	Fast	D	L	L	M,A		Profuse yellow, bell-like flowers. Tolerates pruning
<i>Forsythia suspensa</i> Weeping Forsythia	10	Upright	Fast	D	L	L	H,A,E		Golden yellow flowers. Can be trained as a vine with branch support
<i>Grayia spinosa</i> (N) Spiny Hopsage	<3	Shrub	Mod.	D	H	M	F	Unknown	Tolerates alkaline soils and standing water, silver foliage
<i>Juniperus chinensis</i> ‘Armstrongii’ Armstrong Juniper	4	Upright	Mod.	E	M	M	H,F,M		Lacy light green foliage. More compact with Pfitzer Juniper
<i>Juniperus chinensis</i> ‘Hetzii’ Hetz Blue Juniper	8	Spreading	Mod.	E	M	M	W,H,M		Blue-gray foliage color with outward spreading branches. Tolerates abuse
<i>Juniperus chinensis</i> ‘Pfitzerana’ Pfitzer Juniper	6	Spreading	Fast	E	M	M	W,H,M		Feathery, gray-green foliage with sharp needle-like texture
<i>Juniperus chinensis</i> ‘Pfitzerana Aurea’ Golden Juniper	4	Spreading	Fast	E	M	M	W,H,M		Blue-gray foliage with current season’s growth golden yellow
<i>Juniperus conferta</i> ‘Blue Pacific’ Shore Juniper	2	Spreading	Mod.	E	M	M	F		Bright blue-green, soft-needled foliage. Will withstand heat conditions
<i>Juniperus sabina</i> ‘Tamariscifolia’ Tamarix Juniper	3	Spreading	Mod.	E	M	M	F,M		Dense, blue-green, soft-needled foliage. Valuable as low, spreading plan
<i>Ligustrum vulgare</i> ‘Lodense’ Dwarf Privet	4	Rounded	Fast	D	M	L	H,F		Light green leaves with white flowers. Tolerates pruning and shearing
<i>Lonicera tatarica</i> Tatarian Honeysuckle	10	Spreading	Mod.	D	L	L	W,H,M		Small pink flowers in late spring, bright red fruit. Useful for screens/massing
<i>Mahonia aquifolium</i> Oregon Grape	5	Upright	Mod.	D	L	L	F,M		Valued for holly-like foliage, bright yellow flowers and blue berries
<i>Mahonia aquifolium</i> ‘Compacta’ Dwarf Oregon Grape	2	Upright	Mod.	D	L	L	F,M		Dwarf variety of Oregon grape. Coppery-green new foliage
<i>Pennisetum setaceum</i> Fountain grass	4	Rounded	Fast	D	M	M	M		Stems are tipped with fuzzy, showy, coppery pink or purplish flower spikes

## FINAL APPENDIX H

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

### Plant Species Potentially Suitable for Landscape Use at NAS Fallon

<i>Botanical Name</i> <sup>1/</sup> <b>Common Name</b>	<i>Size</i> <i>(feet)</i>	<i>Shape</i>	<i>Rate of</i> <i>Growth</i>	<i>Foliage</i> <i>Type</i> <sup>2</sup>	<i>Drought</i> <i>Tolerance</i> <sup>3</sup>	<i>Salinity</i> <i>Tolerance</i> <sup>3</sup>	<i>Use</i> <sup>4</sup>	<i>Insect/</i> <i>Diseases</i>	<i>Comments</i>
<i>Perovskia atriplicifolia</i> Russian sage	4	Rounded	Fast	D	H	M	A		Has purple flowers. Attracts bees. Not a native sage.
<i>Philadelphus coronarius</i> Sweet Mock Orange	8	Upright	Slow	D	M	L	H,F,A		Creamy-white clusters of fragrant flowers. Tolerates pruning
<i>Potentilla fruticosa</i> Shrub Cinquefoil	<4	Shrub	Mod.	D	M	L	S,F,M,A	Few to none	Green foliage, numerous flowering cultivars
<i>Potentilla fruticosa</i> 'Katherine Dykes' Dykes Potentilla	4	Rounded	Slow	D	M	L	F,M,A		Primrose yellow flowers, cup-like shape. Tolerates adverse growing conditions
<i>Potentilla fruticosa</i> 'Mount Everest' White Potentilla	4	Upright	Slow	D	M	L	F,M,A		White, yellow-centered flowers; one of most vigorous of Potentilla cultivars
<i>Prunus besseyi</i> Western Sand Cherry	<5	Shrub	Mod.	D	M	L	F	Few	Spreading by suckers, gray-green foliage. Plants withstand heat, cold, wind, aridity. Fruit used for pies, jams, jellies
<i>Prunus glandulosa</i> Dwarf Flowering Almond	5	Spreading	Mod.	D	M	L	H,F,A		Double pink or white flowers. Tolerant of heavy pruning
<i>Prunus x cistena</i> Purple-leaved Sand Cherry	3-5	Shrub	Mod.	D			F	Few	Purple-leaved foliage is attractive
<i>Prunus pumila</i> Sand Cherry	3-5	Spreading	Mod.				F,M	Few	Spreading groundcover
<i>Prunus tomentosa</i> Nanking Cherry	8	Spreading	Fast	D	M	L	M,A		Pale pink flowers in early spring. Scarlet ½ inch size fruit
<i>Pyracantha coccinea</i> 'Lalandei' Firethorn	8	Upright	Mod.	D	M	L	F,M		Small fragrant white flowers and profuse orange berries. Tolerant of pruning
<i>Rhamnus cathartica</i> Common Buckthorn	12	Rounded	Mod.	D	M	M	W,H,M		Excellent massing shrub good for background and screening
<i>Rhus glabra</i> Smooth Sumac	12	Spreading	Fast	D	M	L	M,A		Brilliant scarlet leaf color in fall. Spreads by underground roots
<i>Rhus trilobata</i> Fragrant Sumac	6	Spreading	Mod.	D	M	L	H,F,M,A		Tiny yellow flowers in spring. Brilliant yellow to red fall color
<i>Ribes alpinum</i> Alpine Currant	5	Rounded	Mod.	D	L	L	H,F,M		Excellent massing/hedge shrub. Useful in shady areas
<i>Salix exigua</i> * (N) Coyote Willow	10	Shrub	Fast	D			M,N,H	Minor pests	Silver-gray foliage, dense shrub, must irrigate



## FINAL APPENDIX H

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

### Plant Species Potentially Suitable for Landscape Use at NAS Fallon

<i>Botanical Name</i> <sup>1/</sup> Common Name	<i>Size</i> (feet)	<i>Shape</i>	<i>Rate of</i> <i>Growth</i>	<i>Foliage</i> <i>Type</i> <sup>2</sup>	<i>Drought</i> <i>Tolerance</i> <sup>3</sup>	<i>Salinity</i> <i>Tolerance</i> <sup>3</sup>	<i>Use</i> <sup>4</sup>	<i>Insect/</i> <i>Diseases</i>	<i>Comments</i>
<i>Salix lasiolepis</i> (N) Arroyo Willow	15	Shrub	Fast	D	L		M,N,H	Minor pests	Silver-gray foliage, dense shrub, must irrigate
<i>Sambucus canadensis</i> American Elderberry	8	Spreading	Fast	D	L	L	W,H,M		Tropical looking foliage. Creamy white flowers and purple black fruit
<i>Shepherdia argentea</i> * (N) Silver Buffalo Berry	18	Spreading	Mod.	D	L	M	N,H,M	Unknown	Silver foliage
<i>Shepherdia canadensis</i> * Buffalo Berry	8	Spreading	Mod.				N,H,F	Unknown	Silver foliage
<i>Spiraea japonica</i> 'Alpina' Japanese Spiraea	3	Upright	Mod.	D	L	L	F,M		Valued for long summer pink flowers. Tolerates pruning
<i>Spiraea vanhouttei</i> Vanhoutte Spiraea	6	Rounded	Fast	D	L	L	H,M,A		Forms fountain of arching branches with white flower clusters in summer
<i>Symphoricarpos albus</i> Common Snowberry	5	Spreading	Fast	D	M	M	H,F,A		Valued for pink flowers and white fruit. Useful in both sun and shade areas
<i>Syringa vulgaris</i> Common Lilac	15	Upright	Fast	D	M	M	H,M,A		Fragrant flowers and flower color varieties including lavender, blue, and white
<i>Thuja occidentalis</i> 'Globosa' Globe Arborvitae	3	Rounded	Mod.	E	L	L	H,F,A		Good formal accett or hedge plant. Bright green foliage color
<i>Viburnum trilobum</i> Cranberry Blush	10	Rounded	Fast	D	L	L	F,A		Showy white flowers and red fruit. Red leaves in fall season
<i>Weigela florida</i> Rose Weigela	6	Spreading	Mod.	D	L	L	F,A		Showy bell-shaped pink to rose red flowers in May and June
<i>Yucca filamentosa</i> Adam's Needle	3	Rounded	Slow	E	M	M	F,A		White flower clusters and sword- shaped leaves. Fire retardant
<i>Yucca glauca</i> Soapweed Yucca	3	Rounded	Slow	E	M	M	F,A		Greenish white summer flowers in tall, narrow clusters. Fire retardant
<b>GROUND COVER</b>									
<i>Ajuga reptans</i> Carpet Bugle	0.5		Fast	D	M	L	M		Blue, white, or purple upright flower spikes. Bronze leaf color in full sun
<i>Cotoneaster horizontalis</i> Rock Cotoneaster	2		Slow	D	M	L	M		Deep red and orange foliage in fall. Shiny bright red fruit.
<i>Euonymus fortunei</i> Wintercreeper	1		Slow	D	L	L	M		In desert climates takes full sun better than ivy. Numerous cultivars available

# FINAL APPENDIX H

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

## Plant Species Potentially Suitable for Landscape Use at NAS Fallon

<i>Botanical Name</i> <sup>1/</sup> <b>Common Name</b>	<i>Size</i> <i>(feet)</i>	<i>Shape</i>	<i>Rate of</i> <i>Growth</i>	<i>Foliage</i> <i>Type</i> <sup>2</sup>	<i>Drought</i> <i>Tolerance</i> <sup>3</sup>	<i>Salinity</i> <i>Tolerance</i> <sup>3</sup>	<i>Use</i> <sup>4</sup>	<i>Insect/</i> <i>Diseases</i>	<i>Comments</i>
<i>Juniperus horizontalis</i> 'Plumosa' Andorra Juniper	1.5		Mod.	E	M	M	M		Gray-green summer foliage changing to plum color in winter
<i>Juniperus horizontalis</i> 'Wiltonii' Wilton Juniper	0.5		Mod.	E	M	M	M		Intense silver-blue foliage. The lowest variety of juniper groundcover
<i>Juniperus sabina</i> 'Buffalo' Buffalo Juniper	1		Mod.	E	M	M	M		Soft, feathery, bright green foliage. Similar to <i>J. tamariscifolia</i>
<b>GROUNDCOVER</b>									
<i>Lonicera japonica</i> 'Halliana' Hall's Honeysuckle	1		Mod.	D	M	L	M,F		Fragrant white flowers turning yellow. Useful in large areas
<i>Mahonia repens</i> Creeping Mahonia	1		Mod.	D	M	L	M		Interesting foliage and yellow flowers. Grows by underground stems
<i>Rosa wichuraiana</i> Memorial Rose	1		Slow	D	L	L	M		Good groundcover in poor soil. White flowers in clusters
Sodded Turf			Fast						Use tall Fescue blends that are locally adaptable
<b>GRASSES</b>									
<i>Elymus glaucus</i> Blue wildrye	24"								
<i>Distichlis stricta</i> Inland saltgrass	6"								
<i>Elymus lanceolatus</i> Thickspike wheatgrass	24"		Fast						
<i>Festuca idahoensis</i> Idaho fescue	24"								
<i>Leymus triticoides</i> Creeping wildrye	24"+								
<i>Puccinellia distans</i> Alkaligrass	12-24"								
<b>VINES</b>									
<i>Campsis radicans</i> Trumpet Vine			Fast	D	L	L	F		Flowers are 3 inches long orange tubes with scarlet lobes. Will climb 30 feet or more
<i>Clematis ligusticifolia</i> (N) Native Clematis		Vine	Fast	D	M	L	F	Few pests	Creamy white fragrant flowers in summer and fall. Does not self attach.

## FINAL APPENDIX H

Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

### Plant Species Potentially Suitable for Landscape Use at NAS Fallon

<i>Botanical Name</i> <sup>1/</sup> <b>Common Name</b>	<i>Size</i> <i>(feet)</i>	<i>Shape</i>	<i>Rate of</i> <i>Growth</i>	<i>Foliage</i> <i>Type</i> <sup>2</sup>	<i>Drought</i> <i>Tolerance</i> <sup>3</sup>	<i>Salinity</i> <i>Tolerance</i> <sup>3</sup>	<i>Use</i> <sup>4</sup>	<i>Insect/</i> <i>Diseases</i>	<i>Comments</i>
<i>Clematis orientalis</i> * Oriental Clematis	15	Vine	Fast	D	M	L	S,A,F	Few pests	Yellow flower, showy seed heads
<i>Clematis tangutica</i> Golden Clematis		Vine	Fast	D	M	L	F	Few pests	Bright yellow lantern-shaped flowers from July to fall. Grows to 15 feet
<i>Parthenocissus quinquefolia</i> Virginia Creeper		Vine	Fast	D	L	L	F		Grows on fences only. Can damage siding. Attractive orange/red fall color
<i>Parthenocissus tricuspidata</i> Boston Ivy		Vine	Fast	D	L	L	F		Similar to <i>P. quinquefolia</i> . Clings tightly to vertical surfaces

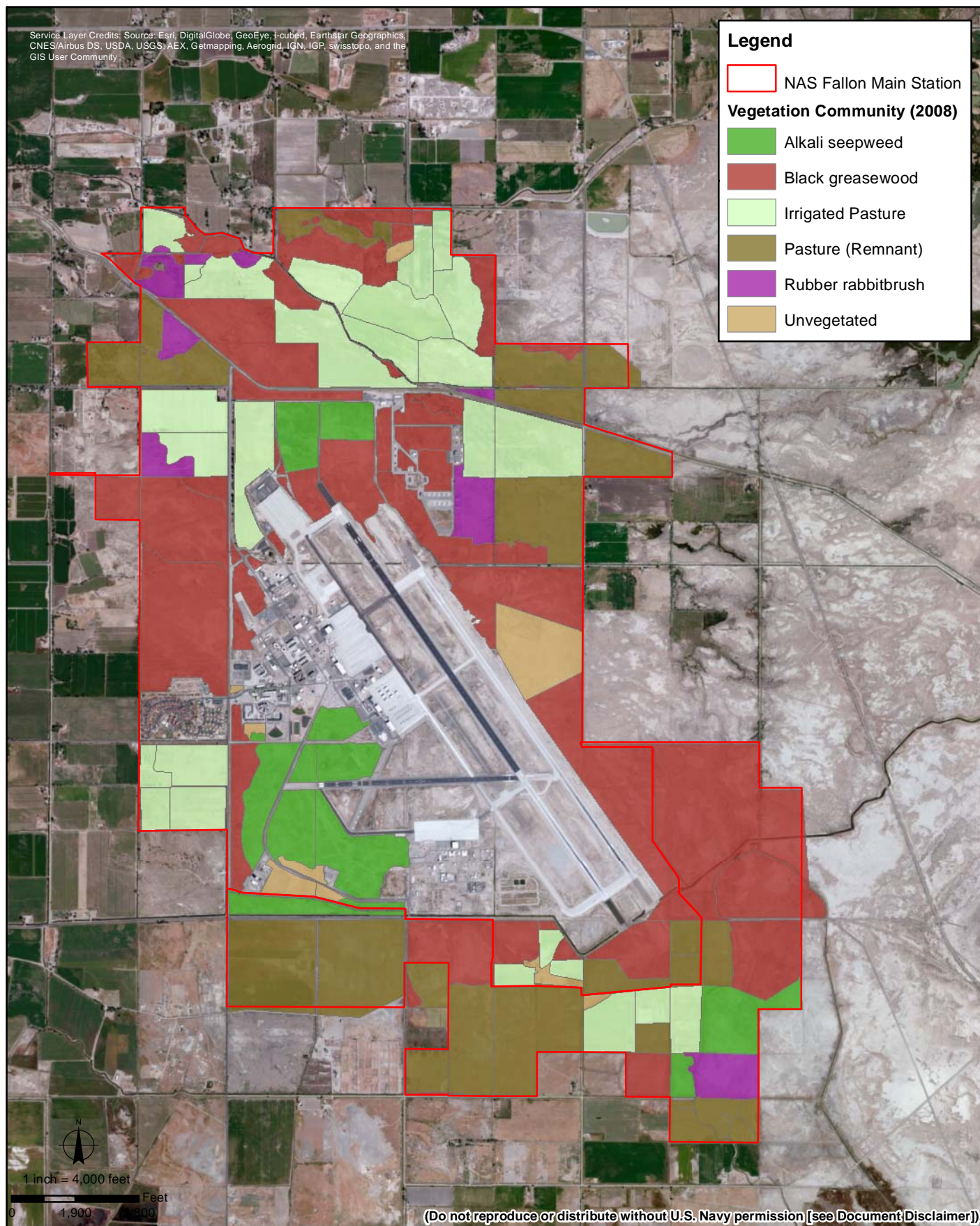
Notes: 1. N = Native to Lahontan Valley  
2. Foliage Type: E = evergreen; D = deciduous; SE = semi-evergreen  
3. Tolerance: L = little to no tolerance; M = moderately tolerant; H = highly tolerant  
4. Use: S =shade; M = mass planting; W = windbreak; F = foundation planting; H = hedge or screen, A = accent plant, N = natural area  
\* Plants with the greatest potential to grow at NAS Fallon  
\*\* Best adapted species

Sources: U.S. Navy 1991, 1995,2006; University of Nevada, Nevada Cooperative Extension, *Sunset Western Garden Book* 2012.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

## Legend

- NAS Fallon Main Station
- Vegetation Community (2008)**
- Alkali seepweed
- Black greasewood
- Irrigated Pasture
- Pasture (Remnant)
- Rubber rabbitbrush
- Unvegetated

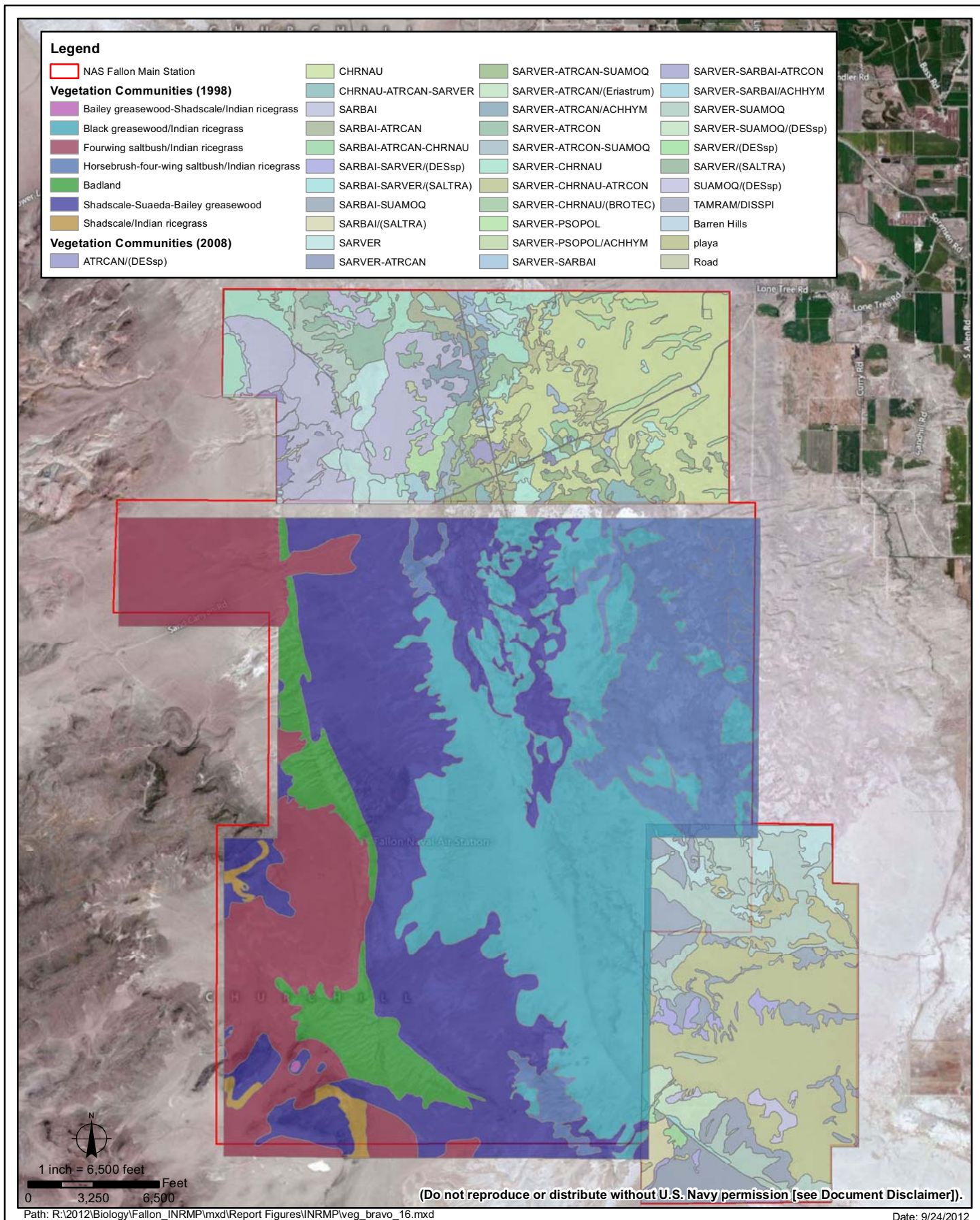


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### Vegetation Communities - NAS Fallon Integrated Natural Resources Management Plan Naval Air Station Fallon Fallon, Nevada

APPENDIX H





**Vegetation Communities - Bravo 16**  
**Integrated Natural Resources Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**

**APPENDIX H**



Legend

NAS Fallon

Vegetation Communityh

(BROTEC)	ARTTRI/ACHHYM	HYMSAL/(BROTEC)	SARBAI-GRAYSPI
(BROTEC)dist	ARTTRI/HILJAM	KRALAN-SARBAI/(SALTRA)	SARBAI-HYMSAL-PICDES
(BROTEC-HALGLO)	ARTTRI/POASEC	KRALAN/(BROTEC-SALTRA)	SARBAI-HYMSAL/(BROTEC)
(BROTEC-SALTRA)	ATRCAN-HYMSAL/(BROTEC-SISsp)	KRALAN/(SALTRA)	SARBAI-KRALAN/(BROTEC-SALTRA)
(BROTEC-SISsp)	ATRCAN/(BROTEC-SALTRA)	PINMON-JUNOST	SARBAI-KRALAN/(SALTRA)
(SALTRA)	ATRCON-PICDES	PINMON-JUNOST/ARTNOV/HILJAM	SARBAI-PICDES
(SALTRA-SISsp)	CHRNAU	PINMON/ARTNOV-EPHGRE	SARBAI-PICDES/(BROTEC)
ACHHYM-(BROTEC-SALTRA)	CHRNAU/HILJAM	SARBAI	SARBAI/(BROTEC)
ARTNOV	ELYELY-HILJAM-(BROTEC)	SARBAI-ARTNOV-EPHVIR/POASEC-(BROTEC)	SARBAI/(BROTEC-AMSTES)
ARTNOV-ATRCON	EPHNEV-ERINAN	SARBAI-ARTTRI-PICDES	SARBAI/(BROTEC-HALGLO)
ARTNOV-CHRNAU/HILJAM	EPHNEV-HYMSAL-GRASPI/(BROTEC)	SARBAI-ATRCON	SARBAI/(BROTEC-SALTRA)
ARTNOV/(BROTEC)	EPHNEV/HILJAM	SARBAI-ATRCON-PICDES	SARBAI/(BROTEC-SISsp)
ARTNOV/HILJAM	EPHVIR-ARTNOV/(BROTEC)-HILJAM	SARBAI-ATRCON/(BROTEC)	SARBAI/(SALTRA)
ARTTRI-ATRCON/(BROTEC-SISsp)	EPHVIR-CHRNAU/ELYELY-HILJAM-(BROTEC)	SARBAI-EPHNEV	SARBAI/(SALTRA-SISsp)
ARTTRI-CHRNAU/(BROTEC)	EPHVIR-CHRNAU/HILJAM-(BROTEC)	SARBAI-EPHNEV-HYMSAL/(BROTEC)	Developed
ARTTRI-SARBAI/POASEC	EPHVIR/(BROTEC)	SARBAI-EPHNEV/(BROTEC)	Playa
ARTTRI/(BROTEC)	ERINAN/(BROTEC)-HILJAM	SARBAI-EPHNEV/ACHHYM	Road
	Excluded	SARBAI-ERINAN/HILJAM	Unknown
	HYMSAL	SARBAI-ERINAN/POASEC-(BROTEC)	

Bravo 17

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Vegetation Communities - Bravo 17  
Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

APPENDIX H



Legend

- NAS Fallon

Vegetation Communities (1998)

Bailey greasewood-Shadscale/Indian ricegrass

Bailey greasewood/Indian ricegrass

Black greasewood/Indian ricegrass

Black greasewood/Inland saltgrass

Fourwing saltbush/Indian ricegrass

Horsebrush-four-wing saltbush/Indian ricegrass

Iodinebush/Inland saltgrass

None

Shadscale-Bailey greasewood/Indian ricegrass

Vegetation Communities (2008)

(BROTEC)

(SISp)

ACHHYM-PSOLAN

EPHNEV-SARBAI/ACHHYM-PSOLAN

EPHNEV-SARBAI/ACHHYM-RUMVEN

HYMSAL/(BROTEC)

HYMSAL/ACHHYM

KRALAN-SARBAI-ATRCON/(BROTEC)

SARBAI

SARBAI-ATRCAN/(SALTRA)

SARBAI-ATRCON

SARBAI-ATRCON-HYMSAL/(BROTEC)

SARBAI-ATRCON-PICDES/(BROTEC)

SARBAI-ATRCON/(BROTEC)

SARBAI-GRASPI/(BROTEC)

SARBAI-HYMSAL-KRALAN/(BROTEC)

SARBAI-HYMSAL-PICDES/(BROTEC)

SARBAI-HYMSAL/(BROTEC)

SARBAI-PICDES

SARBAI-PICDES/(BROTEC)

SARBAI-PSOPOL/(BROTEC)-ACHHYM

SARBAI/(BROTEC)

SARBAI/(BROTEC)-ACHHYM

SARBAI/(BROTEC-SALTRA)

SARVER

SARVER-PSOPOL/ACHHYM

SARVER-TETTET/(BROTEC)

TETTET

TETTET-ATRCAN

TETTET-ATRCAN/ACHHYM

TETTET-HYMSAL/ACHHYM

TETTET-PSOPOL

Dunes

Playa

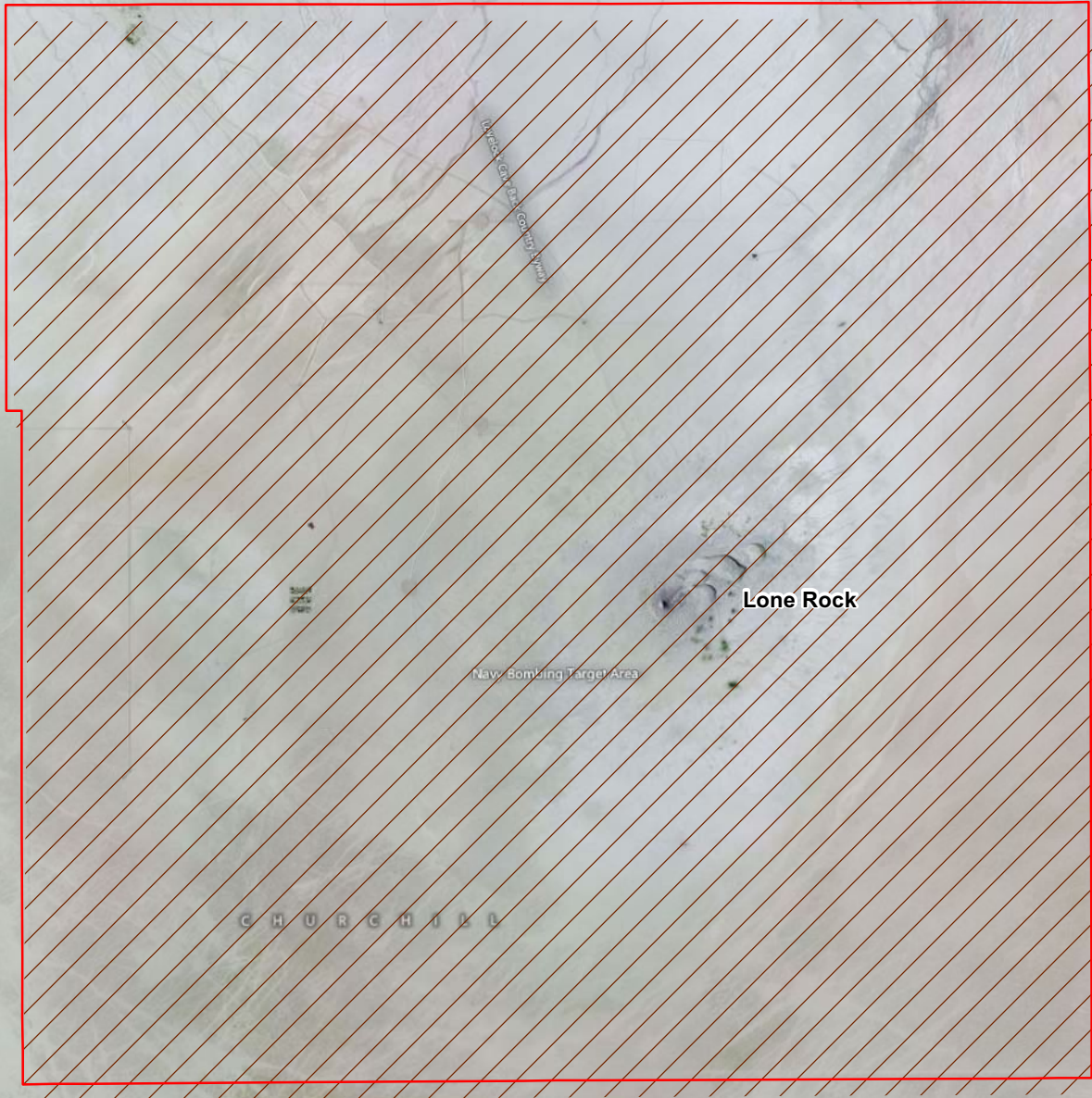
Road

Sparsely Vegetated
- 
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- Vegetation Communities - Bravo 19  
Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada
- 
- APPENDIX H  
4



## Legend

- NAS Fallon
- Playa



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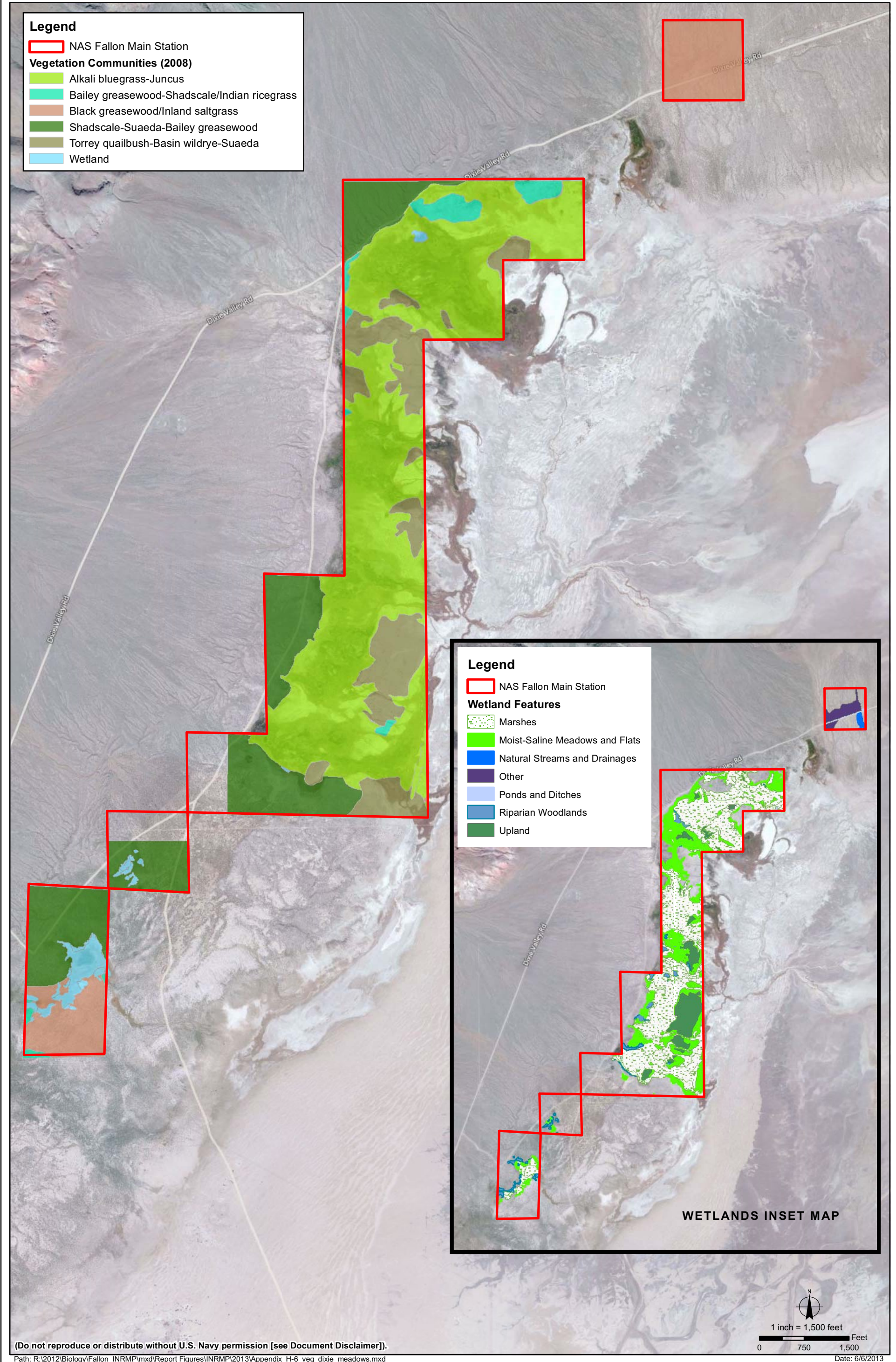
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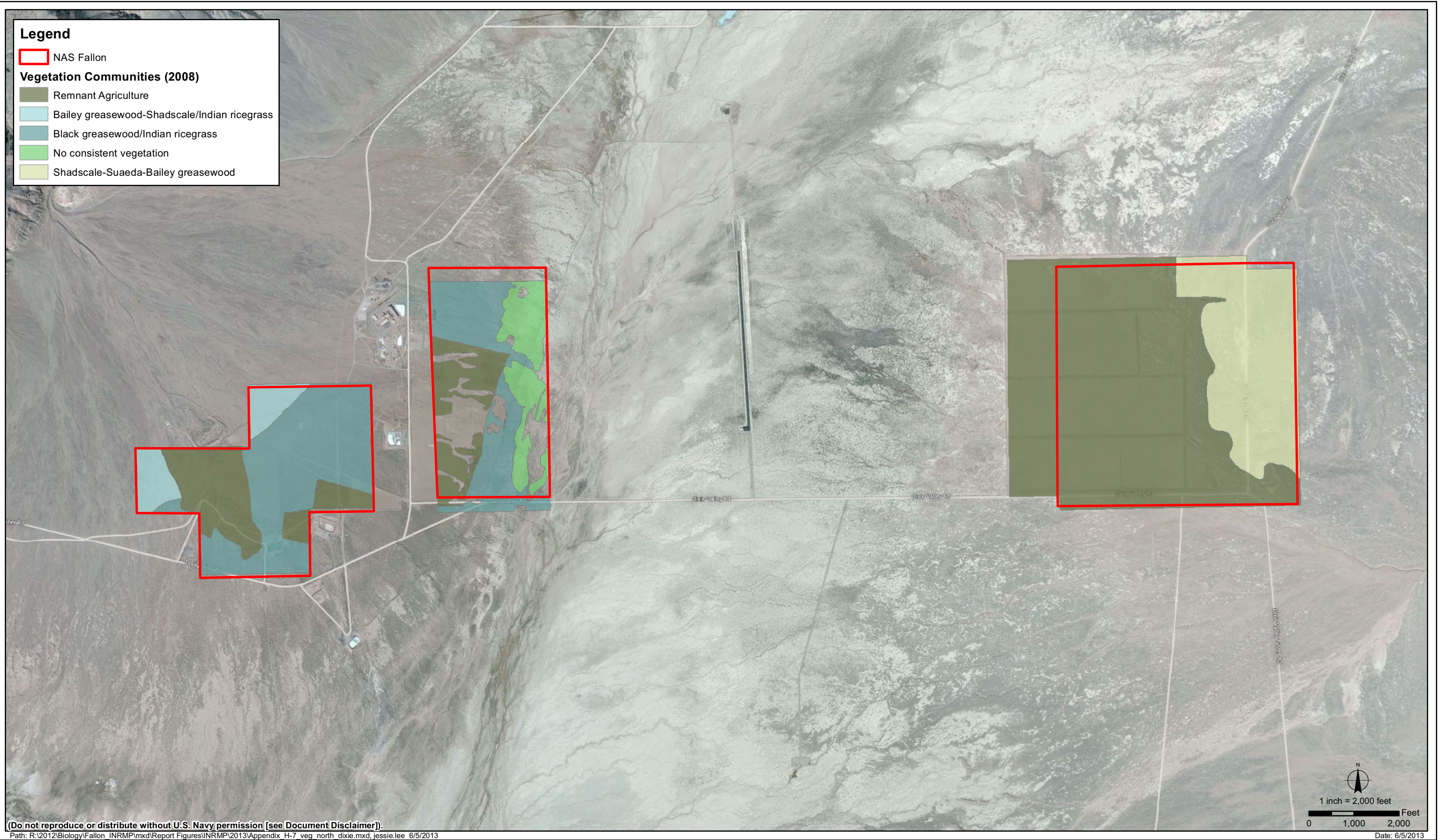




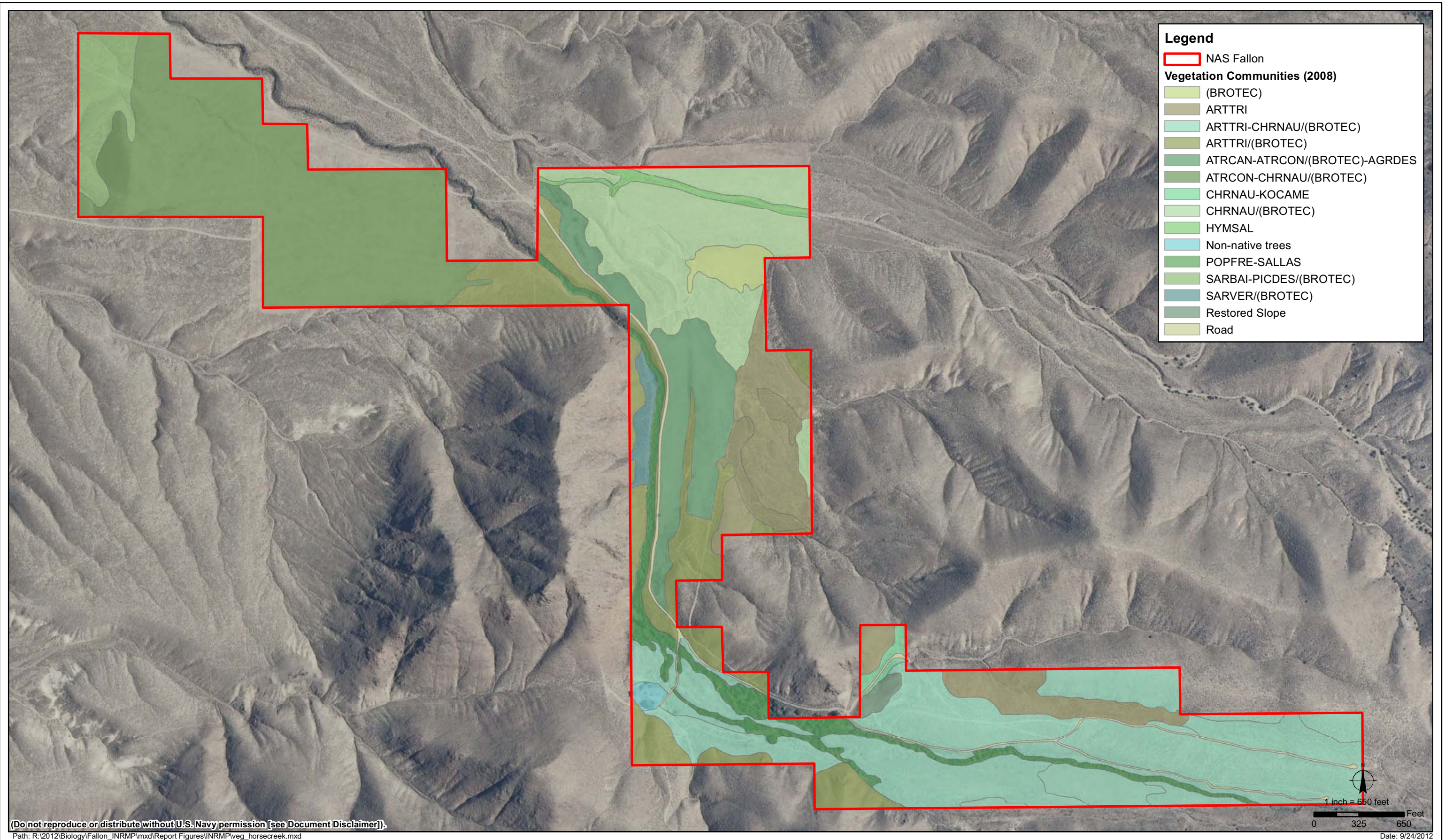












**Vegetation Communities - Horse Creek**  
**Integrated Natural Resources Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**





## Legend

NAS Fallon

### Vegetation Community (2008)

<span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; border: 1px solid black;"></span> ARTTRI	<span style="display: inline-block; width: 15px; height: 10px; background-color: #A5D6A7; border: 1px solid black;"></span> ARTTRI-GRASPI/POASEC	<span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; border: 1px solid black;"></span> SARBAI
<span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; border: 1px solid black;"></span> ARTTRI-CHRNAU-HYMSAL/(BROTEC)	<span style="display: inline-block; width: 15px; height: 10px; background-color: #D7CCC8; border: 1px solid black;"></span> ARTTRI-SARBAI/(BROTEC)-POASEC	<span style="display: inline-block; width: 15px; height: 10px; background-color: #8D6E63; border: 1px solid black;"></span> SARBAI-HYMSAL/(BROTEC)
<span style="display: inline-block; width: 15px; height: 10px; background-color: #81C784; border: 1px solid black;"></span> ARTTRI-CHRNAU/(BROTEC)	<span style="display: inline-block; width: 15px; height: 10px; background-color: #A5D6A7; border: 1px solid black;"></span> ARTTRI-SARBAI/POASEC	<span style="display: inline-block; width: 15px; height: 10px; background-color: #B2EBF2; border: 1px solid black;"></span> SARBAI-PICDES
<span style="display: inline-block; width: 15px; height: 10px; background-color: #66BB6A; border: 1px solid black;"></span> ARTTRI-CHRNAU/(BROTEC-HALGLO)	<span style="display: inline-block; width: 15px; height: 10px; background-color: #DCE775; border: 1px solid black;"></span> ARTTRI/(BROTEC)	<span style="display: inline-block; width: 15px; height: 10px; background-color: #5E855E; border: 1px solid black;"></span> SARBAI-PICDES/(BROTEC)
<span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; border: 1px solid black;"></span> ARTTRI-CHRNAU/POASEC	<span style="display: inline-block; width: 15px; height: 10px; background-color: #8D6E63; border: 1px solid black;"></span> ARTTRI/(BROTEC)-POASEC	<span style="display: inline-block; width: 15px; height: 10px; background-color: #FFCC80; border: 1px solid black;"></span> Road
<span style="display: inline-block; width: 15px; height: 10px; background-color: #A5D6A7; border: 1px solid black;"></span> ARTTRI-EPHNEV-SARBAI/POASEC	<span style="display: inline-block; width: 15px; height: 10px; background-color: #DCE775; border: 1px solid black;"></span> ARTTRI/ACHHYM	<span style="display: inline-block; width: 15px; height: 10px; background-color: #FFF176; border: 1px solid black;"></span> Sparsely Vegetated
	<span style="display: inline-block; width: 15px; height: 10px; background-color: #8D6E63; border: 1px solid black;"></span> ARTTRI/POASEC	
	<span style="display: inline-block; width: 15px; height: 10px; background-color: #5E855E; border: 1px solid black;"></span> HYMSAL/(BROTEC)	



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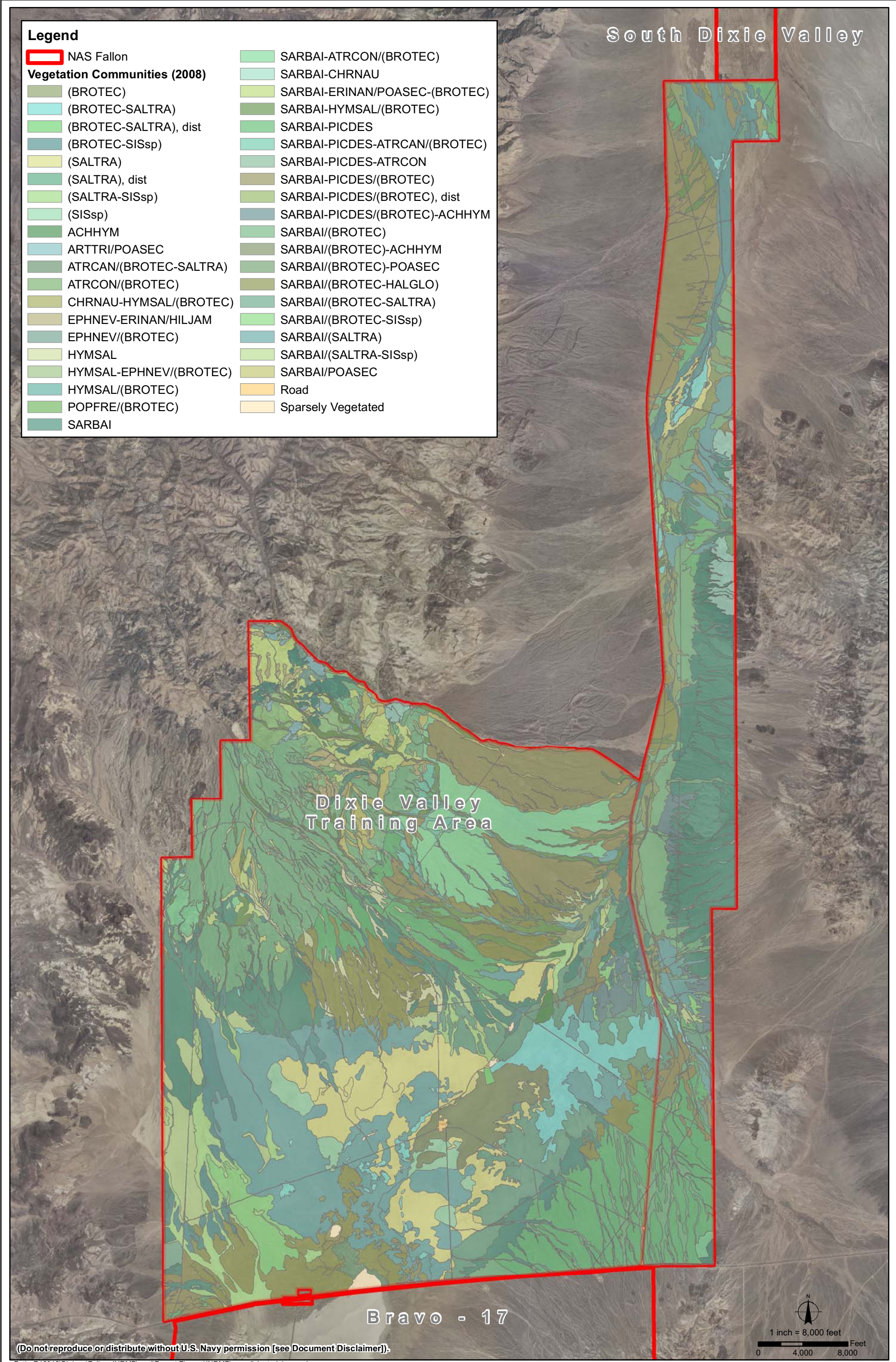












- Legend**
- NAS Fallon

**Vegetation Communities (2008)**

(BROTEC)

(BROTEC-SALTRA)

(BROTEC-SALTRA), dist

(BROTEC-SISsp)

(SALTRA)

(SALTRA), dist

(SALTRA-SISsp)

(SISsp)

ACHHYM

ARTTRI/POASEC

ATRCAN/(BROTEC-SALTRA)

ATRCAN/(BROTEC)

CHRNAU-HYMSAL/(BROTEC)

EPHNEV-ERINAN/HILJAM

EPHNEV/(BROTEC)

HYMSAL

HYMSAL-EPHNEV/(BROTEC)

HYMSAL/(BROTEC)

POPFRE/(BROTEC)

SARBAI
- SARBAI-ATRCAN/(BROTEC)

SARBAI-CHRNAU

SARBAI-ERINAN/POASEC-(BROTEC)

SARBAI-HYMSAL/(BROTEC)

SARBAI-PICDES

SARBAI-PICDES-ATRCAN/(BROTEC)

SARBAI-PICDES-ATRCAN

SARBAI-PICDES/(BROTEC)

SARBAI-PICDES/(BROTEC), dist

SARBAI-PICDES/(BROTEC)-ACHHYM

SARBAI/(BROTEC)

SARBAI/(BROTEC)-ACHHYM

SARBAI/(BROTEC)-POASEC

SARBAI/(BROTEC)-HALGLO

SARBAI/(BROTEC-SALTRA)

SARBAI/(BROTEC-SISsp)

SARBAI/(SALTRA)

SARBAI/(SALTRA-SISsp)

SARBAI/POASEC

Road

Sparsely Vegetated

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**Vegetation Communities - Dixie Valley Training**  
**Integrated Natural Resources Management Plan**  
**Naval Air Station Fallon**  
**Fallon, Nevada**



**Legend**

NAS Fallon

**Vegetation Communities**

Bailey greasewood-Shadscale/Indian ricegrass

Torrey quailbush-Basin wildrye-Suaeda

Remnant Agriculture



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Vegetation Communities - Bar A-3  
Integrated Natural Resources Management Plan  
Naval Air Station Fallon  
Fallon, Nevada

APPENDIX H



# **FINAL**

Integrated Natural Resources Management Plan  
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## **APPENDIX I**

### **NAS FALLON WETLANDS**

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### ***Marshes***

This category includes seasonally to semipermanently flooded, natural marsh habitats characterized by graminoids (grass-like plants) such as Baltic rush (*Juncus balticus*), bulrushes (*Scirpus* spp.), spikerushes (*Eleocharis* spp.), cattails (*Typha* spp.), and sedges (*Carex* spp.), as well as grasses, such as saltgrass (*Distichlis spicata*), that typically occur in Great Basin marshes. These areas are classified as palustrine emergent wetlands that are at least seasonally flooded. Small shallow ponds are also included within this category if they are surrounded by marsh habitats. Willows (*Salix* spp.), cottonwoods (*Populus fremontii*), or other woody species may be present as scattered individuals but not as a continuous overstory; the vegetation is predominantly herbaceous. Marsh-like habitats that are associated with excavated ditches and impoundments are considered separately under the Manmade Ponds and Ditches category.

Natural marshes occur primarily on the Dixie Meadows and North Dixie Valley, where they occupy several hundred acres. Natural marsh habitats are also scattered on Main Station, although most of the wetland habitat on the Main Station occurs in association with manmade ponds and ditches. The only natural marsh that occurs on FRTC is associated with Stinking Springs, which provides a small-area permanent shallow water habitat as well as vegetated wetlands on the western part of B-19.

### ***Moist-Saline Meadows and Flats***

This category includes natural habitats that are temporarily to intermittently flooded and typically support low-growing plants that tolerate seasonal flooding and saline soils. These habitats are often transitional between wetlands and uplands. As with marshes, this category may also encompass small areas of shallow ponds or temporarily flooded depressions that are included in or adjacent to the vegetated areas. Most of these areas are classified as palustrine emergent wetlands that are unpredictably flooded for brief periods. Saltgrass meadows on playas, classified as lacustrine emergent wetlands, also fall into this group. Typical vegetation of these habitats includes saltgrass, sharp-pointed bulrush (*Scirpus pungens*), western niterwort (*Nitrophila occidentalis*), and iodinebush (*Allenrolfea occidentalis*). Iodinebush wetland is also included in this habitat type. It does not include the borders of manmade ditches and ponds and often support similar vegetation.

These habitats are most extensive on the Dixie Meadows and North Dixie Valley, where they occupy several hundred acres. Moist-saline meadows and flats are also scattered on NAS Fallon. There are several hundred acres of iodinebush wetland surrounding the large playa on B-19.

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These areas should be considered to have ecological significance, depending on the ecological context in which they occur. For example, saline (saltgrass) meadows are more likely to provide important wildlife habitat when they are connected to larger areas of wetlands than when they are isolated and of limited extent.

### ***Riparian Wetlands***

This category includes natural habitats with significant shrub or tree cover along natural streams that range from temporarily to permanently flooded. The overstory consists of shrub or tree species that are typically found on stream banks in Nevada. This habitat type is classified as palustrine scrub-shrub or forested wetlands, often associated with an emergent wetland understory. Fremont cottonwood is typically present, although often only as saplings in disturbed or relatively dry sites. Other native or nonnative shrubs or trees, such as willows (*Salix amygdaloides*), wild rose (*Rosa woodsii*), tamarisk (*Tamarix* spp.), or Russian-olive (*Elaeagnus angustifolia*), may be present. Woodland habitats associated with manmade ditches and ponds on NAS Fallon are described below.

Natural riparian woodland habitat is associated with the perennial stretch of Horse Creek. Many acres of riparian scrub habitat also occur on the Dixie Meadows and North Dixie Valley. Additional areas of riparian woodland habitat are at the north end of B-16, where this habitat apparently established along drainages fed by agricultural runoff but which are now mostly dry. Riparian woodlands are generally important for both resident and migratory wildlife

### ***Natural Streams and Drainages***

This category consists of natural drainage channels that range from temporarily to semi-permanently flooded. They are unvegetated or support nonwetland vegetation. These habitats are classified as riverine streambeds if they are intermittently flooded, and as riverine lower perennial or upper perennial if they are flooded on a regular (at least seasonal) basis.

Natural streams with regular seasonal or perennial flows have ecological and regulatory significance, and the management of these areas should emphasize the maintenance and enhancement of their functions and values. In some cases (e.g., along Horse Creek), these areas provide opportunities to enhance fish and wildlife habitat by managing flows and encouraging the establishment of riparian vegetation. Stream channels with temporary or intermittent flows that are connected to other wetland and aquatic habitats are likely to be ecologically important within the context of the areas to which they are connected.

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Horse Creek is the only perennial stream on Navy-administered lands. Cottonwood Creek, an intermittent stream, was historically used to irrigate the Boyer Ranch in northern Dixie Valley. Scattered throughout NAS Fallon are over a hundred miles of intermittent drainages that are only a few feet wide and flow temporarily in response to episodes of rainfall and runoff. Otherwise, the vast majority of surface water flows in excavated ditches, which are considered a separate category and discussed below.

### ***Manmade Ponds and Ditches***

This category consists of shallow ponds and ditches that are manmade through excavation, impoundment, or artificial flooding and they may be vegetated or unvegetated. This habitat is classified as palustrine, manmade ponds and riverine, manmade ditches, as well as all wetland inventory features identified and mapped as excavated, impounded, or artificially flooded. The vegetated portions of manmade ponds and ditches may support vegetation similar in form and function to that described in the preceding categories.

Manmade ponds and ditches are extensive on NAS Fallon with ditches providing about 120 acres of seasonal to permanent open water habitat and a roughly equal area of associated marshes and moist-saline meadows and flats. Ponds provide an additional 4 acres. Additional areas (less extensive than on the Main Station) of manmade open water and wetland habitat occur on the Dixie Meadows and North Dixie Valley. The ecological significance of manmade ditches and ponds varies greatly, but it is generally highest where such features support adjacent marsh or woodland vegetation.

### ***Playas***

This category essentially consists of unvegetated, normally dry saline flats that are situated in topographic low areas with poor drainage. Playas experience shallow, temporary to intermittent flooding followed by prolonged drying periods during which salts accumulate at the surface. A few small areas of regular seasonal flooding that are distinguished in the wetland inventory are included here as part of the larger, less regularly flooded areas.

Playa habitat contiguous with or surrounded by larger areas of vegetated marsh, wet meadow, or moist saline flats are included with those wetland categories. Playas that are smaller than 20 acres are classified as palustrine-unconsolidated shore habitat. Larger playas are classified as lacustrine-littoral-unconsolidated shore habitat.

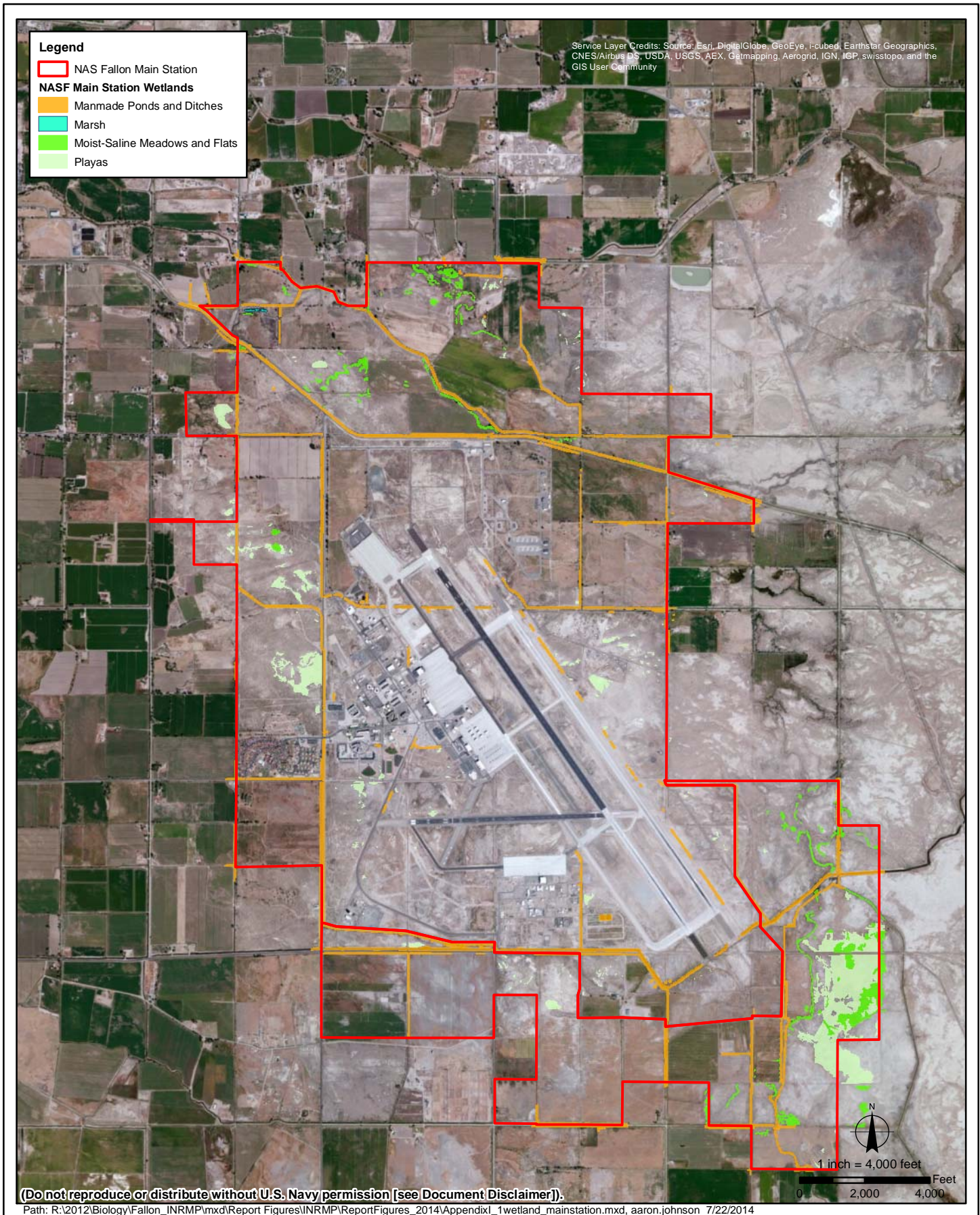


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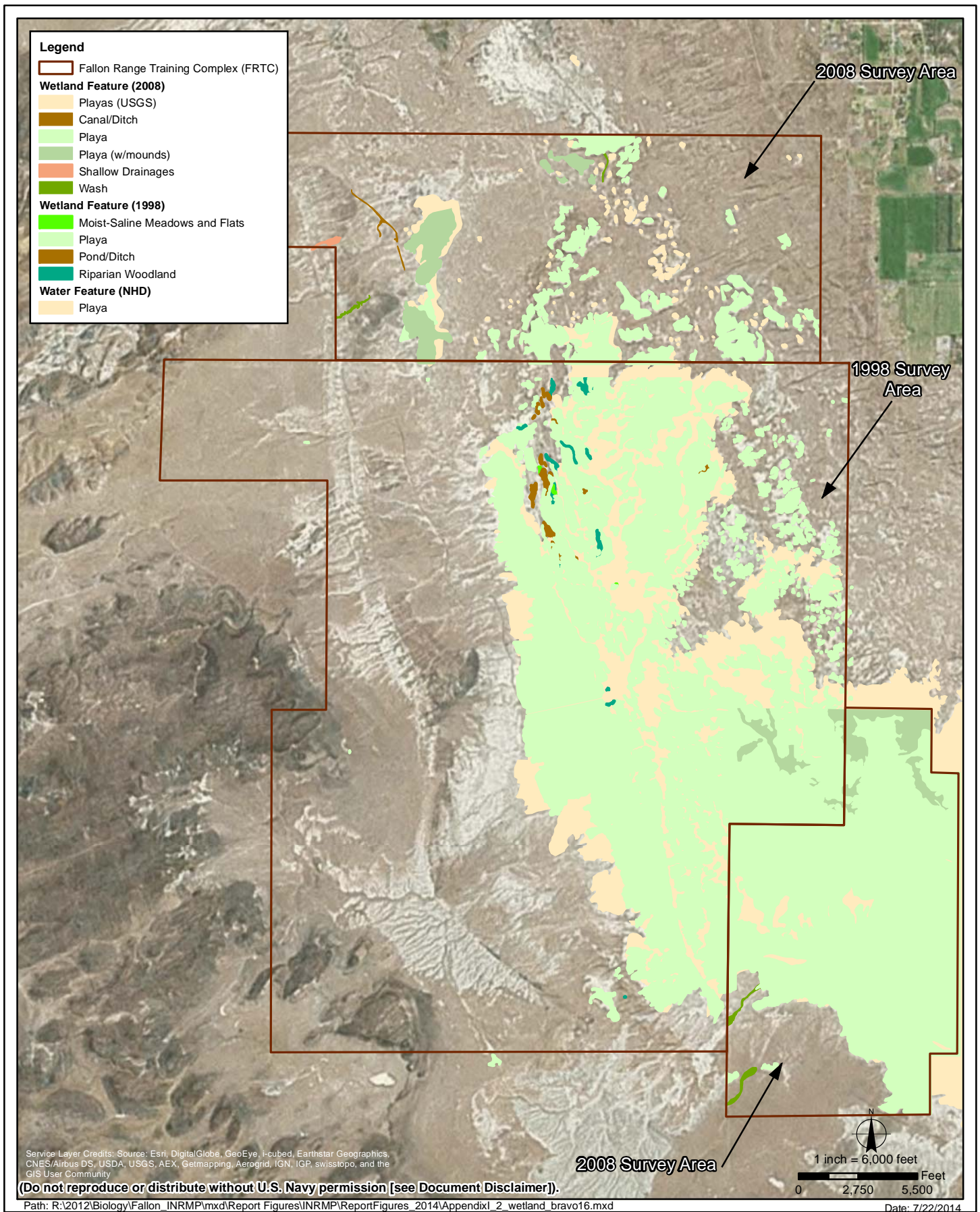


**Surface Water Features - NAS Main Station**  
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# **Legend**

Fallon Range Training Complex (FRTC)

## **Wetland Feature (2008)**

Ditch

Playa

Wash

Wash Bench

## **Wetland Feature (1998)**

Moist-Saline

Meadows and Flats

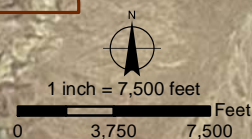
Playa

1998 Wetland  
Delineation Boundary

## **Water Feature (NHD)**

Playa

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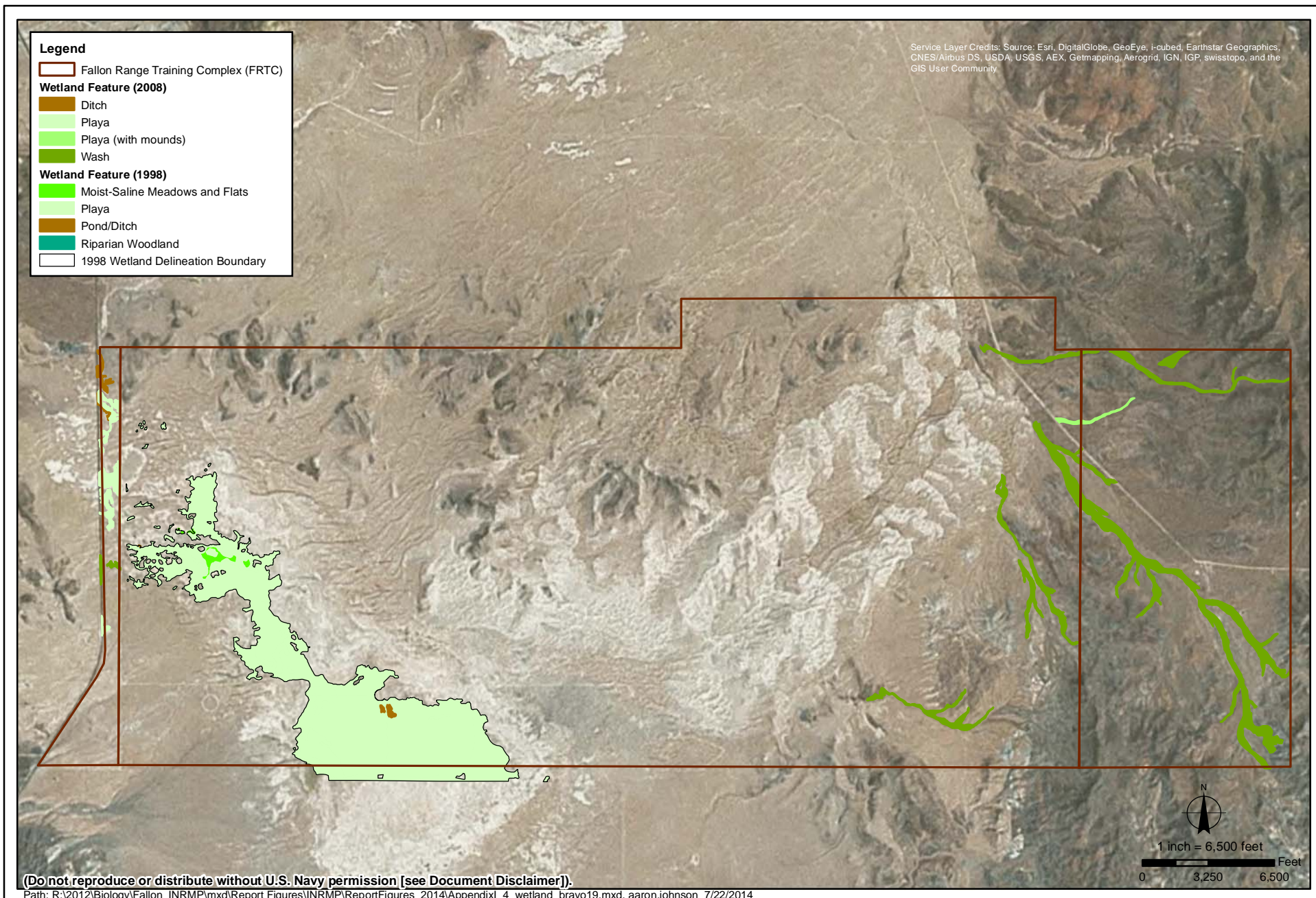


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## **Surface Water Features - Bravo 17** **Integrated Natural Resources Management Plan** **Naval Air Station Fallon** **Fallon, Nevada**

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**Surface Water Features - Bravo 19**  
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
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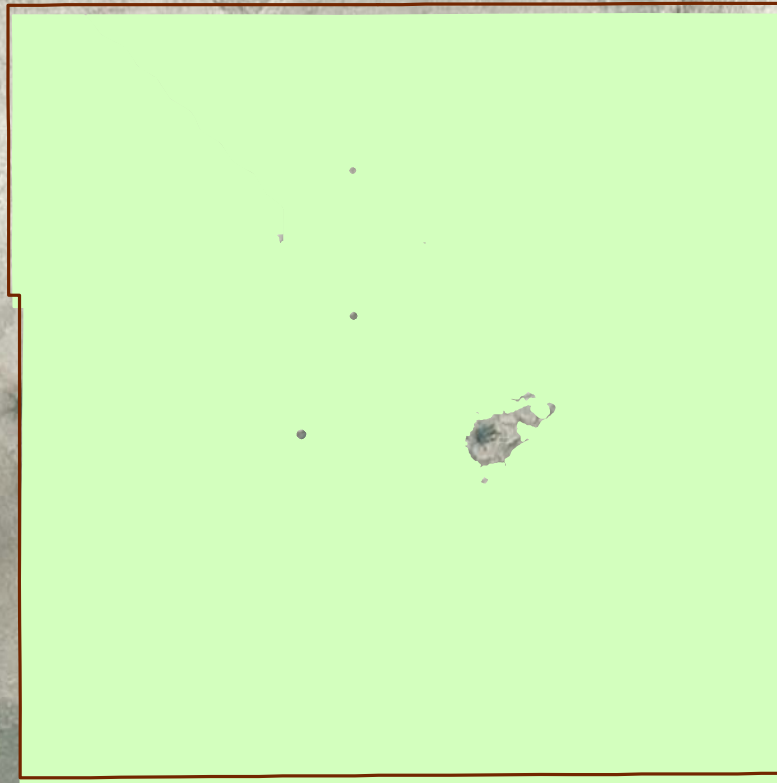
**Legend**

 Fallon Range Training Complex (FRTC)

**Wetland Feature (1998)**

 Playa

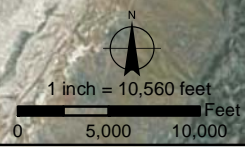
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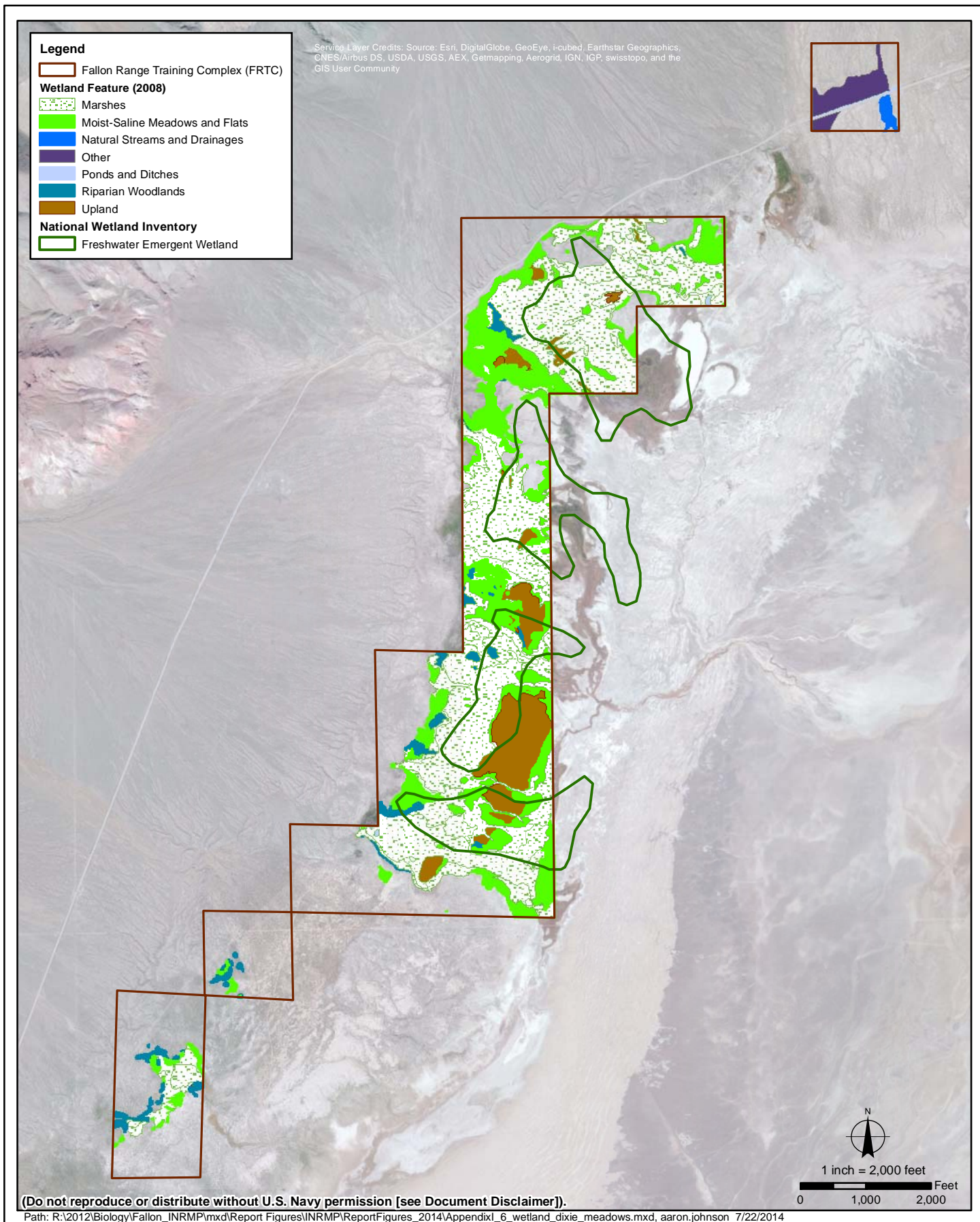


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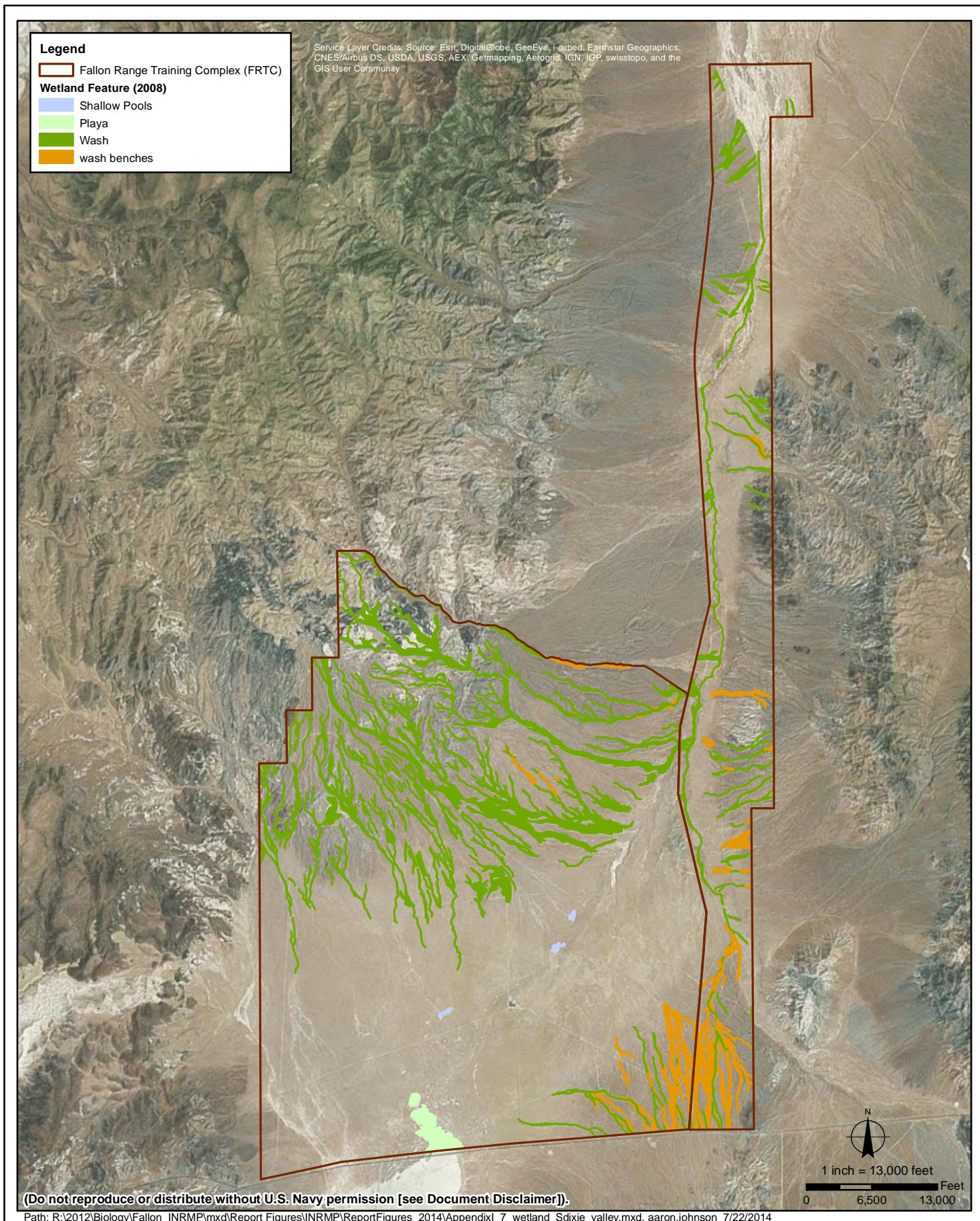




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**Surface Water Features - South Dixie Valley**  
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**Legend**

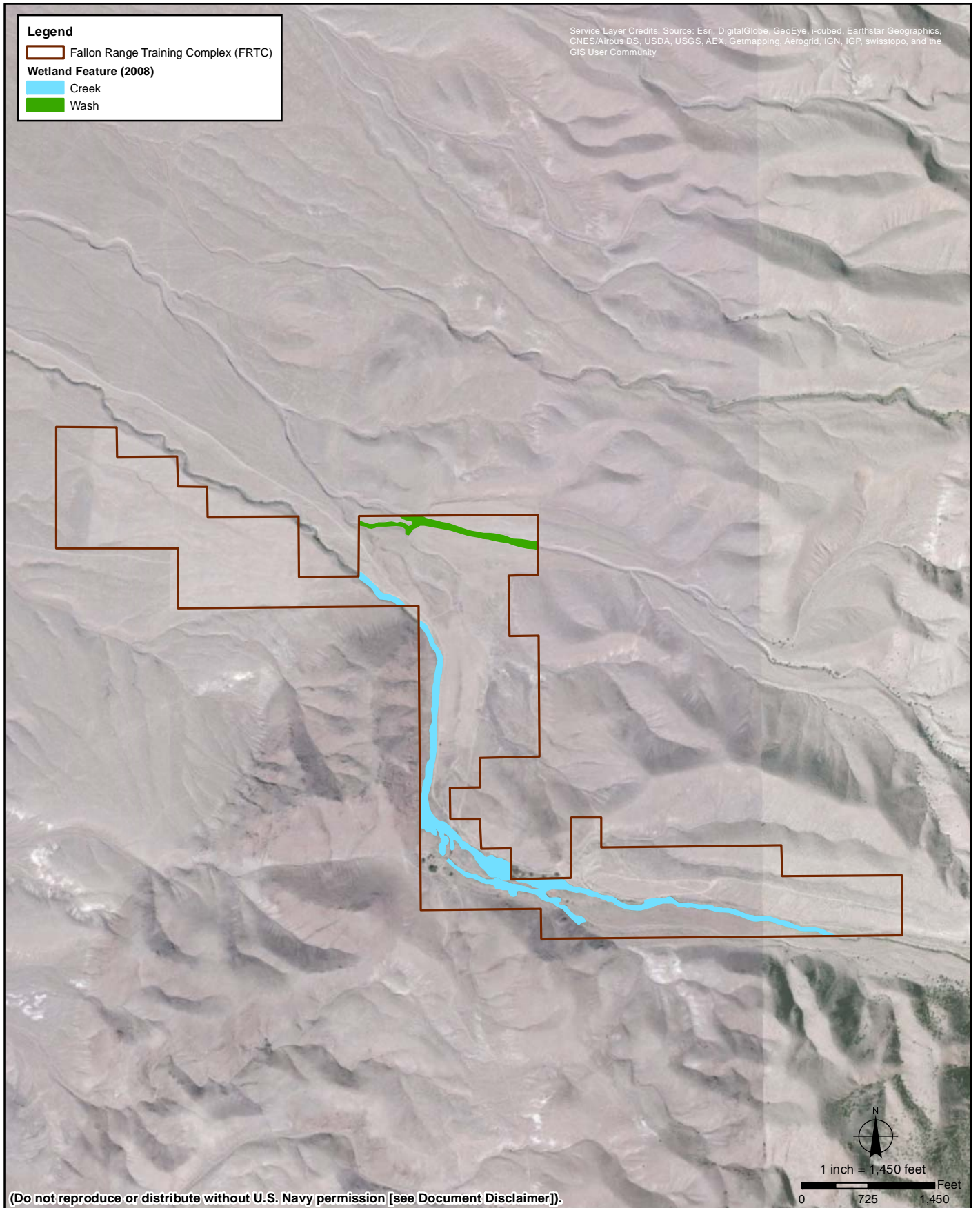
 Fallon Range Training Complex (FRTC)

**Wetland Feature (2008)**

 Creek

 Wash

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**Surface Water Features - Horse Creek**  
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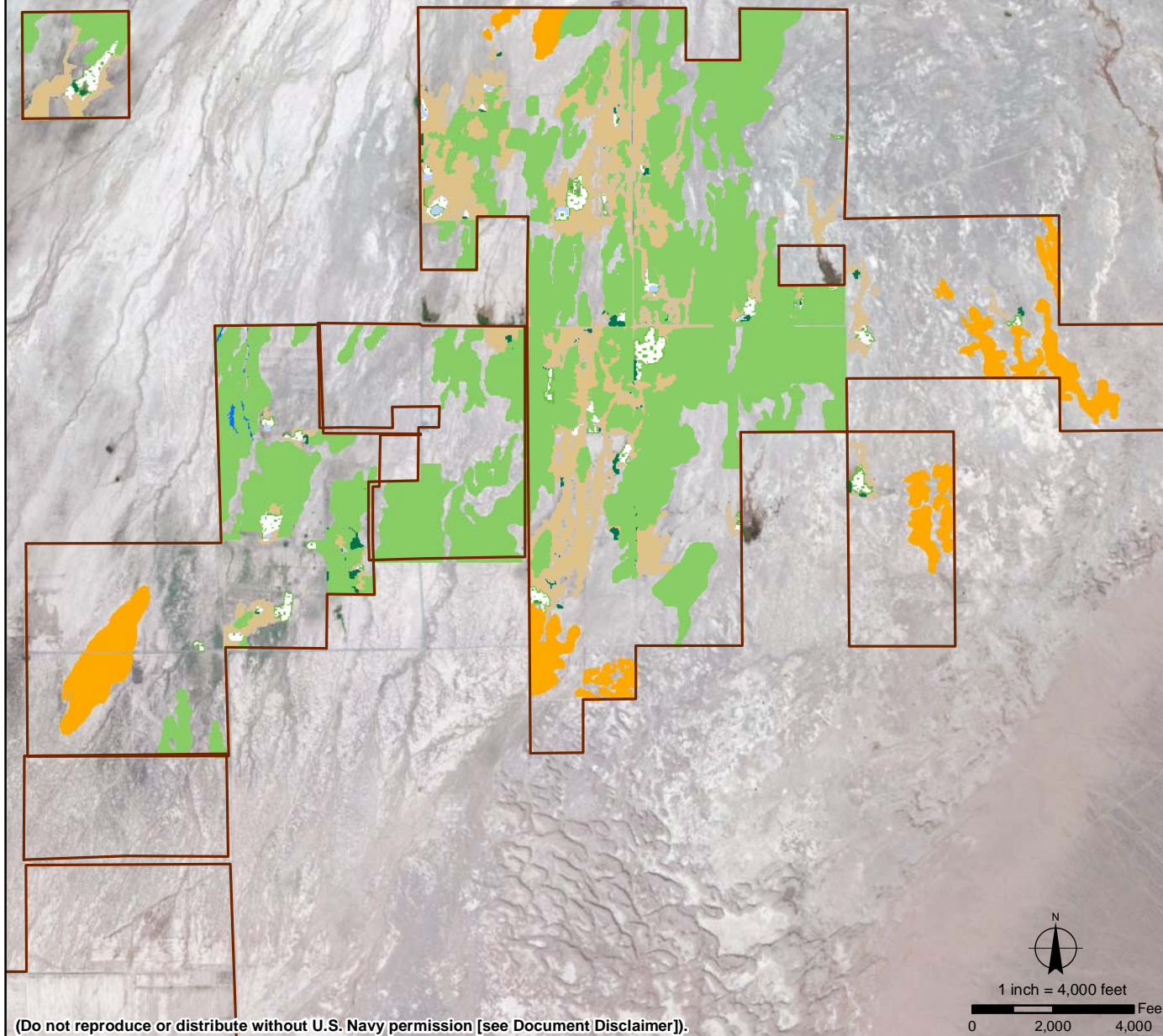
# Legend

Fallon Range Training Complex (FRTC)

## Wetland Feature (2008)

- Ditch
- Marsh
- Mixed Grasslands (moist)
- Playas
- Pond
- Spikerush Meadow
- Streambed
- Woodlands-mixed

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, I-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geomapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



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### Surface Water Features - Settlement Area Integrated Natural Resources Management Plan Naval Air Station Fallon Fallon, Nevada

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### **NAS FALLON FLORA**

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**Table J**  
**Plant Species Documented on NAS Fallon-Administered Lands**

Family	Scientific Name	Common Name	Status
Aizoaceae	<i>Sesuvium verrucosum</i>	verrucose seapurslane	
Alismataceae	<i>Sagittaria cuneata</i>	arumleaf arrowhead	
Alliaceae	<i>Allium atropurpureum</i> var. <i>atropurpureum</i>	darkred onion	
Amaranthaceae	<i>Amaranthus albus</i> <sup>†</sup> <i>Amaranthus retroflexus</i> <sup>†</sup>	prostrate pigweed redroot amaranth	
Apiaceae	<i>Berula erecta</i> <i>Lomatium foeniculaceum</i> ssp. <i>fimbriatum</i> <i>Perideridia bolanderi</i>	cutleaf waterparsnip desert biscuitroot Bolander's yampah	
Apocynaceae	<i>Apocynum cannabinum</i>	dogbane	
Asclepiadaceae	<i>Asclepias fascicularis</i> <i>Asclepias speciosa</i>	Mexican whorled milkweed showy milkweed	
Asteraceae	<i>Acroptilon repens</i> <sup>†</sup> <i>Agoseris glauca</i> var. <i>laciniata</i> <i>Ambrosia acanthicarpa</i> <i>Ambrosia artemisiifolia</i> <sup>†</sup> <i>Antennaria dimorpha</i> <i>Anthemis cotula</i> <i>Artemisia arbuscula</i> ssp. <i>arbuscula</i> <i>Artemisia dracunculus</i> <i>Artemisia ludoviciana</i> ssp. <i>incompta</i> <i>Artemisia ludoviciana</i> ssp. <i>ludoviciana</i> <i>Artemisia nova</i> <i>Artemisia spinescens</i> <i>Artemisia tridentata</i> ssp. <i>tridentata</i> <i>Artemisia tridentata</i> ssp. <i>vaseyana</i>  <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>  <i>Aster frondosus</i> <i>Aster hesperius</i> <i>Bidens cernua</i> <i>Bidens frondosa</i> <i>Brickellia microphylla</i> var. <i>microphylla</i> <i>Brickellia oblongifolia</i> var. <i>linifolia</i> <i>Centaurea solstitialis</i> <i>Chaenactis douglasii</i> var. <i>achilleaefolia</i> <i>Chaenactis douglasii</i> var. <i>montana</i> <i>Chaenactis stevioides</i>	Russian knapweed false agoseris sand bursage annual ragweed low pussytoes stinking chamomile little sagebrush tarragon white sagebrush white sagebrush black sagebrush bud sagebrush basin big sagebrush mountain big sagebrush Wyoming big sagebrush short-rayed alkali aster white panicle aster nodding beggartick devil's beggartick littleleaf brickellbush narrowleaf brickellbush yellow star-thistle Douglas' dustymaiden Douglas' dustymaiden Esteve's pincushion	

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Family	Scientific Name	Common Name	Status
	<i>Chaenactis xantiana</i>	fleshcolor pincushion	
	<i>Chaetadelpa wheeleri</i>	Wheeler's skeletonweed	
	<i>Chrysothamnus albidus</i>	whiteflower rabbitbrush	
	<i>Chrysothamnus nauseosus</i> ssp. <i>hololeucus</i>	rubber rabbitbrush	
	<i>Chrysothamnus nauseosus</i> ssp. <i>leiospermus</i>	rubber rabbitbrush	
	<i>Chrysothamnus nauseosus</i> ssp. <i>speciosus</i>	rubber rabbitbrush	
	<i>Chrysothamnus nauseosus</i> var. <i>oreophilus</i>	rubber rabbitbrush	
	<i>Chrysothamnus parryi</i> ssp. <i>nevadensis</i>	Parry's rabbitbrush	
	<i>Chrysothamnus viscidiflorus</i> ssp. <i>puberulus</i>	yellow rabbitbrush	
	<i>Chrysothamnus viscidiflorus</i> ssp. <i>viscidiflorus</i>	green rabbitbrush	
	<i>Cichorium intybus</i>	chicory	
	<i>Cirsium arvense</i> <sup>†</sup>	Canada thistle	
	<i>Cirsium vulgare</i> <sup>†</sup>	bull thistle	
	<i>Conyza canadensis</i>	Canadian horseweed	
	<i>Crepis acuminata</i>	tapertip hawksbeard	
	<i>Crepis occidentalis</i> ssp. <i>conjuncta</i>	largeflower hawksbeard	
	<i>Crepis runcinata</i> var. <i>andersonii</i>	Anderson's hawksbeard	
	<i>Dicoria canescens</i>	desert twinbugs	
	<i>Ericameria nana</i>	dwarf goldenbush	
	<i>Erigeron aphanactis</i> var. <i>aphanactis</i>	rayless shaggy fleabane	
	<i>Erigeron bloomeri</i> var. <i>bloomeri</i>	scabland fleabane	
	<i>Euthamia occidentalis</i>	western goldenrod	
	<i>Gnaphalium luteoalbum</i> <sup>†</sup>	Jersey cudweed	
	<i>Gnaphalium palustre</i>	western marsh cudweed	
	<i>Grindelia nana</i> var. <i>integrifolia</i>	Idaho gumweed	
	<i>Grindelia squarrosa</i> var. <i>serrulata</i>	curlycup gumweed	
	<i>Gutierrezia sarothrae</i>	broom snakeweed	
	<i>Helianthus annuus</i> <sup>†</sup>	common sunflower	
	<i>Helianthus anomalus</i>	western sunflower	
	<i>Hymenoclea salsola</i> var. <i>salsola</i>	burrobush	
	<i>Iva axillaries</i> var. <i>robustior</i>	povertyweed	
	<i>Iva nevadensis</i>	Nevada sumpweed	
	<i>Lactuca pulchella</i>	blue lettuce	
	<i>Lactuca serriola</i> <sup>†</sup>	prickly lettuce	
	<i>Machaeranthera canescens</i>	hoary tansyaster	
	<i>Madia gracilis</i>	grassy tarweed	
	<i>Malacothrix glabrata</i>	smooth desertydandelion	
	<i>Malacothrix sonchoides</i>	sowthistle desertydandelion	
	<i>Onopordum acanthium</i> <sup>†</sup>	Scotch thistle	
	<i>Pectis papposa</i>	manybristle chinchweed	
	<i>Picrothamnus desertorum</i>	bud sagebrush	
	<i>Prenanthes exigua</i>	brightwhite	
	<i>Psathyrotes annua</i>	annual psathyrotes	
	<i>Pyrocoma racemosa</i> var. <i>paniculata</i>	clustered goldenweed	
	<i>Pyrocoma racemosa</i> var. <i>sessiliflora</i>	clustered goldenweed	
	<i>Senecio integerrimus</i> var. <i>exaltatus</i>	Columbia ragwort	

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Family	Scientific Name	Common Name	Status
	<i>Solidago spectabilis</i>	Nevada goldenrod	
	<i>Sonchus asper</i> <sup>†</sup>	spiny sowthistle	
	<i>Stephanomeria exigua</i>	small wirelettuce	
	<i>Stephanomeria pauciflora</i>	brownplume wirelettuce	
	<i>Stephanomeria spinosa</i>	thorn skeletonweed	
	<i>Taraxacum officinale</i> <sup>†</sup>	common dandelion	
	<i>Tetradymia glabrata</i>	littleleaf horsebush	
	<i>Tetradymia spinosa</i>	spiny horsebush	
	<i>Tetradymia tetrameres</i>	fourpart horsebrush	
	<i>Tragopogon dubius</i> <sup>†</sup>	yellow salsify	
	<i>Xanthium strumarium</i> var. <i>canadense</i>	Canada cocklebur	
Bignoniaceae	<i>Catalpa bignonioides</i>	southern catalpa	
Boraginaceae	<i>Amsinckia tessellata</i>	bristly fiddleneck	
	<i>Cryptantha circumscissa</i>	cushion cryptantha	
	<i>Cryptantha echinella</i>	prickly cryptantha	
	<i>Cryptantha flavoculata</i>	roughseed catseye	
	<i>Cryptantha humilis</i>	roundspike cryptantha	
	<i>Cryptantha micrantha</i>	redroot cryptantha	
	<i>Cryptantha nevadensis</i>	Nevada cryptantha	
	<i>Cryptantha pterocarya</i>	wingnut cryptantha	
	<i>Cryptantha recurvata</i>	curvednut cryptantha	
	<i>Cryptantha</i> sp.	cryptantha	
	<i>Cryptantha torreyana</i>	Torrey's cryptantha	
	<i>Heliotropium curassavicum</i>	salt heliotrope	
	<i>Plagiobothrys salsus</i>	salty popcornflower	
	<i>Plagiobothrys scouleri</i> var. <i>penicillatus</i>	sleeping popcornflower	
	<i>Tiquilia nuttallii</i>	Nuttall's crinklemat	
Brassicaceae	<i>Arabis holboellii</i> var. <i>pinetorum</i>	Holboell's rockcress	
	<i>Arabis</i> sp.	rockcress	
	<i>Barbarea orthoceras</i>	American yellowrocket	
	<i>Capsella bursa-pastoris</i>	shepherd's purse	
	<i>Cardaria draba</i>	whitetop	
	<i>Cardaria pubescens</i>	hairy whitetop	
	<i>Caulanthus crassicaulis</i> var. <i>crassicaulis</i>	thickstem wild cabbage	
	<i>Caulanthus major</i> var. <i>nevadensis</i>	slender wild cabbage	
	<i>Caulanthus pilosus</i>	hairy wild cabbage	
	<i>Chorispora tenella</i>	crossflower	
	<i>Descurainia sophia</i> <sup>†</sup>	herb sophia	
	<i>Descurainia</i> sp.	tansymustard	
	<i>Hymenolobus procumbens</i>	prostrate hutchinsia	
	<i>Lepidium densiflorum</i> var. <i>pubescarpum</i>	babyseed pepperweed	
	<i>Lepidium fremontii</i>	desert pepperweed	
	<i>Lepidium latifolium</i> <sup>†</sup>	broadleaved pepperweed	

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Family	Scientific Name	Common Name	Status
	<i>Lepidium perfoliatum</i> <sup>†</sup>	clasping pepperweed	
	<i>Lepidium</i> sp.	pepperweed	
	<i>Lepidium virginicum</i> var. <i>pubescens</i>	hairy pepperweed	
	<i>Lesquerella cordiformis</i>	Wassuck Range bladderpod	
	<i>Nasturtium officinale</i>	watercress	
	<i>Rorippa curvipes</i> var. <i>truncata</i>	bluntleaf yellowcress	
	<i>Rorippa palustris</i> var. <i>occidentalis</i>	western bog yellowcress	
	<i>Sisymbrium altissimum</i> <sup>†</sup>	tall tumbled mustard	
	<i>Stanleya elata</i>	Panamint princesplume	
	<i>Stanleya pinnata</i>	desert princesplume	
	<i>Streptanthella longirostris</i>	longbeak streptanthella	
	<i>Thelypodium flexuosum</i>	nodding thelypod	
	<i>Thelypodium milleflorum</i>	mayflower thelypod	
Cactaceae	<i>Opuntia erinacea</i>	grizzlybear pricklypear	
	<i>Opuntia pulchella</i>	sand cholla	S2S3 by NNHP
Callitrichaceae	<i>Callitriche heterophylla</i> var. <i>bolanderi</i>	Bolander's water-star-wort	
	<i>Callitriche</i> sp.	water-star-wort	
Capparaceae	<i>Cleome lutea</i>	beeplant	
	<i>Cleomella brevipes</i>	shortstalk stinkweed	
	<i>Cleomella parviflora</i>	slender cleomella	
	<i>Cleomella plocasperma</i>	twisted cleomella	
Caryophyllaceae	<i>Arenaria kingii</i> var. <i>glabrescens</i>	King's compact sandwort	
	<i>Minuartia nuttallii</i> ssp. <i>fragilis</i>	brittle sandwort	
	<i>Sagina saginoides</i>	arctic pearlwort	
	<i>Spergularia marina</i>	salt sandspurry	
Chenopodiaceae	<i>Allenrolfea occidentalis</i>	iodinebush	
	<i>Atriplex argentea</i> ssp. <i>argentea</i>	silverscale saltbush	
	<i>Atriplex canescens</i>	fourwing saltbush	
	<i>Atriplex confertifolia</i>	shadscale saltbush	
	<i>Atriplex heterosperma</i>	twoscale saltbush	
	<i>Atriplex phyllostegia</i>	leafcover saltweed	
	<i>Atriplex rosea</i> <sup>†</sup>	tumbling saltweed	
	<i>Atriplex</i> sp.	saltbush	
	<i>Atriplex torreyi</i>	Torrey's qualbush	
	<i>Atriplex triangularis</i>	triangle orache	
	<i>Atriplex truncata</i>	wedgescale saltbush	
	<i>Bassia hyssopifolia</i> <sup>†</sup>	fivehook bassia	
	<i>Chenopodium album</i> <sup>†</sup>	lambsquarters	
	<i>Chenopodium berlandieri</i>	pigseed goosefoot	
	<i>Chenopodium desiccatum</i>	aridland goosefoot	
	<i>Chenopodium foliosum</i>	leafy goosefoot	
	<i>Chenopodium fremontii</i>	Fremont goosefoot	

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Family	Scientific Name	Common Name	Status
	<i>Chenopodium glaucum</i>	oakleaf goosefoot	
	<i>Chenopodium nevadense</i>	Nevada goosefoot	
	<i>Grayia spinosa</i>	spiny hopsage	
	<i>Halogeton glomeratus</i> <sup>†</sup>	saltlover	
	<i>Kochia americana</i>	green molly	
	<i>Kochia scoparia</i> <sup>†</sup>	kochia	
	<i>Krascheninnikovia lanata</i>	winterfat	
	<i>Monolepis nuttalliana</i>	Nuttall's povertyweed	
	<i>Nitrophila occidentalis</i>	boraxweed	
	<i>Salicornia europaea</i>	slender glasswort	
	<i>Salsola paulsenii</i> <sup>†</sup>	barbwire Russian thistle	
	<i>Salsola tragus</i> <sup>†</sup>	prickly Russian thistle	
	<i>Sarcobatus vermiculatus</i>	greasewood	
	<i>Suaeda calceoliformis</i>	Pursh seepweed	
	<i>Suaeda moquinii</i>	alkali seepweed	
Convolvulaceae	<i>Convolvulus arvensis</i> <sup>†</sup>	field bindweed	
	<i>Cressa truxillensis</i>	spreading alkaliweed	
Crassulaceae	<i>Crassula aquatica</i>	water pygmyweed	
Cupressaceae	<i>Juniperus osteosperma</i>	Utah juniper	
Cuscutaceae	<i>Cuscuta denticulata</i>	desert dodder	
	<i>Cuscuta pentagona</i> var. <i>pentagona</i>	fiveangled dodder	
Cyperaceae	<i>Carex athrostachya</i>	slenderbeak sedge	
	<i>Carex lanuginosa</i>	wooly sedge	
	<i>Carex praegracilis</i>	clustered field sedge	
	<i>Carex subfusca</i>	brown sedge	
	<i>Carex vulpinoidea</i>	fox sedge	
	<i>Cyperus aristatus</i>	bearded flatsedge	
	<i>Cyperus erythrorhizos</i>	redroot flatsedge	
	<i>Eleocharis macrostachya</i>	pale spikerush	
	<i>Eleocharis parishii</i>	Parish's spikerush	
	<i>Eleocharis parvula</i> var. <i>anachaeta</i>	dwarf spikerush	
	<i>Eleocharis rostellata</i>	beaked spikerush	
	<i>Scirpus acutus</i>	hardstem bulrush	
	<i>Scirpus americanus</i>	chairmaker's bulrush	
	<i>Scirpus maritimus</i>	cosmopolitan bulrush	
	<i>Scirpus microcarpus</i>	panicled bulrush	
	<i>Scirpus pungens</i>	common threesquare	
Elaeagnaceae	<i>Elaeagnus angustifolia</i> <sup>†</sup>	Russian olive	
	<i>Shepherdia argentea</i>	silver buffaloberry	
Elatinaceae	<i>Bergia texana</i>	Texas bergia	

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	<i>Elatine brachysperma</i>	shortseed waterwort	
Ephedraceae	<i>Ephedra nevadensis</i> <i>Ephedra viridis</i>	Nevada jointfir mormon tea	
Equisetaceae	<i>Equisetum arvense</i> <i>Equisetum laevigatum</i>	field horsetail smooth horsetail	
Euphorbiaceae	<i>Chamaesyce fendleri</i> <i>Chamaesyce glyptosperma</i> <i>Chamaesyce micromera</i> <i>Chamaesyce ocellata</i> ssp. <i>arenicola</i> <i>Chamaesyce serpyllifolia</i> ssp. <i>serpyllifolia</i>	Fendler's sandmat ribseed sandmat Sonoran spurge Contura Creeks sandmat thymeleaf spurge	
Fabaceae	<i>Astragalus atratus</i> var. <i>atratus</i> <i>Astragalus filipes</i> <i>Astragalus iodanthus</i> var. <i>iodanthus</i> <i>Astragalus lentiginosus</i> var. <i>kennedyi</i> <i>Astragalus purshii</i> var. <i>purshii</i> <i>Astragalus serenoii</i> var. <i>serenoii</i> <i>Astragalus</i> sp. <i>Galega officinalis</i> <i>Gleditsia triacanthos</i> <i>Lotus corniculatus</i> <sup>†</sup> <i>Lupinus argenteus</i> var. <i>heteranthus</i> <i>Lupinus pusillus</i> var. <i>intermontanus</i> <i>Medicago lupulina</i> <i>Medicago sativa</i> <i>Melilotus alba</i> <i>Melilotus officinalis</i> <i>Psoraleidium lanceolatum</i> <i>Psoralethamnus kingii</i> <i>Psoralethamnus polydenius</i> <i>Robinia pseudoacacia</i> <i>Trifolium fragiferum</i> <sup>†</sup> <i>Trifolium monanthum</i> var. <i>monanthum</i> <i>Trifolium repens</i> <sup>†</sup> <i>Trifolium variegatum</i> <i>Trifolium wormskioldii</i>	mourning milkvetch basalt milkvetch Humboldt River milkvetch Kennedy's milkvetch woollypod milkvetch naked milkvetch milkvetch goats rue honeylocust bird's-foot trefoil tailcup lupine intermountain lupine black medic alfalfa sweetclover sweetclover lemon scurphea Lahonton indigo bush Nevada dalea black locust strawberry clover mountain carpet clover white clover whitetip clover cows clover	
Gentianaceae	<i>Centaurium exaltatum</i>	desert centaury	
Geraniaceae	<i>Erodium cicutarium</i> <sup>†</sup>	redstem stork's bill	
Grossulariaceae	<i>Ribes aureum</i> var. <i>aureum</i> <i>Ribes cereum</i> var. <i>cereum</i> <i>Ribes inerme</i>	golden currant wax currant whitestem gooseberry	



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	<i>Ribes velutinum</i>	desert gooseberry	
Hydrocharitaceae	<i>Elodea canadensis</i>	Canadian waterweed	
Hydrophyllaceae	<i>Nama aretioides</i> var. <i>multiflorum</i>	ground nama	
	<i>Phacelia bicolor</i>	twocolor phacelia	
	<i>Phacelia hastata</i> var. <i>alpina</i>	silverleaf phacelia	
	<i>Phacelia</i> sp.	phacelia	
Juncaceae	<i>Juncus balticus</i>	Baltic rush	
	<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush	
	<i>Juncus confusus</i>	Colorado rush	
	<i>Juncus ensifolius</i> var. <i>montanus</i>	Rocky Mountain rush	
	<i>Juncus longistylis</i>	longstyle rush	
	<i>Juncus torreyi</i>	Torrey's rush	
Juncaginaceae	<i>Triglochin concinna</i> var. <i>debilis</i>	slender arrowgrass	
Lamiaceae	<i>Lycopus americanus</i>	American water horehound	
	<i>Lycopus asper</i>	rough bugleweed	
	<i>Mentha arvensis</i>	wild mint	
	<i>Mentha rotundifolia</i>	apple mint	
	<i>Mentha spicata</i>	spearmint	
	<i>Monardella odoratissima</i> ssp. <i>glauca</i>	pale monardella	
Lemnaceae	<i>Lemna minor</i>	common duckweed	
	<i>Lemna minuta</i>	least duckweed	
Liliaceae	<i>Fritillaria atropurpurea</i>	leopard lily	
	<i>Asparagus officinalis</i> var. <i>officinalis</i> <sup>†</sup>	garden asparagus	
Loasaceae	<i>Mentzelia albicaulis</i>	white blazingstar	
Malvaceae	<i>Malva neglecta</i>	common mallow	
	<i>Malvella leprosa</i>	alkali mallow	
	<i>Sidalcea neomexicana</i> ssp. <i>crenulata</i>	salt spring checkerbloom	
	<i>Sphaeralcea ambigua</i> ssp. <i>ambigua</i>	apricot globemallow	
	<i>Sphaeralcea grossulariifolia</i>	gooseberryleaf globemallow	
Marsileaceae	<i>Marsilea vestita</i> ssp. <i>vestita</i>	hairy waterclover	
Melanthiaceae	<i>Zigadenus paniculatus</i>	foothill deathcamas	
Nyctaginaceae	<i>Abronia turbinata</i>	transmontane sand verbena	
	<i>Mirabilis alipes</i>	winged four-o'clock	
	<i>Mirabilis bigelovii</i>	Bigelow four-o'clock	
	<i>Tripterocalyx crux-maltae</i>	Lassen sandverbena	

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Family	Scientific Name	Common Name	Status
Oleaceae	<i>Fraxinus pennsylvanica</i>	green ash	
Onagraceae	<i>Camissonia claviformis</i> ssp. <i>integrrior</i>	browneyes	
	<i>Camissonia heterochroma</i>	Shockley's evening primrose	
	<i>Camissonia parvula</i>	Lewis River suncup	
	<i>Camissonia</i> sp.	suncup	
	<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	fringed willowherb	
	<i>Gaura parviflora</i> <sup>†</sup>	smallflowered gaura	
	<i>Gayophytum diffusum</i> ssp. <i>parviflorum</i>	small flowered groundsmoke	
	<i>Oenothera deltoides</i> ssp. <i>piperi</i>	Piper's eveningprimrose	
	<i>Oenothera elata</i> ssp. <i>hirsutissima</i>	Hooker's evening primrose	
	<i>Oenothera flava</i>	yellow evening primrose	
	<i>Oenothera villosa</i> ssp. <i>strigosa</i>	hairy evening primrose	
Orchidaceae	<i>Epipactis gigantea</i>	stream orchid	
Orobanchaceae	<i>Orobanche corymbosa</i>	flat-top broomrape	
Papaveraceae	<i>Argemone munita</i>	flatbud pricklypoppy	
Pinaceae	<i>Pinus monophylla</i>	singleleaf pinyon	
Plantaginaceae	<i>Plantago lanceolata</i> <sup>†</sup>	narrowleaf plantain	
	<i>Plantago major</i> <sup>†</sup>	common plantain	
Poaceae	<i>Achnatherum hymenoides</i>	Indian ricegrass	
	<i>Agropyron desertorum</i> <sup>†</sup>	desert wheatgrass	
	<i>Agropyron trachycaulum</i>	slender wheatgrass	
	<i>Agrostis gigantean</i> <sup>†</sup>	redtop	
	<i>Agrostis stolonifera</i> <sup>†</sup>	creeping bentgrass	
	<i>Alopecurus aequalis</i>	shortawn foxtail	
	<i>Alopecurus carolinianus</i>	Carolina foxtail	
	<i>Beckmannia syzigachne</i>	American sloughgrass	
	<i>Blepharidachne kingii</i>	King's eyelashgrass	
	<i>Bouteloua barbata</i> var. <i>barbata</i>	sixweeks grama	
	<i>Bromus rubens</i>	red brome	
	<i>Bromus tectorum</i> <sup>†</sup>	cheatgrass	
	<i>Bromus willdenowii</i> <sup>†</sup>	rescuegrass	
	<i>Cenchrus longispinus</i>	mat sandbur	
	<i>Chloris verticillata</i>	tumble windmill grass	
	<i>Chloris virgata</i> <sup>†</sup>	feather fingergrass	
	<i>Cicuta maculate</i>	spotted water hemlock	
	<i>Deschampsia cespitosa</i>	tufted hairgrass	
	<i>Distichlis spicata</i> var. <i>stricta</i>	saltgrass	
	<i>Echinochloa crus-galli</i>	barnyardgrass	
	<i>Echinochloa muricata</i> var. <i>muricata</i>	rough barnyardgrass	
	<i>Echinochloa muricata</i> var. <i>occidentalis</i>	rough barnyardgrass	
	<i>Elymus canadensis</i>	Canada wildrye	

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Family	Scientific Name	Common Name	Status
	<i>Elymus cinereus</i>	basin wildrye	
	<i>Elymus elymoides</i> spp. <i>elymoides</i>	squiretail	
	<i>Elymus glaucus</i> ssp. <i>glaucus</i>	blue wildrye	
	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	slender wheatgrass	
	<i>Elymus triticoides</i>	creeping wildrye	
	<i>Elytrigia pontica</i> ssp. <i>pontica</i>	tall wheatgrass	
	<i>Eragrostis orcuttiana</i>	Orcutt's lovegrass	
	<i>Eragrostis pectinacea</i>	tufted lovegrass	
	<i>Eragrostis pilosa</i> <sup>†</sup>	Indian lovegrass	
	<i>Eremopyrum triticeum</i>	annual wheatgrass	
	<i>Eriochloa contracta</i>	prairie cupgrass	
	<i>Festuca arundinacea</i> <sup>†</sup>	tall fescue	
	<i>Festuca pratensis</i>	meadow fescue	
	<i>Hesperostripa comata</i>	needle and thread	
	<i>Hilaria jamesii</i>	James' galleta	
	<i>Hordeum jubatum</i> <sup>†</sup>	foxtail barley	
	<i>Hordeum leporinum</i> <sup>†</sup>	hare barley	
	<i>Hordeum pusillum</i>	little barley	
	<i>Leersia oryzoides</i>	rice cutgrass	
	<i>Leptochloa fascicularis</i>	bearded sprangletop	
	<i>Melica stricta</i>	rock melicgrass	
	<i>Muhlenbergia asperifolia</i>	scratchgrass	
	<i>Muhlenbergia frondosa</i>	wirestem muhly	
	<i>Oryzopsis hymenoides</i>	Indian ricegrass	
	<i>Panicum capillare</i>	witchgrass	
	<i>Panicum dichotomiflorum</i>	fall panicgrass	
	<i>Paspalum distichum</i> <sup>†</sup>	knotgrass	
	<i>Phalaris arundinacea</i>	reed canary grass	
	<i>Phragmites australis</i>	common reed	
	<i>Poa annua</i> <sup>†</sup>	annual bluegrass	
	<i>Poa palustris</i> <sup>†</sup>	fowl bluegrass	
	<i>Poa pratensis</i> ssp. <i>pratensis</i> <sup>†</sup>	Kentucky bluegrass	
	<i>Poa secunda</i> ssp. <i>juncifolia</i>	Sandberg bluegrass	
	<i>Poa secunda</i> ssp. <i>secunda</i>	Sandberg bluegrass	
	<i>Polypogon interruptus</i> <sup>†</sup>	ditch rabbit's foot grass	
	<i>Polypogon monspeliensis</i> <sup>†</sup>	annual rabbit's foot grass	
	<i>Puccinellia distans</i>	weeping alkaligrass	
	<i>Puccinellia lemmonii</i>	Lemmon's alkaligrass	
	<i>Puccinellia nuttalliana</i>	Nuttall's alkaligrass	
	<i>Setaria glauca</i> <sup>†</sup>	yellow foxtail	
	<i>Setaria viridis</i> <sup>†</sup>	green bristlegrass	
	<i>Sitanion hystrix</i> var. <i>brevifolium</i>	squirreltail	
	<i>Sitanion hystrix</i> var. <i>californicum</i>	squirreltail	
	<i>Sitanion hystrix</i> var. <i>hystrix</i>	squirreltail	
	<i>Spartina gracilis</i>	alkali cordgrass	
	<i>Sporobolus airoides</i>	alkali sacaton	

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	<i>Sporobolus cryptandrus</i>	sand dropseed	
	<i>Stipa comata</i> var. <i>comata</i>	needle and thread	
	<i>Stipa nevadensis</i>	Nevada needlegrass	
	<i>Stipa speciosa</i>	desert needlegrass	
	<i>Stipa thurberiana</i>	Thurber's needlegrass	
	<i>Triticum aestivum</i> <sup>†</sup>	common wheat	
	<i>Vulpia myuros</i> var. <i>hirsuta</i> <sup>†</sup>	annual fescue	
	<i>Vulpia octoflora</i>	sixweeks fescue	
	<i>Zea mays</i>	corn	
Polemoniaceae	<i>Collomia grandiflora</i>	grand collomia	
	<i>Eriastrum wilcoxii</i>	Wilcox's woollystar	
	<i>Gilia lottiae</i>	Lott's gilia	
	<i>Gilia micromeria</i>	dainty gilia	
	<i>Ipomopsis polycladon</i>	manybranched ipomopsis	
	<i>Leptodactylon pungens</i>	granite prickly phlox	
	<i>Microsteris gracilis</i> ssp. <i>humilior</i>	slender phlox	
	<i>Navarretia breweri</i>	Brewer's navarretia	
	<i>Phlox austromontana</i>	mountain phlox	
	<i>Phlox hoodii</i> var. <i>canescens</i>	carpet phlox	
	<i>Phlox stansburyi</i>	cold-desert phlox	
Polygonaceae	<i>Chorizanthe rigida</i>	devil's spineflower	
	<i>Eriogonum brachyanthum</i>	shortflower buckwheat	
	<i>Eriogonum caespitosum</i>	matted buckwheat	
	<i>Eriogonum deflexum</i> var. <i>nevadense</i>	Nevada buckwheat	
	<i>Eriogonum heermannii</i> var. <i>heermannii</i>	Heermann's buckwheat	
	<i>Eriogonum inflatum</i> var. <i>inflatum</i>	desert trumpet	
	<i>Eriogonum maculatum</i>	spotted buckwheat	
	<i>Eriogonum microthecum</i> var. <i>laxiflorum</i>	slender buckwheat	
	<i>Eriogonum nidularium</i>	birdnest buckwheat	
	<i>Eriogonum ovalifolium</i> var. <i>purpureum</i>	cushion buckwheat	
	<i>Eriogonum palmerianum</i>	Palmer's buckwheat	
	<i>Eriogonum pusillum</i>	yellowturbans	
	<i>Eriogonum umbellatum</i> var. <i>nevadense</i>	sulphur-flowered buckwheat	
	<i>Eriogonum watsonii</i>	Watson's buckwheat	
	<i>Oxytheca perfoliata</i>	roundleaf oxytheca	
	<i>Polygonum arenastrum</i>	oval-leaf knotweed	
	<i>Polygonum douglasii</i> ssp. <i>douglasii</i>	Douglas' knotweed	
	<i>Polygonum hydropiper</i>	marshpepper knotweed	
	<i>Polygonum hydropiperoides</i>	swamp smartweed	
	<i>Polygonum lapathifolium</i>	curlytop knotweed	
	<i>Polygonum persicaria</i>	spotted ladythumb	
	<i>Rumex conglomeratus</i>	clustered dock	
	<i>Rumex crispus</i> <sup>†</sup>	curly dock	
	<i>Rumex maritimus</i> var. <i>persicarioides</i>	golden dock	

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	<i>Rumex salicifolius</i> var. <i>triangulivalvis</i>	Mexican dock	
	<i>Rumex stenophyllus</i>	narrowleaf dock	
	<i>Rumex venosus</i>	veiny dock	
Portulacaceae	<i>Claytonia parviflora</i> ssp. <i>parviflora</i>	streambank springbeauty	
	<i>Lewisia rediviva</i>	bitter root	
	<i>Montia chamissoi</i>	water minerslettuce	
	<i>Portulaca oleracea</i> <sup>†</sup>	little hogweed	
Potamogetonaceae	<i>Potamogeton crispus</i> <sup>†</sup>	curly pondweed	
	<i>Potamogeton foliosus</i>	leafy pondweed	
	<i>Potamogeton nodosus</i>	longleaf pondweed	
Primulaceae	<i>Glaux maritima</i>	sea milkwort	
Ranunculaceae	<i>Clematis ligusticifolia</i>	western white clematis	
	<i>Delphinium andersonii</i>	Anderson's larkspur	
	<i>Ranunculus cymbalaria</i> var. <i>saximontanus</i>	alkali buttercup	
Rosaceae	<i>Holodiscus microphyllus</i> var. <i>glabrescens</i>	oceanspray	
	<i>Malus pumila</i>	paradise apple	
	<i>Potentilla biennis</i>	biennial cinquefoil	
	<i>Pyrus communis</i>	common pear	
	<i>Rosa odorata</i>	tea rose	
	<i>Rosa woodsii</i> var. <i>ultramontana</i>	Woods' rose	
Rubiaceae	<i>Galium aparine</i>	stickywilly	
	<i>Galium bifolium</i>	twinleaf bedstraw	
	<i>Galium multiflorum</i>	manyflower bedstraw	
Salicaceae	<i>Populus alba</i>	white poplar	
	<i>Populus canadensis</i>	Canadian poplar	
	<i>Populus fremontii</i>	Fremont cottonwood	
	<i>Populus nigra</i> var. <i>italic</i>	Lombardy poplar	
	<i>Salix amygdaloides</i>	peachleaf willow	
	<i>Salix babylonica</i>	weeping willow	
	<i>Salix exigua</i>	coyote willow	
	<i>Salix laevigata</i>	red willow	
	<i>Salix lasiolepis</i>	arroyo willow	
	<i>Salix lutea</i>	yellow willow	
Saxifragaceae	<i>Lithophragma glabrum</i>	bulbous woodland-star	
Scrophulariaceae	<i>Bacopa eisenii</i>	western hydranthele	
	<i>Castilleja chromosa</i>	desert Indian paintbrush	
	<i>Castilleja exilis</i>	lesser Indian paintbrush	
	<i>Collinsia parviflora</i>	maiden blue-eyed Mary	
	<i>Cordylanthus maritimus</i> var. <i>canescens</i>	saltmarsh bird's beak	

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	<i>Limosella aquatica</i>	water mudwort	
	<i>Lindernia dubia</i> var. <i>dubia</i>	yellowseed false pimpernel	
	<i>Mimetanthe pilosa</i>	false monkeyflower	
	<i>Mimulus floribundus</i>	manyflowered monkeyflower	
	<i>Mimulus glabratus</i> ssp. <i>utahensis</i>	roundleaf monkeyflower	
	<i>Mimulus guttatus</i>	seep monkeyflower	
	<i>Mimulus mephiticus</i>	foul odor monkeyflower	
	<i>Penstemon acuminatus</i> var. <i>latebracteatus</i>	sharpleaf penstemon	
	<i>Penstemon palmeri</i> var. <i>macranthus</i>	Lahontan beardtounge	S2 NNHP
	<i>Penstemon</i> sp.	penstemon	
	<i>Scrophularia desertorum</i>	desert figwort	
	<i>Verbascum blattaria</i>	moth mullein	
	<i>Veronica americana</i>	American speedwell	
	<i>Veronica anagallis-aquatica</i>	water speedwell	
	<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	hairy purslane speedwell	
Solanaceae	<i>Lycium shockleyi</i>	Shockley's desert-thorn	
	<i>Nicotiana attenuata</i>	coyote tobacco	
Tamaricaceae	<i>Tamarix ramosissima</i> <sup>†</sup>	saltcedar	
Typhaceae	<i>Typha angustifolia</i>	narrowleaf cattail	
	<i>Typha domingensis</i> <sup>†</sup>	southern cattail	
	<i>Typha latifolia</i>	broadleaf cattail	
Ulmaceae	<i>Ulmus pumila</i> <sup>†</sup>	Siberian elm	
Urticaceae	<i>Urtica dioica</i> ssp. <i>holosericea</i>	stinging nettle	
Verbenaceae	<i>Verbena bracteata</i>	bigbract verbena	
Woodsiaceae	<i>Cystopteris fragilis</i>	brittle bladderfern	
Zannichelliaceae	<i>Zannichellia palustris</i>	horned pondweed	
Zygophyllaceae	<i>Peganum harmala</i>	African rue	
	<i>Tribulus terrestris</i> <sup>†</sup>	puncturevine	

Source: US Navy 1997, Tierra Data, Inc. 2008

Notes: Non-native species as identified by the Checklist of Non-Native Plants of Southern Nevada (Ryan 2005).

NNHP STATE RANK

S2 = Imperiled due to rarity and/or other demonstrable factors

S3 = Rare and local throughout its range, or with very restricted range, or otherwise vulnerable to extinction



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## **APPENDIX K**

### **NAS FALLON FAUNA**

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# **FINAL** **APPENDIX K**

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**Table K-1.**  
**Invertebrates**  
**(Identified to Family)**  
**Documented on NAS Fallon-Administered Lands**

Phylum	Order	Family Name	Common Name	Status Federal/ BLM/NV
Annelida	Oligochaeta	-	earthworms	
Arthropoda	Araneae	Theraphosidae	tarantulas	
	Anostraca	Artemiidae Branchinectidae	brine shrimp fairy shrimp	
	Cladocera	Daphniidae	water fleas	
	Coleoptera	Anthicidae <sup>†</sup> Carabidae Chrysomelidae Coccinellidae <sup>†</sup> Dytiscidae Elateridae Erotylida Heteroceridae Latridiidae Leiodidae Melyridae <sup>†</sup> Noteridae Pselaphidae Scarabaeidae <sup>†</sup> Staphylinidae	ant-like flower beetles Carabid beetles leaf beetles ladybirds predaceous diving beetles click beetles pleasing fungus beetles variegated mud-loving beetles minute brown scavenger beetles round fungus beetles soft-winged flower beetles burrowing water beetles Pselaphid beetles scarab beetles rove beetles	
	Entomobryomorpha	Entomobryidae	springtails	
	Diptera	Agromyzidae Anthomyiidae Asilidae Bombyliidae Calliphoridae Cecidomyiidae Ceratopogonidae Chaoboridae Chironomidae Chloropidae Culicidae <sup>†</sup> Dixidae Dolichopodidae Dryomyzidae Empididae Heleomyzidae Muscidae	leaf-miner flies Anthomyiid flies robber flies bee flies blow flies gall gnats no-see-ums phantom midges Chironomids frit flies mosquitoes Dixid midges long-legged flies Dryomyzid flies daggar flies Heleomyzid flies house flies	

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**Table K-1  
Invertebrates  
(Identified to Family)  
Documented on NAS Fallon-Administered Lands (*continued*)**

Phylum	Order	Family Name	Common Name	Status Federal/ BLM/NV
		Mycetophilidae	fungus gnats	
		Psychodidae	moth flies	
		Scatopsidae	minute black scavenger flies	
		Sciaridae	dark-winged fungus gnats	
		Sciomyzidae	marsh flies	
		Tabanidae	horse flies	
		Tanyderidae	primitive crane flies	
		Tipulidae	crane flies	
	Ephemeroptera	Baetidae	small minnow mayflies	
		Heptageniidae	flatheaded mayflies	
	Hemiptera	Anthocoridae	minute pirate bugs	
		Belostomatidae	giant water bugs	
		Corixidae	water boatmen	
		Cydnidae	burrowing bugs	
		Lygaeidae	milkweed bugs	
		Miridae	plant bugs	
		Notonectidae <sup>†</sup>	backswimmers	
		Pentatomidae	stink bugs	
	Homoptera	Aleyrodidae	whiteflies	
		Aphididae	aphids	
		Cicadellidae	leafhoppers	
		Delphacidae	Delphacid planthoppers	
		Dictyopharidae	Dictyopharids	
		Eriosomatidae	woolly aphids	
		Issidae	Issid plant hoppers	
		Psyllidae	Psyllids	
	Hymenoptera	Andrenidae	Andrenid bees	
		Braconidae	Braconid wasps	
		Colletidae	plasterer bees	
		Cynipidae	gall wasps	
		Encyrtidae	Encyrtid wasps	
		Eulophidae	Eulophid wasps	
		Eumenidae	potter wasps	
		Formicidae <sup>†</sup>	ants	
		Halictidae	sweat bees	
		Ichneumonidae	Ichneumonid wasps	
		Mymaridae	fairy flies	
		Sphecidae	thread-waisted wasps	
		Vespidae	Vespid wasp	
		-	Proctotrupid wasps	

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**Table K-1**  
**Invertebrates**  
**(Identified to Family)**  
**Documented on NAS Fallon-Administered Lands (*continued*)**

Phylum	Order	Family Name	Common Name	Status Federal/ BLM/NV
	Isopoda	Armadillidiidae	pill bugs	
	Isoptera	Termitidae	termites	
	Lepidoptera	Arctiidae	moths	
		Lycaenidae <sup>†</sup>	gossamer-winged butterfly	
		Nymphalidae <sup>†</sup>	brush-footed butterfly	
		Papilionidae <sup>†</sup>	swallowtail butterflies	
		Pieridae <sup>†</sup>	Pierid butterflies	
		Pterophoridae	plume moths	
	Neuroptera	Chrysopidae	lacewings	
		Hemerobiidae	brown lacewings	
		Myrmeleontidae	antlions	
	Odonata	Aeshnidae <sup>†</sup>	darners	
		Coenagrionidae <sup>†</sup>	narrow-winged damselflies	
		Libellulidae <sup>†</sup>	skimmers	
	Orthoptera	Acrididae	grasshoppers	
		Gryllidae <sup>†</sup>	Gryllid crickets	
		Rhaphidophoridae	camel crickets	
		Megapodagrionidae	flatwings	
	Pseudoscorpionida	-	pseudoscorpions	
	Psocoptera	Trogidae	hide beetles	
	Scorpiones	-	scorpion	
	Solifugae	Eremobatidae	Eremobatids	
	Symphyleona	Sminthuridae	globular springtails	
	Thysanoptera	Phlaeothripidae	Thrips	
	Thysanura	Machilidae	bristletails	
	Trichoptera	Hydropsychidae	nest-spinning caddisflies	
		Limnephilidae	northern caddisflies	
		Rhyacophilidae	primitive caddisflies	
	Trombidiformes	-	water mites	

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**Table K-1**  
**Invertebrates**  
**(Identified to Family)**  
**Documented on NAS Fallon-Administered Lands (*continued*)**

Phylum	Order	Family Name	Common Name	Status Federal/ BLM/NV
	-	-	copepods	
	-	-	seed shrimp	
Mollusca	-	Lymnaeidae	Lymnaeid snails	
		Physidae	bladder snails	

Source: US Navy 1997, Tierra Data, Inc. 2008

**Table K-2**  
**Fish Documented on NAS Fallon-Administered Lands**

Family	Species	Common Name	Status Federal/BLM/NV
Centrarchidae	<i>Lepomis cyanellus</i>	green sunfish	
	<i>Lepomis macrochirus</i>	bluegill	
	<i>Micropterus salmoides</i>	largemouth bass	
Cyprinidae	<i>Gila bicolor ssp.</i>	Dixie Valley tui chub	-/s/S1,SCP
Poeciliidae	<i>Gambusia affinis</i>	mosquito fish	
Salmonidae	<i>Salvelinus fontinalis</i>	brook trout	

Source: US Navy 1997, Tierra Data, Inc. 2008



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**Table K-3**  
**Herpetofauna Species Documented on NAS Fallon-Administered Lands**

<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Status Federal/BLM/NV</b>
<b>Amphibians</b>			
Bufonidae	<i>Anaxyrus [Bufo] boreas boreas/ proposed Anaxyrus williamsi</i>	western toad (Dixie Valley toad)	-/-SCP ( <i>Anaxyrus [Bufo] boreas</i> )
Scaphiopodidae	<i>Scaphiopus intermontanus</i>	Great Basin spadefoot	-/-SCP
Ranidae	<i>Lithobates catesbeianus</i>	American bullfrog	
<b>Reptiles</b>			
Colubridae	<i>Coluber taeniatus taeniatus</i> <i>Lampropeltis getula californiae</i> <i>Masticophis flagellum</i> <i>Pituophis catenifer deserticola</i> <i>Salvadora hexalepis</i>	desert striped whipsnake California kingsnake coachwhip snake Great Basin gopher snake western patch-nosed snake	
Crotaphytidae	<i>Crotaphytus bicinctores</i> <i>Crotaphytus collaris</i> <i>Gambelia wislizenii</i>	Great Basin collard lizard common collared lizard long-nosed leopard lizard	-/-SCP
Phrynosomatidae	<i>Callisaurus draconoides</i> <i>draconoides</i> <i>Phrynosoma platyrhinos</i> <i>platyrhinos</i> <i>Sceloporus graciosus</i> <i>Sceloporus magister uniformis</i> <i>Sceloporus occidentalis longipes</i> <i>Uta stansburiana nevadensis</i>	common zebra-tailed lizard  northern desert horned lizard sagebrush lizard yellow-backed spiny lizard Great Basin fence lizard Nevada side blotched lizard	-/-SCP
Teiidae	<i>Aspidoscelis tigris tigris</i>	Great Basin whiptail lizard	
Viperidae	<i>Crotalus oreganus lutosus</i>	Great Basin rattlesnake	

Source: US Navy 1997, Tierra Data, Inc. 2008, UC Davis 2011

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**Table K-4  
Avian Species Documented on NAS Fallon-Administered Lands**

Family	Scientific Name	Common Name	Status Federal/BLM/NV
Accipitridae	<i>Accipiter cooperii</i>	cooper hawk	MBTA/-/-
	<i>Accipiter striatus</i>	sharp-shinned hawk	MBTA/-/-
	<i>Aquila chrysaetos</i>	golden eagle	MBTA, BCC,PIF/n/S4
	<i>Buteo jamaicensis</i>	red-tailed hawk	MBTA, BCC/-/-
	<i>Buteo lagopus</i>	rough-legged hawk	MBTA/-/-
	<i>Buteo regalis</i>	ferruginous hawk	MBTA/n/S3
	<i>Buteo swainsoni</i>	Swainson's hawk	MBTA, BCC/n/S2B
	<i>Circus cyaneus</i>	northern harrier	MBTA
	<i>Haliaeetus leucocephalus</i>	bald eagle	MBTA,PIF/s/S1B, SCP
	<i>Pandion haliaetus</i>	osprey	MBTA/-/-
Aegithalidae	<i>Psaltiriparus minimus</i>	bushtit	MBTA/-/-
Alaudidae	<i>Eremophila alpestris</i>	horned lark	MBTA/-/-
Anatidae	<i>Aix sponsa</i>	wood duck	MBTA/-/-
	<i>Anas acuta</i>	northern pintail	MBTA/-/SCP
	<i>Anas americana</i>	American widgeon	MBTA/-/-
	<i>Anas clypeata</i>	northern shoveler	MBTA/-/-
	<i>Anas crecca</i>	American green-winged teal	MBTA/-/-
	<i>Anas cyanoptera</i>	cinnamon teal	MBTA/-/-
	<i>Anas discors</i>	blue-winged teal	MBTA/-/-
	<i>Anas platyrhynchos</i>	mallard	MBTA/-/-
	<i>Anas strepera</i>	gadwall	MBTA/-/-
	<i>Aythya affinis</i>	lesser scaup	MBTA/-/-
	<i>Aythya americana</i>	redhead	MBTA/-/-
	<i>Branta canadensis</i>	Canada goose	MBTA/-/-
	<i>Bucephala albeola</i>	bufflehead	MBTA/-/-
	<i>Lophodytes cucullatus</i>	hooded merganser	MBTA/-/-
	<i>Oxyura jamaicensis</i>	ruddy duck	MBTA/-/-
Answeriformes	<i>Aythya valisineria</i>	canvasback	MBTA/-/SCP
Apodidae	<i>Aeronautes saxatalis</i>	white-throated swift	MBTA/-/-
Ardeidae	<i>Ardea herodias</i>	great blue heron	MBTA/-/-
	<i>Butorides striatus</i>	green-backed heron	MBTA/-/-
	<i>Casmerodius albus</i>	great egret	MBTA/-/-
	<i>Egretta thula</i>	snowy egret	MBTA/-/-
	<i>Nycticorax nycticorax</i>	black-crowned night heron	MBTA/-/-
Bombycillidae	<i>Bombycilla cedrorum</i>	cedar waxwing	MBTA/-/-
Calcariidae	<i>Plectrophenax nivalis</i>	snow bunting	MBTA/-/-
Caprimulgidae	<i>Chordeiles minor</i>	common nighthawk	MBTA/-/-
Cardinalidae	<i>Paserina amoena</i>	lazuli bunting	MBTA/-/-
	<i>Piranga ludoviciana</i>	western tanager	MBTA/-/-
Cathartidae	<i>Cathartes aura</i>	turkey vulture	MBTA/-/-

# FINAL APPENDIX K

Integrated Natural Resources Management Plan  
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**Table K-4**  
**Avian Species Documented on NAS Fallon-Administered Lands**  
*(continued)*

Family	Scientific Name	Common Name	Status Federal/BLM/NV
Cerylidae	<i>Ceryle alcyon</i>	belted kingfisher	MBTA/-/-
Charadriidae	<i>Charadrius vociferus</i>	killdeer	MBTA/-/-
Columbidae	<i>Columba livia</i>	rock pigeon	MBTA/-/-
	<i>Zenaida macroura</i>	mourning dove	MBTA/-/-
Corvidae	<i>Aphelocoma coerulescens</i>	scrub jay	MBTA/-/-
	<i>Corvus brachyrhynchos</i>	American crow	MBTA/-/-
	<i>Corvus corax</i>	common raven	MBTA/-/-
	<i>Gymnorhinus cyanocephalus</i>	pinyon jay	MBTA/-/SCP
	<i>Pica pica</i>	black-billed magpie	MBTA/-/-
Emberizidae	<i>Amphispiza belli</i>	sage sparrow	MBTA/-/SCP
	<i>Amphispiza bilineata</i>	black-throated sparrow	MBTA/-/-
	<i>Calamospiza melanocorys</i>	lark bunting	MBTA/-/-
	<i>Chondestes grammacus</i>	lark sparrow	MBTA/-/-
	<i>Junco hyemalis</i>	dark-eyed junco	MBTA/-/-
	<i>Junco hyemalis</i> spp.	Oregon junco	MBTA/-/-
	<i>Melospiza lincolni</i>	Lincoln sparrow	MBTA/-/-
	<i>Melospiza melodia</i>	song sparrow	MBTA;BCC/-/-
	<i>Passerculus sandwichensis</i>	savannah sparrow	MBTA/-/-
	<i>Passerella iliaca</i>	fox sparrow	MBTA/-/-
	<i>Pipilo chlorurus</i>	green-tailed towhee	MBTA/-/-
	<i>Pipilo maculatus</i>	spotted towhee	MBTA/-/-
	<i>Pooecetes gramineus</i>	vesper sparrow	MBTA/-/-
	<i>Spizella breweri</i>	Brewer's sparrow	MBTA,PIF/-/SCP
	<i>Zonotrichia leucophrys gambeli</i>	Gamble's white-crowned sparrow	MBTA/-/-
Falconidae	<i>Falco columbarius</i>	merlin	MBTA/-/-
	<i>Falco mexicanus</i>	prairie falcon	MBTA, BCC/n/S4
	<i>Falco sparverius</i>	American kestrel	MBTA/-/-
Fringillidae	<i>Carduelis pinus</i>	pine siskin	MBTA/-/-
	<i>Carduelis psaltria</i>	lesser goldfinch	MBTA/-/-
	<i>Carduelis tristis</i>	American goldfinch	MBTA/-/-
	<i>Carpodacus cassinii</i>	Cassin's finch	MBTA/-/-
	<i>Carpodacus mexicanus</i>	house finch	MBTA/-/-
Hirundinidae	<i>Hirundo pyrrhonota</i>	cliff swallow	MBTA/-/-
	<i>Hirundo rustica</i>	barn swallow	MBTA/-/SCP
	<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow	MBTA/-/-
	<i>Tachycineta bicolor</i>	tree swallow	MBTA/-/-
	<i>Tachycineta thalassina</i>	violet-green swallow	MBTA/-/-
Icteridae	<i>Agelaius phoeniciu</i>	red-winged blackbird	MBTA/-/-
	<i>Euphagus cyanocephalus</i>	Brewer's blackbird	MBTA/-/-
	<i>Icterus bullockii</i>	Bullock's oriole	MBTA/-/-
	<i>Molothrus ater</i>	brown-headed cowbird	MBTA/-/-
	<i>Quiscalus mexicanus</i>	great-tailed grackle	MBTA/-/-

# FINAL APPENDIX K

Integrated Natural Resources Management Plan  
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**Table K-4**  
**Avian Species Documented on NAS Fallon-Administered Lands**  
*(continued)*

Family	Scientific Name	Common Name	Status Federal/BLM/NV
	<i>Sturnella neglecta</i>	western meadowlark	MBTA/-/-
	<i>Xanthocephalus</i>	yellow-headed blackbird	MBTA/-/-
	<i>xanthocephalus</i>		
Lanidae	<i>Lanius ludovicianus</i>	loggerhead shrike	MBTA, BCC, PIF/n/S3, SCP
	<i>Lanius excubitor</i>	northern shrike	MBTA/-/-
Laridae	<i>Chlidonias niger</i>	black tern	MBTA/-/-
	<i>Larus californicus</i>	California gull	MBTA/-/-
	<i>Larus delawarensis</i>	ring-billed gull	MBTA/-/-
	<i>Sterna forsteri</i>	Forster's tern	MBTA/-/-
Mimidae	<i>Mimus polyglottos</i>	northern mockingbird	MBTA/-/-
	<i>Oreoscoptes montanus</i>	sage thrasher	MBTA/-/-
Motacillidae	<i>Anthus spinoletta</i>	water pipit	MBTA/-/-
Odontophoridae	<i>Callipepla californica</i>	California quail	
Paridae	<i>Baeolophus ridgwayi</i>	juniper titmouse	MBTA/-/-
	<i>Poecile gambeli</i>	mountain chickadee	MBTA/-/-
Parulidae	<i>Dendroica coronata</i>	Audubon's warbler	MBTA/-/-
	<i>Dendroica petechia</i>	yellow warbler	MBTA/-/-
	<i>Geothlypis trichas</i>	common yellowthroat	MBTA/-/-
	<i>Icteria virens</i>	yellow-breasted chat	MBTA/-/-
	<i>Oporornis tolmiei</i>	MacGillivray's warbler	MBTA/-/-
	<i>Vermivora celata</i>	orange-crowned warbler	MBTA/-/-
	<i>Vermivora ruficapilla</i>	Nashville warbler	MBTA/-/-
	<i>Vermivora virginiae</i>	Virginia's warbler	MBTA/-/SCP
	<i>Wilsonia pusilla</i>	Wilson's warbler	MBTA/-/-
Passeridae	<i>Passer domesticus</i>	house sparrow	MBTA/-/-
Pelecanidae	<i>Pelecanus erythrorhynchos</i>	American white pelican	MBTA/-/SCP
Phalacrocoracidae	<i>Phalacrocorax auritus</i>	double-crested cormorant	MBTA/-/-
Phasianidae	<i>Alectoris chukar</i>	chukar	
	<i>Centrocercus urophasianus</i>	sage grouse	C, PIF/s/S3, SCP
	<i>Meleagris gallopavo</i>	wild turkey	
	<i>Phasianus colchicus</i>	ring-necked pheasant	
Picidae	<i>Colaptes auratus</i>	northern flicker	MBTA/-/-
	<i>Melanerpes lewis</i>	Lewis's woodpecker	MBTA, PIF/-/SCP
	<i>Picoides pubescens</i>	downy woodpecker	MBTA/-/-
	<i>Sphyrapicus nuchalis</i>	red-naped sapsucker	MBTA/-/-
Podicipedidae	<i>Aechmophorus occidentalis</i>	western grebe	MBTA/-/-
	<i>Podiceps nigricollis</i>	eared grebe	MBTA/-/-
	<i>Podilymbus podiceps</i>	pie-billed grebe	MBTA/-/-
Ptilonotidae	<i>Phainopepla nitens</i>	phainopepla	MBTA/-/-

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Integrated Natural Resources Management Plan  
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**Table K-4**  
**Avian Species Documented on NAS Fallon-Administered Lands**  
*(continued)*

Family	Scientific Name	Common Name	Status Federal/BLM/NV
Rallidae	<i>Fulica americana</i>	American coot	MBTA/-/-
	<i>Gallinula chloropus</i>	common moorhen	MBTA/-/-
	<i>Porzana carolina</i>	sora	MBTA/-/-
	<i>Rallus limicola</i>	Virginia rail	MBTA/-/-
Recurvirostridae	<i>Recurvirostra americana</i>	American avocet	MBTA/-/SCP
Regulidae	<i>Regulus calendula</i>	ruby-crowned kinglet	MBTA/-/-
Scolopacidae	<i>Calidris mauri</i>	western sandpiper	MBTA/-/-
	<i>Gallinago delicata</i>	Wilson's snipe	MBTA/-/-
	<i>Gallinago gallinago</i>	common snipe	MBTA/-/-
	<i>Numenius americanus</i>	long-billed curlew	MBTA, BCC, PIF/n/S3?B, SCP
	<i>Tringa sp.</i>	yellowlegs	MBTA/-/-
Sittidae	<i>Sitta canadensis</i>	red-breasted nuthatch	MBTA/-/-
Strigidae	<i>Asio flammeus</i>	short-eared owl	MBTA/n/S4, SCP
	<i>Asio otus</i>	Long-eared owl	MBTA/-/-
	<i>Athene cunicularia</i>	burrowing owl	MBTA, BCC, PIF/n-S4
	<i>Bubo virginianus</i>	great horned owl	MBTA/-/-
Sturnidae	<i>Sturnus vulgaris</i>	European starling	MBTA/-/-
Threskiornithidae	<i>Plegadis chihi</i>	white-faced ibis	MBTA/-/SCP
Trochilidae	<i>Archilochus alexandri</i>	black-chinned hummingbird	MBTA/-/-
	<i>Selasphorus platycercus</i>	broad-tailed hummingbird	MBTA/-/-
	<i>Stellula callipe</i>	calliope hummingbird	MBTA/-/-
Troglodytidae	<i>Cistothorus palustris</i>	marsh wren	MBTA/-/-
	<i>Salpinctes obsoletus</i>	rock wren	MBTA/-/-
	<i>Troglodytes aedon</i>	house wren	MBTA/-/-
	<i>Troglodytes bewickii</i>	Bewick's wren	MBTA/-/-
	<i>Troglodytes troglodytes</i>	winter wren	MBTA/-/-
Turdidae	<i>Catharus guttatus</i>	hermit thrush	MBTA/-/-
	<i>Sialia currucoides</i>	mountain bluebird	MBTA/-/-
	<i>Turdus migratorius</i>	American robin	MBTA/-/-
Tyrannidae	<i>Contopus sordidulus</i>	western wood-pewee	MBTA/-/-
	<i>Empidonax traillii</i>	willow flycatcher	MBTA/-/-
	<i>Empidonax wrightii</i>	gray flycatcher	MBTA/-/-
	<i>Myiarchus cinerascens</i>	ash-throated flycatcher	MBTA/-/-
	<i>Sayornis saya</i>	Say's pheobe	MBTA/-/-
	<i>Tyrannus verticalis</i>	western kingbird	MBTA/-/-
Tytonidae	<i>Tyto alba</i>	common barn owl	MBTA/-/-
Vireonidae	<i>Vireo gilvus</i>	warbling vireo	MBTA/-/-
	<i>Vireo plumbeus</i>	plumbeous vireo	MBTA/-/-

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**Table K-4**  
**Avian Species Documented on NAS Fallon-Administered Lands**  
*(continued)*

Family	Scientific Name	Common Name	Status Federal/BLM/NV
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**Table K-5**  
**Mammalian Species Documented on NAS Fallon Administered-Lands**

Family	Scientific Name	Common Name	Status Federal/BLM/NV
Antilocaridae	<i>Antilocapra americana</i>	pronghorn antelope	
Bovidae	<i>Bos Taurus</i>	cattle	
	<i>Ovis canadensis</i>	bighorn sheep	-/-SCP
Canidae	<i>Canis latrans</i>	coyote	
	<i>Vulpes macrotis</i>	kit fox	
Cervidae	<i>Odocoileus hemionus</i>	mule deer	-/-SCP
Cricetidae	<i>Neotoma lepida</i>	desert woodrat	
	<i>Ondatra zibethica</i>	muskrat	
	<i>Peromyscus maniculatus</i>	deer mouse	
	<i>Reithrodontomys megalotis</i>	western harvest mouse	
Equidae	<i>Equus caballus</i>	horse	
Erethizontidae	<i>Erethizon dorsatum</i>	porcupine	
Felidae	<i>Lynx rufus</i>	bobcat	
Heteromyidae	<i>Dipodomys deserti</i>	desert kangaroo rat	-/-SCP
	<i>Dipodomys merriami</i>	Merriam's kangaroo rat	
	<i>Dipodomys microps</i>	Great Basin kangaroo rat	
	<i>Perognathus parvus</i>	Great Basin pocket mouse	
Leporidae	<i>Lepus californicus</i>	black-tailed hare	
	<i>Sylvilagus nuttalli</i>	mountain cottontail	
Molossidae	<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	
Sciuridae	<i>Ammospermophilus leucurus</i>	white-tailed antelope ground squirrel	
Vespertilionidae	<i>Antrozous pallidus</i>	pallid bat	-/n/-
	<i>Corynorhinus townsendii</i>	Townsend's big eared bat	-/-SCP
	<i>Eptesicus fuscus</i>	big brown bat	
	<i>Lasionycteris noctivagans</i>	silver-haired bat	-/-SCP
	<i>Lasiurus blossevillii</i>	western red bat	-/n/S1S2, SCP
	<i>Lasiurus cinereus</i>	hoary bat	-/-SCP
	<i>Myotis californicus</i>	California myotis	
	<i>Myotis cilioabrum</i>	small-footed myotis	-/-SCP
	<i>Myotis evotis</i>	long-eared myotis	-/-SCP
	<i>Myotis lucifugus</i>	little brown bat	-/-SCP



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Family	Scientific Name	Common Name	Status Federal/BLM/NV
	<i>Myotis volans</i>	hairy winged myotis	
	<i>Myotis yumanensis</i>	Yuma myotis	-/n/S4
	<i>Pipistrellus hesperus</i>	western pipistrelle	

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Source: US Navy 1997, Tierra Data, Inc. 2008

### FEDERAL STATUS

C = Candidate = While the USFWS encourages cooperative conservation efforts for these species, they do not receive statutory protection under the ESA

MBTA = Migratory Bird Treaty Act

BCC- Birds of Conservation Concern

### NEVADA SPECIAL STATUS

E = Endangered = Listed as endangered under Nevada Administrative Code (NAC) 503

T = Threatened = Listed as threatened under NAC 503

S = Sensitive = Listed as sensitive under NAC 503

### BLM STATUS

S = Nevada Special Status Species; USFWS listed, proposed, or candidate for listing, or protected by Nevada state Law (i.e. NRS

N = Nevada Special Status Species; designated as sensitive by the BLM State Office

P = Proposed Nevada Special Status Species; designated as proposed sensitive by the BLM State Office

C = BLM California Special Status Species; see definitions for S and N

### NNHP STATE RANK

S1 = Critically imperiled due to extreme rarity, imminent threats, and/or biological factors

S2 = Imperiled due to rarity and/or other demonstrable factors

S3 = Rare and local throughout its range, or with very restricted range, or otherwise vulnerable to extinction

S4 = Apparently secure, though frequently quite rare in parts of its range, especially at its periphery

S5 = Demonstrably secure, though frequently quite rare in parts of its range, especially at its periphery

B = Breeding status within the state, rank for breeding occurrences only

N = Non-breeding status within the state; rank for non-breeding occurrences only

Z = Zero definable occurrences in the state, and therefore not of practical conservation concern, although native and regularly found there

? = Not yet ranked at the state scale

### NNHP Habitat Codes

S = Taxon is dependent upon sand dunes or strongly associated with sand dunes (i.e. found on dune skirts or extensive deep-sand deposits)

s = Taxon is possibly dependent upon sand dunes or deep-sand deposits

W = Taxon requires aquatic or wetland habitats (i.e. open water and/or hydric vegetation and at least seasonally saturated soil) for its survival,

either always or at one or more critical life stages

### Nevada Wildlife Action Plan:

SCP- Species of Conservation Priority

Department of Defense Partners in Flight Species (PIF)

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## **APPENDIX L**

### **NAS FALLON INVASIVE WEEDS**

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**Table L-1.  
Target Weed Species of Concern on NAS Fallon**

Common Name	Scientific Name	Nevada Noxious Weed Category	NAS Fallon Priority
Russian knapweed	<i>Acroptilon repens</i>	B	High
camelthorn+	<i>Alhagi camelorum</i>	A	n/a
mayweed chamomile+	<i>Anthemis cotula</i>	A	n/a
giant reed+	<i>Arundo donax</i>	A	n/a
Sahara mustard+	<i>Brassica tournefortii</i>	B	n/a
cheatgrass	<i>Bromus tectorum</i>	n/a	Medium
hoary cress	<i>Cardaria draba</i>	C	High
musk thistle	<i>Carduus nutans</i>	B	n/a
purple star thistle+	<i>Centaurea calcitrapa</i>	A	n/a
diffuse knapweed+	<i>Centaurea diffusa</i>	B	n/a
Iberian starthistle+	<i>Centaurea iberica</i>	A	n/a
spotted knapweed+	<i>Centaurea masculosa</i>	A	n/a
malta star thistle+	<i>Centaurea melitensis</i>	A	n/a
yellow starthistle+	<i>Centaurea solstitialis</i>	A	High
squarrose knapweed+	<i>Centaurea virgata</i>	A	n/a
rush skeletonweed+	<i>Chondrilla juncea</i>	A	n/a
water hemlock	<i>Cicuta maculata</i>	n/a	n/a
Canada thistle+	<i>Cirsium arvense</i>	C	n/a
poison hemlock+	<i>Conium maculatum</i>	C	n/a
common crupina+	<i>Crupina vulgaris</i>	A	n/a
houndstongue+	<i>Cynoglossum officinale</i>	A	n/a
Russian thistle	<i>Salsola tragus</i>	n/a	High
leafy spurge+	<i>Euphorbia esula</i>	B	n/a
goatsrue+*	<i>Galega officinalis</i>	A	n/a
curlycup gumweed	<i>Grindelia squarrosa</i>	n/a	Medium
saltlover	<i>Halogeton glomeratus</i>	n/a	Medium
hydrilla+	<i>Hydrilla verticillata</i>	A	n/a
black henbane+	<i>Hyoscyamus niger</i>	A	n/a
Klamath weed+	<i>Hypericum perforatum</i>	A	n/a
dyer's woad+	<i>Isatis tinctoria</i>	A	n/a
perennial pepperweed	<i>Lepidium latifolium</i>	C	High
dalmation toadflax+	<i>Linaria dalmatica</i>	A	n/a
yellow toadflax+	<i>Linaria vulgaris</i>	A	n/a
purple loosestrife+	<i>Lythrum salicaria</i>	A	n/a
Eurasian water-milfoil+	<i>Myriophyllum spicatum</i>	A	n/a
Scotch thistle	<i>Onopordum acanthium</i>	B	High
African Rue+	<i>Peganum harmala</i>	A	n/a
green fountain grass+	<i>Pennisetum setaceum</i>	A	n/a
sulfur cinquefoil+	<i>Potentilla recta</i>	A	n/a
Austrian fieldcress+	<i>Rorippa austriaca</i>	A	n/a
Russian olive	<i>Eleagnus angustifolia</i>	n/a	Medium
Mediterranean sage+	<i>Salvia aethiopis</i>	A	n/a
giant Salvinia+	<i>Salvinia molesta</i>	A	n/a
Carolina horse-nettle+	<i>Solanum carolinense</i>	B	n/a
white horse-nettle+	<i>Solanum elaeagnifolium</i>	B	n/a

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Common Name	Scientific Name	Nevada Noxious Weed Category	NAS Fallon Priority
sow thistle	<i>Sonchus arvensis</i>	A	n/a
Johnson grass+	<i>Sorghum halepense</i>	C	n/a
Austrian peaweed+	<i>Sphaerophysa salsula</i>	A	n/a
medusahead+	<i>Taeniatherum caput-</i>	B	n/a
salt cedar (tamarisk)	<i>Tamarix spp</i>	C	High
puncture vine	<i>Tribulus terrestris</i>	C	High
Syrian bean Caper+	<i>Zygophyllum fabago</i>	A	n/a

Sources: Tetra Tech, Inc, 2006; Federal Noxious Weeds from USDA-APHIS

Nevada Noxious Weeds from Dep't of Agriculture, No. 55.11, eff.5-25-62; A 5-1-68--(NAC A by State Quarantine Officer, 8-9-94; R191-99, 8-7-2000; R097-01m 5-1-2002; R003-03, 9-24-2003).

Category "A": Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all areas.

Category "B": Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur.

Category "C": Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer






+ Not detected during 2012 weed survey.

\* Federal Noxious Weed

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**Table L-2.  
Species Detected On NAS Fallon In 2012 (AMEC 2013b)**

Family	Latin Name	Common Name	Photo
Apiaceae	<i>Cicuta maculata</i>	water hemlock	
Asteraceae	<i>Acroptilon repens</i>	Russian knapweed	
Asteraceae	<i>Carduus nutans</i>	musk thistle	
Asteraceae	<i>Grindella squarrosa</i> var. <i>serrulata</i>	curlycup gumweed	
Asteraceae	<i>Onopordum acanthium</i>	Scotch thistle	







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Family	Latin Name	Common Name	Photo
Asteraceae	<i>Sonchus arvensis</i>	sow thistle	
Brassicaceae	<i>Cardaria draba</i>	hoary cress	
Brassicaceae	<i>Lepidium latifolium</i>	perennial pepperweed	
Chenopodiaceae	<i>Halogeton glomeratus</i>	saltlover	
Chenopodiaceae	<i>Salsola tragus</i>	Russian thistle	

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Family	Latin Name	Common Name	Photo
Eleagnaceae	<i>Eleagnus angustifolius</i>	Russian olive	
Poaceae	<i>Bromus tectorum</i>	cheatgrass	
Tamaricaceae	<i>Tamarix ramosissima</i>	saltcedar	
Zygophyllaceae	<i>Tribulus terrestris</i>	puncture vine	

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**APPENDIX M**

**LIST OF SPECIAL STATUS SPECIES**

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**Table M-1**  
**Special Status Plant Species Found in Churchill County, Nevada**

<i>Scientific Name</i>	<i>Common Name</i>	<i>BLM Species Classification</i>	<i>NNHP State Ranks</i>	<i>NNHP Habitat Code</i>	<i>Present on NAS Fallon Management Areas*</i>
<i>Astragalus lentiginosus</i> var. <i>scorpionis</i>	scorpion milkvetch		S3?		
<i>Astragalus porrectus</i>	Lahontan milkvetch		S3		
<i>Astragalus pseudodanthus</i>	Tonopah milkvetch	N	S2	S	
<i>Astragalus pterocarpus</i>	winged milkvetch		S3		
<i>Camissonia nevadensis</i>	Nevada suncup		S3		
<i>Eriogonum</i> † <i>beatleyae</i>	Beatley buckwheat	N	S2		
<i>Eriogonum</i> † <i>lemmonii</i>	Lemmon buckwheat		S3		
<i>Eriogonum</i> † <i>rubicaule</i>	Lahontan Basin buckwheat		S3		
<i>Helianthus deserticola</i>	dune sunflower		S2		
<i>Linanthus arenicola</i>	dune linanthus		S3	S	
<i>Mentzelia candelariae</i>	candelaria blazingstar		S3?		
<i>Opuntia pulchella</i>	sand cholla	N	S2S3	S	√
<i>Oryctes nevadensis</i>	oryctes	N	S2S3	S	
<i>Penstemon arenarius</i>	Nevada dune beardtongue	N	S2S3	S	
<i>x</i>	Lahontan beardtongue	N	S2?		√
<i>Phacelia</i> † <i>glaberrima</i>	Reese River phacelia		S3?		
<i>Plagiobothrys salsus</i>	salt marsh allocarya		S2S3	W	√
<i>Psorothamnus kingii</i>	Lahontan indigobush		S3	S	√
<b>NNHP STATE RANK</b> S1 = Critically imperiled due to extreme rarity, imminent threats, and/or biological factors S2 = Imperiled due to rarity and/or other demonstrable factors S3 = Rare and local throughout its range, or with very restricted range, or otherwise vulnerable to extinction ? = Not yet ranked at the state scale					
<b>BLM STATUS</b> N = Nevada Special Status Species; designated as sensitive by the BLM State Office C = BLM California Special Status Species; see definitions for S and N					
<b>NNHP Habitat Codes</b> S = Taxon is dependent upon sand dunes or strongly associated with sand dunes (i.e. found on dune skirts or extensive deep-sand deposits) W = Taxon requires aquatic or wetland habitats (i.e. open water and/or hydric vegetation and at least seasonally saturated soil) for its survival, either alqays or at one or more critical life stages					
<i>Source:</i> NNHP 2004, Tierra Data Inc. 2008, Cottle 2005, US Navy 1997					
<i>Notes:</i> According to the NNHP there are no rare plant species in Churchill County with USFWS designations or Nevada special status listing in Nevada Administrative Code (NAC) 527. * Documentation of species on Navy-administered lands is based on US Navy 1997, Cottle 2005, and Tierra Data Inc. 2008. Lack of documentation does not prove the absence of species † Genus identified in the 2008 Ecological Inventory Update, however no species determination was made.					

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**Table M-2**  
**Special Status Wildlife Species Found in Churchill County, Nevada**

<i>Scientific Name</i>	<b>Common Name</b>	<b>Federal Status</b>	<b>Nevada Protected (NAC 503)</b>	<b>BLM Species Classification</b>	<b>NNHP State Ranks</b>	<b>NDOW Species of Conservation Priority</b>	<b>Present on NAS Fallon Management Areas*</b>
<b>Insects</b>							
<i>Aegialia hardyi</i>	Hardy's aegialian scarab			N	S1		√
<i>Aphodius sp.</i>	Sand Mountain aphodius scarab			N	S1?		√
<i>Coenonycha pygmaea</i>	Sand Mountain pygmy scarab				S1		
<i>Euphilotes pallescens arenamontana</i>	Sand Mountain blue butterfly			N	S1		
<i>Limenitis archippus lahontani</i>	Nevada viceroy				S1S2		√
<i>Myrmecocystus arenarius</i>	dune honey ant				S2?		
<i>Serica psammobunus</i>	Sand Mountain serican scarab			N	S1		√
<b>Fish</b>							
<i>Gila bicolor</i> ssp.	Dixie Valley tui chub				S1	√	√
<i>Oncorhynchus clarki henshawi</i>	Lahontan cutthroat trout	T		S	S3	√	
<b>Amphibians</b>							
<i>Anaxyrus [Bufo] boreas boreas/ Anaxyrus williamsi</i>	Western (Dixie Valley) toad					√	√
<i>Rana pipiens</i>	northern leopard frog		P	N	S2S3	√	
<i>Scaphiopus intermontanus</i>	Great Basin spadefoot toad					√	√
<b>Amphibians</b>							
<i>Charina bottae</i>	rubber boa				S4		
<b>Mammals</b>							
<i>Antrozous pallidus</i>	pallid bat		P	N,C	S3B		√
<i>Brachylagus idahoensis</i>	pygmy rabbit			N	S3?	√	
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat		S	N, C	S3B	√	√
<i>Euderma maculatum</i>	spotted bat		T	S	S1S2	√	
<i>Lasionycteris noctivagans</i>	silver-haired bat			N	S3N	√	√
<i>Lasiurus blossevillii</i>	western red bat		S	N	S1S2	√	√
<i>Lasiurus cinereus</i>	hoary bat			N	S3?	√	√
<i>Lontra canadensis</i>	river otter			N	S2	√	
<i>Microdipodops pallidus</i>	pale kangaroo mouse		P		S2		
<i>Myotis californicus</i>	California myotis			N	S3B		√
<i>Myotis ciliolabrum</i>	western small-footed myotis			N, C	S3B	√	√



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<i>Scientific Name</i>	<b>Common Name</b>	<b>Federal Status</b>	<b>Nevada Protected (NAC 503)</b>	<b>BLM Species Classification</b>	<b>NNHP State Ranks</b>	<b>NDOW Species of Conservation Priority</b>	<b>Present on NAS Fallon Management Areas*</b>
<i>Myotis evotis</i>	long-eared myotis			N, C	S4B	√	√
<i>Myotis lucifugus</i>	little brown myotis			N	S1S2	√	√
<i>Myotis thysanodes</i>	fringed myotis		P	N, C	S2B	√	
<i>Myotis volans</i>	long-legged myotis			N	S4B		√
<i>Myotis yumanensis</i>	Yuma myotis			N, C	S4B		√
<i>Ochotona princeps</i>	American pika		P		S3	√	
<i>Odocoileus hemionus</i>	mule deer					√	√
<i>Ovis canadensis</i>	bighorn sheep					√	√
<i>Pipistrellus hesperus</i>	western pipistrelle			N	S4		√
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		P	N	S4B		√
<b>Birds</b>							
<i>Accipiter gentilis</i>	northern goshawk S N S3 □		S	N	S3	√	
<i>Amphispiza belli</i>	sage sparrow	MBTA, BCC				√	√
<i>Aquila chrysaetos</i>	golden eagle	MBTA, BCC		N	S4	√	√
<i>Asio flammeus</i>	short-eared owl	MBTA		N	S4	√	√
<i>Asio otus</i>	long-eared owl	MBTA		N	S4	√	√
<i>Athene cunicularia hypugaea</i>	western burrowing owl	MBTA		N, C	S3B		
<i>Baeolophus griseus</i>	juniper titmouse	MBTA		N	S5B		√
<i>Buteo regalis</i>	ferruginous hawk	MBTA, BCC		N	S3	√	√
<i>Buteo swainsoni</i>	Swainson's hawk	MBTA		N	S2B		√
<i>Centrocercus urophasianus</i>	Greater sage grouse	C, MBTA, BCC		N, C	S3S4B	√	√
<i>Charadrius alexandrinus nivosus</i>	western snowy plover	T; MBTA		N	S1B	√	
<i>Charadrius montanus</i>	mountain plover	MBTA		S	SZN		
<i>Chlidonias niger</i>	black tern	MBTA		N	S2S3B	√	√
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	C, MBTA, BCC	S	S	S1B	√	
<i>Dendroica petechia</i>	yellow warbler	MBTA		P	S3B		√
<i>Falco mexicanus</i>	prairie falcon	MBTA		N	S4	√	√

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<i>Scientific Name</i>	<b>Common Name</b>	<b>Federal Status</b>	<b>Nevada Protected (NAC 503)</b>	<b>BLM Species Classification</b>	<b>NNHP State Ranks</b>	<b>NDOW Species of Conservation Priority</b>	<b>Present on NAS Fallon Management Areas*</b>
<i>Geothlypis trichas</i>	common yellowthroat	MBTA		P	S3B		√
<i>Grus canadensis tabida</i>	greater sandhill crane	MBTA		N	S3B	√	
<i>Gymnorhinus cyanocephalus</i>	pinyon jay	MBTA, BCC		N	S4	√	√
<i>Haliaeetus leucocephalus</i>	bald eagle	MBTA, BBC	E	S	S1B	√	√
<i>Icteria virens</i>	yellow-breasted chat	MBTA, B		N	S3B		√
<i>Lanius ludovicianus</i>	Loggerhead shrike	MBTA, BBC	S	N	S3	√	√
<i>Leucosticte artrata</i>	black rosy-finch	MBTA, BBC		N	S4	√	
<i>Melanerpes lewis</i>	Lewis's woodpecker	MBTA, BBC		N	S4	√	√
<i>Mycteria Americana</i>	wood stork	E		S	SAN		
<i>Numenius americanus</i>	long-billed curlew	MBTA, BBC		N	S3?B	√	√
<i>Oporinis tolmiei</i>	Macgillivray's Warbler			P	S4B		√
<i>Oreoscoptes montanus</i>	sage thrasher	MBTA, BBC	S			√	√
<i>Otus flammeolus</i>	flamulated owl	MBTA		N	S4?B	√	
<i>Pandion haliaetus</i>	osprey	MBTA		P	S2B		√
<i>Pelecanus erythrorhynchos</i>	American white pelican	MBTA		P	S2B	√	√
<i>Pelecanus occidentalis</i>	brown pelican	MBTA		S	S2N		
<i>Pipilo chlorurus</i>	green tailed townhee	MBTA, BBC					√
<i>Plegadis chihi</i>	white-faced ibis	MBTA		P	S3B	√	√
<i>Podiceps nigricollis</i>	eared grebe	MBTA, BBC					√
<i>Pooecetes gramineus</i>	vesper sparrow	MBTA		N	S4B		√
<i>Sphyrapicus nuchalis</i>	red-naped sapsucker	MBTA		N	S4S5B		√
<i>Spizella breweri</i>	Brewer's sparrow	MBTA, BBC	S			√	√
<i>Stellula calliope</i>	calliope hummingbird	MBTA, BBC					√
<i>Vermivora celata</i>	orange-crowned warbler	MBTA		P	S4B		√

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<i>Scientific Name</i>	<b>Common Name</b>	<b>Federal Status</b>	<b>Nevada Protected (NAC 503)</b>	<b>BLM Species Classification</b>	<b>NNHP State Ranks</b>	<b>NDOW Species of Conservation Priority</b>	<b>Present on NAS Fallon Management Areas*</b>
<i>Vermivora virginiae</i>	Virginia's warbler	MTBA, BBC				√	√
<p><b>FEDERAL STATUS</b>  E = Endangered = Danger of extinction throughout range  T = Threatened = Likely to become endangered in foreseeable future throughout range  C = Candidate = While the USFWS encourages cooperative conservation efforts for these species, they do not receive statutory protection under the ESA  MBTA = Migratory Bird Treaty Act  BCC- Birds of Conservation Concern</p> <p><b>NEVADA SPECIAL STATUS</b>  E = Endangered = Listed as endangered under Nevada Administrative Code (NAC) 503  T = Threatened = Listed as threatened under NAC 503  S = Sensitive = Listed as sensitive under NAC 503</p> <p><b>BLM STATUS</b>  S = Nevada Special Status Species; USFWS listed, proposed, or candidate for listing, or protected by Nevada state Law (i.e. NRS)  N = Nevada Special Status Species; designated as sensitive by the BLM State Office  P = Proposed Nevada Special Status Species; designated as proposed sensitive by the BLM State Office  C = BLM California Special Status Species; see definitions for S and N</p> <p><b>NNHP STATE RANK</b>  S1 = Critically imperiled due to extreme rarity, imminent threats, and/or biological factors  S2 = Imperiled due to rarity and/or other demonstrable factors  S3 = Rare and local throughout its range, or with very restricted range, or otherwise vulnerable to extinction  S4 = Apparently secure, though frequently quite rare in parts of its range, especially at its periphery  S5 = Demonstrably secure, though frequently quite rare in parts of its range, especially at its periphery  B = Breeding status within the state, rank for breeding occurrences only  N = Non-breeding status within the state; rank for non-breeding occurrences only  Z = Zero definable occurrences in the state, and therefore not of practical conservation concern, although native and regularly found there  ? = Not yet ranked at the state scale  NDOW Species of Conservation Priority (SCP)</p> <p><i>Source:</i> USFWS 2008, USFWS 2011, NNHP 2004, Tierra Data Inc. 2008, Cottle 2005, US Navy 1997, UC Davis 2011, NDOW 2012a</p> <p><i>Notes:</i>  * Documentation of species on Navy-administered lands is based on US Navy 1997, Cottle 2005, and Tierra Data Inc. 2008. Lack of documentation does not prove the absence of species</p>							

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## **APPENDIX N**

### **2006 INRMP EA/FONSI**

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**DEPARTMENT OF DEFENSE  
DEPARTMENT OF THE NAVY**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR ENVIRONMENTAL  
ASSESSMENT (EA) FOR REVISING AND IMPLEMENTING AN INTEGRATED  
NATURAL RESOURCES MANAGEMENT PLAN (INRMP) FOR NAVAL AIR STATION  
FALLON, FALLON, NEVADA**

Pursuant to the National Environmental Policy Act (NEPA) (42 USC § 4321 to 4370e), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (CEQ Regulations) (40 CFR Parts 1500-1508), and Chief of Naval Operations Instruction 5090.1B, CH-4, the Department of the Navy (DoN) gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement (EIS) is not required for the implementation of a revised INRMP for Naval Air Station Fallon (NAS Fallon), Fallon Nevada.

The Sikes Act Improvement Act (SAIA) of 1997 requires the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. The SAIA requires the military departments to prepare and implement INRMPs for each military installation that provides for management activities to the extent that such activities are consistent with the use of the installation for military preparedness. This document fulfills the SAIA requirement for NAS Fallon.

**Proposed Action:** Commander Navy Region Southwest (CNRSW) proposes to revise the 2001 INRMP for lands administered by NAS Fallon. Implementation of this revised INRMP is consistent with the military use of the property and the goals and objectives established in the Sikes Act Improvement Act.

The Navy has chosen the ecosystem management alternative as the guiding natural resources management principle. This ecosystem management principle will be applied through implementation of the revised INRMP at NAS Fallon.

The overall goal of this revised INRMP is to develop a program that conserves and enhances ecosystem integrity and sustains both biological diversity and continued availability of those resources for military readiness, sustainability and other human uses.

The objectives are to integrate management of fish and wildlife, land, and outdoor recreation opportunities, as practicable and consistent with the military mission and established land uses.



FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR ENVIRONMENTAL ASSESSMENT (EA)  
FOR REVISING AND IMPLEMENTING AN INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN  
(INRMP) FOR NAVAL AIR STATION FALLON, FALLON, NEVADA

**Existing Conditions:** The Proposed Action is to implement a revised INRMP for NAS Fallon, Fallon, Nevada. Lands administered by NAS Fallon include the NAS Fallon Main Station and the Fallon Range Training Complex (FRTC). The Main Station lies in the central portion of the Carson Desert, Nevada, commonly referred to as the Lahontan Valley. The FRTC parcels are located generally on the valley floor in the Carson Sink, Carson Desert, and Dixie Valley. Nearby mountain ranges include the Blow Sand Mountains, Stillwater Range, Desatoya Mountains and the Clan Alpine Mountains.

NAS Fallon's mission is to provide the most realistic integrated air warfare training support available to carrier air wings, USMC air groups, tenant commands and individual units participating in training events, including joint and multinational exercises, while remaining committed to its assigned personnel. In support of these critical training and personnel requirements, NAS Fallon will continually upgrade and maintain the FRTC, the airfield, aviation support facilities, and base living/recreation accommodations, ensuring deployed unit training and a high local quality of life.

**Alternatives Analyzed:** In addition to the Proposed Action, the Navy analyzed a No Action Alternative (Continuation of Current Management). Under the No Action Alternative the Navy would continue implementing the objectives and strategies as identified under the 2001 NAS Fallon INRMP. An environmental analysis of the No Action Alternative is performed to serve as a benchmark against which the Proposed Action can be evaluated. Based on the principles applied in the 2001 NAS Fallon INRMP (i.e., protection/preservation, sustained yield, multiple use, and ecosystem management), the Navy decided to use the same management principles as the alternative in order to analyze the potential environmental impacts of developing and implementing a revised INRMP at NAS Fallon. These management alternatives were designed to be consistent with the NAS Fallon mission and with all laws, guidance, directives, and regulations pertaining to natural resources management.

**Environmental Effects:** Based on this EA, implementing the proposed action would have no potentially significant direct, indirect, or cumulative effects on the quality of the natural or human environment. The project does not require an EIS and a FONSI will be published. The US Navy plans to implement the proposed action, its preferred alternative.

There will be no adverse impacts to fire management, agricultural out leasing, land use, wild horses and burros, soil resources, minerals, energy, air, noise, socioeconomics or environmental justice under the Proposed Action Alternative. The proposed Action would provide a

FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR ENVIRONMENTAL ASSESSMENT (EA)  
FOR REVISING AND IMPLEMENTING AN INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN  
(INRMP) FOR NAVAL AIR STATION FALLON, FALLON, NEVADA

beneficial effect to recreation, livestock grazing, visual resources, water resources, wetland and riparian habitats, vegetation and forestry, wildlife, special status species and cultural resources.

The EA also addresses cumulative impacts that could result from the incremental impact of implementing the Proposed Action (based on ecosystem management principles) when added to other past, present, or reasonably foreseeable future actions at NAS Fallon. Review of the potential impacts of cumulative projects, combined with those associated with implementation of the Proposed Action, indicates that no significant cumulative impacts would occur.

The implementation of the revised INRMP integrates a natural resources management focus and programs by developing a single plan consistent with the military use of the property and the goals and objectives established in the Sikes Act Improvement Act. Additionally, through the use of routine reviews and updates (every five years at a minimum) the INRMP can be modified to avert potential conflicts, thus avoiding undesirable cumulative effects. The INRMP was also designed to establish partnerships with other federal, state, and local entities (e.g., US Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM) and Nevada Department of Wildlife (NDOW). These partnerships and the resulting coordination would further reduce the potential for cumulative impacts.

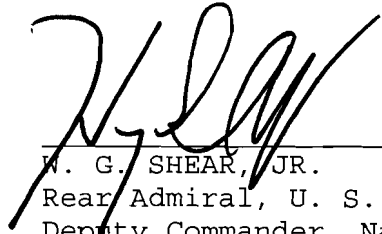
**Public Review** On August 23-26, 2005, a Notice of Availability for the Draft INRMP and EA was published in several local newspapers, the Lahontan Valley News, Fallon Star, Reno Gazette Journal, and the Carson City Nevada Appeals. Letters of notification regarding the availability of the Draft INRMP/EA were sent to organizations, federal agencies, state and county governments, and private citizens on the NAS Fallon public scoping mailing list. In addition, copies of the Draft INRMP/EA were made available at six local libraries. The public comment period for the Draft began August 26, 2005 and ended on September 26, 2005. A few comment letters were received from agencies and organizations, but no comments were received from the general public. Where appropriate, these comments guided revisions that have been incorporated into the INRMP.

**Finding:** Based on the analysis presented in the EA, coordination with the USFWS, BLM and the NDOW, and public review of the revised INRMP, the Department of the Navy finds that implementation of the proposed action through selection of the ecosystem management alternative will not significantly impact the quality of the human or natural environment or generate significant controversy.

FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR ENVIRONMENTAL ASSESSMENT (EA)  
FOR REVISING AND IMPLEMENTING AN INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN  
(INRMP) FOR NAVAL AIR STATION FALLON, FALLON, NEVADA

The EA prepared by the Navy addressing this action is on file and interested parties may obtain a copy from: Naval Air Station Fallon Environmental Department, 4755 Pasture Road, Fallon, NV 89495-5000 (Attention: Gary Cottle, Code N45F, Telephone 775-426-2956 or Steve Kramer, Code N45F, Telephone 775-426-3186).

7 Sept 2006  
Date

  
\_\_\_\_\_  
W. G. SHEAR, JR.  
Rear Admiral, U. S. Navy  
Deputy Commander, Navy  
Installations Command

## **APPENDIX O**

### **NAS FALLON PROJECTS**

- Table O-1. Implementation Summary of In-House Management Measures
- Table O-2. Implementation Summary of Project Management Measures

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Integrated Natural Resources Management Plan  
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Table O-1.  
Implementation Summary of In-House Management Measures

Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
Review proposed projects to ensure compliance with all laws and regulations as they pertain to natural resources.	All Areas	Navy and BLM	4	INRMP Implementation	NEPA	Current	Recurring
Manage erosion control in accordance with several plans and permits including the Storm Water Management Plan, Dust Control Plan, and Agricultural Outlease Agreements, Nevada BMPs, and Conservations Plans.	Main Station	Navy	4	Ecosystem Integrity	CWA DoDI 4715.03 OPNAVINST 5090.1D1 Soil Conservation Act NAVFAC P-73 Vol. II	Ongoing	Recurring
Maintain gravel roads on training ranges where necessary to control dust and soil erosion.	Training Ranges	Navy	4	Ecosystem Integrity	CWA CAA DoDI 4715.03 OPNAVINST 5090.1D	Ongoing	Recurring
Continue to apply for gravel extraction permits from the BLM when necessary.	All Areas	Navy	4	Ecosystem Integrity	FLPMA	Ongoing	Recurring
Manage lands consistent with VRM management designations as determined by BLM for surrounding areas.	All Areas	Navy and BLM	4	Ecosystem Integrity	FLPMA	Current	Recurring
Irrigation Water Management on agricultural outlease parcels.	Main Station	Navy	4	Ecosystem Integrity	NV Water Law Title 48 Public Law 101-618 MLWA of 1999	Current	Recurring
Water Resources Management	Training Ranges	Navy and BLM	4	Ecosystem Integrity	Sikes Act CWA  OPNAVINST 5090.1D DODI 4715.03 EO 11990 EO 13423 EO13514NV Water Law Title 48	Current	Recurring

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Table O-1.  
Implementation Summary of In-House Management Measures

Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
There will be no access to the subsurface by drilling or any other means nor any removal of any subsurface material from Shoal Site without thorough evaluation and coordination with the DOE.	Shoal Site	Navy, BLM and DOE		Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)-	DOE Regulations	Current	Recurring
The Navy manage lands to protect or enhance wetlands and riparian areas under Section 404 of the CWA.	All Areas	Navy	4	Ecosystem Integrity	CWA DoDI 4715.03	Current	Recurring
Management of the Dixie Meadows area	Training Range – Dixie Valley	Navy	4	Ecosystem Integrity	CWA DoDI 4715.03	Ongoing	Recurring
Conduct monthly natural resource management inspections of agricultural outlease areas using NAS Fallon Agricultural Lease Inspection Form	Main Station (Agricultural Outleases)	Navy	4	Ecosystem Integrity; INRMP Implementation	DoDI 4715.03 OPNAVINST 5090.1D	Current	Recurring
Conduct monthly monitoring of wetland and riparian areas using a Dixie Valley inspection report form.	Training Range Dixie Valley	Navy	4	Ecosystem Integrity; INRMP Implementation	Sikes Act Nevada Water Law/ OPNAVINST 5090.1D	Current	Recurring
Implement pest management program and individual species control in accordance with the NAS Fallon IPMP	All Areas	Navy	4	Ecosystem Integrity; INRMP Implementation	DoDI 4150.07 Noxious Plant Control Act Nevada Assembly Joint Res. No I 13/ OPNAVINST 5090.1D FIFRA	Current	Recurring
Implement NAS Fallon SWPPP.	All Areas	Navy	4	Ecosystem Integrity	CWA DoDI 4715.03 OPNAVINST 5090.1D Soil Conservation Act	Ongoing	Recurring
Manage water sources for livestock, vegetation and wildlife management in accordance with the Grazing, Vegetation, and Water Resource Management Plan for the Settlement Area.	Training Range – Dixie Valley	Navy and BLM	4	Ecosystem Integrity	DoDI 4715.03 OPNAVINST 5090.1D Sikes Act	Current	Recurring
Coordinate with appropriate federal, state and local government agencies to inventory, evaluate, control and remove undesirable vegetation.	All Areas	Navy and BLM	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	OPNAVINST 5090.1D DoDI 4715.03 Noxious Weed Act EO 13112	Ongoing	Recurring



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Implementation Summary of In-House Management Measures**

Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
Conduct air and ground fire suppression activities where they are determined to be necessary and safe in accord with the mutual aid agreement.	All Areas	Navy and BLM	4	Ecosystem Integrity	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	Current	Ongoing
Control buildup of flammable vegetation in the areas surrounding operations, where possible. Conduct vegetation surveys to assess fire potential and implement fuel reduction when necessary.	All Areas	Navy	4	Ecosystem Integrity	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	Ongoing	Recurring
The NAS Fallon Fire Department will continue to determine appropriate times and methods for prescribed burning of weeds and irrigation ditches.	Main Station	Navy	4	Ecosystem Integrity	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	Current	Recurring
Trees that pose a safety risk (i.e. too close to structures or dead) will be removed by grounds maintenance.	Main Station	Navy	4	Ecosystem Integrity	OPNAVINST 5090.1D DoDI 4715.03	Current	Recurring
Ensure all agricultural lessees implement the Soil and Water Conservation Plan required for each lease.	Main Station	Navy	4	Ecosystem Integrity; INRMP Implementation	NAVFAC P-73 Vol II CWA EO 13112	Ongoing	Recurring
Evaluate the potential for noxious weed colonization prior to surface disturbance. If there is a high potential for colonization, the site will be monitored post project and weed control measures would be implemented if necessary.	All Areas	Navy and BLM	4	Ecosystem Integrity	Noxious Weed Control Act FIFRA EO 13112	Ongoing	Recurring
Revegetate the area with native plants, where feasible, after significant disturbance (natural or man-made)	All Areas	Navy and BLM	4	Ecosystem Integrity	Noxious Weed Control Act FIFRA EO 13112	Ongoing	Recurring
Manage vegetation on the Main Station for low water use in both the landscaping and the agricultural outleases in accord with the Agricultural Outlease Management Plan and the NAS Fallon Landscape Plan, consistent with the BASH Management Plan and FOD reduction program.	Main Station	Navy	4	Ecosystem Integrity	OPNAVINST 5090.1D DoDI 4715.03 EO 13112 EO12902 MBTA	Ongoing	Recurring

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**Table O-1.  
Implementation Summary of In-House Management Measures**

Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
Manage grazing in accord with the Navy Grazing Management Plan. There are restrictions in these plans to protect the soil, vegetation, water and wildlife from overgrazing. Grazing will be compatible with current and future military training requirements.	All Areas	Navy and BLM	4	Ecosystem Integrity	NAVFAC P-73 FLPMA EO 13112	Current	Recurring
Maintain fencing around B-17 to prevent encroachment from livestock onto the range. If necessary additional fencing will be added.	Training Ranges – B-17	Navy and BLM	4	Ecosystem Integrity	MLWA FLPMA	Ongoing	Recurring
Maintain fences and gates to prohibit grazing from Horse Creek.	Training Ranges – Dixie Valley	Navy	4	Ecosystem Integrity	Sikes Act OPNAVINST 5090.1D	Ongoing	Recurring
Monitor wildlife populations for overpopulation and disease.	All Areas	Navy	4	Ecosystem Integrity	Sikes Act FWCA	Current	Recurring
Allow NDOW access to the wildlife guzzlers at least annually.	Training Ranges	Navy and BLM	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act FWCA	Ongoing	Recurring
Provide access for the annual bighorn sheep hunt on closed withdrawn lands at B-17 as specified in agreement with NDOW	Training Range B-17	Navy and NDOW	4	Recreational Use and Access	Sikes Act FWCA	Ongoing	Recurring
In conjunction with other agencies review and update migratory bird data for Navy lands during peak migration periods.	All Areas	Navy and BLM	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act FWCA MBTA	Ongoing	Recurring
Continue to coordinate, collect data, and maintain ponds, wetlands for the Dixie Valley tui chub and western (Dixie Valley toad) amongst Navy, USFWS and NDOW.	Dixie Valley	Navy, USFWS and NDOW	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act FWCA ESA	Ongoing	Recurring

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**Table O-1.  
Implementation Summary of In-House Management Measures**

Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
Continue to coordinate to assess sage grouse amongst Navy, BLM and NDOW. Data to be maintained include GIS data of potential habitat, documented sage grouse, and population data if available	Training Range – Dixie Valley and B-17	BLM, Navy, NDOW	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act FWCA ESA	Ongoing	Recurring
Cooperate with USFWS to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects to listed species and migratory birds.	All Areas	Navy and BLM	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	MBTA OPNAVINST 5090.1D DoDI 4715.03 ESA Eagle Act	Ongoing	Recurring
The maintenance contractor has been instructed to contact the Natural Resource Specialist before any bird nest is removed. Unprotected birds such as starlings, pigeons, and house sparrows are controlled in the hangers and their nests removed.	Main Station	Navy	4	Ecosystem Integrity	MBTA OPNAVINST 5090.1D DoDI 4715.03	Ongoing	Recurring
Inventory, Resource and Monitoring Programs for migratory bird monitoring.	B-20 and Dixie Valley	Navy	4	Ecosystem Integrity	OPNAVINST 5090.1D DoDI 4715.03 MBTA	Current	Recurring
Implement BASH risk reduction measures in accordance with NAS Fallon BASH Management Plan and other laws.	All Areas	Navy	4	Ecosystem Integrity	Sikes Act MBTA Eagle Act	Current	Recurring
The Natural Resources Branch assists the Aviation Safety Officer and updates the BASH Plan annually.	Main Station	Navy	4	Ecosystem Integrity	Sikes Act MBTA	Current	Recurring
Coordinate with USDA APHIS for coyote control	All Areas	Navy and BLM	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	EO 13112	Current	Recurring
Continue to prohibit domestic sheep grazing on Navy lands within nine miles of desert bighorn sheep habitat, including B-17, Dixie Valley, and Horse Creek, consistent with regional livestock policy.	Training Range B-17 and Dixie Valley	Navy and BLM	4		NDOW requirement	Current	Recurring
Coordinate with Pest Control Contractor for pest animal control.	All Areas	Navy	4	Ecosystem Integrity	DoDI 4150.07 FIFRA	Ongoing	Recurring

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Implementation Summary of In-House Management Measures**

Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
Coordinate with NDOW for sick or injured wildlife.	All Areas	Navy, NDWO	4	Ecosystem Integrity; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act	Ongoing	Recurring
Manage outdoor recreation to allow public access but prevent conflicts with the military mission and in accordance with DoD and Navy regulations.	Main Station	Navy	4	Recreational Use and Access	Sikes Act OPNAVINST 5090.1D DoDI 4715.03 Outdoor Recreation Federal State Programs Act	Ongoing	Recurring
Manage outdoor recreation on Navy-acquired open lands where compatible with the military mission in accordance with federal and Navy regulations and policy.	Training Ranges – Navy-acquired lands	Navy	4	Recreational Use and Access	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	Ongoing	Recurring
All organized outdoor recreation activities on withdrawn training ranges would be managed by BLM in consultation with Navy. The BLM CCDO may issue special recreation permits for activities including, but not limited to, road rallies, OHV endurance rides, and dirt bike races.	Training Ranges – open withdrawn lands	BLM and Navy	4	Recreational Use and Access	FLPMA	Current	Recurring
Continue to allow fishing access to the ten maintained ponds in Dixie Valley and Horse Creek. Fishing rules and regulations are established and enforced by the NDOW.	Training Range – Dixie Valley	Navy and NDOW	4	Recreational Use and Access	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	Current	Recurring
Hunting on the NAS Fallon Main Station would be allowed when there are high populations of coyotes, jackrabbits,starlings, or pigeons.	Main Station	Navy	4	Recreational Use and Access	Sikes Act NDOW regulations	Current	When necessary
Hunting is permitted on open withdrawn lands. Hunting rules and regulations are established and enforced by the NDOW.	Training Ranges – Open Withdrawn lands	Navy	4	Recreational Use and Access	Sikes Act NDOW regulations	Current	Recurring
Limit OHV use on Navy-acquired and withdrawn lands to existing roads and trails.	Training Ranges	Navy and BLM	4	Recreational Use and Access; Ecosystem Integrity	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	Current	Recurring

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**Table O-1.  
Implementation Summary of In-House Management Measures**

Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
Continue to work closely with other federal, state and local governments and groups to develop cooperative agreements when applicable for the joint development of recreation trails (OHV, bicycle, horse, hiking, wildlife viewing, recreation sites, etc.).	All Areas	Navy	4	Recreational Use and Access; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	Ongoing	Recurring
Ensure that the Pony Express National Historic Trail remains open to public access in the vicinity of its lands.	Training Ranges	Navy	4	Recreational Use and Access	Sikes Act	Current	Recurring
Manage areas along national and historic trails in accordance with BLM VRM classifications.	Training Ranges B-17 and B-16	Navy	4	Recreational Use and Access	Sikes Act	Ongoing	Recurring
Maintain and improve the campground at Horse Creek.	Training Range – Dixie Valley	Navy and BLM	4	Recreational Use and Access	Sikes Act DoDI 4715.03 OPNAVINST 5090.1D	Ongoing	Recurring
Develop an agreement amongst all agencies responsible for natural resources law enforcement on open withdraw and open Navy-acquired lands.	All Areas	Navy, BLM, NDOW, USFWS and Churchill County	4	Recreational Use and Access; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act DoDI 4715.03 OPNAVINST 5090.1D	Ongoing	EPR for funding submitted.
Integrate GIS data between Navy and BLM to facilitate natural resources management and other communications. Develop MOU for data sharing.	All Areas	Navy and BLM	4	Recreational Use and Access; Sikes Act Cooperation (Partnership Effectiveness)	Sikes Act DoDI 4715.03 OPNAVINST 5090.1D	Ongoing	Recurring
Continue to implement the agreement document between the Navy, BLM, and the Nevada SHPO.	All Areas	Navy, BLM and SHPO	4	Sikes Act Cooperation (Partnership Effectiveness)	NHPA	Current	Recurring
Avoid significant cultural properties where possible and implement mitigation measures where unavoidable.	All Areas	Navy and BLM	4	-	NHPA ARPA	Current	Recurring
Protect sites eligible for the National Register of Historic Places by identifying those sites for full fire suppression.	All Areas	Navy and BLM	4	-	NHPA	Current	See BLM Fire Plan

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Table O-1.  
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Management Measure	Location	Responsible Agency	ERL Number	Metrics Focus Area	Regulatory Drivers	Implementation Schedule	Date Complete
Consult with SHPO following BLM state protocols and Native American tribes following BLM consultation policy on withdrawn lands.	Navy withdrawn lands	Navy and BLM	4	-	NHPA MLWA	Current	Recurring
Implement ICRMP and evaluate natural resources management to identify potential impacts to cultural resources.	Navy acquired lands	Navy and BLM	4	-	NHPA ARPA NAGPRA MLWA	Ongoing	Recurring
Host organized activities open to the public as compatible with military mission and security requirements, such as Arbor Day Celebration, Earth Day, and Spring Wings Bird Festival	Main Station	Navy	4	Recreational Use and Access	Sikes Act	Current	Recurring
Natural resources personnel shall be provided an opportunity to participate in natural resource management job training activities and professional meetings.	Not applicable	Navy	4	Team Adequacy	Sikes Act DoDI 4715.03	Ongoing	Recurring

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**Table O-2.  
Implementation Summary of Project Management Measures**

EPR Number	Description of Project or Activity	Location	Responsible Agency	Regulatory Drivers	Navy ERL	Implementation Schedule	Cost Estimate	Funding Source	Metrics Focus Area	Consultation or Permit	Date Complete
60495NR304	Water wells management in Dixie Valley	Training Range – Dixie Valley	Navy	Sikes Act FWCA	4	FY12-13	\$111,000	CNIC	Ecosystem Integrity	NEPA complete No USFWS	Recurring
60495NR403	Maintain fencing necessary to keep cattle out of wetland areas including ponds and Horse Creek.	Training Range – Dixie Valley	Navy	Sikes Act CWA EO 11990 OPNAVINST 5090.1D	4	FY12	\$75,000	CNIC	Ecosystem Integrity	NEPA complete USFWS required	Recurring
60495NR1052	Continue to conduct noxious weed control in wetland and riparian areas, including Horse Creek. Management may include replacing noxious weeds with native plants.	Training Range – Dixie Valley	Navy	Sikes Act CWA EO 11990 OPNAVINST 5090.1D	4	FY 12	\$26,000	CNIC	Ecosystem Integrity	NEPA complete No USFWS	Recurring
60495NR501	Establish non-invasive vegetation and prevent or minimize erosion using native plants when possible.	Main Station	Navy	DoDI 4715.03 OPNAVINST 5090.1D Soil Conservation Act	4	Ongoing	\$500/acre	CNIC	Ecosystem Integrity	NEPA required No USFWS	Recurring
60495NR121	Per the Grazing, Vegetation, and Water Resource Management Plan for the Settlement, management of the ten identified ponds would consist of low cost methods with the goal of maintaining the existing ecological values.	Training Range – Dixie Valley	Navy	DoDI 4715.03 OPNAVINST 5090.1D Sikes Act	4	FY12	\$24,330	CNIC	Ecosystem Integrity	NEPA No USFWS	Recurring



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EPR Number	Description of Project or Activity	Location	Responsible Agency	Regulatory Drivers	Navy ERL	Implementation Schedule	Cost Estimate	Funding Source	Metrics Focus Area	Consultation or Permit	Date Complete
60495NR305	Monitor for the presence and spread of invasive exotic species and delineate vegetation using GIS.	All Areas	Navy and BLM	Sikes Act OPNAVINST 5090.1D DoDI 4715.03 Noxious Weed Act EO 13112	4	FY14	\$30000	CNIC	Ecosystem Integrity	No NEPA No USFWS	Recurring
6049501022	Use cottonwood and willow pole plantings to restore and sustain the cottonwood and willow trees.	All Areas	Navy	Sikes Act Soil Conservation Act OPNAVINST 5090.1D DoDI 4715.03	4	FY13	\$10,000/yr	CNIC	Ecosystem Integrity	No NEPA No USFWS	Recurring
6049501052	Remove tamarisk and Russian olive trees to protect native cottonwoods and willows on the Dixie Valley Training Range and Horse Creek.	Training Ranges	Navy	Sikes Act EO 13112 OPNAVINST 5090.1D DoDI 4715.03	4	FY12-14	\$25,400	CNIC	Ecosystem Integrity	No NEPA No USFWS	Recurring
60495NR405	Implement the revegetation prescriptions developed in the NAS Fallon Revegetation Project on disturbed and bare ground areas.	Main Station	Navy	OPNAVINST 5090.1D DoDI 4715.03 Soil Conservation Act/	4	Ongoing	\$500/acre	CNIC	Ecosystem Integrity	NEPA required No USFWS	Recurring
60495NR703	Inventory and map existing roads on open navy-acquired lands to develop baseline data.	Training Ranges – Navy-acquired lands	Navy	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	4	FY12	\$50000	CNIC	Ecosystem Integrity	No NEPA No USFWS	2012
604951012A	Implement improvements to the nature trail to benefit the public and natural resources.	Main Station	Navy	Sikes Act	4	FY13	\$25,000	CNIC	Ecosystem Integrity	NEPA complete No USFWS	Recurring
60495NR 141	Construct Bat Gates on old mines on Ranges B-19 & B-17	Training Ranges – B19 B17	Navy and BLM	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	4	FY12	\$156,533	CNIC	Ecosystem Integrity	NEPA complete No USFWS	2012

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Implementation Summary of Project Management Measures

EPR Number	Description of Project or Activity	Location	Responsible Agency	Regulatory Drivers	Navy ERL	Implementation Schedule	Cost Estimate	Funding Source	Metrics Focus Area	Consultation or Permit	Date Complete
New Project	NR Law Enforcement Agreement with BLM	Training Range – Dixie Valley	Navy and BLM	Sikes Act OPNAVINST 5090.1D DoDI 4715.03	4	FY12		CNIC	4Sikes Act Cooperation (Partnership Effectiveness)	No NEPA No USFWS	Recurring
New Project	Complete a report on the status of the revegetation prescriptions completed on the NAS Fallon Buffer Zone. Revegetation Projects on disturbed and bare ground areas since 1995.	Main Station	Navy	OPNAVINST 5090.1D DoDI 4715.03 Soil Conservation Act/ Public Law 101-618	4	FY14	\$50,000	CNIC	Ecosystem Integrity	NEPA required No USFWS	FY15

Acronyms:

CWA= Clean Water Act  
DoD= Department of Defense  
DoDI=Department of Defense Instruction  
EO= Executive Order  
ESA= Endangered Species Act  
FNWA= Federal Noxious Weed Act  
FWCA= Fish and Wildlife Coordination Act  
OPNAVINST=Naval Operations Instruction  
NHPA= National Historic Preservation Act  
Sikes Act- Sikes Act, as amended.

Environmental Readiness Level 4:

- Supports all actions specifically required by law, regulation or E.O. (DoD Class I and II requirements) just in time.
- Supports all DoD Class 0 requirements related to a specific statute such as hazardous waste disposal, permits, fees, monitoring, sampling and analysis, reporting and record keeping.
- Supports recurring administrative, personnel and other costs associated with managing environmental programs that are necessary to meet applicable compliance requirements (DoD Class 0).
- Supports DoD policy requirement to comply with overseas FGS and Overseas Environmental Baseline Guidance Document (OEBGD).
- Supports minimum feasible Navy executive agent responsibilities formally designated by OSD, participation in Office of the Secretary of Defense (OSD) sponsored inter-department and inter-agency efforts, and OSD mandated regional coordination efforts.

Environmental Readiness Level 3:

- Supports all capabilities provided by ERL4.
- Supports existing level of Navy EA responsibilities, participation in OSD sponsored interdepartmental and inter-agency efforts, and OSD mandated regional coordination efforts.
- Supports proactive involvement in the legislative and regulatory process to identity and mitigate requirements that will impose excessive costs or restrictions on operations and training.
- Supports proactive initiatives critical to the protection of Navy operational readiness.

Environmental Readiness Level 2:

- Supports all capabilities provided under ERL3.
- Supports enhanced proactive initiatives critical to the protection of Navy operational readiness.
- Supports all Navy and DOD policy requirements.
- Supports investments in pollution reduction, compliance enhancement, energy conservation and cost reduction.

Environmental Readiness Level 1:

- Supports all capabilities provided under ERL2.
- Supports proactive actions required to ensure compliance with pending/strongly anticipated laws and regulations in a timely manner and/or to prevent adverse impact to Navy mission.
- Supports investments that demonstrate Navy environmental leadership and proactive environmental stewardship.

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