DRAFT

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

AND

ENVIRONMENTAL ASSESSMENT

April 2012

U.S. ARMY GARRISON YUMA PROVING GROUND
YUMA, ARIZONA

DRAFT

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
U.S. ARMY YUMA PROVING GROUND
YUMA AND LA PAZ COUNTIES, ARIZONA
Update for: Fiscal Years 2012-2016

April 2012

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INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
U.S. Army Garrison Yuma Proving Ground
Update for: FY 2012 - 2016

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ACRONYMS AND ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ACHP	Advisory Council on Historic Preservation
ADEQ	Arizona Department of Environmental Quality
AIDTT	Arizona Interagency Desert Tortoise Team
AIRFA	American Indian Religious Freedom Act
AML	Appropriate Management Level
AMRP	Army Master Range Plan
ATEC	Army Test & Evaluation Command
ATTACC	Army Training and Testing Area Carrying Capacity
AR	Army Regulation
ARS	Arizona Revised Statute
AGFD	Arizona Game and Fish Department
BLM	U.S. Bureau of Land Management
BMPs	Best Management Practices
BTV	Bluetongue Virus
CAA	Clean Air Act
CAMA	California Arizona Maneuver Area
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CG	Commanding General
CO	Carbon Monoxide
CRTC	Cold Regions Test Center
CWA	Clean Water Act
DA	Department of the Army
DAMO-TRS	Chief, Training Support Systems Division
DDT	Dichlorodiphenyltrichloroethane
DoD	Department of Defense
DoDD	Department of Defense Directive
DPTM	Directorate of Plans, Training, and Mobilization
DPW	Directorate of Public Works
DTC	Development Test Command
EA	Environmental Assessment
EHDV	Epizootic hemorrhagic disease virus
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
ESA	Endangered Species Act
ESD	Environmental Sciences Division
FAA	Federal Aviation Administration
FD	Federally Delisted
FE	Federally Endangered
FNSI	Finding of No Significant Impact
FMWR	Family, Morale, Welfare, and Recreation
FT	Federally Threatened
FY	Fiscal Year (Oct. – Sept.)
Garrison	U.S. Army Garrison Yuma Proving Ground
GIS	Geographic Information Systems
GPS	Global Positioning System
GMU	Game Management Unit

GRASS	Geographic Resources Analysis Support System
HAPs	Hazardous Air Pollutants
HMA	Herd Management Area
HMAP	Herd Management Area Plan
HQDA	Department of Army Headquarters
HWSF	Hazardous Waste Storage Facility
I-8	U.S. Interstate 8
I-10	U.S. Interstate 10
ICP	Integrated Contingency Plan
ICRMP	Integrated Cultural Resources Management Plan
IMA	Individual Mobilization Augmentation/Individual Mobilization Augmentee
IMCOM	Installation Management Command
INRMP	Integrated Natural Resources Management Plan
ISCP	Installation Spill Contingency Plan
ISR	Installation Status Report
ITAM	Integrated Training Area Management
KFR	Kofa Firing Range
LAAF	Laguna Army Airfield
LCM	Land Condition Module
LCTA	Land Condition Trend Analysis
LF-TIS	Live-fire Training Investment Strategy
LIG	Lieutenant General
LRAM	Land Rehabilitation and Maintenance
LTA	Lighter-than-air
MACOMs	Major Commands
MCAS-Yuma	Marine Corps Air Station at Yuma
MERs	Master Environmental Reference Sites
MILCON	Military Construction
msl	Mean Sea Level
MOE	Military Operations Environments
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NACCITEC	National Counterterrorism Counterinsurgency and Integrated Test and Evaluation Center
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NGO	Non-Governmental Organization
NHPA	National Historic Preservation Act
NIS	Non-native Invasive Species
NOx	Nitrogen Oxides
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NWR	National Wildlife Refuge
ODCs	Ozone-depleting chemicals
OPAREAs	Operating Areas
ORV	Off-Road Vehicle
OSHA	Occupational Safety and Health Administration
PAM	Pamphlet (Department of Army)
PCB	Polychlorinated Biphenyl
PET	Potential Evapotranspiration
PL	Public Law
PLO	Public Land Order
PM10	Particulate Matter (10 microns or less in diameter)
PMR	Program Management Review

PSD	Prevention of Significant Deterioration
RCMP	Range Complex Master Plan
RCRA	Resource Conservation and Recovery Act
RDP	Range Development Plan
RDT&E	Research, Development, Testing, and Evaluation
REC	Record of Environmental Consideration
RNA	Ribonucleic Acid
RRPB	Range Requirements Review and Prioritization Board
RTLA	Range and Training Land Assessment/Analysis
RTLP	Range and Training Land Program
SERDP	Strategic Environmental Research and Development Program
SHPOs	State Historic Preservation Officers
SIP	State Implementation Plan
SOP	Standard Operating Procedure
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SRA	Sustainable Range Awareness
SRP	Sustainable Range Program
SWPPP	Storm Water Pollution Prevention Plan
TCPs	Traditional Cultural Properties
tpy	Tons per year
TRI	Training Requirements Integration
TRTC	Tropic Regions Test Center
TSA	Threatened by Similarity of Appearance
UAS	Unmanned Aerial Systems
UAVs	Unmanned Aerial Vehicles
USAPHC	United States Army Public Health Command
USAYPG or YPG	United States Army Yuma Proving Ground
U.S.C.	United States Code
USEPA or EPA	U.S. Environmental Protection Agency
USFWS or Service	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
UXO	Unexploded Ordnance
VECs	Valued Environmental Components
VOC	Volatile organic compounds
WAPA	Western Area Power Administration
WSC	Wildlife of Special Concern in Arizona
YTC	Yuma Test Center

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CHAPTER 1 INTRODUCTION

1.1 Purpose

The purpose of this Integrated Natural Resources Management Plan (INRMP) is to guide and document the manner in which the U.S. Army Yuma Proving Ground (USAYPG or YPG) sustains the military mission on the installation while managing the ecological health of our natural resources area. The INRMP will ensure sound land management, environmental stewardship, and compliance with all relevant laws, regulations, and applicable state and federal management plans, are consider during mission and project planning activities and that no net loss of mission capacity results from meeting our stewardship responsibilities. The INRMP is consistent with military requirements and the Sikes Act and associated amendments.

Management of natural resources on and around the installation requires coordination and cooperation between the U.S. Army Garrison Yuma Proving Ground (Garrison) Manager, the YPG Commander, the Regional Director of the United States Fish and Wildlife Service (USFWS), Region 2; and the State of Arizona, by and through the Arizona Game and Fish Commission and its administrative agency, the Arizona Game and Fish Department (AGFD). The final signed plan will reflect the mutual agreement of all cooperating parties concerning the conservation, protection, and management of fish and wildlife resources on the installation.

1.2 Goals and Objectives

The focus of the INRMP is the implementation of goals, objectives, and natural resources management policies and projects. This management plan is based on ecosystem management with the intention of demonstrating the interrelationships between the military mission and natural resources management. Chapters 4 and 5 of this INRMP set forth the natural resources management goals and objectives developed by YPG. In summary, the goals of this INRMP are to:

- Integrate elements of natural resources management into a single program that, in turn, is integrated into the YPG environmental program and military testing and training
- Describe the testing and training site and its natural resources
- describe the military mission, potential effects of the mission on natural resources at YPG, and options for resolving potential conflicts between the military mission and natural resources management
- Provide references, show the environmental compliance status of YPG and the INRMP, and define responsibilities for the management of natural resources
- show the status of baseline inventories of natural resources and monitoring needs for environmental compliance
- Describe non-native invasive species problems on YPG and discuss impacts and management
- Describe revegetation and erosion-control techniques used that will maximize soil stability and sustain high-quality water resources and testing/training lands

- Detail methods used to increase the environmental awareness of YPG personnel and the public
- Outline management guidelines, policies, and projects that will be effective in maintaining and improving the sustainability and biological diversity of ecosystems on the training site, support human needs, emphasize public involvement, and promote partnerships and adaptive management
- Manage natural resources at YPG to assure proper stewardship of public lands entrusted to Army care
- Provide the necessary means for implementation of the plan as well as being user friendly and translatable to the YPG Commander and Garrison Manager and their subordinate personnel, external federal and state agencies and non-governmental organizations (NGO), and the public

1.2.1 Guiding Principles

The USAGYPG has prepared this INRMP to ensure that natural resources conservation measures are consistent with various laws, policies, procedures, and federal and state regulations. Of particular importance are:

- Under the Natural Resource Management on Military Lands Act of 1960 (16 U.S.C. 670 *et seq.*), commonly known as the Sikes Act, as amended according to the Sikes Act Improvement Act of 1997:

  The Secretary of Defense shall carry out a program to provide for the conservation and rehabilitation of natural resources on military installations.

  To facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States under the jurisdiction of the Secretary, unless the Secretary determines that the absence of significant natural resources on a particular installation makes the preparation of such a plan inappropriate.

  The Secretary of a military department shall prepare each integrated natural resources management plan for which the Secretary is responsible in cooperation with the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, and the head of each appropriate State fish and wildlife agency for the State in which the military installation concerned is located (i.e., Arizona Game and Fish Department). The resulting plan for the military installation shall reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources.

  Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments (i.e., Army) carry out the program to provide for:

  - *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*
  - *Public access to military installations to facilitate the proposed uses, subject to safety requirements and military security*

- Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*. This regulation consolidated environmental protection and enhancement, including natural resources in one regulation and provides the framework for the Army Environmental Management System
- Department of Defense (DoD) Instruction 4715.3, Environmental Conservation Program
- AR 350-19, *The Army Sustainable Range Program* (consolidates AR 210-21 and AR 350-4)
- Colorado State University, Center for Ecological Management of Military Lands. *RTLA Technical Reference Manual: Ecological Monitoring on Military Lands*
- Army Assistant Chief of Staff for Installation Management memo (March 21, 1997). *Army Goals and Implementing Guidance for Natural Resource Planning Level Surveys and Integrated Natural Resource Management Plans*
- Office of the Undersecretary of Defense Memorandum-Subject: *Implementation of the Sikes Act Improvement Act, Updated Guidance*
- Cooperative Management Agreement between United States Army, YPG, and United States Bureau of Land Management, Yuma Resource Area (September 1988, Addendum, May 31 1989)
    - Establishes mutually acceptable management objectives, responsibilities, and operating procedures for management of land, natural resources, and facilities of interest to both parties
- DoD Instruction No. 4715.03. *Natural Resources Conservation Program*
- Memorandum of Understanding (MOU) Among the U.S. DoD 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, (January 2006)
- MOU between the U.S. DoD and Bat Conservation International (October 2006)
- MOU between the U.S. DoD and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds (July 2006)
- Department of the Army (DA), Assistant Chief of Staff for Installation Management-Subject Army Species at Risk Policy and Implementing Guidance (September 2006)
- Executive Order 13352 – Facilitation of Cooperative Conservation
- Executive Order 13112 – Invasive Species
- Army Policy Guidance: Management and Control of Invasive Species

Additional environmental laws, regulations, and federal and local agreements applicable to natural resources management at YPG are listed in the References section.

The INRMP is a dynamic document that focuses on a 5-year planning period based on past and present actions. Continual improvement of the INRMP is achieved by utilizing adaptive management and through required reviews and/or updates at least every five years.

1.2.2 Screening Criteria

The following screening criteria were used to assist in defining the scope of the INRMP and developing the INRMP management goals and objectives.

- The INRMP will provide for no net loss to the military mission and will support designated land uses, including the conservation of natural resources on YPG
- Activities and land use will be in accordance with Public Land Order (PLO) 848 and P.L.O. 6474, which withdrew and reserved the public land that comprises YPG for the use of the DA for military purposes
- The INRMP will neither increase nor decrease the existing responsibility and authority of the collaborating agencies
- Public access shall be compatible with YPG mission activities and ecosystem sustainability, security, and safety
- YPG range areas will remain closed to the public except as specifically authorized by YPG Hunting Regulation 210-11 and other Command policy
- The INRMP will comply with all relevant laws and regulations
- The INRMP shall be prepared in accordance with other appropriate YPG management plans
- Nothing in the INRMP shall be construed to obligate any of the collaborators to expend funds in excess of authorized appropriations
- The INRMP shall consider its effects beyond YPG installation boundaries
- Native Americans shall have reasonable access to YPG sites and resources with traditional significance in accordance the YPG Integrated Cultural Resources Management Plan (ICRMP) and other Command policy

1.3 Background

1.3.1 Location

YPG is located in Yuma and La Paz counties in the southwest corner of Arizona, approximately 25 miles (40 kilometers) north of the City of Yuma (Figure 1). The Kofa National Wildlife Refuge (NWR) is nested within the "U" shape of the YPG borders. Imperial NWR shares a portion of its boundary with YPG on the west. The Cibola NWR is north of Imperial NWR and in proximity to YPG. Neighboring portions of Kofa and Imperial NWRs are designated as wilderness. BLM wilderness areas in the Trigo Mountains and Muggins Mountains share boundaries with YPG.

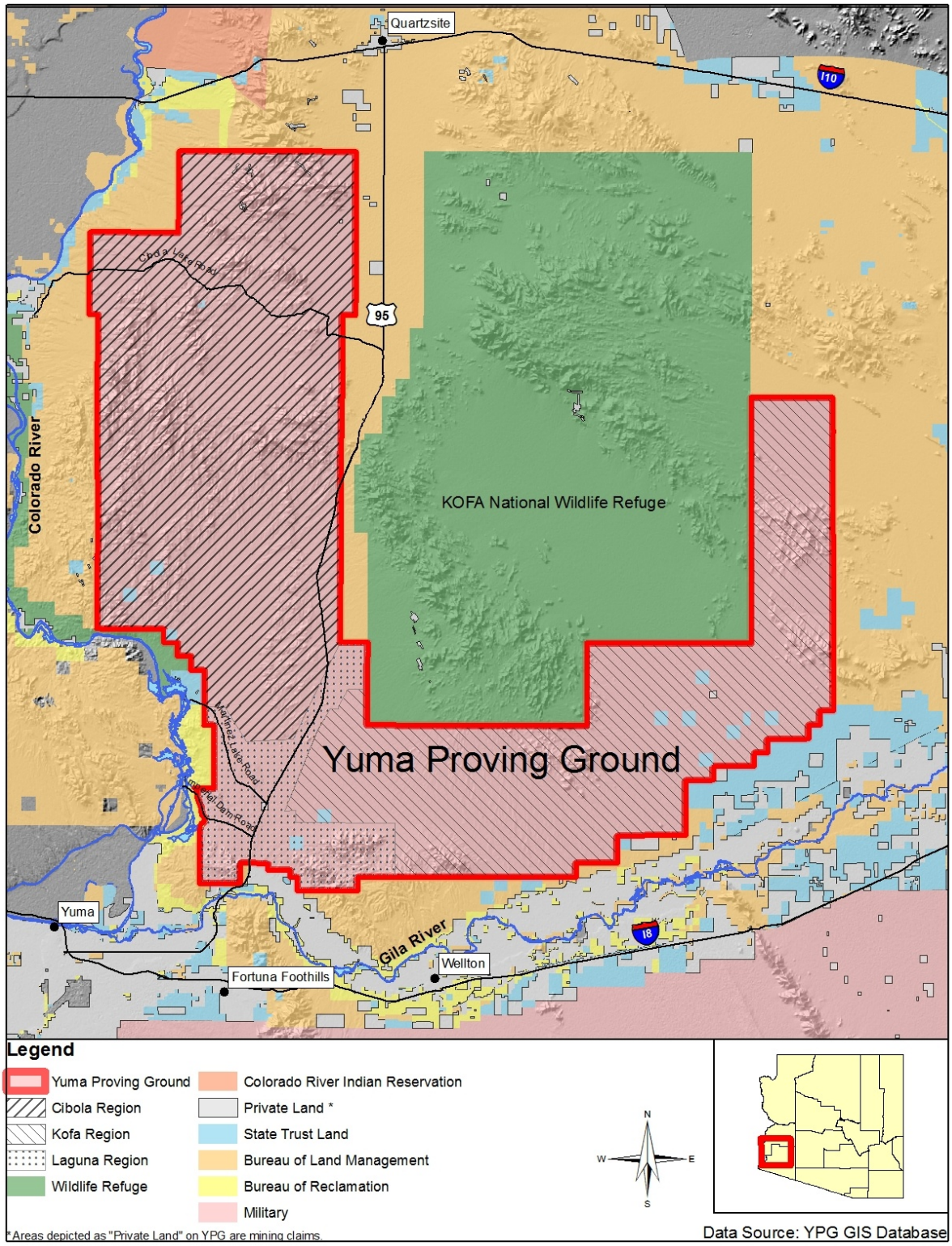

Figure 1: General Location of YPG and Surrounding Land Use

1.3.2 Installation Acreage, Ownership, and Airspace

YPG originally comprised 892,570 acres of both public and non-public lands withdrawn under provisions of PLO No. 848, dated July 1, 1952. Since that time, various real property transactions have altered the installation's holdings to its current size of 838,174 acres. Included within YPG are numerous parcels of state and privately owned land amounting to approximately 7,882 acres currently under lease to YPG. Patented mines within the installation not currently leased make up approximately 410 acres. In addition, by letter permit dated December 3, 1958, the Secretary of Interior granted permission to YPG to use 171,000 acres within the Kofa NWR as an artillery fire buffer zone.

The airspace above most of YPG, Kofa NWR, and neighboring areas is restricted for military operations (Figure 2). The airspace is not completely off-limits to private or commercial flights, but these flights are restricted to periods of non-use by YPG or other military users. Within YPG, the U.S. Department of Justice operates a Special Use Airspace, which restricts military mission access as well as commercial use. The MCAS-Yuma schedules airspace in the greater Yuma region. Further, the MCAS-Yuma manages the restricted airspace over YPG as its Yuma Range, upon release by YPG. This allows flight-training opportunities for units from all services in Arizona, California, and elsewhere.

1.3.3 History

Prior to use by the military, the YPG area experienced relatively minimal human use. In general, protohistoric groups living along the river were more sedentary than the upland people; subsistence was based on floodwater agriculture, fishing, hunting, and wild plant gathering. Groups living away from the river were more mobile, focusing more on hunting and seasonal resource gathering in the deserts and mountains, and practiced only limited farming. In more recent times, mountainous areas were mined for a variety of ores, primarily copper and gold and the lower elevations supported occasional seasonal cattle grazing.

In 1942, the War Department created the California-Arizona Maneuver Area (CAMA), an 18,000 square mile training area commanded by General George S. Patton as he prepared troops for the North African campaign. The CAMA spanned both sides of the Colorado River and consisted of 12 camps and auxiliary facilities, including Camp Laguna, located in the southwest corner of YPG. The test mission of YPG started in 1943 with the creation of the Yuma Test Branch, which tested bridging and fording equipment prior to deployment to the European and Pacific fronts. The current YPG mission dates to 1951 with the establishment of the Yuma Test Station, the precursor to YPG.

For more information on YPG's history and the Cultural Resources Program, please refer to the YPG *Integrated Cultural Resource Management Plan* (U.S. Army Yuma Proving Ground, 2011).

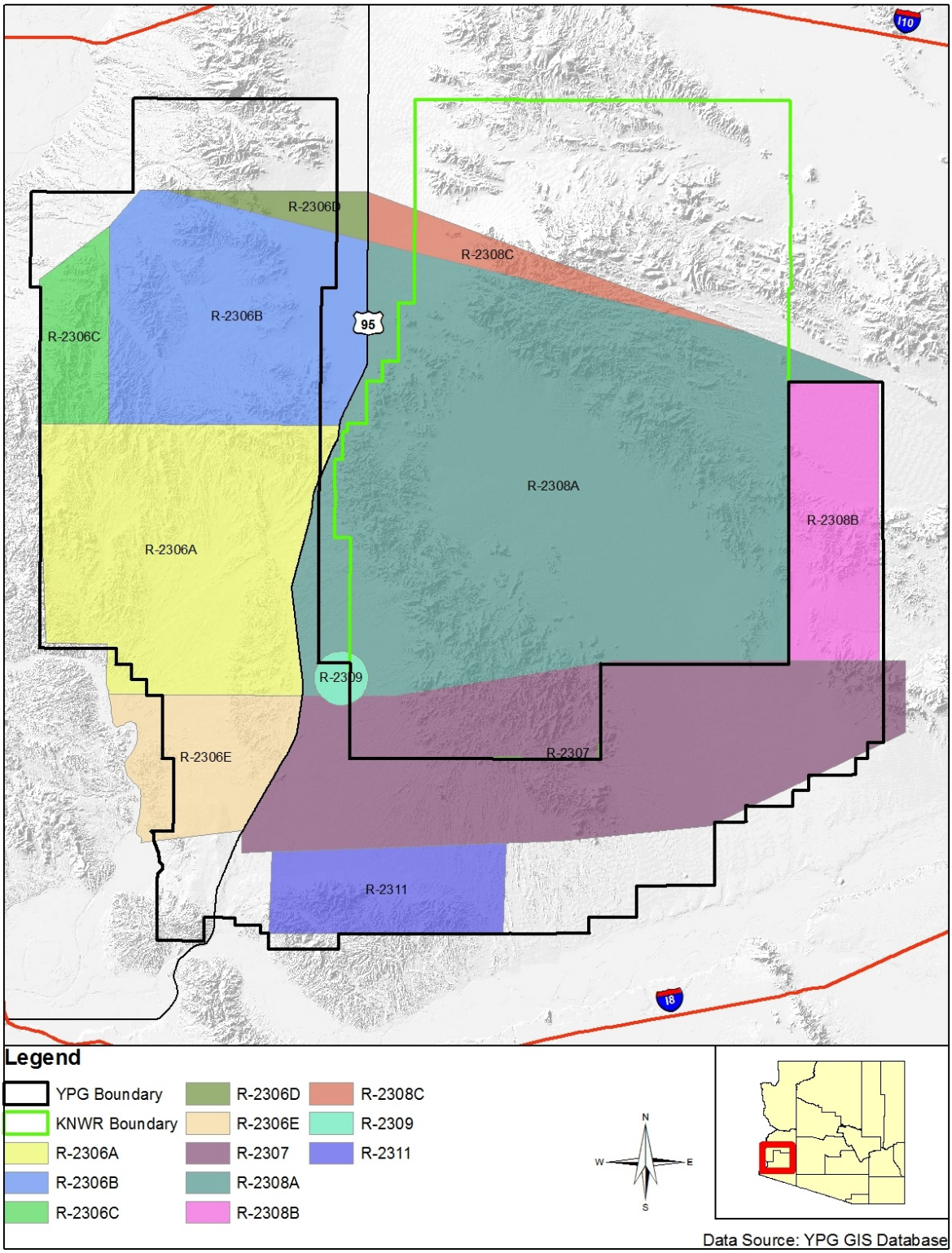

Figure 2: Airspace Boundaries Used for YPG Mission Purposes

1.3.4 Philosophy of Land Management

The philosophy of land management at YPG can be framed within the contexts of Sustainable Range Program (SRP) and ecosystem management. Fundamental to these programs is the conclusion that the military mission drives natural resources management. Because it is a desert test center, YPG must endeavor to conserve valuable natural resources. The holistic approach of the SRP and ecosystem management ensure sustainable use of YPG lands as well as taking into consideration the environment of the surrounding area, compliance with federal environmental laws, and public concerns. Chapter 4 details the SRP and Chapter 5 describes ecosystem management at YPG.

1.4 National Environmental Policy Act Compliance

In the past, the Army and other DoD agencies have prepared National Environmental Policy Act (NEPA) analysis and documentation for proposed actions to implement plans, such as INRMPs, after these plans have been developed. Although this approach complies generally with NEPA regulations and policies, it is cumbersome and often results in the inefficient repetition and redundancy associated with developing completely separate documents. Policy and procedures for implementing the NEPA and Council on Environmental Quality (CEQ) regulations in the Code of Federal Regulations (40 CFR 1500-1508) are set forth in 32 CFR 651, Environmental Analysis of Army Actions (previously AR 200-2). Developing and implementing an INRMP is one of the category of proposed actions that Army policy and procedures requires analysis under NEPA (32 CFR 651.10), normally an Environmental Assessment (EA) [32 CFR 651.33(h)]. The Army goal is to integrate environmental reviews with other Army planning and decision-making actions, thereby avoiding delays in mission accomplishment. To facilitate meeting this goal, NEPA analysis is completed as part of any recommendation or report, including INRMPS, provided to decision makers prior to the decision (subject to 40 CFR 1506.1).

1.4.1 NEPA and INRMP Integration

CEQ regulations encourage NEPA documents to be combined with other agency documents to reduce duplication and paperwork (40 CFR §1506.4) so that agencies can focus on the real purpose of the NEPA analysis-that is making better decisions.

To ensure that management goals, objectives, and actions reflect environmental values, YPG has fully integrated the INRMP and its associated NEPA analysis and documentation into a single plan. The components of each document are consolidated, merged, and presented as a single document. This approach embraces the intent and spirit of NEPA, as well as the requirements of 32 CFR 651.

The INRMP portion of the document provides management measures that have been developed by considering various alternatives for meeting resource-specific goals and objectives at YPG. The INRMP also provides the rationale for why certain management measures have been selected for implementation and others have not, based on analysis of resource-specific screening criteria. The EA portion of the document "carries forward" the INRMP's selected management measures as the proposed action. Since other management alternatives were considered and

eliminated from further consideration in developing the INRMP, the EA addresses only the proposed action and a no action alternative.

In order to readily identify elements of the NEPA analysis, Table 1 presents a cross reference, as a reader's guide, that indicates where specific NEPA related elements can be found. All remaining sections pertain primarily to the INRMP.

Table 1: NEPA Analysis and Corresponding INRMP Sections

NEPA Analysis	Corresponding INRMP Section
The Purpose of and Need for the Proposed Action summarizes the proposed action's purpose and need and describes the scope of the environmental impact analysis process.	Chapter 1, Section 1.4.2
Description of the Proposed Action and Alternatives describe the proposed action of implementing the INRMP (i.e., the selected management measures) and an alternative to implement the proposed action (i.e., the no action alternative).	Chapter 2, Section 1.4.3
Scope of Analysis describes the scope of the environmental impact analysis process.	Chapter 1, section 1.4.4
Affected Environment describes the existing environmental setting.	Chapter 3
Environmental Consequences identify potential environmental effects of implementing the proposed action and the no action alternative.	Chapter 7
Conclusions identify potential impacts associated with the alternatives and draw a conclusion as to which alternative should be implemented.	Chapter 8, section 8.2 (NEPA)
References provide bibliographical information for cited sources.	References
List of Preparers identifies persons who prepared the document and their areas of expertise.	List of Preparers
Persons Consulted provide a listing of persons and agencies consulted during preparation of the EA.	Appendix A Agencies Consulted and Distribution List
The Appendices include agency consultation letters and supplemental information used to develop the NEPA analysis.	Supporting Information

The EA analyzes the update and implementation of the INRMP as the Proposed Action. It formalizes existing natural resources practices for use by YPG as an effective planning and decision-making tool. The analyses included in the NEPA portion of the INRMP allows for timely identification of environmental effects and values in sufficient detail for evaluation during the decision-making process. Decision-makers will be able to conclude whether a Finding of No Significant Impact (FNSI) is appropriate. This decision is based on a determination that all potential impacts are either less than significant or can be reduced to less-than-significant levels through the implementation of mitigation measures. Future NEPA documentation can "tier" to this original analysis for future projects or actions that are associated with implementing the INRMP. Subsequent NEPA documents could include EAs or Records of Environmental Consideration (RECs), as appropriate. (A REC is a signed statement briefly documenting that an Army action has received environmental review.)

1.4.2 Purpose and Need for the Proposed Action

The ecosystem within which YPG is located is an integral and valuable part of its mission, as the climate, terrain, vegetation, and wildlife comprise the rugged desert environment necessary for military testing and training, and must be sustained for the long term. It is the responsibility of YPG to sustain ecosystem integrity over the long term, not only for military use, but also for economic, human, and environmental perpetuation.

The purpose of the Proposed Action (implement and maintain an updated INRMP) is to provide ecosystem management guidance, policies, and projects that allow YPG to meet environmental stewardship responsibilities by effectively managing natural resources, while sustaining the military mission.

The Proposed Action emphasizes the regional (ecosystem) perspective and utilizes inventory and monitoring programs to evaluate the results of ecosystem management actions. Implementation of an updated plan is needed to set forth a cooperative and adaptive management philosophy that is based on the current condition and status of the regional ecosystem and that will support the military mission and guide decision making at YPG.

1.4.3 Description of the Proposed Action and Alternatives

The Proposed Action (Preferred Alternative) is to implement the policies, projects and programs (Chapter 4), and management goals and objectives (Chapter 5) presented in this INRMP. The Proposed Action focuses on management of the ecosystems rather than individual species, and because ecosystems cross boundaries, partnerships are required to achieve shared goals. The Proposed Action would apply ecosystem management to sustain the ecological health and integrity of the natural desert ecosystems required for multipurpose military testing. Ecosystem management considers the public needs and desires in management decisions and applies best available knowledge and technologies to implement adaptive management techniques.

No Action (Maintain Current Management) – With the No Action Alternative, current management policies remain in effect and existing natural resources management at YPG persists as the status quo. The 1997 INRMP would be used and YPG will continue to coordinate with AGFD, USFWS, Bureau of Land Management (BLM), other federal and state agencies, NGOs, and the public to guide natural resources management decisions within its boundaries. However, management, data collection, and reporting could be incompatible with YPG's management partners. Under the No Action Alternative, YPG would be out of compliance with the Sikes Act and the DoD's goal of ecosystem management will not be met.

1.4.4 Scope of Analysis

This plan applies to organizations internal and external to YPG that are involved with, or interested in, the management or use of YPG lands and natural resources for military and non-military purposes. The focus of this INRMP is the management of natural resources on the installation for the next five years (FY 2012–2016) and beyond.

The analysis of this plan provides an objective evaluation of the environmental effects of implementing this updated INRMP at YPG. This INRMP uses a collaborative approach, further described in Section 1.4.5, to develop, administer, and carry out ecosystem management goals, objectives, and actions. The guiding principles delineated in Section 1.3 were used to further define the scope of the INRMP.

Natural resources parameters, rather than synthetic boundaries, are applied to determine the scope of the ecosystem management area. An interdisciplinary team was used to identify and develop the ecosystem management goals, objectives, and actions described in this INRMP. During the planning process, YPG solicited input from internal and external stakeholders to support development of the INRMP.

The evaluation of affected resources and the potential for environmental consequences conducted by the INRMP and NEPA team at YPG initially encompassed a broad range of Valued Environmental Components (VECs). However, the potential for environmental impacts to some of the resources areas was determined to be nonexistent, unlikely, or negligible and were not carried forward for further analysis in the NEPA portion of the INRMP (see discussion in Chapter 3). As a result, the scope of environmental analysis focused on the VECs listed below because they were determined to be potentially affected in connection with activities associated with natural resources management at USAYPG.

- **Air Quality**
- **Biological Resources**
- **Cultural Resources**
- **Hazardous and Toxic Substances**
- **Health and Safety**
- **Land Use**
- **Soil Resources**
- **Transportation and Infrastructure**
- **Visual and Aesthetic Values**
- **Water Resources**

Table 9 in chapter 7 provides a description of these VECs and their context in relation to natural resources management at YPG. Potential environmental consequences for each of these VECs are discussed in Chapter 7 and 8.

Management objectives, set forth in Chapters 4 and 5 and Chapter 6, provide for general inventory of natural resources, management of habitat, including management of invasive species, the conservation and hunting of game on YPG, and the enforcement of state and federal policies.

1.4.5 Interagency Administration, Coordination, and Review

YPG has prepared the INRMP in cooperation with the USFWS and AGFD, with all three agencies having signatory authority. The decision making team is lead by YPG, with the USFWS and AGFD as equal partners in the plan preparation and implementation. BLM also participates in the planning process as a partnering land manager because YPG is on land withdrawn from the public domain for permanent military use. BLM also manages wild horses and burros on YPG under the 1971 Free Roaming Wild Horse and Burro Act. Other stakeholders and members of the public have been involved throughout the public involvement process.

Participation by the USFWS is consistent with its mission statement found in National Policy Issuance #99-01: *"…working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.*" Furthermore, the agency is responsible for enforcing federal wildlife laws, administering the Endangered Species Act, managing migratory bird populations, and conserving and restoring wildlife habitat.

AGFD is the state wildlife management agency that has public trust responsibilities for all species of fish and wildlife within the state of Arizona as directed by Title 17 of the Arizona Revised Statutes (ARS). The AGFD mission is "*To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations."* To that end, AGFD works cooperatively with federal land managers, including YPG, to manage wildlife resources.

Each agency has responsibilities and authority to enforce laws in its respective jurisdiction on the installation.

Authority: The INRMP is prepared in accordance with the authorities contained in the Sikes Act, 10 USC 2671, 32 CFR 190, and ARS 17-231.B.7. The Department of Interior (DoD), USFWS, and State of Arizona, through their duly designated representatives, whose signatures appear on the front of this document, approve this plan.

Agreement: All parties mutually recognize and agree to the following:

- YPG controls access to the installation and has primary responsibility for managing the land and natural resources found thereon
- The USFWS has primary regulatory responsibility over migratory birds and species protected under the Endangered Species Act
- AGFD manages resident wildlife populations and has primary responsibility to promulgate regulations for the hunting of these species (Title 12, Arizona Administrative Code and as provided for under ARS 17); shares management authority for migratory, threatened, and endangered species with the USFWS; and has responsibility for managing recreational off-highway vehicles in accordance with ARS 17-454 and 28-1174

Previous Agreements: This document supersedes the following agreements:

- MOU Between the United States DoD, the United States Department of Interior, and the State of Arizona Game and Fish Commission dated November 14, 1979
- Cooperative Plan for the Conservation, Development and Management of Fish and Wildlife Resources, U.S. Army, YPG Military Reservation, dated October 12, 1979
- Integrated Natural Resources Management Plan, U.S. Army Yuma Proving Ground, dated 1997, the first YPG INRMP

Administration: The provisions of this plan are subject to the laws of the United States and the State of Arizona. Nothing in this plan is intended to obligate any of the signatories to expend funds in excess of appropriations authorized by law. The following illustrates the basic administration for this plan.

- Support rendered by the USFWS, AGFD, or YPG under the terms and signatory responsibility of this plan may be provided on a reimbursable, non-reimbursable, or cost-share basis
    - Any reimbursement shall be specifically approved and funded in advance and any reimbursable work will not be accomplished until specific written approval authorizing payment is provided.
- When natural resources management activities are required under this plan, officials and employees of AGFD and USFWS (and other authorized persons under direct control of either agency) shall be granted access to mutually agreed upon portions of YPG, in accordance with routine YPG procedures for granting such access as prescribed in Standard Operating Procedure (SOP) YP-YTRO-P-1000 (YPG 2003) and subsequent updates
- Notice to terminate the agreements under this plan shall be made by the initiating agency to the other signatories 90 days prior to termination
- The parties agree to use arbitration, after exhausting all applicable administrative remedies, to resolve any dispute arising out of this plan, where not in conflict with federal law
- This plan shall be effective when signed by the authorized representatives of each of the parties
- Any notices to or demand upon any party hereto by another party pursuant to this plan shall be in writing and shall be delivered in person to the other parties or forwarded by registered or certified mail, return receipt requested, postage paid, addressed as follows:

U.S. Army Yuma Proving Ground	**Arizona Game and Fish**	**U.S. Fish and Wildlife Service**
Garrison Manager	Director	Regional Director, Region 2
U. S. Army Garrison Yuma Proving Ground	Arizona Fish and Game	U.S. Fish and Wildlife Service
IMWE-YMA-PWE	Department	P. O. Box 1306
301 C Street	2221 West Greenway Road	Albuquerque, NM 87013
Yuma, AZ 85365-9498	Phoenix, AZ 85023-4399	

* Or to such other addresses as parties may from time to time furnish in writing to the other parties by notice.

1.5 Responsibilities

1.5.1 U.S. Army Yuma Proving Ground

YPG employs a complex staff of military and civilian professionals to support its military testing and training mission. The following describes those entities that assume the largest roles in the management of natural resources and outdoor activities.

Installation Commander: The YPG Commander is responsible for ensuring that subordinate commands and tenant activities at YPG are familiar with the requirements of the INRMP and participate to the extent practicable.

Garrison Manager: The Garrison Manager conducts operations in support of the Yuma Test Center (YTC) and tenant activities, to include the preparation and implementation of an INRMP for the installation.

Public Works Directorate: The Directorate of Public Works (DPW) manages the real property, grounds maintenance, construction, and pest control functions. Contract personnel perform many of the tasks overseen by DPW civilian employees. DPW and its maintenance contractor supply the equipment and materials to maintain improved grounds and some outlying areas.

Environmental Sciences Division: The Environmental Sciences Division (ESD) is a division under DPW and has overall responsibility for the installation's environmental programs. Areas of responsibility include air and water resources, solid waste, natural resources, cultural resources, NEPA, pest management, installation restoration and hazardous materials and waste handling, and spill response activities.

Natural Resources Program: The ESD administers this program, which has responsibility for oversight of YPG natural resources management. One natural resources manager and one ecologist performing natural resources work currently staff the program. The environmental support services contractor also provides technical support on a task-assignment basis.

In addition to Operational and Maintenance Account appropriated funding, natural resources programs are eligible for a variety of commodity-based and grant funding. Commodity-based funds are derived from YPG hunting permit fees and from DoD-wide forestry, agriculture, and grazing income. Grants such as the DoD Legacy Resource Management Program and the Strategic Environmental Research and Development Program (SERDP) are alternative sources of funds.

Plans & Operations Directorate: The Sustainable Range Program (SRP) Office is located within the Plans and Operations Directorate responsible for the Integrated Training Area Management (ITAM) Program, which includes four subprograms: the Range and Training Land Analysis (RTLA), Training Requirements Integration (TRI), Land Rehabilitation and Maintenance (LRAM), and Environmental Awareness. ITAM is the U.S. Army standard for sustaining the capability of installation land units to support their military training missions, to ensure compliance with existing statutory regulations, and to promote sound stewardship of natural resources contained on lands used for military operations.

Emergency Services Directorate: The Directorate of Emergency Services controls public access and serves as the post game warden. Military police patrol and enforce regulations and laws.

Family, Morale, Welfare, and Recreation Directorate: The Directorate of Family, Morale, Welfare, and Recreation (FMWR) sponsors the outdoor recreation program. Recreational equipment such as campers, mountain bikes, and backpacks are available for rent for use on or around YPG. The Dusty Y Stables also fall under MWR's sponsorship. MWR operates the day care center and Youth Services, both of which collaborate on interpretive environmental education programs. FMWR is eligible for non-appropriated funds generated by fees that can, in return, be expended for these activities.

Public Affairs Office: The Public Affairs Office serves as liaison with the public in public meetings, prepares media presentations, and offers photography services for natural resources projects and community educational events.

1.5.2 Other Federal and State Agencies

It is important to note that natural resources on military lands are cooperatively managed with other federal and state agencies. Therefore, representatives from these agencies directly or indirectly perform natural resources functions such as game and non-game survey, habitat monitoring and improvements, or nuisance wildlife control. The USFWS and AGFD are both mandated partners with YPG in recognition of the respective wildlife management missions they fulfill (Sikes Act) and have signatory authorities on this plan.

U.S. Fish and Wildlife Service: Much of the Service's role with YPG is one of compliance with federal laws such as the Endangered Species Act and Migratory Bird Treaty Act. The Southwest Region 2 Office in Albuquerque, New Mexico, oversees Sikes Act coordination. The Arizona Ecological Services Field Office in Phoenix serves as Endangered Species Act compliance liaison. The neighboring Cibola, Imperial and Kofa refuges also partner with YPG on many natural resources projects. Refuge managers and staff collaborate and partner with YPG to achieve mutually beneficial natural resource enhancements and developments. USFWS operates primarily on appropriated funds as well as partnerships, and provides its own supplies and resources to perform its mission.

Arizona Game and Fish Department: ARS 17-231 states that the AGFD may "enter into agreements with the federal government…for management studies, measures or procedures for or relating to the preservation and propagation of wildlife and expend funds for carrying out such agreements." In addition, the Department is given priority into entering into contracts with YPG to implement INRMP objectives as outlined in the Sikes Act (Sec. 670a [Section 101]). The AGFD Region 4 office in Yuma handles most of the Department's day-to-day coordination with YPG. Although all Yuma AGFD staff likely have responsibilities for YPG natural resources, the Region Supervisor serves as the principle liaison. YPG also relies on professional staff at the state office level for specific projects. Primary natural resources management activities with YPG include law enforcement, wildlife monitoring, and habitat improvement. AGFD provides the equipment and supplies necessary to accomplish its mission throughout the region, including YPG.

Bureau of Land Management: The Bureau of Land Management (BLM) Yuma Field Office manages 1.6 million acres in southwest Arizona, much of it neighboring YPG. The BLM has responsibilities on the installation arising from its organic act, the Federal Land Policy and Management Act (43 U.S.C. 35 *et seq*.) and other related statutes. The office oversees management of wild horses and burros in the Cibola-Trigo Herd Management Area (HMA), which includes a large area of YPG. In concert with other local agencies, BLM serves as the primary responder to wildfire emergencies. Principle field office staff involved in YPG natural resources programs includes: natural resources specialists, wildlife biologist, range conservationist, law enforcement officers, and wilderness specialists. BLM receives appropriated funds as its primary funding source, but also may be entitled to fee-based revenues. BLM provides its own equipment and supplies to perform its mission.

1.5.3 Other Agencies, Academia, and Non-Governmental Organizations

Many agencies, universities, and NGOs participate in YPG's natural resources management. These include, but are not limited to:

- Army Research Office
- Natural Resource Conservation Service
- U.S. Army Corps of Engineers Research Laboratories
- Desert Research Institute
- Colorado State University and other academic institutions
- Sonoran Institute
- Yuma Valley Rod and Gun Club
- Arizona Desert Bighorn Sheep Society
- Desert Wildlife Unlimited.

These entities may contribute expertise, labor, equipment, and supplies in support of natural resources projects on YPG. The funding sources for use by these entities depend upon the nature of the organization—some are entitled to federal or state appropriations, while others depend upon charitable donations. These groups are an invaluable part of natural resources management on the installation. More information about specific projects and partners is addressed in respective implementation sections of the INRMP.

CHAPTER 2 YPG MISSION

2.1 Military Mission

As a general-purpose facility, YPG's mission is to plan, conduct, analyze, and report on the testing of military materiel that is in development, production and operation, including weapons and vehicle and aviation systems. Soldier training is also conducted at YPG by all military services. YPG continues to be ideally suited for testing materiel and training soldiers in desert environments. Most of the work at YPG is developmental testing. New or modified equipment, systems, and/or components of such are tested at YPG to determine whether they meet the customer or manufacturer's specifications. Production acceptance testing is a quality assurance program ensuring the Army's standing stock of munitions and other supplies are serviceable and ready for deployment. Operational testing is conducted to ensure that new training doctrines developed to optimize soldiers' abilities to field improved weapons and tactical equipment in training exercises or battle are successful. These tests are completed for proponent materiel developers, producers, or contractors as directed by the Commanding General (CG), U.S. Army Test and Evaluation Command.

YPG functions as a multipurpose range for both ground-based and airborne testing. YPG's three test centers – Yuma Test Center (YTC) at YPG, Cold Regions Test Center (CRTC) at Fort Greely, Alaska, and Tropic Regions Test Center (TRTC) at a number of tropical sites – are tenant organizations on their host installations. Natural resources management for CRTC and TRTC is addressed in their host installations' INRMPs and are beyond the scope of this INRMP.

2.1.1 Yuma Test Center

As a military testing organization, YTC oversees a number of data collection and analysis services with relevance to YPG's natural resources. The meteorological team monitors, records, and reports YPG weather and the chemistry laboratory evaluates soils and material samples from vehicles and other systems undergoing evaluation at YPG. A geographic information system (GIS) laboratory supports the natural resources management mission with GIS maps and database management and analysis. The test programs coordinated and conducted through YTC are managed under one the primary test directorates, divisions, or support elements described below.

Ground Combat Systems: This test directorate oversees a variety of test and evaluation activities including munitions and weapons testing, wheeled and tracked vehicle systems, ammunition management, metrology and simulation, and maintenance of all ground combat systems being tested at YPG. The following are the primary divisions within the directorate that are pertinent to natural resources management on the installation.

- Munitions and Weapons Division – This division directs the planning and execution of tests for military weapons, ammunition, and related systems and equipment throughout the item's lifecycle from concept demonstrations, to development, type classification, production acceptance, product improvements, and malfunction investigations.
- Combat and Automotive Systems Division – This division directs test and evaluation of tracked and wheeled vehicles, weapons systems, including tank weapons and ammunition, other mobile equipment, fuel and water transfer systems, unmanned/robotic

for systems performance and reliability under desert conditions, as well as human factors in combat scenarios. The division provides these services to both government and private industry and provides Human Factors Engineering support to other test areas.

Air Combat Systems: This test directorate oversees a variety of test and evaluation activities including air delivery, optics, sensor systems, and flight operations and maintenance services. The following are the primary divisions within the directorate that are pertinent to natural resources management on the installation.

- Aviation/Air Delivery Systems Division – Conducts most airborne activities and some ground-related activities. This division is the primary location for Army developmental air transport and airdrop tests, which focus on development of new or improved methods for transport and delivery of personnel, equipment, and ammunitions. This division also tests aircraft armaments, aircraft weapons and fire control systems, airborne and ground target acquisition systems, ground and aerial rockets and rocket systems, unmanned aviation systems, general support equipment, Soldier equipment, and chemical-biological defense equipment.
- Persistent Surveillance Systems – Tests sensors on aerostat and airship platforms. These surveillance systems remain aloft using lighter-than-air (LTA) gases. Aerostats include free and moored balloons. Airships are aircrafts that can be steered and propelled using rudders and propellers or other thrust mechanisms. Testing includes the use of various military and civilian vehicles and simulated insurgents with live fire from firearms, small artillery, and explosives.
- Unmanned Aerial Systems (UAS) – Testing of UASs include sensors, communications, weapons firing, and aircraft operation on platforms ranging from 1-pound platforms to more than 1 ton. Testing occurs during all stages of the development cycle and includes test firing of weapons systems.

National Counterterrorism Counterinsurgency and Integrated Test and Evaluation Center: National Counterterrorism Counterinsurgency and Integrated Test and Evaluation Center (NACCITEC) tests and evaluates counterterrorism technologies. Testing includes performance, interoperability, and communications for potential, pending, and currently fielded counter- IED and counter-terrorism technologies.

Range Operations Division: This division falls directly under the YTC Commander and includes the Training Exercise Management Office, which is responsible for visiting unit coordination and management of a variety of training activities conducted on the installation. Training activities prepare units for the terrain and unique physical characteristics of the desert environment. Active and reserve military units come to YPG for training events from all services and allied countries including Germany, Canada, and Great Britain. Routine events include Special Forces Forward Operating Base, support to the Marine Corps Weapons Tactics Instructors Course, and the Desert Scimitar training exercise.

Some training activities on YPG are combined with testing to determine the performance of weapons and equipment under field conditions rather than test conditions. This operational testing is conducted to support other testing activities, such as when live fire is needed to provide appropriate test conditions. Field exercise training may include mounted or dismounted

maneuvers, live-fire activities, and bivouacs for extended activities. Training occurs in designated areas in all three regions of YPG.

2.1.2 Other Military Users

YPG hosts more than 17,000 visitors per year. These include test customers, training units, U.S. government and foreign dignitaries, local organizations, and school groups.

2.2 YPG Garrison

The Garrison at YPG serves the installation much like the infrastructure of a city or town except that all services directly or indirectly support the Army mission.

The mission, vision, and goals of the Yuma Garrison were developed as a guide to provide the facilities and services required by mission personnel and residents for work, home, and recreation.

The natural resources found on YPG are a significant and valuable part of its role as a premier desert test and evaluation facility for the U.S. Army, the DoD, and allied nations and the management of these natural resources are primarily the responsibility of the ESD within Garrison. However, there is overlap with the RTLA, ITAM, and LRAM functions, which are managed by the SRP Office under the YPG Commander.

Yuma Garrison

Mission:
Provide professional garrison services to the Military community (Soldiers, employees, family members and retirees) in a manner that they expect and deserve.
Vision:
A Community of Choice - Home to America's Armed Forces with premier facilities and services that enable our military to win on any battlefield.
Goals:
1. (Leadership): Develop and retain visionary leaders and an innovative, professional workforce.
2. (Innovation): Optimize resources by developing and implementing innovative means to provide premiere facilities and quality services.
3. (Agility): Be a streamlined, agile organization focused on meeting customers' needs by providing quality services in support of current and future missions.
4. (Infrastructure): Build and sustain state of the art infrastructure to support readiness and mission execution and enhance well-being of the military community.

2.2.1 Support Facilities

Support organizations provide all structures and facilities for mission, logistical, and personnel support. Mission and logistical support encompasses communication networks, data control, ammunition storage, physical security, vehicle maintenance, safety, environmental support, and fabrication facilities. Personnel and general support includes housing, food services, recreation, administrative and medical services, and facility maintenance.

2.2.2 YPG Tenant Organizations

Military Tenants: Several military units use YPG facilities and resources as tenants on the installation. These include:

- Military Freefall School – Approximately 100 permanent instructors are stationed at YPG and they annually train over 1,000 students from all military services in freefall parachute techniques
- Army Medical Command – A small garrison of support soldiers from Fort Irwin, CA is stationed at YPG and is responsible for providing medical services at the YPG Clinic
- Veterinary Clinic – A veterinary clinic is a tenant activity that provides animal care services to military families in the Yuma area, including those stationed at Marine Corps Air Station in Yuma (MCAS-Yuma)
    - The veterinary clinic also provides animal care for K-9 troops that train at YPG, as well as other Federal government agencies in the local are that operate K-9 units such as U.S. Customs and Border Protection

Private Partnerships/Industrial Tenants: Non-military tenants are allowed to develop and use facilities on the installation. Some industries may use existing military facilities; however, they must comply with all Federal, State, and Army regulations and requirements. Private project proponents are responsible for any mitigation of impacts required resulting from their activities. The Army is responsible for ensuring that appropriate management, monitoring, and mitigation measures are implemented.

2.2.3 Integration with Master Planning

U. S. Army Garrison Yuma is updating the installation master plan. The INRMP will be integrated with the master plan.

CHAPTER 3 AFFECTED ENVIRONMENT

The analysis of the affected environment related to INRMP initially considered a broad range of VECs or resources. The evaluation of affected resources and the potential for environmental consequences conducted by the INRMP and NEPA team at YPG included the VECs listed below. However, they were not carried forwarded for further analysis in the NEPA portion of the INRMP because the potential for environmental impacts to these resources was determined to be nonexistent, unlikely, or negligible. This process allows the analysis presented in the INRMP to focus on those resources areas where potential for an effect associated with implementation of the proposed action was greater.

- Coastal Zone Management: The primary focus of the Coastal Zone Management Act is to effectively manage to preserve, protect, develop, restore, or enhance the resources of the nation's coastal zones. YPG is not located in a coastal area, and there are no activities planned in the proposed action that would impact any coastal resources.
- Environmental Justice: Activities proposed under the updated INRMP will not disproportionately affect minority and/or low-income populations through substantial degradation of air or water quality or exposure to hazardous materials, substances, or waste.
- Floodplains: Executive Order 11988 Floodplain Management restricts federal agencies from constructing in a floodplain. No construction or other modification of a floodplain area is proposed.
- Geology, Geography: The scale of activities proposed in the INRMP cannot reasonably be expected to affect these large-scale resource areas; therefore, they were not carried forward for detailed analysis.
- Meteorological Resources (Climate): Various actions, such as the use of vehicles and aircraft for water hauling, construction, wildlife captures, and surveys will not emit greenhouse gases into the atmosphere in meaningful or quantifiable amount; therefore, implementation of the Proposed Action or No Action Alternative will have no effect on climate.
- Noise: Impacts to noise would be temporary and infrequent, such as that associated with survey over-flights and wildlife waters construction/renovation, which are considered negligible.
- Physiography and Topography: Neither the No Action nor the Proposed Action would significantly affect physiography or topography due to the localized and small-scale nature of proposed activities.
- Prime Farmland: The Farmland Protection Policy Act protects prime or unique farmlands from unnecessary and irreversible conversion to non-agricultural uses. YPG does not contain prime farmlands; therefore, no activities associated with INRMP will affect any prime farmland.
- Socioeconomic: Potential impacts associated with management of natural resources at YPG would be limited to recreational hunting activities; however, access is restricted to specified areas due to the nature of the installation mission. Permit fees generated are nominal and do not have a measurable effect on regional socioeconomics.
- Wild and Scenic Rivers: A wild and scenic river, defined as a free-flowing river or segment of a river that has exceptional scenic, recreational, geologic, fish and wildlife, historic, cultural properties, or other similar values, can be designated by act of Congress or by the

Secretary of the Interior at the request of a governor as part of the National Wild and Scenic Rivers system. There are no designated Wild and Scenic Rivers located on Yuma Proving Ground.

The VECs identified that may be affected by the Proposed Action or No Action alternatives evaluated in connection with natural resources management at U.S. Army YPG are:

- **Air Quality**
- **Biological Resources**
- **Cultural Resources**
- **Hazardous and Toxic Substances**
- **Health and Safety**
- **Land Use**
- **Soil Resources**
- **Transportation and Infrastructure**
- **Visual and Aesthetic Values**
- **Water Resources**

A description of these VECs and their context in relation to natural resources management at YPG are discussed below and potential environmental consequences for each of these VECs are discussed in Chapter 7.

3.1 Air Resources

The Clean Air Act (CAA), as amended, is the Federal law that regulates the protection of ambient air quality. National Ambient Air Quality Standards (NAAQS) were established by the Environmental Protection Agency (EPA) to control criteria air pollutants. The Arizona Department of Environmental Quality (ADEQ) has adopted the federal NAAQS shown in Table 2 and enforcement is performed through their Air Quality Division.

Table 2: National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour [(1)]	None	
	35 ppm (40 mg/m^3)	1-hour [(1)]		
Lead	0.15 µg/m^3 [(2)]	Rolling 3-Month Average	Same as Primary	
Nitrogen Dioxide	53 ppb [(3)]	Annual (Arithmetic Average)	Same as Primary	
Particulate Matter (PM_{10})	100 ppb	1-hour [(4)]	None	
	150 µg/m^3	24-hour [(5)]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual [(6)] (Arithmetic Average)	Same as Primary	
	35 µg/m^3	24-hour [(7)]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour [(8)]	Same as Primary	
	0.08 ppm (1997 std)	8-hour [(9)]	Same as Primary	
	0.12 ppm	1-hour [(10)]	Same as Primary	
Sulfur Dioxide	0.03 ppm [(11)] (1971 std)	Annual (Arithmetic Average)	0.5 ppm	3-hour [(1)]
	0.14 ppm [(11)] (1971 std)	24-hour [(1)]		
	75 ppb [(12)]	1-hour	None	

(1) Not to be exceeded more than once per year.
(2)Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
(3) The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard
(4) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).
(5) Not to be exceeded more than once per year on average over 3 years.
(6) To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
(7) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).
(8) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)
(9) (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(c) EPA is in the process of reconsidering these standards (set in March 2008).
(10) (a) EPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").
(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.
(11) The 1971 sulfur dioxide standards remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
(12) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.
Source: http://www.epa.gov/air/criteria.html

3.1.1 Nonattainment of NAAQS and Conformity Determination

The ADEQ, in conjunction with the EPA, has defined areas of the State that are and are not in attainment of the NAAQS and portions of Yuma County were designated a Moderate PM_{10} nonattainment area for the 24-hour standard. The Yuma PM_{10} Nonattainment Area is located in the southwestern part of Yuma County comprising about 456 square miles or 300,000 acres. The nonattainment area is defined by the following townships (40 CFR § 81.303):

- T7S- R21W, R22W
- T8S-R21W, R22W, R23W, R24W
- T9S-R21W, R22W, R23W, R24W, R25W
- T10S-R21W, R22W, R23W, R24W, R25W

The portions of YPG located in Township 7S and Range 21W fall within the Yuma PM_{10} Nonattainment Area, as shown Figure 3.

A State Implementation Plan (SIP) revision was submitted in 1991, and a supplement was submitted in 1994 adopting a range of PM_{10} control measures and demonstrating attainment with the NAAQS. Data indicate that the entire county has moved into attainment with the 24-hour PM_{10} standard; however, USEPA has not approved the ADEQ Yuma County PM_{10} Maintenance Plan (ADEQ, 2006) and this area remains classified as nonattainment.

The CAA contains general conformity requirements that currently apply to federal agency related activities, except transportation projects, in the Yuma Moderate PM_{10} Nonattainment Area (40 CFR 93.150-160). The regulations are intended to ensure federal actions are consistent with state and local air quality planning. Therefore, any construction that takes place within the nonattainment area on YPG must be evaluated for conformity under the CAA section 176 in accordance with 40 CFR 51.

A conformity analysis must clearly demonstrate that federal projects will not: 1) cause or contribute to any new violations of the NAAQS; 2) interfere with provisions in the applicable SIP for compliance with the NAAQS; or 3) increase the frequency or severity of NAAQS violations. Any federal agency engaging, sponsoring, permitting, or approving an action in the Yuma Nonattainment Area is responsible for making the conformity determination, in consultation with ADEQ. Those federal agencies in the Yuma area that must comply with the general conformity requirements are the BLM, Bureau of Reclamation (Reclamation), Federal Aviation Administration (FAA), Department of Homeland Security, MCAS), and the U.S. Army Yuma Proving Grounds.

3.1.2 Construction and Operating Permits

Regulations for the implementation of construction permitting programs are mandated under Title I of the CAA and regulations for the implementation of operating permit programs are mandated under Title V of the CAA. ADEQ has combined these programs and requires that a facility with emissions obtain a construction/operating permit for all existing stationary sources of air emissions and any future stationary sources of air emissions.

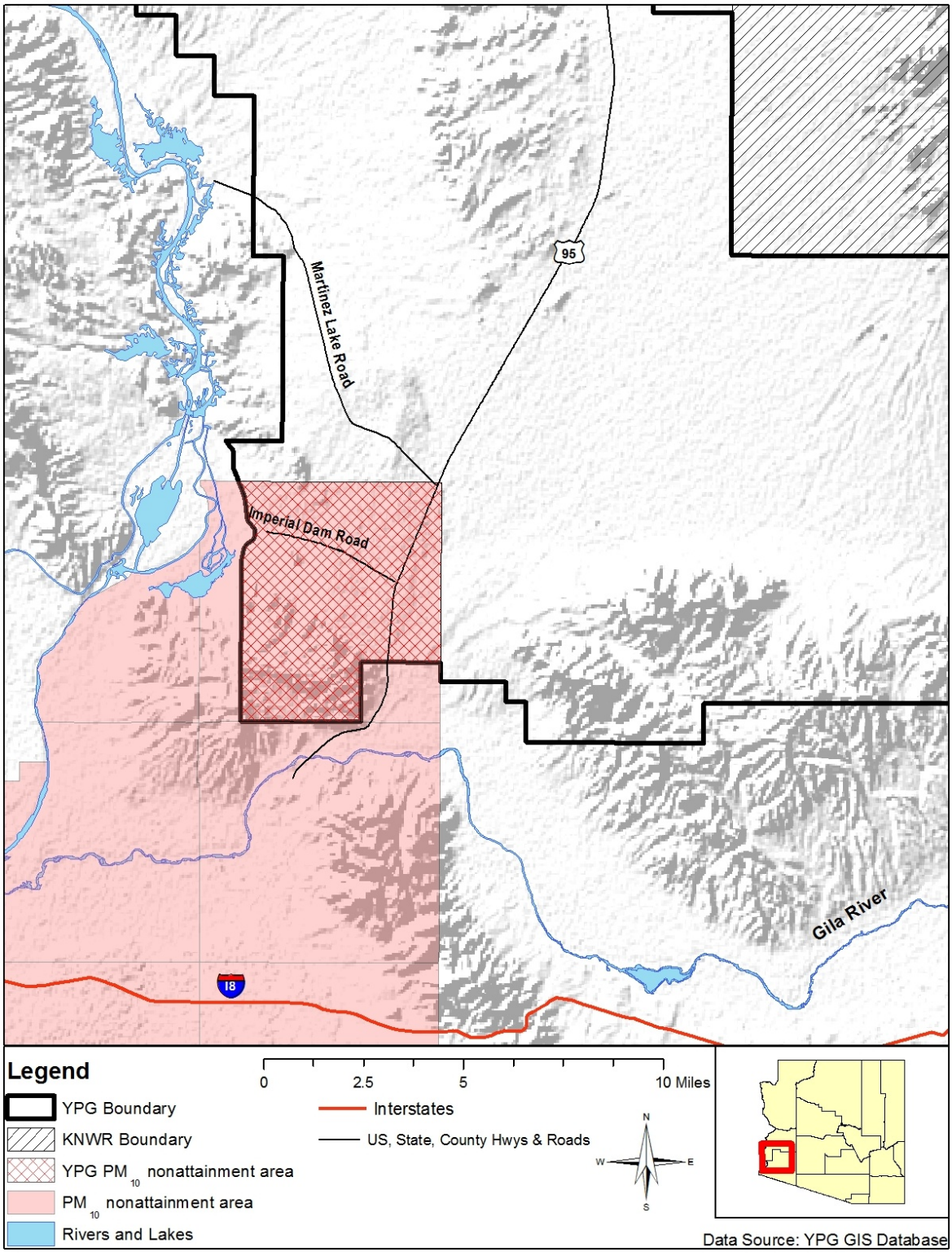

Figure 3: PM_{10} nonattainment area on YPG

YPG is classified as a Class I Major Source pursuant to Arizona Administrative Code (A.A.C.) R18-2-101.64. Potential emissions of nitrogen oxides (Nox), carbon monoxide (CO), and volatile organic compounds (VOC) each exceed 100 tons per year (tpy) and ADEQ issued YPG a Title V Air permit (#43492) in June of 2010. Under this permit, YPG is authorized to carry out activities such as:

- operation of Boilers/heaters and generators
- fire training
- surface coating/miscellaneous chemical use
- waste disposal
- welding operations
- soil vapor extraction units
- inert munitions manufacturing
- plasma cutting table
- open burning and detonation
- deflagration testing
- petroleum product storage/transfers
- carpentry/woodworking activities
- abrasive-blasting
- water treatment plants
- handling of refrigerants
- laboratories

Air emissions tracked on the installation consist of criteria air pollutants, VOCs, hazardous air pollutants (HAPs), ozone-depleting chemicals (ODCs), and smokes and obscurants. YPG submits an annual air emissions inventory to ADEQ. Data from the 2010 YPG air emissions inventory presented Table 3 shows that point source emissions at YPG account for a very small fraction of Yuma County's total emissions.

Table 3: Comparison of Yuma County and YPG Air Emissions

	Yuma County [1]	Yuma Proving Ground	
Pollutant	Total (tpy)	Point Source (tpy) [2]	% of Total
PM_{10}	11,522	3.24	0.03
CO	40,485	3.28	0.01
VOC	7,425	20.7	0.28
NOX	9,947	16.5	0.17
SO_2	517	1.12	0.22

[1] Source: http://www.epa.gov/air/data/index.html. Data used is from most recent year available (2002).

[2] Source: Yuma Proving Ground 2010 Annual Air Emission Inventory.

YPG is an area source of HAPS but emissions of any single HAPS and facility wide totals are below 10 tpy and 25 tpy respectively.

3.2 Biological Resources

YPG is located in the Lower Colorado River subdivision of the Sonoran Desert, the driest and hottest portion of the driest, hottest desert in North America. The hyperarid desert around Yuma has a ratio of potential evapotranspiration (PET) to precipitation (P) of 30:1, compared to 4.3:1 for the portion of the Sonoran Desert around Tucson and 600:1 in the interior Sahara Desert (Arizona-Sonora Desert Museum 2000). YPG is characterized by broad flat valleys with low mountain ranges of almost barren rock. Creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) dominate the valleys. Larger desert washes support bosques of mesquite (*Prosopis* spp.), as well as ironwood (*Olneya tesota*), paloverde (*Parkinsonia* spp.) and other tree species. The washes, included among riparian communities by some ecologists, comprise less than 5% of the habitat but support 90% of desert birdlife, and are important corridors for dispersal of plants (seeds spread during water flows) and animals. The Sonoran Desert has ca. 2000 species of plants, 50-90% of which are annuals, which appear in profusion after wet winters. Large, columnar cacti (saguaro, *Carnegiea gigantea*, on YPG) and numerical dominance of trees in the pea family (Fabaceae) distinguish the Sonoran Desert from other deserts in North America (Dimmitt 2000).

Human activities in the Southwest, particularly in the past century, have caused irreversible changes to the ecological integrity of native plant and animal communities. Much of the most optimal habitat with respect to access to water has been taken over for homes, agriculture, and other uses. Other desert habitat has been lost to construction, mineral and energy development, and unmanaged recreation.

Species of special management concern are those that are federally listed or proposed for listing under the Endangered Species Act, those that are listed as Wildlife of Special Concern by AGFD, and those whose conservation status may otherwise be of special concern. Table 4 lists federally listed species and AGFD WSC and whether they occur on the installation.

Federally Listed Species Observed on YPG: Nichol's Turk's head cactus (*Echinocactus horizonthalonius var. nicholii*), a federally listed endangered species, may occur on YPG, as discussed below.

The Sonoran desert tortoise (*Gopherus agassizii*) was designated a candidate for protection under the Endangered Species Act (Federal Register / Vol. 75, No. 239 / Tuesday, December 14, 2010). Subsequently published research described the Sonoran population as a new species, *Gopherus morafkai* (Murphy et al. 2011). This research does not change the status of the tortoise under the Endangered Species Act. The name *G. agassizii* applies to the tortoise that lives in the Mojave Desert.

Wildlife of Special Concern in Arizona Occurring on YPG: AGFD recognizes rare wildlife as Wildlife of Special Concern (WSC) whose occurrence may be in jeopardy or with known or perceived threats or population declines (AGFD 1996). Those species occurring on YPG include Morafka's Desert Tortoise (*Gopherus morafkai*), Mohave fringe-toed lizard (*Uma scoparia*), California leaf-nosed bat (*Macrotus californicus*), western yellow bat (*Lasiurus ega*), American peregrine falcon (*Falco peregrinus*), and osprey (*Pandion haliaetus*).

Table 4: Relevant Listed Species and Wildlife of Special Concern in Arizona

Species	Federal Status	State Status	Occurrence on YPG	Comments
Sonoran desert toad *Incilius alvarius*	None	1b	O	
Sprague's pipit *Anthus spragueii*	None	1a	P	Observed outside boundaries, would be rare or accidental on YPG
Bald eagle *Haliaeetus leucocephalus*	FD	WSC 1a	O	Observed occasionally on YPG; a migrant known to winter along the river
Golden eagle *Aquila chrysaetos*	None	1b	O	
Western burrowing owl *Athene cunicularia hypugaea*	None	1b	O	
Ferruginous hawk *Buteo regalis*	None	1b	P	Observed outside boundaries
Gilded flicker *Colaptes chrysoides*	None	1b	O	Breeds on YPG
Lincoln's sparrow *Melospiza lincolnii*	None	1b	P	Observed outside boundaries
Gila woodpecker *Melanerpes uropygialis*	None	1b	O	Breeds on installation
Savannah sparrow *Passerculus sandwichensis*	None	1b	P	Observed outside boundaries
Abert's towhee *Melozone aberti*	None	1b	O	Breeds on installation
Le Conte's thrasher *Toxostoma lecontei*	None	1b	O	Breeds on installation
Arizona Bell's vireo *Vireo bellii arizonae*	None	1b	P	
California brown pelican *Pelecanus occidentalis californicus*	FD		O	Observed on YPG; not expected other than accidental due to lack of habitat
Osprey *Pandion haliaetus*	None	WSC	O	Observed occasionally on YPG; water foraging areas not present on YPG
Southwest willow flycatcher *Empidonax traillii extimus*	FE	WSC	P	Listed in LaPaz and Yuma Counties; riparian species near Colorado River
Peregrine falcon *Falco peregrinus*	FD	WSC	O	Observed occasionally on YPG; cliff nesting habitat limited on YPG
Yuma clapper rail *Rallus longirostris yumanensis*	FE	WSC	P	Listed in La Paz and Yuma Counties; water bird near Colorado River
Harris' antelope squirrel, *Ammospermophilus harrisii*	None	1b	O	
Sonoran pronghorn [(1)] *Antilocapra americana sonoriensis*	FE	WSC	NE	Listed in Yuma County; currently not found on YPG but YPG lies within historic range
California leaf-nosed bat *Macrotus californicus*	None	WSC	O	Observed on YPG; roosts in abandon mines
Pale Townsend's big-eared bat *Corynorhinus townsendii pallescens*	None	1b	P	
Greater western mastiff bat *Eumops perotis californicus*	None	1b	P	
Western red bat, *Lasiurus blossevillii*	None	1b	P	
Western yellow bat *Lasiurus ega*	None	WSC	O	Single, tentative observation on YPG; uncommon resident

Species	Federal Status	State Status	Occurrence on YPG	Comments
Lesser long-nosed bat *Leptonycteris curasoae yerbabuenae*	FE	WSC	NE	
California leaf-nosed bat *Macrotus californicus*	None	1b	O	
Cave myotis *Myotis velifer*	None	1b	P	
Yuma myotis *Myotis yumanensis*	None	1b	O	
Pocketed free-tailed bat *Nyctinomops femorosaccus*	None	1b	O	
Desert bighorn sheep *Ovis canadensiss mexicana*	None	1b	O	
Arizona pocket mouse *Perognathus amplus*	None	1b	O	
Little pocket mouse *Perognathus longimembris*	None	1b	O	
Mexican free-tailed bat, *Tadarida brasiliensis*	None	1b	O	
Harquahala southern pocket gopher, *Thomomys bottae subsimilis*	None	1b	P	
Kit fox, *Vulpes macrotis*	None	1b	O	
Desert tortoise (Sonoran population) *Gopherus agassizii,* now *G.morafkai*	C	WSC 1a	O	Observed on YPG; low density population
Gila monster, *Heloderma suspectum*	None	1a	P	
Sonoran collared lizard *Crotaphytus nebrius*	None	1b	P	
Sonoran coralsnake *Micruroides euryxanthus*	None	1b	O	
Mohave fringe-toed lizard *Uma scoparia*	None	WSC 1b	O	Observed on YPG; limited to sand dune complex in northwest Cibola Range
Razorback sucker *Xyrauchen texanus*	FE	WSC	NE	Listed in La Paz and Yuma Counties; no habitat on YPG
Nichol's Turk's head cactus *Echinocactus horizonthalonius* var. *nicholii*	FE	NONE	P	Reported to have been photographed on YPG; population not relocated

Federal and State Status
FE – Listed Federally Endangered
C – Candidate for Federally Endangered
FD – Federally Delisted
WSC – Wildlife of Special Concern in Arizona

Occurrence on YPG
O – Observed
P – Potential
NE – Not Expected

Tier 1a and 1b refers to AGFD classification of species vulnerability. See http://www.azgfd.gov/

(1) The Sonoran pronghorn (*Antilocapra americana sonoriensis*), which is listed as federally endangered (32 FR 4001), does not inhabit YPG. However, it has been suggested that YPG is located within the historic range of the Sonoran pronghorn (USFWS 1998, USFWS 2001). An experimental nonessential population will be established on Kofa NWR in 2012.

3.2.1 Ecosystems, Natural Communities, Flora, and Fauna

Vegetation in the Yuma area is within the Lower Colorado Valley Subdivision of the Sonoran Desert, the largest and most arid portion of the desert. Figure 4 shows biotic communities of the Sonoran Desert. The extreme aridity characterizing this region is reflected in open plains covered sparsely with drought-tolerant shrubs, grasses, and cacti. Most common is the creosote bush, found in widespread stands or mixed with combinations of ocotillo (*Fouquieria splendens*), bursage (*Ambrosia deltoidea*), teddy bear cholla cactus (*Cylindropuntia bigelovii*), and foothills paloverde trees (*Parkinsonia* spp.), depending on landform features (Turner and Brown 1994; Shreve and Wiggins 1964).

Sandy soil formations support big galleta grass (*Pleuraphis rigida*) plant communities along with foothill paloverde trees (*Parkinsonia microphylla*), honey mesquite trees (*Prosopis glandulosa*), or bursage (*Ambrosia deltoidea*). Hillsides support brittlebush (*Encelia farinosa*) in various combinations with other plants such as cacti, in particular the saguaro cactus (*Carnegiea gigantea*). Foothills and mountains provide habitat for mixed shrubs. Desert washes and channel banks support many trees and shrubs, including blue paloverde (*Parkinsonia florida*), ironwood (*Olneya tesota*), smoke tree (*Psorothamnus spinosus*), mesquite (*Prosopis* spp.), and catclaw acacia (*Acacia greggii*). Vegetation found on the highest mountain slopes appears similar to Arizona Upland Subdivision portions of the desert. Exposed rocky slopes provide habitat for saguaros and other cacti, and paloverde trees (*Parkinsonia* spp.). For further description of the Lower Colorado River Valley and Arizona Upland Subdivisions of the Sonoran Desert, see Shreve and Wiggins (1964) and Turner and Brown (1994).

Mesquite bosques (woodlands) are a particularly valuable habitat type on YPG. These isolated woodland patches usually occur in otherwise monotypic creosote plains, and provide food and cover for wildlife. Surveys of mesquite bosques were performed in 2008 (Cibola and Laguna regions) and 2009 (Kofa region). A total of 185 bosques were found in the Cibola and Laguna regions. These bosques were less than ½ acre to over 40 acres in size. Ten bosques are more than 5 acres in size, and the remaining 175 bosques average 1.14 acres each. In the Kofa region, only 23 mesquite bosques were found, and only 3 of these were natural. The others were there as a result of soil disturbance (the creation of depressions in the landscape that allowed soil fines to be deposited and increased the potential for water retention). In the Kofa region, the bosques were much smaller. Mean size of the 3 natural bosques was 2.6 acres, and the 20 artificial bosques, 0.7 acres. In all three regions, mesquite bosques were almost all restricted to the Gilman-Harqua-Glenbar soil complex, a type that is limited in distribution in the Cibola and Laguna regions but more abundant on Kofa. It is not known why there are so many fewer and smaller bosques on Kofa. The 2009 survey included detailed vegetation community characteristics of 19 bosques in the Cibola and Kofa regions (U.S. Department of the Army Yuma Proving Ground 2008, 2009a.

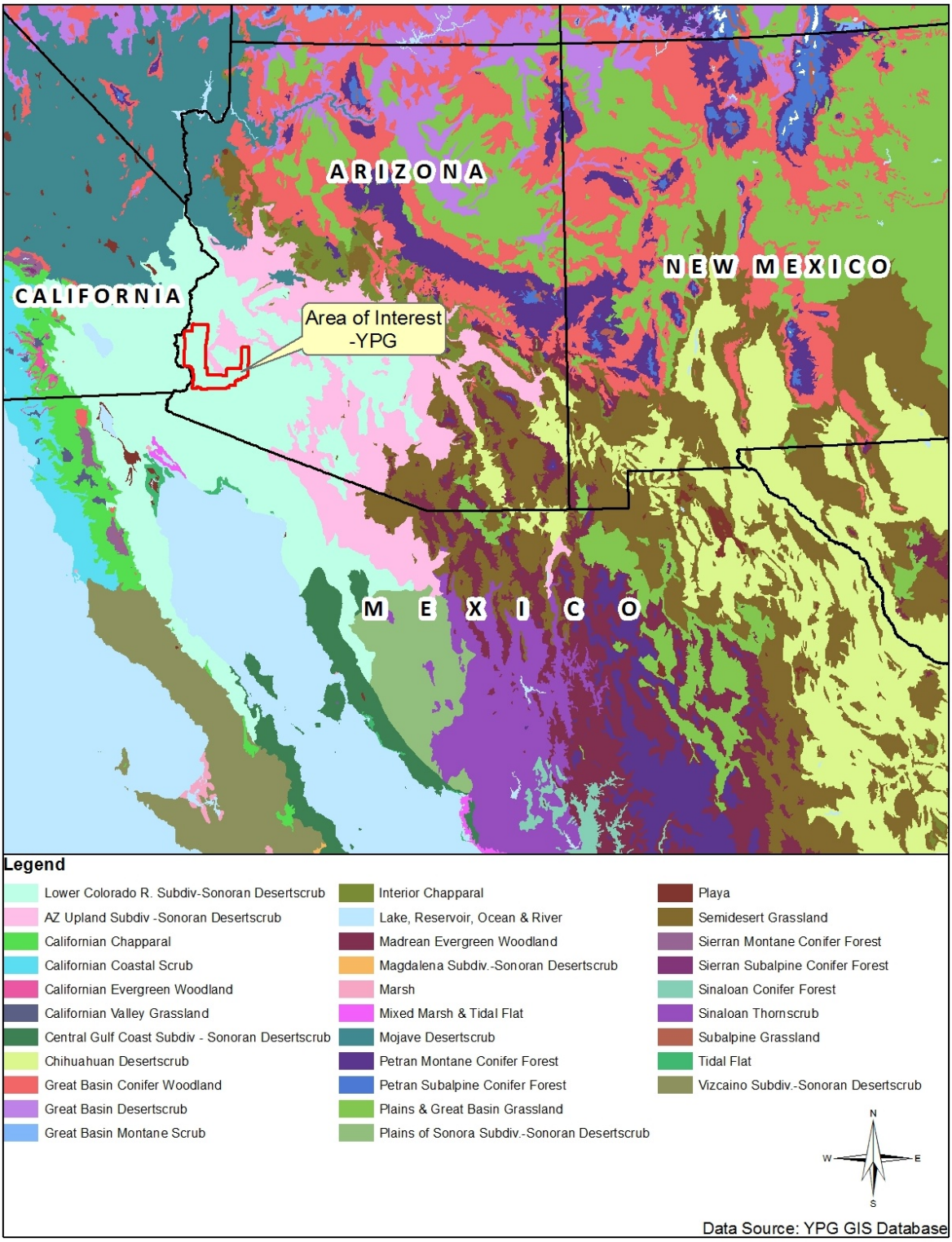

Figure 4: Biotic Communities of the Sonoran Desert

The importance of mesquite bosques to wildlife was apparent in the surveys discussed above, where researchers noted signs of use by deer, coyote, birds, and other taxa (U.S. Department of the Army Yuma Proving Ground 2008, 2009a). Through the use of wildlife cameras, AGFD researchers have documented 24 taxa utilizing mesquite bosques, some seasonally and others year-round (Rosenstock and Yarborough 2010, 2011). Because of the limited distribution and the importance of the bosques, their conservation needs to be a priority in land use planning. Further, 8 of the 23 bosques in the Kofa region included tamarisk (*Tamarix* sp. or spp.), an invasive weed that may outcompete native trees; removal of these trees would enhance survival and growth of native plants in the bosque communities.

Much of the open terrain areas used for testing are covered with the creosote-bursage vegetative type. Plants are sometimes cleared during construction of new testing areas or before construction of buildings and roads. Creation of new impact zones may require clearing and leveling vegetation to facilitate projectile recovery. Sometimes trees and shrubs are pruned to create a clear line of site to targets from gun positions. Ironwood cleared from drop zones have been provided free of charge to selected nonprofits for fundraising events.

Typically, plants are salvaged in accordance with the Arizona Native Plant Law. Saguaros are high-priority must-salvage plants. Smaller cacti and ocotillos are easy to salvage and should be moved rather than destroyed. Ironwoods and other trees are salvaged if possible, although transplanting mature trees is usually unsuccessful.

3.2.2 Potential Sensitive Plant Species at YPG

Nichol's Turk's Head Cactus: The Nichol's Turk's head cactus (*Echinocactus horizonthalonius var. nicholii*) is a small, blue-green-to-gray-green barrel cactus with a single stem that reaches about 18 inches in height and 8 inches in diameter. It has pink-to-bright purple flowers and soft, woolly white fruit (USFWS 1986). According to Phillips et al. (1979), in Arizona the cactus is mostly found on limestone-derived soils on alluvial fans and on inclined terraces and saddles at elevations from about 3,200 to 3,800 feet in southwestern Pinal County (Vekol Mountains) and north-central Pima County (Waterman Mountains). The cactus is believed to have been photographed on YPG during a Land Condition Trend Analysis (LCTA) survey (YPG 1995). Thorough surveys conducted to relocate the cactus were unsuccessful (Rebman 1996). The nearest confirmed location is in Pima County, and many professionals acquainted with the find feel that the YPG sighting is in error. Specifically, AGFD considers the find unconfirmed. If the plant does in fact exist on YPG, it is within the planned White Tanks Conservation Area and is being appropriately managed.

USFWS (1979) listed the Nichol's Turk's head cactus as endangered because of its specialized habitat requirements and limited habitat and abundance, making it vulnerable to threats, including ORV use, mining, road construction, and other activities.

Other Species of Concern Observed Near YPG: The following rare plants are known to occur near YPG but have not been observed within the YPG boundaries: flat-seeded spurge (*Chamaesyce platysperma*), Algodones sunflower (*Helianthus niveus*), sandfood (*Pholisma sonorae*), giant Spanish needle (*Palafoxia arida var. gigantea*), and Alverson's foxtail cactus (*Coryphantha [Escobaria] alversonii*). Appendix B lists plants species which have been found on the installtion.

3.2.3 Potential Sensitive Animal Species at YPG

Southwestern Bald Eagle: The USFWS (1982) presented the Southwestern Bald Eagle Recovery Plan considering the population of the Southwest; this INRMP refers to that population. The bald eagle (*Haliaeetus leucocephalus*) has an average wingspan of 6.5 to 7.0 feet and a dark brown body. Adults, five years or older, are characterized by a white head and tail (Udvardy and Farrand 1994). According to Udvardy and Farrand (1994), bald eagles historically occurred throughout the United States, Canada, and northern Mexico. The geographic area of concern for the southwestern bald eagle includes Oklahoma, Texas west of the 100th meridian, all of New Mexico and Arizona, and that part of California bordering the lower Colorado River. This population probably extends into Baja California and mainland Mexico.

Southwestern bald eagles require large trees, snags, or cliffs near water for nesting, with abundant fish and waterfowl for prey. They winter along major rivers and reservoirs in areas where fish or carrion are available (Ehrlich et al. 1988; Udvardy and Farrand 1994). This habitat does not exist on YPG but is found nearby along the Colorado River. Currently, wintering eagles are found along rivers and major reservoirs in Arizona, particularly in the White Mountain region, with small resident population nests primarily along the Salt and Verde rivers (Phillips et al. 1983). New nest sites along the Colorado, Gila, Bill Williams, and Agua Fria drainages indicate that the population may be increasing. However, this increase may reflect an increased search effort rather than population expansion. The southwestern bald eagle is occasionally observed on the installation.

The USFWS (1967) listed the bald eagle as endangered in 1967. It was subsequently reclassified and down listed to threatened in the lower 48 states in 1999 and has recently been removed from the list altogether (USFWS 1995, USFWS 2006). Although threats to the southwestern bald eagle have declined since its original listing, they include degradation and loss of riparian habitat, pesticide-induced reproductive failure, ingestion of lead-poisoned waterfowl, poaching, timber harvest, loss of foraging perches, and other human disturbance.

Morafka's Desert Tortoise: The desert tortoise species present on YPG, *Gopherus morafkai*, is similar in appearance to Agassiz' desert tortoise, *Gopherus agassizii*, the species present to the west and north of the Colorado River. Murphy et al. (2011) list morphological differences between *G. morafkai* and other North American species of *Gopherus*. As of March, 2012, the desert tortoise of the Sonoran desert is most correctly referred to as *Gopherus agassizii* (Integrated Taxonomic Information System, www.itis.gov). The tortoise is herein called G. morafkai for ease in distinguishing it from the tortoise found west of the Colorado River.

Desert tortoise on Yuma Proving Ground (Photo by R. English)

The two kinds of desert tortoise in the southwest U.S., Agassiz's land tortoise in the Mojave Desert, and Morafka's desert tortoise in the Sonoran Desert, are isolated from each other by the Colorado River. Agassiz's land tortoise, which tends to be more oval and have a higher domed carapace, is listed as Federally Threatened (FT) north and west of the Colorado River in California, and in southern Nevada, southwestern Utah, and northwestern Arizona (USFWS 1990). Tortoises in the Sonoran population (Morafka's) are more pear-shaped, with narrower front ends, wider (flared) rear ends, and flatter carapaces. The USFWS designated the Sonoran desert tortoise population as a candidate for federal listing on December 14, 2010 (FR Vol.75 No.239 P.78094).

According to Stebbins (1985), referring to *G. agassizii* but with some application to the then un-described *G. morafkai*, the desert tortoise is a completely terrestrial species, requiring firm but not hard ground for construction of burrows, adequate ground moisture for survival of eggs and young, and grass, cactus, or other low-growing vegetation for food. Desert tortoises are diurnal, solitary, and dig burrows in which they hibernate from late fall until spring. According to the AIDTT (2000), Sonoran (Morafka's) tortoises live in patchy, small, distinct groups often on rocky bajadas and steep slopes, compared to Mojave tortoises, which live in an even distribution throughout the flats of the desert. Morafka's desert tortoise has been observed at the East Arm and the Cibola Region of YPG (Ough and deVos 1986, Palmer 1986; LaDuc 1992). Figure 5 shows recorded sightings of the Morafka's desert tortoise on and adjacent to the installation. Populations of desert tortoises on YPG are very low, possibly because the very dry climate of the Lower Colorado Subdivision does not support enough forage for larger numbers of Morafka's tortoises.

The Morafka's desert tortoise in southwest Arizona are thought to be threatened by roads, invasive plant species, drought, grazing by non-native mammals (including burros), fire, and other factors (Arizona Interagency Desert Tortoise Team 2009). The presence of roads, particularly maintained gravel roads, has been shown to impact tortoise populations because of illegal collecting (Grandmaison and Frary 2012).

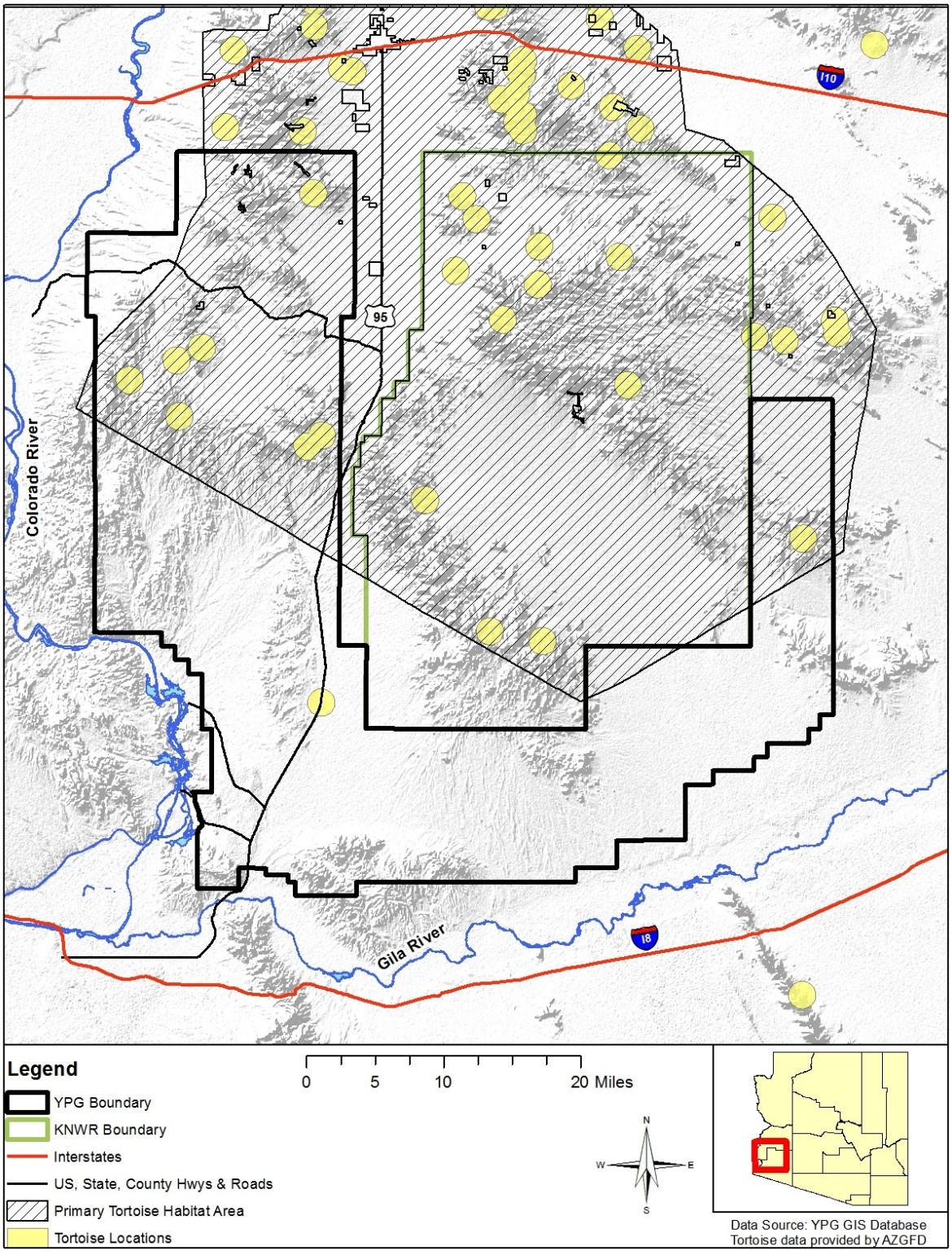

Figure 5: Habitat Area of the Morafka's Desert Tortoise on and Adjacent to YPG

Sonoran pronghorn: Although not yet found on YPG, the endangered Sonoran pronghorn (*Antilocapra americana sonoriensis*) is likely move onto YPG within the decade. The USFWS and the AGFD are in the process of implementing a project to re-establish this species within its historic range. The Sonoran pronghorn being reintroduced are designated as a "nonessential experimental" population. As part of the project, the Sonoran Pronghorn Recovery Team proposed to build a captive-breeding pen for Sonoran pronghorn within the central portion of Kofa NWR and to release up to 20 Sonoran pronghorn from the pen into suitable habitats on Kofa NWR adjacent to the pen site each winter beginning as early as 2013-2014. The Service completed an EA in October 2010 that disclosed the potential impacts associated with the project, which found there would be no significant impact as a result of the proposed project (U.S. Department of Interior, 2010). The project is currently in the first phase of implementation, constructing and populating the captive-breeding pen at Kofa NWR.

YPG is located within a designated nonessential experimental population area (U.S. Department of Interior, 2010, pp. 42, figure 14). Once releases from the breeding pen are initiated, Sonoran pronghorns from the experimental population may be encountered at YPG, particularly in the Kofa Region. Section 4(d) of the Endangered Species Act (ESA) allows the Service to adopt appropriate regulations for conservation of threatened species, which includes relaxing or limiting requirements under section 9 of the ESA that prohibit take of a T&E species.

Accordingly, the Service has established an exception to section 9 that applies to YPG that allows for take of pronghorn from the nonessential experimental population area: "...when it is incidental to, and not the purpose of, carrying out an otherwise lawful activity within the boundaries of YPG…" (U.S. Department of Interior, 2010, pp. 43 and pp.112). There is also no requirement for consultation or conferencing under section 7 of the ESA on DOD lands because the released animals are part of a population that, by definition, is not essential to the continued survival of the species. The only requirement on DoD lands is to report to the Service if incidental take occurs within one of the designated population areas because of military operations (U.S. Department of Interior, 2010).

Mohave Fringe-toed Lizard: The Mohave fringe-toed lizard (*Uma scoparia*) is distinguished by a conspicuous black spot on each side of the belly, black throat markings that are crescent shaped, and a belly usually tinged with greenish yellow. This lizard is highly adapted for life in the sand with a countersunk lower jaw, earflaps, and a fringe of projecting scales on the toes (Stebbins 1985). Fringe-toed lizard tracks are distinctive, consisting of alternating large, round dents made by the hind feet and occasional smaller ones made by the front feet in maintaining balance. The Mohave fringe-toed lizard is restricted to areas of fine, loose, windblown sand of dunes, flats, riverbanks, and washes and is found in the Mojave Desert of California and in the extreme

Mojave fringe-toed lizard on Yuma Proving Ground (Photo by S. Wernsten)

western portion of Yuma County, Arizona (Stebbins 1985, AGFD 1996, Behler and King 1998, AGFD 2008). Mohave fringe-toed lizard habitat on YPG is limited, occurring in the northwest portion of the Cibola Range, where an apparently stable population exists on a series of sand dunes (Palmer 1986, Diamond et al. 2009).

The Mohave fringed-toed lizard is categorized as a "Species of Greatest Conservation Need" in Arizona's Comprehensive Wildlife Conservation Strategy (AGFD 2006) due to restricted habitat requirements and limited distribution. It is also listed as a preliminary conservation element in southwest Arizona (The Nature Conservancy 2004). On YPG the species is threatened by illegal OHV use of the dunes, military testing and evaluation of armored and wheeled vehicles, and invasive species, particularly Sahara mustard (*Brassica tournefortii*) and Mediterranean grass (*Schismus barbatus*) (Diamond et al. 2009).

California Leaf-nosed Bat: Burt and Grossenheider (1980) describe the California leaf-nosed bat (*Macrotus californicus*) as grayish with large ears and a distinctive flap of skin projecting up from its nose. It ranges from southern Nevada southward into Arizona and California and into Mexico (Burt and Grossenheider 1980). In Arizona, the California leaf-nosed bat inhabits mostly the Sonoran desert scrub (Hoffmeister 1986; AGFD 1996). It roosts in several mines on YPG (Castner et al. 1993, 1995). California leaf-nosed bat has been detected in auditory surveys conducted at AGFD catchment #529 on the North Cibola range (Rosenstock *et al*., 2010).

California leaf-nosed bat (photo by R. English)

The California leaf-nosed bat is listed as Wildlife of Special Concern (WSC) in Arizona due to apparently limited winter roost sites and vandalism at roosts, compounded by its susceptibility to low temperatures (AGFD 1996), and as a preliminary conservation element in southwest Arizona (The Nature Conservancy 2004).

Mine on Yuma Proving Ground (photo by R. English)

Western Yellow Bat: The western yellow bat (*Lasiurus xanthinus*) is a medium-sized, pale, yellowish-brown bat that is distinguished by a tail membrane that is heavily furred only on the basal third (Burt and Grossenheider 1980). According to Burt and Grossenheider (1980), the western yellow bat reaches its northern range in southern Arizona and California. In Arizona, it is primarily known in Phoenix and Tucson, but it is thought to occur year-round throughout southern Arizona (Hoffmeister 1986; AGFD 1996).

Not much is known of the habitat needs of the western yellow bat. It is usually found near thick vegetation which is used for roosting. When found in urban areas, the bats are usually associated with palm trees, as ground crews trimming dead fronds have been a major source for specimens (Hoffmeister 1986; AGFD 1996). In more natural settings, western yellow bats are found in low to middle elevations in riparian areas that have thick, leafy vegetation.

There are no records for the western yellow bat in Arizona prior to 1960 (Hinman and Snow, 2003). Some biologists believe the bat is actually expanding its range into the United States from Mexico, aided by the wide use of ornamental palm trees (particularly fan palms, *Washingtonia* spp.) in urban landscaping (Barbour and Davis 1969; Spencer et al. 1988).

Although the biology and population status of the western yellow bat is not well known, it is listed as WSC due to its limited Arizona distribution and potential threats, such as the destruction of riparian forest and woodland habitat, trimming of urban palm trees, and burning of native palm trees (AGFD 1996).

Western yellow bat occurrence and associated habitat are uncommon on YPG; however, one specimen from YPG was tentatively identified during a mist net survey in Vinegaroon Wash (Castner et al. 1993), and another was captured at Lake Alex (AGFD, unpublished data). The species has been confirmed at Imperial National Wildlife Refuge (Johnson 2011).

American Peregrine Falcon: Udvardy and Farrand (1994) describe the American peregrine falcon (*Falco peregrinus*) as a large falcon, slate-gray above and pale below, with thin black bars and spots and a black hood and wide black mustache. It breeds from Alaska and Canada southward throughout the western mountains (Udvardy and Farrand 1994). In Arizona, these birds have been observed over the entire state, with subspecies *tundrius* being a transient and subspecies *anatum* breeding in the state (AGFD 1996). American peregrine falcons inhabit areas with cliffs and steep terrain, often near water (Udvardy and Farrand 1994). This habitat does not exist on YPG, but it is found nearby along the Colorado River. Therefore, the American peregrine falcon is seen as an occasional migrant on YPG.

The American peregrine falcon was listed as endangered in 1970 as a result of reproductive failure (egg shell thinning) due to organochlorine pesticides (mainly DDT) and PCB poisoning (35 FR 16047-16048). USFWS (1999b) subsequently delisted the American peregrine falcon due to its recovery following restrictions on organochlorine pesticides and following implementation of successful management activities. The species is listed as WSC (AGFD 1996).

Osprey: The osprey (*Pandion haliaetus*) is a large bird, brown above and white below, with a white head and dark line near its eye and on the side of its face (Udvardy and Farrand 1994). It is easily recognized in flight by its bent wing profile. It breeds from Alaska south to Arizona (Udvardy and Farrand 1994). In Arizona, it primarily nests at lakes in the White Mountains and across the Mogollon Plateau, with a few occurrences along the Salt and Gila rivers (AGFD 1996). Osprey nest in trees near lakes and rivers, habitat which does not occur at YPG. However, the species is a regular migrant and winter resident along the lower Colorado River (Rosenberg *et al*. 1991). Therefore the osprey is occasionally observed on YPG.

AGFD (1996) lists the osprey as Wildlife of Special Concern (WSC) because of potential loss of nesting habitat and foraging perches typically resulting from land clearing activities along rivers and lakes .

Other Species of Concern Observed on YPG: Several species listed as Birds of Conservation Concern by USFWS (2002) have been documented on YPG including the elf owl (*Micrathene whitneyi*), burrowing owl (*Athene cunicularia*), long-billed curlew (*Numenius americanus*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes auratus*), loggerhead shrike (*Lanius ludovicianus*), Bell's vireo (*Vireo bellii*), crissal thrasher (*Toxostoma crissale*), Le Conte's thrasher (*Toxostoma lecontei*), black-chinned sparrow (*Spizella atrogularis*), and sage sparrow (*Amphispiza belli*). The Gila woodpecker, gilded flicker, and Le Conte's thrasher are listed by The Nature Conservancy as members of the bird guild identified as a preliminary conservation element in southwest Arizona (The Nature Conservancy 2004). Additional WSC found on YPG include the western red bat (*Lasiurus blossevillii*), greater western mastiff bat (*Eumops perotis*), big free-tailed bat (*Nyctiomops macrotis*), Mexican free-tailed bat (*Tadarida brasiliensis*), and western burrowing owl (*Athene cunicularia*) (Appendix B, Fauna List).

Other Species of Concern Observed near YPG: The flat-tailed horned lizard (*Phrynosoma mcallii*) occurs west of the Gila Mountains and south of the Gila River (Foreman 1997). The flat-tailed horned lizard was proposed for federal listing by USFWS as a threatened species on four separate occasions between 1993 and 2010. USFWS withdrew its proposal for listing each time, citing primarily that threats to the species originally identified in the proposed rule were not as significant as earlier believed, and that safeguards provided within the 1997 Conservation Agreement and Rangewide Management Strategy (Foreman 1997) are adequate to prevent extinction of the species.

Several bird species including the black rail (*Laterallus jamaicesis*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), least bittern (*Ixobrychus exilis*), and American bittern (*Botaurus lentiginosus*) are associated with the nearby Colorado River and its tributaries and adjacent wetlands. Also the Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), northern goshawk (*Accipiter gentilis*), gray catbird (*Dumetella carolinensis*), and American redstart (*Setophaga ruticilla*) may occasionally be spotted near YPG. Crested caracara (*Caracara cheriway*), a tropical species, has been confirmed at Cibola National Wildlife Refuge (Johnson 2011).

3.2.4 Migratory and Breeding Birds at YPG

Resident species common to most of the desert areas of YPG include the Gambel's quail (*Callipepla gambelii*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus brunneicapillus*), black-throated sparrow (*Amphispiza bilineata*), loggerhead shrike (*Lanius ludovicianus*), and black-tailed gnatcatcher (*Polioptila melanura*). Raptors found commonly throughout the area are the American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), and red-tailed hawk (*Buteo jamaicensis*). White-winged (*Zenaida asiatica*) and mourning doves (*Zenaida macroura*) may be seasonally abundant. Many other species migrate through the area as a part of the Pacific Flyway. Appendix B provides a listing of bird observed on or around the installation.

Sonoran Desert scrub habitats support abundant and diverse avifauna. Most information about YPG's birds is derived from surveys conducted by AGFD on the North Cibola and East Arm areas of the installation (Ough and deVos 1986; deVos and Ough 1986), the Arizona Breeding Bird Atlas Program, and personal observations. Certain bird species are specific to certain habitat types and may be locally abundant. In montane areas dominated by paloverde/mixed cacti plant communities, rock wren (*Salpinctes obsoletus*) and canyon wren (*Catherpes mexicanus*) are common, with seasonal visitation by Costa's hummingbird (*Calypte costae*) and phainopepla (*Phainopepla nitens*). The sparsely vegetated lower bajadas dominated by creosote (*Larrea tridentata*)/white bursage (*Ambrosia dumosa*) series and at some sites by the creosote/big galleta (*Pleuraphis rigida*plant communities, resident black-throated sparrow (*Amphispiza bilineata*), Le Conte's thrasher (*Toxostoma lecontei*), and horned lark (*Eremophila alpestris*) are commonly observed. The larger washes representing the paloverde/smoketree (*Psorothamnus spinosus*) plant association support the highest densities and richest diversity of desert avifauna. Associated primarily with this habitat on YPG are the lesser goldfinch (*Spinus psaltria*), common yellowthroat (*Geothlypis trichas*), red-winged blackbird (*Agelaius phoeniceus*), and, seasonally, Lucy's warbler (*Vermivora luciae*), yellow warbler (*Dendroica petechia*), and a number of others on a transient basis.

In addition to desert conditions, man-made alterations related to grounds keeping and the proximity of the Pacific Flyway have influenced composition of YPG's avifauna. The first instance allows the presence of cosmopolitan species such as house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and great-tailed grackle (*Quiscalus mexicanus*). Long-billed curlew (*Numenius americanus*) feed regularly on Cox Field in winter. The second results in migrant passages or accidental occurrences due to climatic events, like that of the California brown pelican (*Pelecanus occidentalis californicus*).

3.2.5 Non-Native or Invasive Species

Non-native wildlife species: Some of the most conspicuous non-native animal species found on YPG are wild horses and burros. Both are managed by the BLM under the Wild and Free Roaming Horse and Burro Act of 1971 and are discussed below. In addition, non-native species, such as the house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), Eurasian and possibly African collared-doves (*Streptopelia decaocto* and *S. roseogrisea*, respectively), and Mediterranean house gecko (*Hemidactylus turcicus*), reside on YPG.

Wild burros (photo by C. Fiddes)

YPG provides habitat for wild burros and horses (*Equus* spp.). Neither animal is considered wildlife by the AGFD as defined in the Wild and Free-Roaming Horse and Burro Act (1971). Both species are managed by the BLM, guided by the Cibola-Trigo Herd Management Area Plan (HMAP, 1980), and the Resource Management Plan, Yuma Field Office, Bureau of Land Management (2010). The burros and horses mainly occupy those portions of YPG that are included within the Cibola-Trigo HMA, and BLM is responsible for the management of these

animals including census, monitoring, and removal of animals when the populations exceed the Appropriate Management Level (AML). In the 2010 plan, portions of the HMA east of Highway 95 were eliminated for safety reasons and the HMA now includes portions of the Cibola and Laguna regions on YPG, and public lands managed by BLM adjacent to these areas (Figure 6).

The HMAP established the AML for wild burros at 165. In 1980, the population on the HMA was estimated at 1,200 (Phillips 1980) and was subsequently reduced. In 1983, surveys indicated a population estimate of 372 burros (BLM 1997). Between 1989 and 1997, the herd grew from 351 to nearly 900 (BLM 1997). After a series of removals between 1997 and 2002, the population was reduced to an estimated 210 (BLM 2003). A survey in 2010 estimated that there were 625 burros and 69 horses within the HMA. Because the burros in the HMA average about 16 percent annual recruitment, the BLM Yuma Field Office plans to continue regular gather operations to maintain the burro population at the 165 AML.

Wild horse (photo by C. Fiddes)

During the hot dry periods, wild burros concentrate primarily within three miles of perennial water (Ohmart et al. 1975). The principal water is the Colorado River; however, other perennial waters include Ivan's Well and Lake Alex on YPG. During the cooler months, burros disperse throughout the HMA, including on YPG lands. Illicit water sources appear where borrow pits fill during storms, plumbing leaks develop, or personnel drain water into water troughs or natural basins. These water sources attract burros to areas where they are a hazard to motorists. The BLM and the Garrison Environmental Sciences Division (ESD) have cooperated for many years in repairing leaks and fencing off water sources near Highway 95 for public safety. These efforts have required near continuous attention.

The wild horse population appears to be stable. Currently, the population is estimated at 160 (U.S. BLM 2003). A study conducted by the YPG veterinarian throughout the 1970s and 1980s concluded the horses were in excellent health and that no diseases were present. The study also found that foal mortality in the herd was high, with few surviving as yearlings. Wild horses are more territorial than burros and will use one or two water sources year-round. YPG continues to cooperate fully with BLM in implementing the current HMAP.

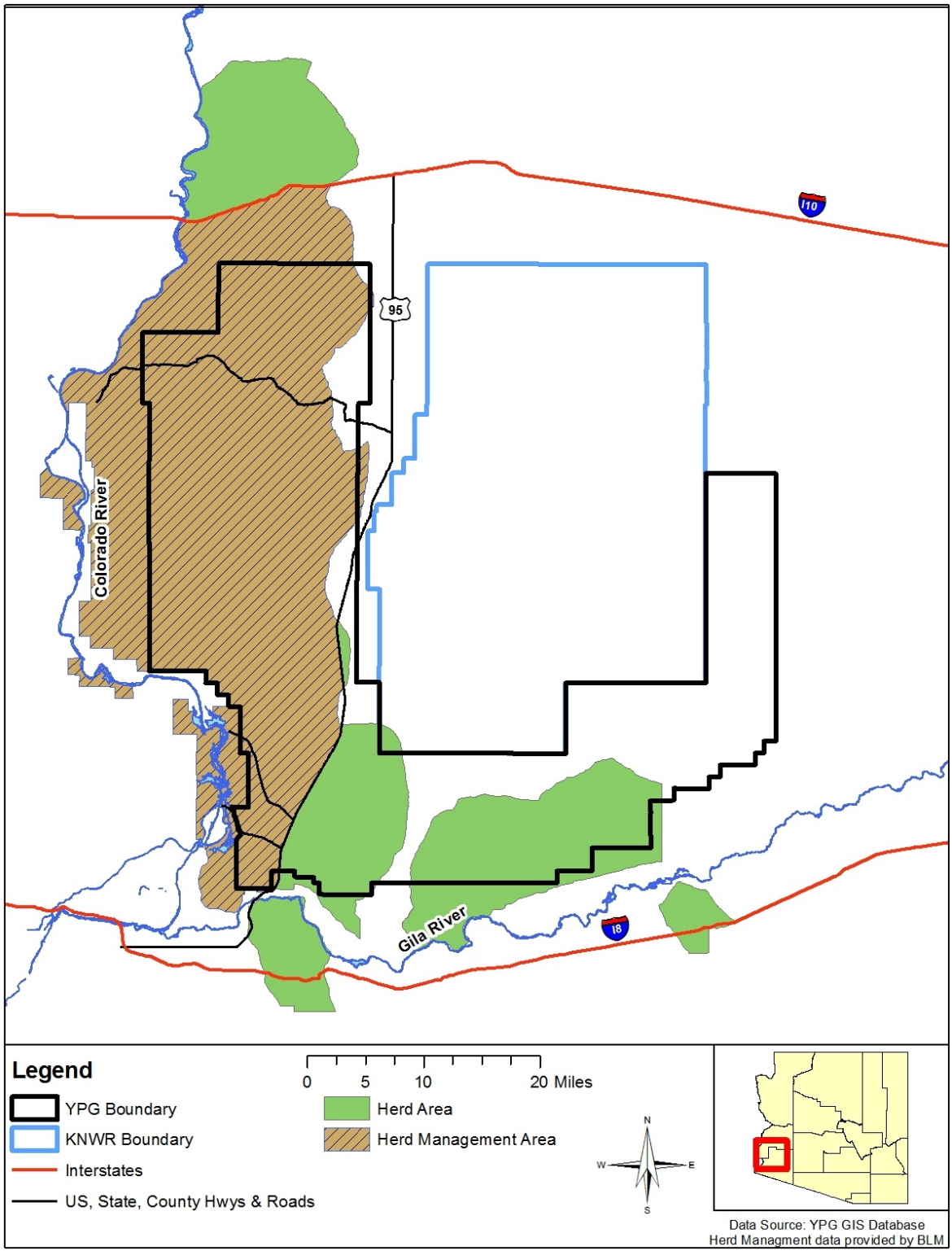

Figure 6: Cibola-Trigo Herd Management Area.

Non-native invasive plants species: These plant species are considered to be one of the most serious threats to the Sonoran Desert ecosystem (Marshall 2000). Plants of concern in the YPG area include buffelgrass (*Pennisetum ciliare*), Athel tamarisk, (*Tamarix aphylla*), salt cedar (*Tamarix* spp. and/or hybrids), common Mediterranean grass and Arabian schismus[1] (*Schismus barbatus* and *arabica*, respectively), Sahara mustard (*Brassica tournefortii*),and several other species. Figure 7 shows the general locations where non-native invasive species are occur on the installation.

Sahara mustard is a good example of rapid changes brought by a species that initially seemed innocuous, exploded in numbers when environmental conditions were right, and is now (2011) as widespread as *Schismus* on the installation.

3.2.6 General Wildlife

YPG wildlife is typical for Sonoran desert scrub habitat. Lists of wildlife species known to occur in the vicinity of YPG are included in Appendix B. Desert wildlife may be endemic to the extremes of hot and dry conditions or may be varieties or races of widespread species showing slight variations aiding in adaptations to arid environments. In general, these characteristics tend toward physical changes such as lighter coloration, body armoring, and increased surface area to heat dissipating body parts, such as longer ears of a jackrabbit conforming to what is known as Allen's Rule. Metabolic adaptations may include the ability to survive without free water, such as kangaroo rats (*Dipodomys* spp.), or to aestivate like spadefoot toads do when conditions are too hot and dry. Nocturnal behavioral changes also help desert creatures adapt to the harsh conditions. Deserts are diverse wildlife areas in which birds, reptiles, and mammals are all well represented. The same is not true of fish and amphibians, other than in and near perennial streams such as the Colorado River.

[1] In the absence of confirmed identification, we assume in this document that both introduced species of *Schismus* occur on the installation. Both have been collected in the Colorado Desert in Imperial County, CA, although only *S. barbatus* is included in the reference collection for YPG compiled by Colorado State University (CSU).

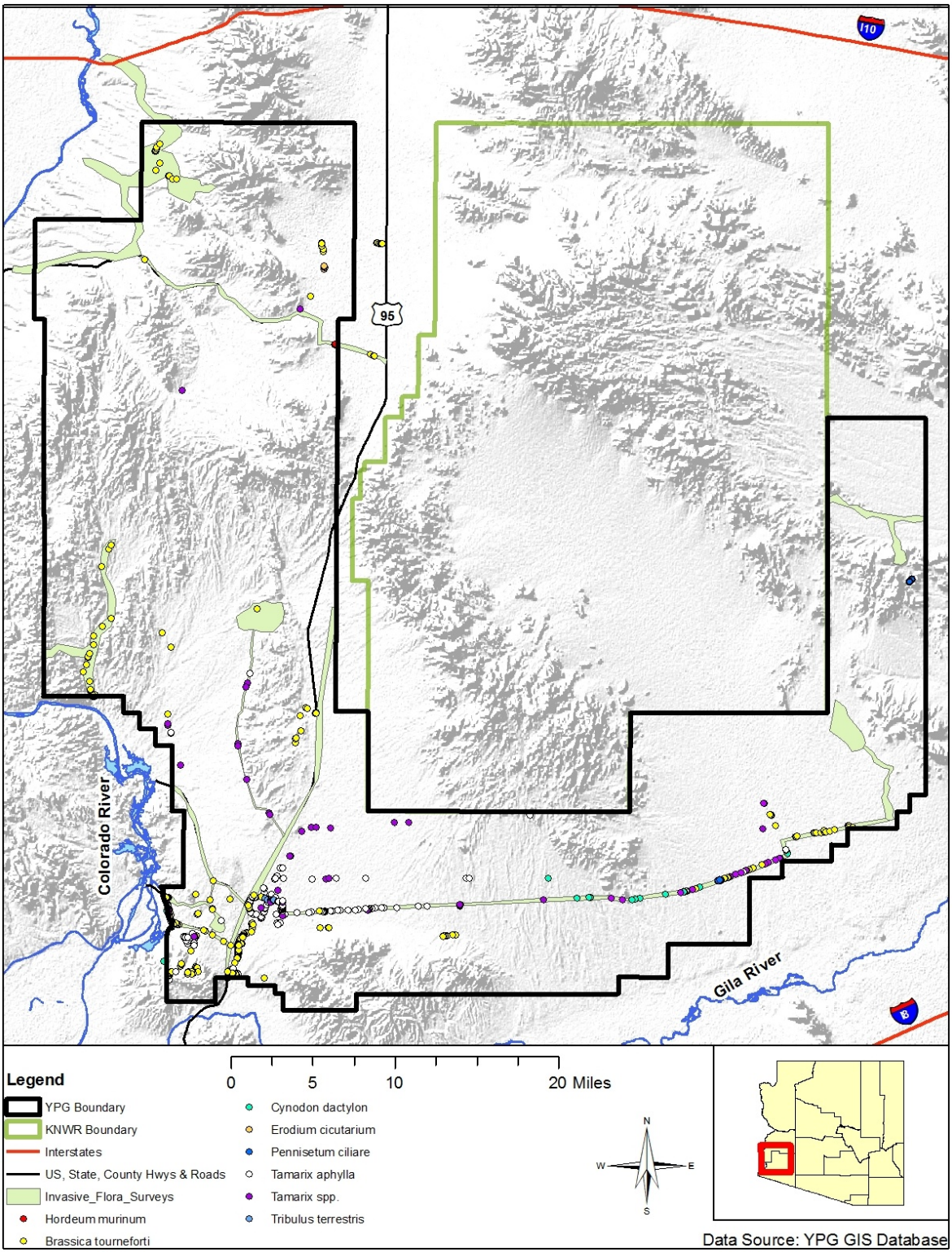

Figure 7: Invasive Flora Observed and Recorded at Yuma Proving Ground

Mammals: YPG is home to many mammal species including desert bighorn sheep (*Ovis canadensis mexicana*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), badger (*Taxidea taxus*), and jackrabbits (*Lepus californicus*) as well as many smaller mammal species such as bats, mice, wood rats, and ground squirrels.

Desert bighorn sheep occur on various mountain ranges on YPG (Figure 8). In AGFD Game Management Units (GMU) 43A and 43B on YPG's western arm, combined population estimates showed sheep numbers generally increasing from 219 in 1993 to a high of 430 sheep in 2010, with a low population estimate of 206 in 2001. In GMU 41W, which includes YPG's east arm, the estimated population grew from a low of 62 in 1992 to 101 in 2006, with a high of 119 in 2003 (AGFD 2007).

Desert bighorn sheep on Yuma Proving Ground (photo by R. English)

Overall, populations of Desert bighorn sheep have been fairly stable over the past 10 years, with numbers slightly decreasing, but remaining generally higher than in the 1980s. The Nature Conservancy lists the desert bighorn sheep as a preliminary conservation element in southwest Arizona (The Nature Conservancy 2004).

Mule deer (*Odocoileus hemionus*) are found throughout YPG, generally inhabiting open interstices between mountains. Combined population estimates in GMUs 43A, 43B, and 41 showed 1,256 animals in 1991 and 2,254 by 2007, with the highest estimate being 2,758 and the lowest being 994 in 1999 and 2002, respectively (AGFD 2007).

YPG has a number of predators including kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), badger (*Taxidea taxus*), ringtail (*Bassariscus astutus*), and an occasional mountain lion (*Puma concolor*). Of the predators noted in surveys on YPG, the kit and gray fox and coyote are the most abundant (Ough and deVos 1986; deVos and Ough 1986). Predator management is conducted in accordance with the Pest Management Plan for the USAYPG (YPG 1998) and the AGFD Predation Management Policy (AGFD 2000). For example, management of the Kofa National Wildlife Refuge bighorn sheep herd has necessitated removal of one or more lions found to prey heavily (specialize) on sheep, as described in the Investigative Report and Recommendation for the Kofa Bighorn Sheep Herd white paper (Kofa National Wildlife Refuge and AGFD 2007). Tracking and removal of lions on YPG by USFWS and/or AGFD will be coordinated with YPG Range Control, and the Garrison natural resource conservation office will be notified as soon as possible. If endangered species, migratory birds, horses, or burros are involved, YPG will coordinate with the appropriate USFWS and/or BLM office. Nuisance or dangerous wildlife will be dispatched or removed by live-trapping and relocation, if Relocation is a viable option for the species involved.

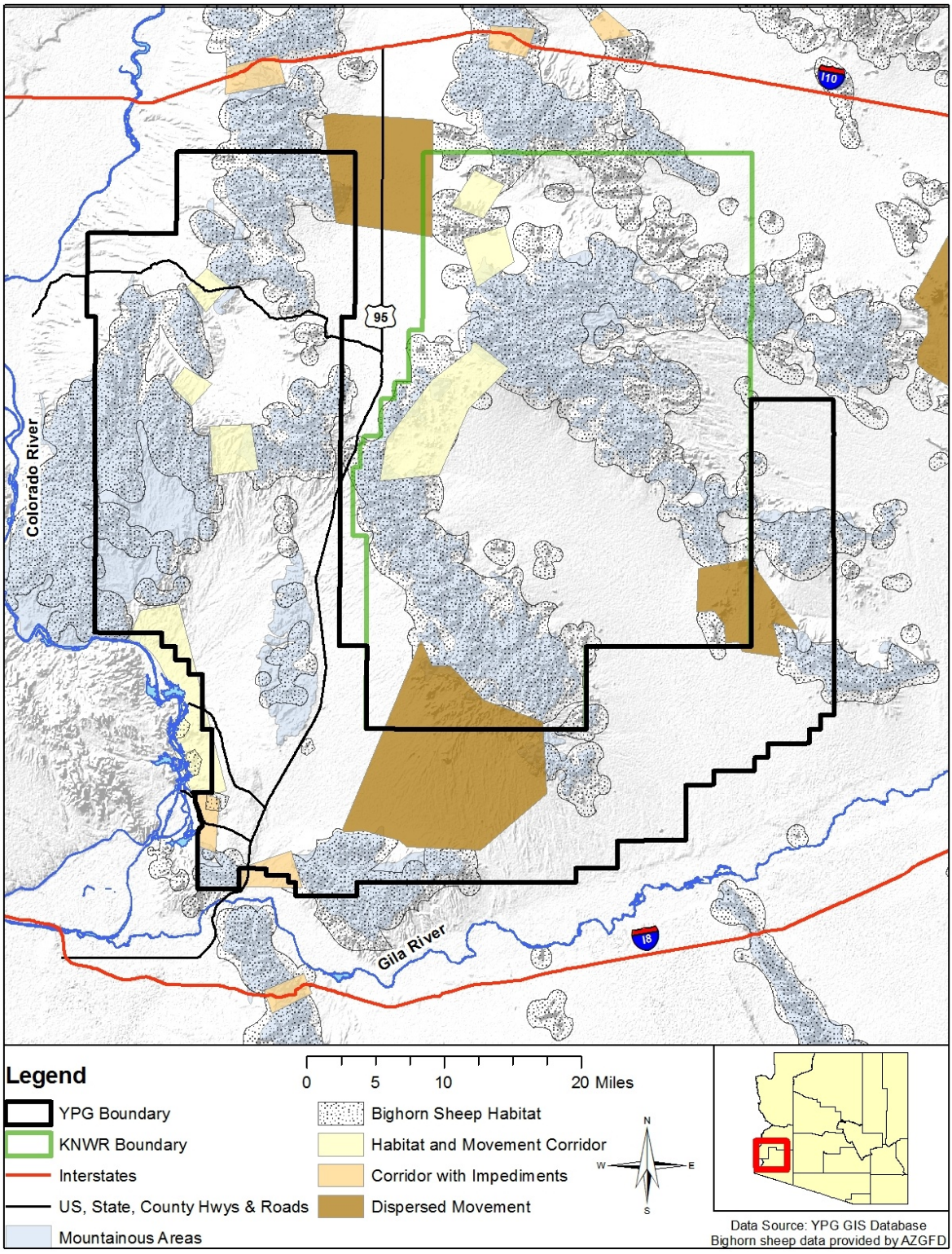

Figure 8: Desert Big Horn Sheep Corridors

Of the terrestrial small mammals on YPG, rock pocket mouse (*Chaetodipus intermedius*) and Merriam's kangaroo rat (*Dipodomys merriami*) are most often observed during surveys (Ough and deVos 1986; deVos and Ough 1986). The black-tailed jackrabbit *(Lepus californicus*) and desert cottontail (*Sylvilagus audubonii*) also are often noted. The most commonly observed bat species on YPG are the California leaf-nosed bat (*Macrotus californicus*), California myotis (*Myotis californicus*), and canyon bat (*Pipistrellus hesperus*) (Castner et al. 1993, 1995; AGFD 2002).

Reptiles and Amphibians: Most of the information regarding YPG herpetofauna is derived from surveys conducted by AGFD on the North Cibola and East Arm areas of the installation (Ough and deVos 1986; deVos and Ough 1986). Lizards, such as the desert horned lizard (*Phrynosoma platyrhinos*), western whiptail (*Aspidoscelis tigris*), and side-blotched lizard (*Uta stansburiana*), are commonly seen throughout YPG. Note that genetic analyses conducted by Mulcany *et al*. (2006) indicated that desert horned lizards east of the Colorado River, including YPG, represent a distinct genotype compared to populations west of the Colorado. Resident snakes include the sidewinder (*Crotalus cerastes*), western diamondback rattlesnake (*Crotalus atrox*), and coachwhip (*Masticophis flagellum*). In all, over 30 species of reptiles have been documented on YPG with the side-blotched lizard (*Uta stansburiana*) and western shovel-nosed snake (*Chionactis occipitalis*) being among the most common.

Couch's spadefoot (*Scaphiopus couchi*), red-spotted toad (*Anaxyrus punctatus*), and Colorado River toad (*Incilius alvarius*) comprise YPG's three amphibian species. These species are listed by The Nature Conservancy as members of the ephemeral water-breeding amphibian guild identified as a preliminary conservation element in southwest Arizona (The Nature Conservancy 2004).

Some species, such as Mohave fringe-toed lizard, are highly adapted to very specific and localized habitat types and are restricted to small areas on YPG. Other species, such as the western whiptail, occur in habitat types more common throughout YPG and are found virtually range-wide.

Invertebrates: Less is known about invertebrate species occurring at YPG and in the vicinity. Some incidental surveys have been conducted for scorpions. Another study that focused on both native and non-native pollinators, primarily bees, was conducted to determine the importance of their ecological role in the YPG area and to assess the effect of wildlife guzzlers on native pollinators. The Sonoran Desert has one of the highest diversity assemblages of native bees in the world. In the first four months of trapping, the researchers found a total of 118 species of bees in 5 families. Among them were at least four bee species new to science (Buchmann and Donovan 2002). Trapping efforts by AGFD on YPG and Kofa NWR yielded more than 200 species, and native bees, unlike honeybees, were unaffected by distance from wildlife waters. This finding suggests that honeybees, primarily Africanized, are not negatively impacting native bees in desert lands of southwestern Arizona (Rosenstock *et al*. 2004).

In addition, considerable effort has been focused on some insects known to be disease vectors for both humans and wildlife. Specifically, mosquito sampling occurs annually in the main post area to monitor adult populations and West Nile virus.

YPG has a wide range of desert fauna. Some species are restricted to specific microhabitats, whereas others range over a wide area. Several groups of animals are associated with the proximity of the Colorado and Gila Rivers and the inherent relationship to the Pacific Flyway. Refer to Appendix B for comprehensive species lists. For detailed data on each species, refer to the reports listed below:

- North Cibola Range Wildlife Inventory (Ough and deVos 1986)
- YPG East Wildlife Inventory (deVos and Ough 1986)
- Special Status Species Summary Report (Palmer 1986)
- Bat Inventory of USAYPG (Castner et al. 1993)
- Bat Inventory of USAYPG, Arizona (Castner et al. 1995)

3.3 Cultural Resources

Cultural resources include any prehistoric or historic district, site, building, structure, object included on, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such properties or resources.

The prehistoric cultural chronology for southwestern Arizona is divided into three major periods: Early (Paleoamerican), Middle (Archaic stage), and Late (Patayan Complex).

The historic period for the YPG area includes early European exploration (1500s-1849), the mining period (1849-1942), and the military presence (1942-present). The ICRMP provides detailed descriptions of these eras and how they influenced the cultural development in the region.

Section 106 of the National Historic Preservation Act (NHPA) of 1966 requires that federal agencies with jurisdiction over a proposed federal project take into account the effect of the undertaking on cultural resources listed, or eligible for listing, on the NRHP, and afford the state historic preservation officers (SHPOs) and the Advisory Council on Historic Preservation (ACHP) an opportunity to comment with regard to the undertaking. To facilitate this, YPG has performed numerous archaeological surveys to identify potential cultural resources.

Figure 9 depicts the areas surveyed on YPG from 1981 through December 2010 and comprises approximately 171,289 acres. Survey plots range in size from less than 1 acre to 17,192 acres (Source: YPG GIS spatial data attributes table).

The information provided below is a summary of the cultural resources setting on the installation. Additional information regarding cultural resources and their management can be found in the YPG *Integrated Cultural Resources Management Plan* (U.S. Department of the Army Yuma Proving Ground 2012). The ICRMP provides a discussion of the prehistoric and historic periods in the Yuma area including the military development of YPG and detailed information about the laws and regulations applicable to the management of cultural resources.

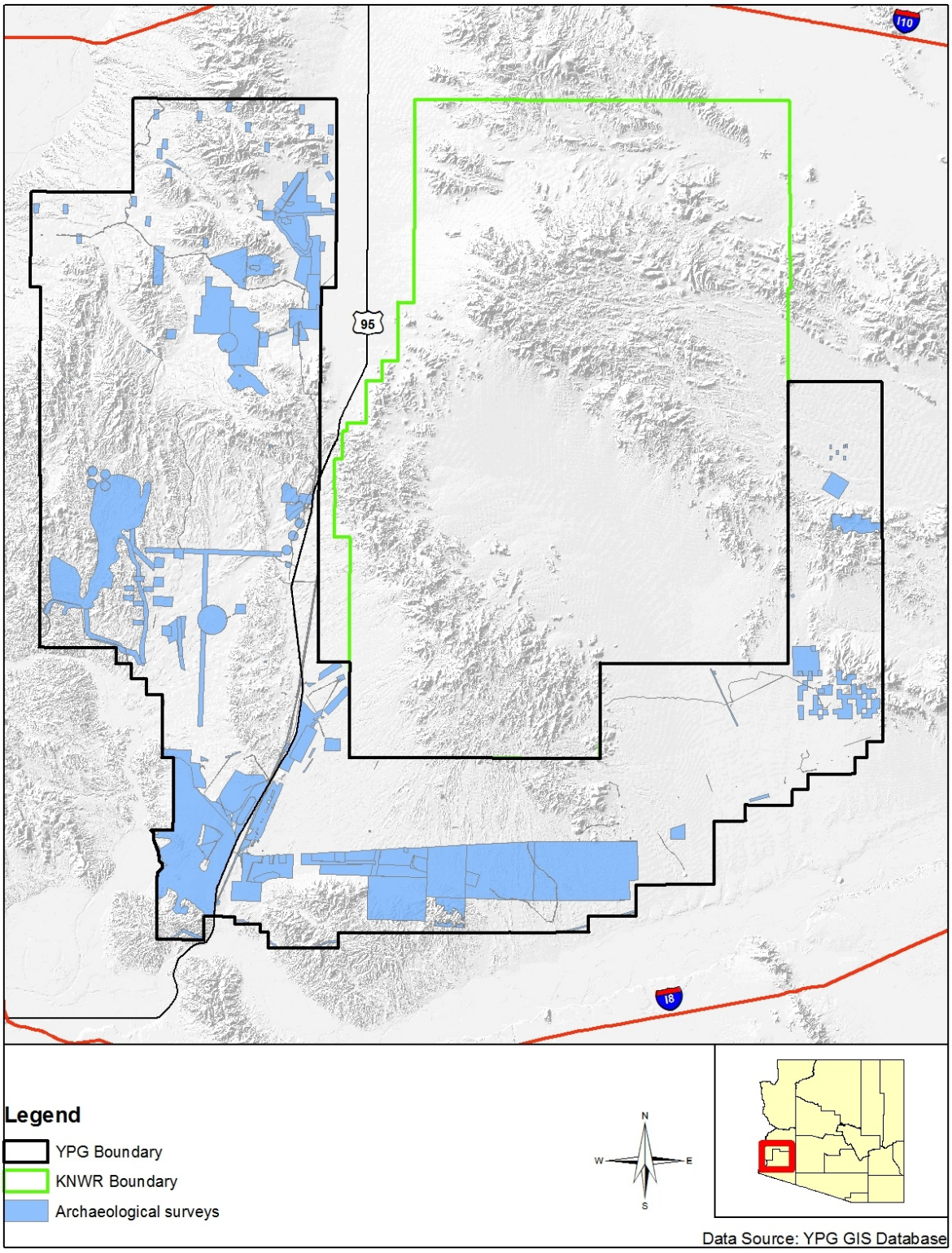

Figure 9: Cultural Surveys Completed at Yuma Proving Ground from 1981 to 2010

3.3.1 Historic Properties

Survey reports and correspondence files between YPG and the Arizona SHPO reveal that the archaeological districts or thematically related properties listed in Table 5 are likely to be eligible for inclusion in the National Register, but YPG has not submitted formal nomination documents.

Table 5: Eligible Historic Districts Surveyed at Yuma Proving Ground

Site/Project Area	Total Area Surveyed	Sites Recorded	NHRP Status
White Tanks Management Area[a]	2,069 acres	46 sites	All 46 sites found within the boundaries of the management area have all been determined eligible and contributing with SHPO concurrence (September 1992).
Camp Laguna	1,850 acres	1 site (entire Camp is classified as one site)	No formal determination of eligibility submitted to the AZSHPO. Eligibility determination, management plan, and programmatic agreement in progress (2011).
Ammunition Storage, Handling, and Testing Facilities[b] Castle Dome Plain District Castle Dome Wash District 9-Alpha North District 9-Alpha East District	2,223 acres	20 sites	No formal determination of eligibility submitted to the AZSHPO.
Red Bluff Range Combat Systems Maneuver Area	5,434 acres	96 prehistoric sites	96 sites were determined eligible.
Extended Combat Systems Maneuver Area	9,902 acres	161 (including 1 historic mining site)	161 sites were determined eligible under multiple property approach. Consultation with tribes and SHPO for mitigation of effects completed in 2001.
Direct Fire Range[c] Red Bluff Pediment District Red Bluff Basin District Muggins Basin District Upper Basin District Gila Watershed District	5,652 acres	54 sites	No formal determination of eligibility submitted to the AZSHPO.

a. Not nominated for NRHP per current Army Policy [AR 200-1, Chapter 6.4(b)(9)]

b. Four areas are proposed for designation as archaeological districts.

c. Five areas within this survey area have been proposed as separate archaeological districts, archaeological districts.

3.3.2 Architectural Surveys

YPG has commissioned several historic architectural surveys of buildings and structures on the installation (Bischoff, 1999; Brenner, 1984; JRP Historical Consulting, 2009), but as of 2010, no historic buildings or structures were determined to be eligible for NRHP listing. Although Building 2 (old Post Headquarters/YPG Heritage Center), was recommended as eligible for inclusion in the National Register (Bishoff, 1999), a detailed historic context study completed in 2009 showed that it did not have the requisite historic importance to mission-related activities to warrant that recommendation (JRP Historical Consulting, 2009). In addition, an enclave of 26 military residences had also previously been determined eligible for inclusion in the National Register, but these buildings fall within the Program Comment for Capehart-Wherry (Advisory Council on Historic Preservation, 2002) constructed Army residences, and no further compliance measures are required for them. The ICRMP provides additional details regarding historic buildings and structures on the installation.

3.3.3 Traditional Cultural Properties

Currently, YPG has identified no Traditional Cultural Properties (TCPs) eligible or potentially eligible for listing in the National Register, but several local Native American tribes have verbally indicated that they consider the White Tanks area, located in the East Arm, a sacred place.

3.3.4 Access Procedures

Because of the potential that unexploded ordnance (UXO) is present within YPG, access to many areas of the installation requires coordination with YPG and permission from YPG's Range Control and Security offices. Written guidance for access to YPG is based on YPG SOP YP-YTRO-P1000, which pertains to general range control precautions and personnel safety. This guidance has been applied to Native American access as well, in particular for access to the White Tanks Conservation Area. Access is coordinated through the Cultural Resources Manager in consultation with YPG Range Control, the Installation Commander, and the Public Affairs Officer.

YPG has established a program that grants access to sacred sites for the observance and practice of religious or traditional ceremonies or for the collection of natural resources. Native American tribes are also permitted to gather and collect downed and dead mesquite and ironwood used to fuel kilns for historic and traditional pottery making. Access is granted upon request from the tribe to collect mesquite and/or ironwood. A Hold Harmless Agreement must be completed for each participant. Additionally, they must be escorted by YPG personnel, may collect only dead, downed trees, and collect no more than two cords.

3.4 Hazardous and Toxic Substances

At YPG, industrial processes, routine maintenance activities, testing, and support activities are the primary operations using hazardous substances and generating wastes. Additional hazardous substances present at YPG are lead and asbestos. Renovation of residences and other buildings is gradually eliminating these materials from buildings on YPG.

Environmental programs at YPG use aggressive management practices to minimize the use of hazardous substances and reduce resultant waste streams. Strict spill-prevention requirements offer additional protection to human health and to the environment. Hazardous substances are stored according to Army regulations and all applicable federal, state, and local ordinances. For further information on hazardous substances and waste management and a listing of hazardous substances stored onsite, refer to the Spill Prevention, Control, and Countermeasures (SPCC) and Integrated Contingency Plan (ICP) (U.S. Army Yuma Proving Ground, 2010)

YPG has a Hazardous Waste Tracking System for all hazardous wastes generated through industrial activities. Hazardous wastes generated at YPG have been managed successfully using the existing 90-Day Hazardous Waste Storage Yard, located in the YTC area. Hazardous wastes and expired hazardous substances accumulate at this location while awaiting disposal. No wastes from outside YPG are accepted at the 90-Day Yard. No treatment is conducted and no wastes are disposed at the 90-Day Yard.

3.5 Health and Safety

The standards applicable to the evaluation of health and safety effects differ for workers and the public. The Occupational Safety and Health Administration (OSHA) is responsible for protecting worker health and safety in nonmilitary workplaces. Regulations that specify and implement safety procedures for Army operations and activities at YPG and are applicable to the proposed action are:

- YPG Standing Operating Procedure for Range Operations YP-YTPO-P1000 (September, 2007) prescribes general range control procedures, instructions, and information necessary for safe conduct of all types of test operations, demonstrations, training, and ground and airspace utilization at YPG
- YPG Regulation 385-1 (April, 2007) provides specific guidance for all safety programs at YPG and applies to all personnel working and living at YPG to include military, civilian, contractor, tenant personnel, and dependents
- AR 385-63 (May, 2003) prescribes Army-wide range safety policies and responsibilities for firing ammunition, lasers, guided missiles, and rockets and provides guidance for the application of risk management in range operations

A number of sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and its extension, the Superfund Amendments and Reauthorization Act, and the Resource Conservation and Recovery Act (RCRA) occur on YPG.

Although YPG has conducted Phase I, II, and III site investigations for portions of the installation, a few of the CERCLA and RCRA sites have not been fully investigated and characterized. In areas where Phase I, II, or III investigations have not been conducted, site-specific determinations will be made by the YPG ESD to specify any requirements and limitations.

All biological surveys or other natural resource related projects will be coordinated through the YPG ESD and the Garrison Safety Office to determine if the activities will occur on an identified CERCLA or RCRA site, which would identify potential risks to workers and outline restrictions to minimize risks to health and safety. A checklist outlining site restrictions will be prepared for any proposed activities within CERCLA or RCRA sites.

A number of UXO sites are present on the installation. All natural resources management activities will also be coordinated through the YPG Range Safety and Operations offices to determine if the sites are located in areas of known or potential UXO contamination and the level of escort required from explosives ordnance disposal prior to initiating any natural resources management activities associated with the INRMP.

All personnel performing natural resources work are required to participate in a range safety briefing, and this along with the standard practices set forth for CERCLA or RCRA sites will minimize risks to the health and safety of those working on natural resources projects.

3.6 Land Use

Land within the YPG boundary is composed of withdrawn public land and a small quantity of non-public land designated for use by the DA for military purposes and devoted to functions that are compatible with the current mission of the installation (COE 1992a, COE 1992b). The land base of YPG is dedicated to military testing and evaluation, which requires that most of the land be reserved for firing ranges, impact areas, mobility test courses, drop zones, and other mission-related support facilities. Many of these activities and facilities require large open areas with associated safety and buffer areas. Scattering of facilities, which is common to the main complex areas, has created vast open spaces. Land use designations ensure only compatible activities are developed in these open spaces.

The installation encompasses 1,309 square miles or 837,760 acres and is subdivided into three geographic and functional areas; (1) the Laguna Region, (2) the Cibola Region, and (3) the Kofa Region (see Figure 1 in Chapter 1). Provided below is a brief description of each of these regions and the types of activities that typically occur within each.

- Cibola Region – is the area located west of Highway 95 (excluding the Laguna Region). The activities in the Cibola Region are diverse and include testing of aviation weapons and systems, including UAS, Air Cargo delivery systems, ground combat systems, a variety of mine and countermine (including detection and elimination systems for improvised explosive devices), and soldier and tactical weapons training activities.

- Kofa Region – is the area east of Firing Front Road including the East Arm portion of YPG and is used for direct and indirect firing of artillery and other weapons and munitions test activities such as deployed mines, Improved Conventional Munitions, instrumented projectiles, and Electromagnetic Gun, Counter Electronic Warfare.

- Laguna Region – is the area where cantonment areas and population centers are primarily located. The cantonment areas in this region include the Main Administrative Area

(Main Post), where most public works functions, FMWR services, and post housing are located; Laguna Army Airfield (LAAF), where aviation support functions are based; and the YTC (formerly Mobility Test Area and Materiel Test Directorate), which is the location of Command functions (Garrison and Test) and their associated offices. The Kofa cantonment area adjacent to the Kofa Firing Range (KFR) is located west of Firing Front Road and east of Highway 95 and is comprised of administrative offices and operational support functions; therefore, it is also included as part of the Laguna Region. The Laguna Region also supports automotive testing, with a majority of the mobility test courses located in this region, but there are a few designated mobility courses located in both the Cibola and Kofa regions.

3.6.1 Adjacent Land Uses

Land ownership in Yuma County is 81.6 percent federal, 7.7 percent state, 0.2 percent tribal, and 10.5 percent private. Adjacent land ownership includes BLM, USFWS, state and private land, and agricultural land. Areas include the Kofa NWR, Cibola NWR, and Imperial NWR. Wilderness areas include locations within the Kofa NWR, the Muggins Mountains, the New Water Mountains, and the Trigo Mountains. There is a combination of privately owned land located within the Wellton-Mohawk Irrigation District that extends along the southern border of YPG in the Gila River floodplain that is utilized primarily for agriculture. The southern boundary of the Kofa Region is 2 miles from the small community of Roll, Arizona (YPG 2001a). Other adjacent communities are Martinez Lake, which is the closest community on the southwest side of YPG in Yuma County, and Quartzite, Arizona in La Paz County, which is located north of the Cibola Region. The Martinez Lake area comprises 979 acres of private land, surrounded by state trust lands and federal lands. YPG occupies approximately 445,717 acres in Yuma County and approximately 392,199 acres in La Paz County.

3.6.2 Recreational Uses

The Yuma area's diverse ecological surroundings and proximity to Mexico and California offer numerous recreational activities. Citizens and visitors are afforded year-round availability of venues for all their outdoor recreational needs, with a community center, fairgrounds, numerous athletic centers, golf courses, and local parks. MCAS-Yuma hosts a recreational facility at Martinez Lake for the local military and their families, including YPG personnel. Picacho State Recreation Area along the Colorado River provides opportunity for various activities – fishing, boating, hiking, camping, swimming, birding, and sightseeing. Imperial Sand Dunes Recreation Area is a 40-mile-long dune system with picturesque scenery and areas for ORVs.

Recreational use on YPG is regulated to the extent necessary to safeguard public health and safety, to provide for national security and the military mission of YPG, and to preserve environmental quality and other natural and cultural resource values.

As a closed installation, public use of YPG is restricted unless expressly authorized. Examples of restricted activities include:

- target shooting
- prospecting or mining

- materials collection of any kind (e.g., plants, artifacts, gravel, soil, rocks, petrified wood; firewood is limited to permitted hunters and special groups)
- cultural artifact disturbance of any kind
- geocaching
- hiking
- recreational ORV travel

Opportunities for outdoor recreation on YPG are limited. Developed recreational facilities, such as a swimming pool, basketball, and tennis courts, are under the jurisdiction of the FMWR Division of the Directorate of Personnel and Community Activities and are not addressed in this plan. Only those recreational opportunities managed by the Conservation Program staff of the ESD are addressed in this plan.
YPG has a horse stable located in the YTC area for boarding privately owned horses, and horse riding is allowed. Horse stables are available and supported by the FMWR directorate.

A Legacy Program Nature Trail adjacent to the Main Administrative Area provides opportunity for interpretive wildlife viewing. A brochure and curriculum have been developed in cooperation with the local elementary school and childcare programs. The trail is currently (as of 2010) closed because of the discovery of UXO in the area. The Wahner Brooks military equipment exhibit located by Imperial Dam Road near the intersection with Highway 95 was also developed through the Legacy Program.

The Army regulates the private use of ORVs on the lands it administers in accordance with the guidelines set forth in Executive Order 11644, Use of Off-Road Vehicles on Public Lands, and AR 200-1. ORV areas are designated, but are closed pending compliance with Army safety policy. Selection of ORV areas on YPG must take into account the impact these vehicles could have on natural and cultural resources as well as the military mission (U.S. Department of the Army Yuma Proving Ground 2009b).

Hunting is a primary recreational activity on YPG and in the regional community. YPG issues approximately 200 hunting permits per year. All hunters using YPG are required to pay a fee, complete a safety briefing, sign a hold harmless agreement, and be acquainted with regulations before entering YPG property. Hunting on YPG is further described in Chapter 5.

3.7 Soil Resources

The predominant soils in deserts belong to the Aridisol Soil Order. Aridisols are soils defined primarily by the lack of plants-indicating the available soil moisture for most of the growing season (Natural Resource Conservation Service 1999). Over time, these dry conditions give rise to characteristic accumulations of soluble salts, carbonates, and clay, but organic matter deposition is minimal or lacking. As these soils mature, cemented soil layers of the salts and carbonate, commonly known as caliches and hardpans, may form. In addition, such soils generally develop some sort of surface mantle such as desert pavement as they age (King et al. 2004). Younger soils present in deserts, primarily dry Entisols, can be common in areas subject to wind and runoff. These soils are not in place long enough for pedogenic (soil forming) processes to develop distinctive horizons (Natural Resource Conservation Service 1999).

Biological crusts bind particles under desert pavement and in most undisturbed soils without desert pavement.

The surface soils of YPG were surveyed, mapped, and described by the Natural Resources Conservation Service (formerly the Soil Conservation Service) in 1991 and have been classified by the U.S. Department of Agriculture as aridic and hyperthermic with lithic and typic torriorthents on the hills and mountains. The survey combines one or more soil types into mapping units at a management level scale of 1:24000. At that scale, it is impractical to separate closely aligned soil types such as the Carrizo family soil found in active wash channels and the Riverbend family soil found in the adjacent banks, and benches within the wash floodplain and is instead displayed as Map Unit 1 (see Figure 10).

Table 6 contains a summary of Map Unit Numbers, soil families included in the mapping unit, and landforms most commonly associated with those soils.

Table 6: Summary of Soil Family and Associated Landforms Found at YPG

Map Unit	Soil Families	Associated Landform
1	Riverbend, Carrizo	Stream terraces, banks, and flood plains
2	Cristobal, Gunsight	Crests or summits and side slopes of fan terraces
3	Chuckawalla, Gunsight	Crests or summits and side slopes of fan terraces
4	Gunsight, Chuckawalla	Summits and side slopes of fan terraces
5	Superstition, Rositas	Relic beach terraces and dunes
6	Carsitas, Chuckawalla	Slopes and summits of dissected relic beach terraces
7	Tucson, Tremant, Antho	Alluvial fans
8	Gilman, Harqua, Glenbar	Basins and flood plains
9	Typic and Lithic Torriorthents	Hills and mountains

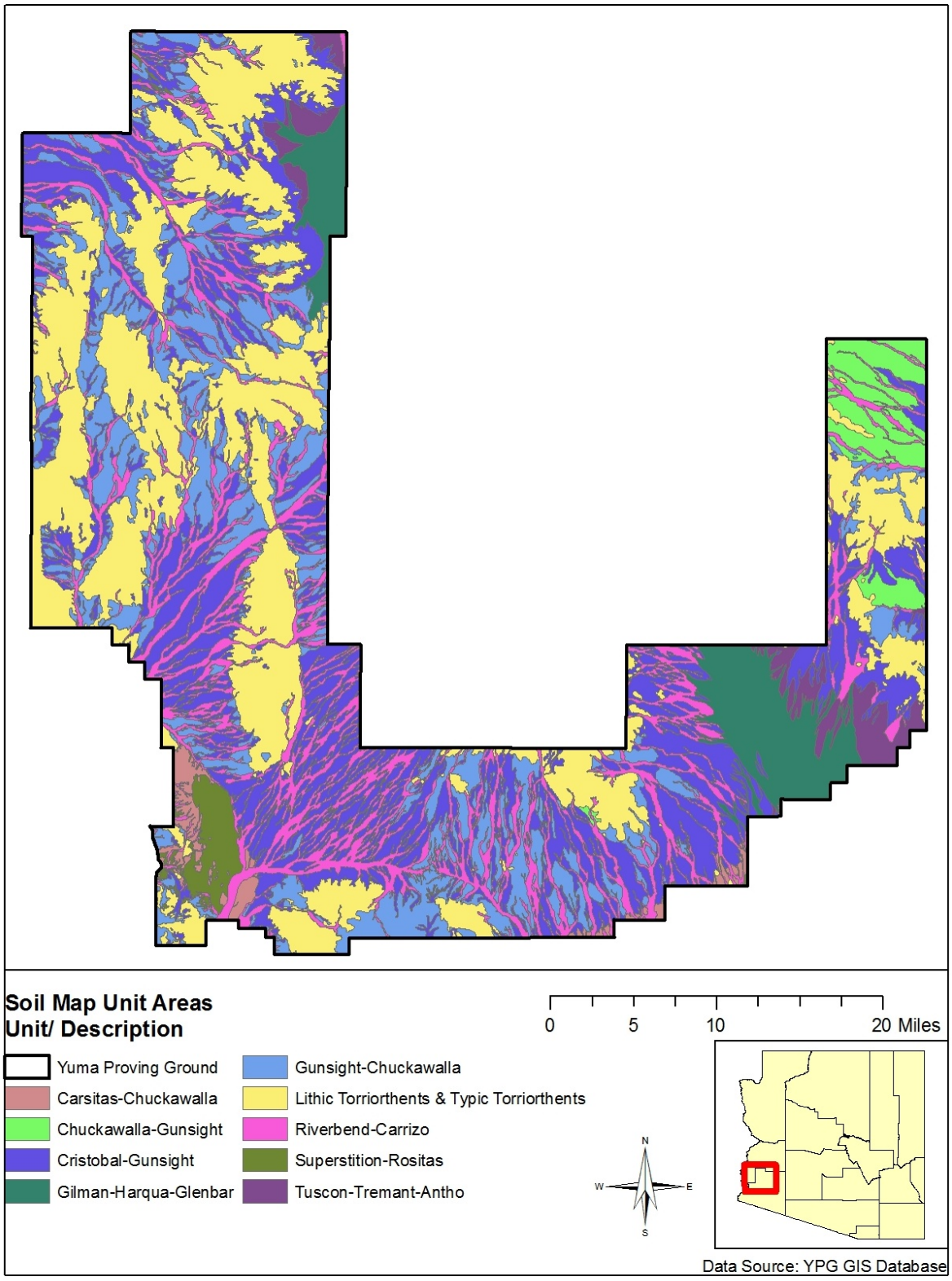

Figure 10: NRCS Soil Survey and Classification for Yuma Proving Ground

3.8 Transportation and Utilities

3.8.1 Transportation

Major public highways in the vicinity are U.S. Highway 95 and Interstates 8 and 10 (I-8 and I-10). I-10 is a major east-west transcontinental route, located approximately six miles north of YPG's northern boundary. I-8 is six miles south of YPG's southern boundary. U.S. Highway 95 is a secondary north-south artery, traversing the United States from Mexico at San Luis, Arizona, to Canada through the northern tip of Idaho. U.S. Highway 95 intersects I-8 in Yuma and I-10 in Quartzsite, Arizona. U.S. Highway 95 is the main route serving YPG, traversing the installation between the Kofa and Cibola ranges. California's Imperial County Route S-24 is an alternate route between Yuma and YPG.

Facilities on YPG are linked by an internal network of maintained paved and gravel roads. Numerous unimproved roads and trails occur throughout more remote areas of the installation. Road access within YPG is limited because of security constraints and hazardous conditions due to the test mission. Personnel access is controlled using security registration, checkpoints, range control monitoring, guard posting, signs, and fences. Public access restriction signs are placed along public thoroughfares.

YPG operates LAAF and the Castle Dome Heliport in support of military flight operations, training, and aircraft test projects. LAAF operates two 6,000-foot runways serving rotary-wing aircraft and fixed-wing aircraft, including the C-130, C-5, and C-17. LAAF can provide round-the-clock mission support on an as-needed basis. The Castle Dome Heliport operates a 3,000-foot runway in support of rotary-wing aircraft testing. Unmanned aerial vehicles (UAVs) are supported at several test runways located on YPG's Cibola Range. However, air access to land on YPG is restricted to military and government use.

3.8.2 Utilities

Waste Water: YPG operates six wastewater facilities. All facilities that discharge industrial wastewater must obtain an Aquifer Protection Permit and a Notice of Discharge from the ADEQ. Lagoons collect domestic sewage and brine waste from water treatment plants. Waste is discharged into septic tanks or specially designed evaporative lagoons. Lagoons are cleaned periodically and septic tanks are pumped on a regular basis. Septic treatment systems or chemical toilets are alternatives provided to work areas beyond the range of the sewer lines.

Solid Waste: Currently the preferred solid waste treatment is landfill burial. Although some recycling services are available, there has been minimal community support resulting in minimal impact to the overall solid waste burden for Yuma County. YPG operates its own permitted Solid Waste Facility for non-hazardous residential and industrial waste.

Energy: Electricity to the area is generated by power plants, primarily hydroelectric plants on the Colorado River and, to a lesser extent, nuclear and coal-powered plants. A natural gas pipeline also serves the area. Solar power is a viable energy alternative in the region, but is currently underutilized (Yuma Data Bank 2001). Areas near YPG have been identified as geothermal development areas. To the west, the Imperial Valley geothermal area has about 600-megawatts of capacity in the area around the Salton Sea. (California Energy Commission,

2009). In southwest Arizona, the closest geothermal resources are between Roll and Hyder, east-southeast of YPG (DOE, 2003).

The primary supplier of electricity to YPG is Western Area Power Administration (WAPA). All of the main complexes have hardwired electrical service. Remote activities depend on gas-powered portable generators. YPG currently does not use natural gas as an energy source, but an El Paso Natural Gas Company pipeline traverses part of the installation. YPG has successfully implemented solar power as a primary or supplemental energy source in some areas. Solar generated electricity is used for activities ranging from a single photovoltaic panel providing power to an individual remote device (flashing lights) to several photovoltaic solar "farms" supplementing YPG's electrical grid with 105 to 450 kilowatts (YPG 2001; Ducey et al. undated).

Communications: A major challenge to communication growth in the area is competition and interference in the radio frequency spectrum. This is especially critical to military operations and has resulted in serious problems at YPG. Interference in radio communications has caused failure in an unmanned airborne vehicle test and affected receipt and transmission of test data. To minimize impacts and to modernize test infrastructure, YPG is completing a fiber optic Range Digital Transmission Network throughout the major complexes and improved test sites.

3.9 Visual and Aesthetic Value

YPG is located in an area characterized by rugged mountains, broad alluvial plains, and sparse desert vegetation. The following natural areas and features are of potential aesthetic and visual value or special interest.

3.9.1 Areas of Visual and Aesthetic Value

Adjacent wilderness areas surrounding YPG include the Kofa NWR, Imperial NWR, Trigo Mountains Wilderness, and Muggins Mountains Wilderness. These regions provide areas for picnicking, camping, hiking, and sight-seeing.

Muggins Mountains Wilderness

The Muggins Mountains are bisected by the YPG southern boundary. The western end of the formation includes a cluster of rugged peaks. The most prominent peak is near the center of the Muggins Mountain Wilderness. The colorful geologic stratum is considered scenic for the desert region. Red Bluff Mountain is located along the southern boundary of KFR and its striking geologic features dominate the view in this vicinity. Needles Eye is one of the pinnacle peaks in the Trigo Mountains. Sawtooth ridges and steep-sided canyons have been dissected by numerous deep washes to produce this geologic wonder. The La Posa Dunes is located in the northern corner of the north Cibola Region. The sand dune complex, formed by the accumulation of windblown sand, has probably been stabilized by big galleta grass. This area may also provide habitat for the Mojave fringe-toed lizard. Mohave Peak, one of the higher

peaks in the south Cibola Region, is an outstanding feature that dominates the landscape. This mountain, with its natural water tanks and undisturbed terrain, is important to the habitat of desert bighorn sheep.

Kofa National Wildlife Refuge

3.9.2 Areas of Special Interest

The ESD staff has completed a project under the DoD Legacy Resource Management Program near Camp Laguna; one of General George S. Patton's training areas during WWII. This project consisted of an archaeological survey and oral histories of individuals at the camp during that time. The resulting Wahner E. Brooks outdoor historical display of military materiel was dedicated May 17, 1995.

The White Tanks Management area, located in the Tank Mountains of YPG's East Arm, provides a natural water-collecting pool for wildlife. White Tanks has been nominated to the NRHP.

Washes that flow into the Colorado River are major topographic features within the Cibola Region, are rich in wildlife and are important migration corridors. More information on major washes on the installation is provided in section 3.10.

3.10 Water Resources

YPG is within the Colorado/Lower Gila watershed (Figure 11). The Colorado River flows in a north-south direction west of the installation, while the lower Gila River flows in an east-west direction south of YPG.

3.10.1 Surface Water Resources

There are no perennial lakes, streams, or mountain springs within the boundaries of YPG. The dominant hydrologic features at YPG are ephemeral stream courses known as washes. These washes may be steep, stable, narrow channels in higher elevations, grading to wide, meandering, braided drainages in the surrounding plains. The text box lists the principal washes and watersheds associated with and found on YPG. Although these washes are dry on the surface most of the time, local and intense flash floods occur in response to storms. Even during flood events, surface flow in desert washes is episodic, receding below ground along one reach of a channel and resurfacing in another reach downstream from where it disappeared (Ayers 1996).

The dynamic nature and ecological role of desert washes are topics of interest to scientists, military planners, and land managers. Washes perform important functions as geomorphic controls and areas of hydrologic recharge. They provide habitats of high relative diversity and biomass compared to surrounding areas, and they serve as movement corridors as well as browse and cover sources for wildlife.

Rain events produce sheet-flow runoff that can cause localized flash-flooding and temporary ponding of water on the surface. Only after significant rainfall events do these washes carry surface drainage from the area towards the Gila River to the south and towards the Colorado River to the west.

CIBOLA REGION - drains to the Colorado River through the following major washes and their tributaries.

- Ehrenberg Wash, north Cibola
- Lake Wash, north Cibola
- Weaver Wash, north Cibola
- Trigo Wash, north Cibola
- Petes Wash, north Cibola
- Tyson Wash, northeast Cibola
- Mule Wash, northwest Cibola
- Crazy Woman Wash, northwest Cibola
- Mohave Wash, central Cibola
- Gould Wash, central Cibola
- McAllister Wash, central and south Cibola
- Yuma Wash, central and south Cibola
- West Fork Yuma Wash, south Cibola
- Lopez Wash, southwest Cibola
- Indian Wash, south Cibola
- Los Angeles Wash, south Cibola

LAGUNA REGION - drains primarily to the lower Gila River through the following major washes and their tributaries.

- Castle Dome Wash, adjacent to Highway 95 and Kofa Region
- Vinegarroon Wash, southeast Laguna
- Long Mountain Wash, southeast Laguna
- Nugget Wash, southeast Laguna
- Twin Tanks Wash, southeast Laguna

KOFA REGION - drains to the lower Gila River through the following major washes and their tributaries.

- Big Eye Wash, central Kofa Region
- Fuzzy Belly Wash, central Kofa Region
- Winston/Gravel Wash, northeast Kofa Region
- Cedric/Yaqui Wash, east Kofa Region
- Rutherford Wash, east Kofa Region
- Hoodoo Wash, north Kofa Region (East Arm portion)
- Unnamed/Majorwash-East, north Kofa (East Arm portion), slightly south of Hoodoo Wash

Source: ADEQ eMaps (June 2011); Hydrography data layer-secondary streams, updated March 2009 and YPG GIS geodatabase.

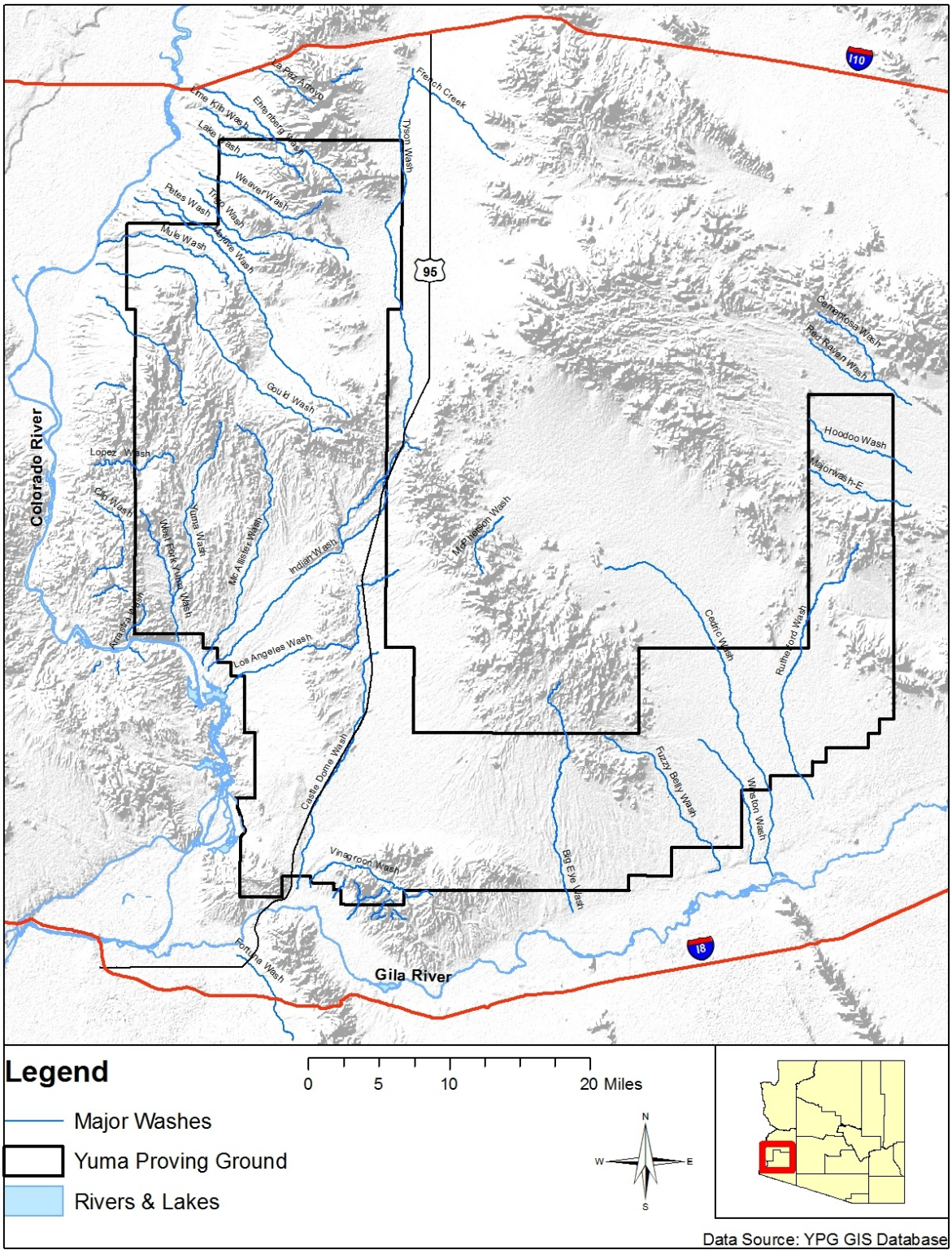

Figure 11: Surface Waters On and Adjacent to Yuma Proving Ground

Other surface water features are limited to naturally occurring tinajas and man-made structures, such as water tanks, wastewater treatment lagoons, and wildlife water catchments. Because of the limited availability of water in the arid southwest, such waters are critical assets in natural resources management.

3.10.2 Groundwater Resources

Groundwater is found in hydrologic basins located below the ground surface. The Colorado and Gila rivers replenish the groundwater in the Yuma region. Saturated basin fill sediment comprises the principal unconfined aquifer for YPG. Information concerning groundwater resources of the area is limited because there are 17 groundwater production wells located across YPG. Most of these are associated with the cantonment areas, but there are some that were constructed in more remote areas.

Depth to groundwater at the installation varies dependent upon geology, location, and thickness of basin alluvium. Known depths to groundwater on the installation range from 30 feet, in the southwest Laguna Region near the Colorado River, to greater than 750 feet, near Castle Dome Heliport (ENTECH, 1988). In contrast with other basins in southern and central Arizona, long-term declines in water-table elevation have not been observed on YPG, probably due to lack of development.

3.10.3 Water Quality

Water distribution systems in the area depend on the Colorado River and its tributary, the Gila River, as both surface water and groundwater sources. Management of these resources is administered by federal, state, and local agencies through intergovernmental agreements. The major consumer in the region is agriculture. Despite tremendous population growth, water supplies appear sufficient to meet future needs, but poor water quality is an issue (Yuma Data Bank 2001).

Groundwater wells supply water for potable and non-potable uses to five separate water distribution systems serving each of the main complexes: YTC, KFR, LAAF, Castle Dome Heliport and Annex, and the Main Administrative Area. Groundwater supplied by most wells is non-potable because of naturally occurring, elevated concentrations of fluoride and arsenic. Drinking water either is imported in bottles or, where possible, treated to bring it below the applicable regulatory limit (YPG 2001). There are several remote wells, such as Lake Alex and Ivan's Well, augmenting range industrial uses where feasible. Water supplies are ample for both current and future use; there are no known potential limitations anticipated from aquifer drawdown, competing users, or increase in YPG's demand (Zillgens 1992).

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CHAPTER 4 SUSTAINABLE RANGE PROGRAM

The Sustainable Range Program (SRP) is the Army's overall approach for improving the way in which it designs, manages, and uses its ranges to ensure long-term sustainability. The SRP goal is to maximize the *capability*, *availability*, and *accessibility* of ranges and training lands to support doctrinal training and testing requirements, mobilization, and deployments under normal and surge conditions.

- ***Capability*** - refers to the SRP core programs: the RTLP and ITAM Program.
- ***Availability*** - refers to the non-environmental facility management functions.
- ***Accessibility*** - refers to the environmental compliance and management functions

4.1 Overview

The program is defined by the following two components.

- Range and Training Land Program (RTLP) - The RTLP planning process integrates mission support, environmental stewardship, and economic feasibility and defines procedures for determining range projects and training land requirements to support live-fire and maneuver training. Training activities at YPG are generally involve small units and are limited in the types of training activity and areas used; therefore, YPG does not have or currently require an active RTLP program.
- Integrated Training Area Management (ITAM) - ITAM is the component of the SRP that is responsible for maintaining land to help the Army meet its training requirements. While the SRP components are mostly focused on training ranges, the principles and process central to ITAM are applicable to the maintenance and management of the vast range areas and resources located on Yuma Proving Ground. The following are the four central ITAM processes.
    - *Training Requirements Integration (TRI)* - provides decision support to senior commander's that can minimize the impacts environmental and cultural resource issues can have on training operations and vice versus the impact training can have on environmental and cultural resources
    - *Range and Training Land Assessment (RTLA)* - acquires and assesses land condition data to provide information supporting decisions that maximize the capability and sustainability of Army land to support maneuver training
    - *Land Rehabilitation and Maintenance (LRAM)* – serves as a mechanism or process to repair, maintain, and enhance Army lands to support realistic maneuver training and sustainable use of an installations land base
    - *Sustainable Range Awareness (SRA)* – The purpose of SRA is to develop and distribute educational materials to users of the installation land base to avoid unnecessary damage to resources and facilities

Since YPG does not have a primary training mission that requires an active or robust RTLP, the following sections focus on the RTLA, LRAM, and SRA processes within ITAM. These three programs better relate to the YPG test mission and the smaller scale training activities that occur on YPG's ranges.

4.2 Range and Training Land Assessment

The overall function of RTLA is to provide information needed to assure safe and realistic Army training and testing. To accomplish this, RTLA program managers monitor natural resources conditions, and inventory, manage, and analyze natural resources information. The data collected can be used to evaluate relationships between land use and condition. RTLA supports the installation's mission as follows:

- Recommends procedures for collecting data that can be used to assess land condition trends
- Identifies priorities for land rehabilitation
- Assists LRAM coordinators in monitoring the effectiveness of LRAM projects
- Provides information to the SRP GIS coordinators to support development of maps that depict suitability, accessibility, capability, and capacity of training lands

Where funded, RTLA provides critical information to decision makers. This information can sustain multiple uses of military lands, while helping to preserve and restore natural resources on military installations.

As the main repository of data and knowledge on the soils and vegetation that are the basis of sustainable ranges and training/testing lands, RTLA data may also support installations in meeting other requirements, such as:

- **Installation Status Reports**
- **Assessing encroachment issues**
- **Natural Resources Management**
- **Installation management plans**
- **LRAM Project evaluations**
- **NEPA analyses**

4.2.1 Previous RTLA efforts at YPG

In late winter of 1991, the Land Condition Trend Analysis (LCTA)[2] Program was initiated at YPG to characterize, quantify, and classify land, vegetation, and wildlife resources. One hundred ninety-eight core plots were established (see Figure 12). The core plots are permanent field plots used to document vegetative, edaphic, topographic, and disturbance characteristics throughout the installation. The core plots were allocated in a stratified random manner using satellite imagery, generalized soil maps, and the Geographic Resources Analysis Support System (GRASS) program. The sampling area was originally intended to cover all 880,000 acres of the installation; however, reporting with high statistical accuracy is limited to the land area taken up by the LCTA plots, each one 600 sq. meters. Eight special-use plots were also established in 1991, three in 1992, and six in 1994.

[2] In 2004, the LCTA ITAM was renamed RTLA to reflect its role in training land management and support. Current policies allow installation-level managers and range operations staff to determine how they can best collect and use resource data to support site-specific land management issues.

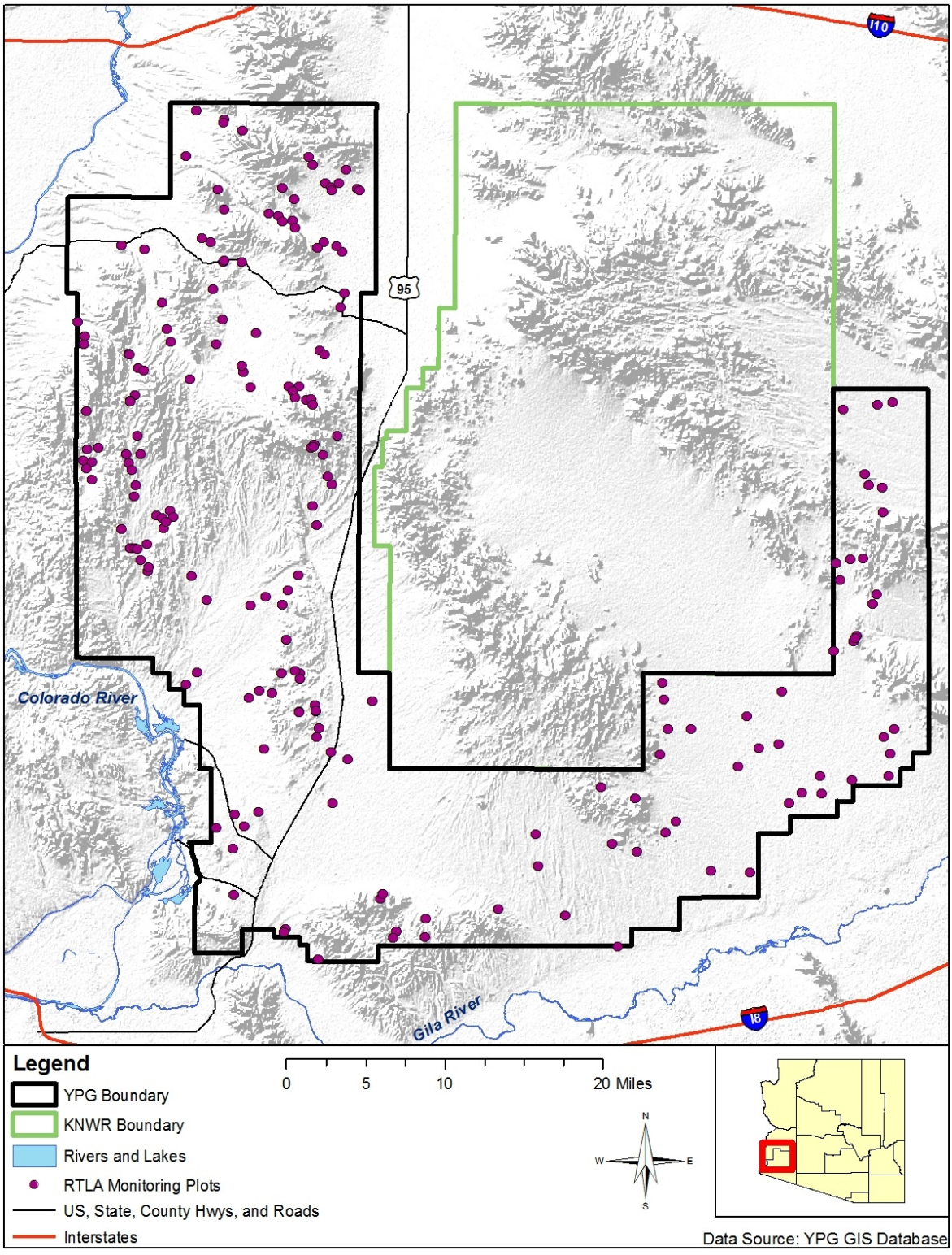

Figure 12: Range Training Land Assessment Plots (formerly known as LCTA)

Baseline surveys of the core plots and special use plots were conducted from 1991–1993, and plot data[3] were collected to (1) qualify types of use (military, non-military), (2) ascertain the degree of military use, (3) quantify types of ground cover, canopy cover, and woody plant densities, (4) estimate soil erosion potential, (5) determine site concealment potential, and (6) determine ground-truth land-cover categories. Long-term monitoring was then conducted once every five years (1998, 2003, and 2008).

4.2.2 Ongoing and Future RTLA Activities and Relationship to the INRMP

Program funding level for FY 2012 will not support maintenance and monitoring of the core plots established under the previous LCTA project; however, YPG will resume this activity if the program is adequately funded in coming years.

Often times, ecological changes in the Sonoran Desert are simply the result of natural environmental conditions such as variations in precipitation. Long-term monitoring provides a historical database that may help determine if observed changes are the result of natural environmental conditions, mission activities, or other factors such as invasion by non-native weed species or wildfire.

The RTLA process provides the ability to detect statistically significant changes or trends in the composition, density, richness, and diversity of both physical and biological characteristics. In example, while the population size of most species has remained constant over the course of the YPG LCTA Program some individual species, such as woody plants and brittlebush (*Encelia farinosa*), experienced a dramatic increase in population following the heavy precipitation of 1993 and continued grow through 1998 (see Figure 13).

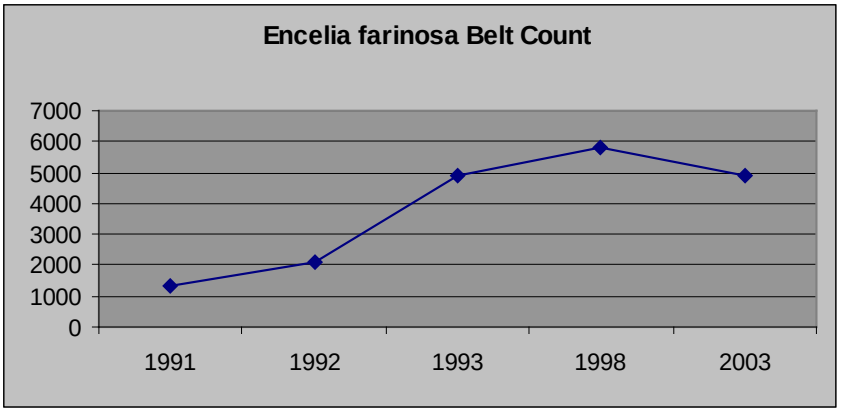

Figure 13: *Encelia farinose* Belt count

The primary benefit of continuing this LCTA design is the ability to investigate further changes on a smaller scale with more statistical reliability after observing interesting trends that may be occurring on LCTA plots. The possible trends, as shown in figure 13, would otherwise go unnoticed, and possible impacts on the mission may not be realized until too late.

[3] Plant, avian, small mammal, reptile, and amphibian data also were collected during the original survey, but this is no longer a part of the monitoring protocol.

Invasive Species Monitoring

Invasive species of most concern to YPG are buffelgrass (*Pennisetum ciliare*), Athel and other tamarisks[4] (*Tamarix aphylla* and *Tamarix* spp.), Sahara mustard (*Brassica tournefortii*), andMediterranean and Arabian grasses[5] (*Schismus* spp.). Other species, such as sowthistle (*Sonchus* sp. or spp.) and puncturevine (*Tribulus terrestris*) are found mostly in the cantonment areas on the installation.

The RTLA process at YPG provides the ability to detect the introduction and spread of invasive species in the permanent plots. Where initial invasions are outside permanent plots, as has happened with buffelgrass, detection is by other means. Regardless of method, data gathered from invasive species monitoring on YPG helps both the military mission on the installation and the mission of neighboring agencies, and invasive species data are integral to slowing the spread of weeds on YPG and adjacent lands.

Sahara mustard is a good example of rapid changes brought by a species that initially seemed innocuous, exploded in numbers when environmental conditions were right, and is now (2011) as widespread as *Schismus* on the installation.

Monitoring Effects of Wildfire and Landscape Recovery

Wildfires often result in significant monetary and temporal costs to the military mission. Current understanding of fire behavior where buffelgrass is established has provided impetus for eradication of the species from YPG, an effort which is just beginning. Keeping the species out will require continued detection efforts, removal where the plant is found, and monitoring previously infested areas for 3-5 years to detect regrowth. Sahara mustard can grow at high density when winters are wet, and the mature plants dry and blow across the landscape. These "tumbleweeds"[6] accumulate where caught by fences and other structures, and provide fuel if fires break out. Early research shows that Mediterranean and Arabian grasses are fire-adapted and may have a greater advantage of outcompeting native vegetation following a wildfire. Monitoring data gathered at YPG have already shown that Mediterranean grasses have overtaken and are now outcompeting native grasses in many areas on the installation.

4.2.3 RTLA and the NEPA Process

Knowledge, data, and information collected through the RTLA program may play a valuable role in the NEPA process by providing existing data sets, professional knowledge, and scientific expertise that can be an efficient and cost-effective method of gathering information to support project specific NEPA analyses. Using RTLA knowledge early in the planning process can save money, resources, and time by helping to identify alternatives that are ecologically untenable or would require extensive mitigation and eliminate them from detailed analysis or make

[5] In the absence of confirmed identification, we assume in this document that both introduced species of *Schismus* occur on the installation. Both have been collected in the Colorado Desert in Imperial County, CA, although only *S. barbatus* is included in the reference collection for YPG compiled by Colorado State University (CSU).

[6] In this document, *Tamarix* spp. other than *T. aphylla* are referred to as "salt cedar," as there is genetic evidence that the most common tamarisk in the U.S. is a hybrid of *T. chinensis* and *T. ramosissima* (Gaskin and Schaal 2002).

adjustments to avoid or reduce adverse impacts to natural resources. Examples of RTLA knowledge and data that support early planning and NEPA analyses include:

- Vegetation structure on training/testing areas that relate to established habitat requirements for rare, threatened, or endangered species; or other managed wildlife such as game species
- Suitability of soils for different types and intensities of use, including soil susceptibility to erosion, which leads to dust production, soil loss, and sedimentation
- Areas of rare, pristine, or desirable vegetation types, and common, degraded, or less desirable types
- Infestations of noxious weeds that affect training/testing suitability, safety, and realism, e.g., Mediterranean and Arabian grasses (*Schismus* spp.), Sahara mustard (*Brassica tournefortii*), buffelgrass (*Pennisetum ciliare*), and Athel and other tamarisks (*Tamarix aphylla* and *Tamarix* spp.)
- Susceptibility of different soil types to invasion by either non-native or native invasive plant species
- Fuel loads where fire regimes have been altered by human activities, e.g., biomass of exotic annual grasses in the Southwest, where native plants did not evolve with fire
- Relative success rates of different restoration and repair activities that can be used for mitigating effects of proposed actions

Leveraging this type of RTLA data and information early during the planning process enables planners and decision makers to locate activities in areas where they will also have access to needed environmental parameters (e.g., soil, vegetative cover) while minimizing project related environmental impact, as well as cumulative effects on regional resources through avoidance or mitigation.

Through the RTLA program the condition of ranges and training lands is assessed in order to assure sustainable training and testing conditions. This includes assessing the impacts of training and testing activities on soils and vegetation to understand a sites existing condition, its ecological potential and its resilience, and providing data and information to make appropriate land management and land use decisions. To support the assessment of these natural resources, the RTLA program has developed thresholds for ecological processes and for safe and realistic military training activities on Army ranges and training areas.

Some of the thresholds developed for use by the RTLA program also have potential to support NEPA analyses as they are used to determine and represent the highest or lowest level of an ecological characteristic at which a function or use of a system remains unchanged. The following RTLA thresholds are related to soils and vegetative cover and are those most applicable to a NEPA analysis for activities and proposed actions that typically occur on YPG ranges.

- Soil Compaction – Thresholds for evaluating potential for and severity of soil compaction using qualitative measures for rate of infiltration (infrequent, moderate, poor, etc) or quantitative values for resistance to penetration (bulk density (g/cm^3)) for varying soil types (e.g., loamy sand, clay, silty clay loam).

- Wind Erosion – Thresholds to evaluate soil susceptibility to wind erosion using quantitative measures that recognize maintaining adequate vegetative cover and minimizing bare soil is key to protecting soil from wind erosion.
- Sheet and Dispersed Water Erosion – Thresholds to evaluate the potential for erosion to occur using quantitative measures that are based on soil texture, slope, soil aggregates, and or vegetative cover characteristic at a site and the influence they have on erosion as a result of sheet or dispersed water flow.

4.3 Land Rehabilitation and Maintenance

LRAM is the program within the ITAM component of the SRP that establishes prevention and corrective procedures to reduce long-term impacts of training and testing on military installations. LRAM processes for programming, planning, designing, and executing land rehabilitation, maintenance, and reconfiguration projects based on requirements and priorities identified through the RTLA program. A key element in the LRAM program is the watershed or drainage basin approach to land rehabilitation. This approach ensures that land rehabilitation projects address actual land degradation problems, not just the symptoms.

The program focuses on the use of cost-effective technologies such as revegetation and erosion control techniques to maintain soils and vegetation required to support the military mission; thereby, reducing soil loss, controlling water runoff, and protecting soil productivity. There are four primary types of rehabilitation activities:

- Reducing Environmental Stressors – The simplest and least costly rehabilitation activity is to reduce or control environmental stressors, such as traffic, or removing live vegetation
- Adding Materials – A second and more costly activity involves adding species (by planting or seeding), water, fertilizers, or soil to a site
- Accelerating or Decelerating Ecosystem Processes – Accelerating or decelerating ecosystem processes might involve attracting seed vectors such as birds or mammals to accelerate seed input to a site
- Changing Site Conditions – In moderately to severely disturbed sites, the fourth type of activity would be accomplished by changing drainage, microtopography, and hardening or surfacing areas

Land management at YPG is generally incorporated as a required part of proposed projects and can incorporate elements of all four types of rehabilitation activities. In example, the first approach is to avoid sensitive areas to the extent possible by relocating to the another site or reconfigure a project's layout to avoid or reduce impacts; if avoidance is not possible then a project may be required to minimize or mitigate impacts by installing drainage control features and or surfacing disturbed areas to eliminate or control soil erosion that could result from wind or surface run-off.

4.4 Sustainable Range Awareness

SRA is the component of the ITAM Program that provides a proactive means to develop and distribute educational materials to users of range and training land assets. This proactive strategy educates military land users and land managers by:

- Educating land users and managers on how their training, testing, and other activities impact the environment
- Teaching them how to reduce the potential for inflicting avoidable impacts on range and training land assets, including the local natural and cultural resources
- Instilling a sense of pride and stewardship responsibility to support sustainability goals

The SRA component applies to soldiers, other services using Army lands, installation staff, other land users, and the public. The SRA component also includes efforts to inform environmental professionals of Army and installation mission and training activities.

Currently, educating land users and manager about how their activities can impact the environment at YPG is limited to annual environmental training, which is a mandatory requirement for government and contractor personnel at the installation. Information provided during this annual training relates to specific environmental compliance requirements (i.e., stormwater management, NEPA processes, etc), restrictions, and activities to avoid damage to natural and cultural resources at the installation. The YPG Environmental Sciences Division is also developing similar training materials and information that is tailored for specific audiences, such as military training at YPG or test customers that are using range areas. Thus the Environmental Sciences Division is currently filling the SRA component in the absence of SRA funding and personnel.

CHAPTER 5 ECOSYSTEM MANAGEMENT

An ecosystem is a community of animals and plants interacting with one another and their physical environment. Ecosystems include physical and chemical components, such as soil, water, and nutrients that support the organisms living within them. These organisms may range from large animals and plants to microscopic bacteria. Ecosystems include the interactions among all organisms in a given habitat. People are part of ecosystems. The health and well-being of human populations depend upon the services provided by ecosystems and their components—organisms, soil, water, and nutrients (Ecological Society of America 2006).

Current guidance within DoD and from other land managers recommends an ecosystem management approach (U.S. Department of Defense 1996). Basic principles applied in this approach include multiple species versus single species management and a commitment to use natural resource parameters rather than political boundaries to determine the scope of the management area.

5.1 Ecosystem Management

The following are accepted guiding principles of ecosystem management upon which management goals are based (Grumbine 1994, 1997; Leslie *et al*. 1996):

Maintain and restore the sustainability and native biological diversity of the ecosystem: Maintaining native biological diversity, and the associated ecological processes on which diversity depends, helps ensure that desert ecosystems are sustained. To maintain biodiversity, a focus on any one level of biodiversity is insufficient; thus, a hierarchical approach is recommended, as well as consideration of biodiversity in a regional context (Weinstein et al. 2004).

Administer with consideration of ecological units and timeframes: Ecosystem management requires the consideration of the effects of activities at spatial and temporal scales relevant to natural processes. Effective management includes working within ecological boundaries that may cross jurisdictions. In such cases, management actions should be compatible or consistent across these jurisdictions. Appropriate timeframes within which ecosystem processes occur also need to be considered; for example, the effects of climate change or drought cycles should be considered appropriately.

Support sustainable human activities: Continued military testing at YPG is dependent on maintained ecosystem health (at a minimum) and ecological integrity. The distinction between ecosystem "health" and ecological "integrity" is that ecosystem health implies some sustainable level of human activity. Activities in this INRMP balance the needs for accomplishing the military mission—while maintaining ecosystem health—by sustaining natural ecosystems and their processes (ecological integrity).

Develop a vision of ecological integrity: YPG's vision for INRMP implementation is based on ecosystem management, and the principles herein strongly focus on maintaining ecosystem integrity. Concepts generally included in ecosystem integrity include:

- The conservation or restoration of viable populations of native species
- Maintenance of disturbance regimes and ecological patterns and processes
- Representation of ecosystem types across their natural ranges of variation

As stated above, it is recognized that various levels of use and protection will be afforded across the installation to maintain both military mission and ecological integrity.

Develop priorities and reconcile conflicts: Successful management approaches recognize conditions are constantly changing and impacts can come from outside installation borders. An ecosystem management approach builds in the mechanisms to identify and agree on priorities and reconcile conflicts within a larger context. Collaboration in interagency teams and anticipating change within the region (and mitigating effects on YPG) are such tools.

Develop coordinated approaches to work toward ecological integrity and ecosystem health at the geographic scales and places where each is appropriate: Coordination among YPG and its neighboring partners (BLM, USFWS, and AGFD) is critical to maintain ecological integrity across the landscape and ensure continued ecosystem health in areas that may be compromised by human activity. Collaboration to address management issues and coordination of management strategies are essential within both YPG and the Kofa Region. Collaboration should also extend to the surrounding communities and local officials to mitigate possible impacts from nearby state and private lands.

Rely on the best sciences available: The INRMP is considered a living document with the flexibility to incorporate new information as it becomes available. While complete information rarely is available to make decisions, the results of scientific research, including projects completed on YPG, should inform management decision makers to the extent possible.

Use benchmarks to monitor and evaluate outcomes: Benchmarks can be used to measure management success and accountability. Monitoring is necessary to assess whether or not the benchmarks are met and to test assumptions and hypotheses about the efficacy of management actions employed. When possible, monitoring efforts should be coordinated with adjacent land management units and regional priorities for greatest impact.

Use adaptive management: Management practices should be flexible to accommodate the incorporation of new information and adjust to changing circumstances. Specific management goals and objectives, benchmarks, and a sound monitoring program are critical to adaptive management.

Implement through installation plans and programs: The INRMP serves as the comprehensive planning document to manage natural resources and achieve YPG's mission. Management goals and objectives included in the INRMP consider the desired range of future condition of ecological systems and linkages to military test activities.

5.2 Ecosystem Management at YPG

DoD ECOSYSTEM MANAGEMENT GOAL

To ensure that military lands support present and future training and testing requirements while maintaining and, when necessary, restoring ecological integrity. Over the long term, this approach shall maintain and improve the sustainability and biological diversity of [desert] ecosystems while supporting sustainable economies, human use, and the environment required for realistic military operations (U.S. Department of Defense 1996).

The vision of YPG's INRMP is to use ecosystem management, in an environment of interagency collaboration, to sustain natural desert ecosystems required for multipurpose testing. This is accomplished by using established protocols (e.g., ITAM, LCTA, LRAM), but also requires coordination and standardization of procedures with cooperating agencies. The conservation of biodiversity is a compatible and integral part of YPG's mission success. The DoD and the DA recognize the importance for all military installations to manage natural resources in ways that minimize adverse effects on the environment and sustain functional ecosystems indefinitely for the accomplishment of the military mission (U.S. Department of Defense 1989, 1996). To achieve this, DoD recognizes ecosystem management as a viable approach. YPG's INRMP is a tool through which ecosystem management goals can be realized.

As authorized by the Sikes Act, the installation may and does enter into cooperative agreements with organizations as a means of meeting various natural resources management objectives. For example, BLM and YPG entered into a Memorandum of Agreement in 1978 and later revised this Agreement through a Cooperative Management Agreement in 1988. These agreements recognized BLM as the lead for wild horse and burro management on YPG. They also address other issues of mutual concern between the common boundaries, including firewood gathering, fire suppression, ORV use, and jojoba harvest. YPG meets periodically with BLM to review and update these agreements.

Historically, AGFD has fulfilled a major role in wildlife management practices on YPG. This role continues today as formalized by ongoing cooperative agreements between agencies. Cooperative endeavors between AGFD and YPG include habitat enhancement and maintenance; game surveys; development, redevelopment, and maintenance of wildlife waters; wildlife research; capture and release; harvest recommendations; and law enforcement. One cooperative agreement involves research by AGFD, including Sonoran Pronghorn Range Survey and the Wildlife Waters Development Study, conducted through Collection Agreements (Rosenstock and Rabe 2002). Components of this research include the evaluation of the historic and current range of Sonoran Pronghorn, water quality and wildlife use of wildlife waters, wildlife use of mesquite bosques, and wildlife disease. AGFD continues to do research at YPG (*e.g.*, occupancy modeling of Mohave fringe-toed lizards within the Ehrenburg dune complex, use of mesquite bosques by wildlife, and development of new bosque habitat), surveys for sensitive species and habitat (*e.g.*, golden eagle nest surveys), and contributes wildlife expertise to YPG.

AGFD research biologist taking samples of wildlife waters (Photo by M. Rabe)

In the past decade, research collaboration is reflected in YPG's participation in a DoD Legacy project, "Wintering ecology of shrubland birds: linking landscape and habitat," conducted with the U.S. Geological Survey (Leu and Knick 2006). YPG has also been involved in another DoD Legacy project with U.S. Fish and Wildlife Service, MCAS-Yuma, and Luke Air Force Base evaluating species at risk on military installations in the Southwest. YPG is participating with MCAS-Yuma and Luke AFB on three separately funded DoD Legacy projects addressing: 1) sensitive bat resources throughout the installations, 2) distribution of LeConte's thrashers, and 3) development of a habitat pattern recognition model for desert tortoises. YPG has also collaborated with the U.S. Army Corps of Engineers, Engineer Research and Development Center to evaluate significant bird migration stopover sites using radar sensing. Other examples of interagency cooperation consist of AGFD trapping and transplanting desert bighorn sheep from YPG to restock other areas of the state and surveys for game and non-game wildlife on YPG.

In 2010, the SERDP funded two projects on YPG to study intermittent and ephemeral desert streams. A Colorado State University project titled "Watershed to local scale characteristics and function of intermittent and ephemeral streams on military lands" will develop and test a classification model of intermittent and ephemeral streams on USAG YPG, and the research team will assist with the design of a long-term monitoring and management plan for YPG, helping to sustain long-term viability of range lands. The University of Arizona is conducting a research project titled "An ecohydrological approach to managing ephemeral and intermittent streams on DoD lands in the southwestern United States." This research will clarify the dynamics between hydrology and flora and fauna in and near desert wash systems. This information will allow YPG to better avoid, minimize, and mitigate impacts of the military mission on these ecologically significant areas.

A third SERDP-funded project, "Integrated spatial models of non-native plant invasion, fire risk, and wildlife habitat to support conservation of military lands in the arid Southwest," is being conducted by Northern Arizona University on federal lands in southwestern Arizona, including the Barry M Goldwater Range, NWRs, and Bureau of Land Management lands. This project will create integrated landscape-level, process based models of non-native plant invasion, fire risk, and wildlife habitat use.

YPG also has worked cooperatively with local government agencies and wildlife organizations in managing the wildlife resources on the installation. The Audubon Society includes YPG in their annual Christmas Bird Count. Several wildlife water development and enhancement projects have been completed over the years with groups such as Yuma Valley Rod and Gun Club, Desert Bighorn Sheep Society, and Desert Wildlife Unlimited, Inc. Such cooperative endeavors are one of the most rewarding aspects of YPG's natural resources program.

In arid desert environments like YPG, management of habitat, including wildlife waters and animal populations, is a primary management tool. It is necessary to maintain a balance of wildlife and horse and burro populations within the capacity of the habitat/forage resources to support those populations over the long term. YPG will manage wildlife resources following guidelines promulgated within DoD for implementing biodiversity and ecosystem-based management principles. Non-game and game populations will be monitored cooperatively with AGFD and USFWS.

YPG wildlife waters renovation project with members of Yuma Valley Rod and Gun Club (Photo by R. English)

Water can be a limiting factor for some wildlife species on YPG. Numerous wildlife water developments have been completed on YPG. *Tinajas* are naturally occurring rock pools that form in bedrock scoured by runoff. Most of the *tinajas* on YPG are small, shallow, and temporary due to evaporation. During a 1990 study about 100 *tinajas* were located and mapped to evaluate additional sites suitable for development of wildlife waters. While some have undergone construction and maintenance programs by the AGFD, their ability to maintain water year-round is limited. They have shown to not be as reliable and cost effective as developed waters because they require a helicopter to maintain them. It is important that additional sites are selected for the development of new waters to help offset current costs and support local wildlife. Developed waters are also maintained by the AGFD by trucking water to sites when needed. Figure 14 is a map of wildlife water holes on and near YPG, including natural *tinajas* (improved potholes), artificial wildlife-watering facilities, and wild horse and burro watering sites.

Developed water sources for wildlife may mitigate for those destroyed or made unavailable through human activities. Water developments built to benefit mule deer and bighorn sheep are visited more often by nongame wildlife than by game species (Rosenstock *et al*. 2004). In the past decade, AGFD and academic researchers have studied the use of wildlife waters by nongame species on YPG. In a study of wildlife water use by bats, both the highest level of use and the highest species diversity were found where water surface area was greatest. Thus bats used *tinajas* more than other types of wildlife waters, and used buried vaults and tanks the least. The tinajas were also closer to bat roosts, so a combination of location and lack of obstacles to bat flight presented by more open water surfaces enhanced use by bats (Rabe and Rosenstock 2005). Through the use of GPS collars, AGFD is currently tracking the impact of wildlife waters, as well as vegetation and military activities, on bighorn sheep habitat use (Rosenstock et al. 2010, Rosenstock and Yarborough 2011).

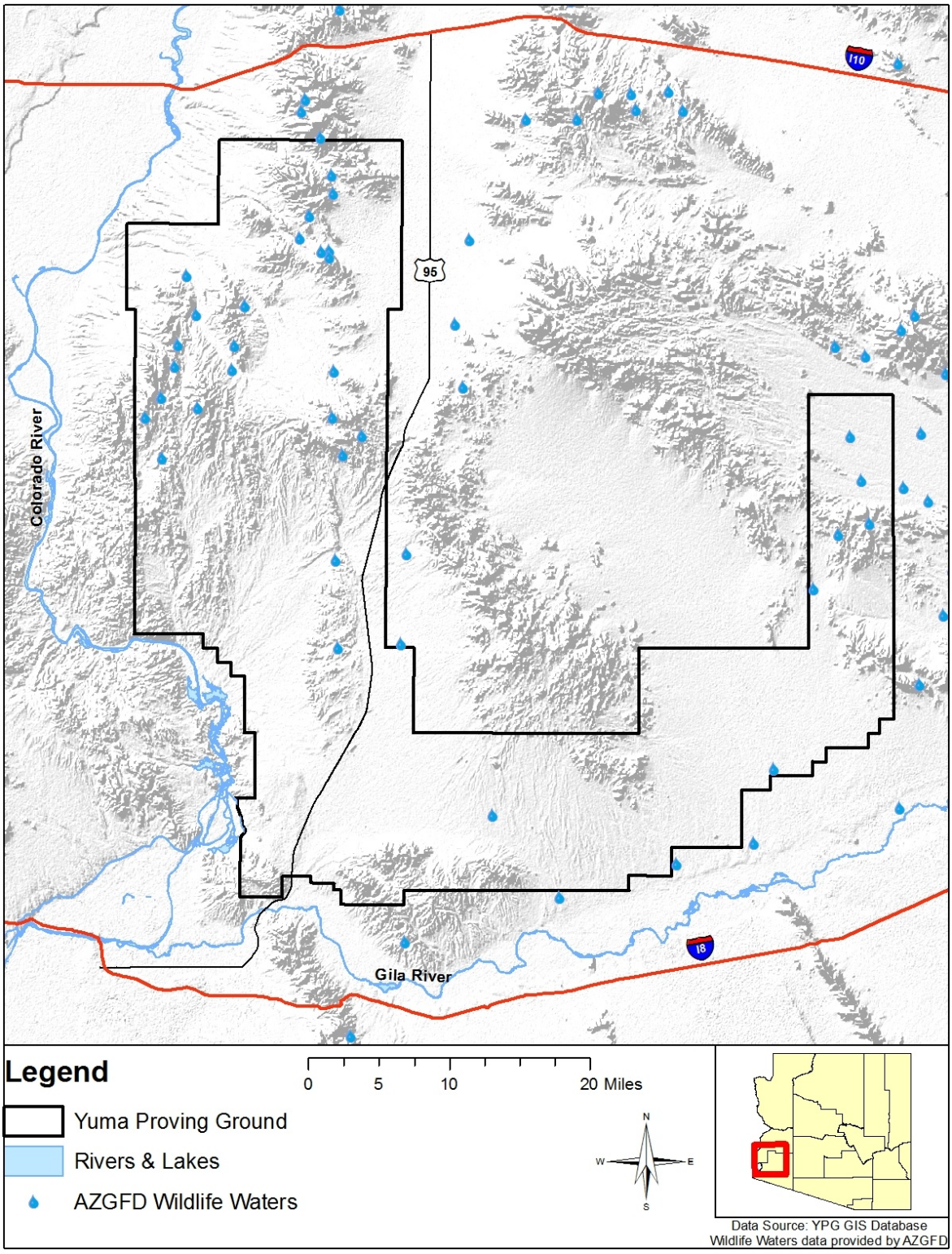

Figure 14: Wildlife Water Source

In another project, remote videography was used to document wildlife use of 3 catchments on YPG. There was high usage by mule deer, mourning and white-winged doves, Gambel's quail, and a multitude of nongame species, included bats, hares and rabbits, rodents, foxes, coyotes, badgers, bobcats, hawks, owls, turkey vultures, several other birds, reptiles, and an unidentified toad. Most of the animals drank at the site. The videocameras recorded a small number of predation events by bobcats, hawks, and a great horned owl, and other interactions between vertebrates. The authors also collected weather data and demonstrated the relationship between animal visits and temperature and humidity. Notably, mule deer visits were most frequent between May and September. Other behaviors were observed, such as the diurnal pattern of visits by Gambel's quail, which came to the drinkers early and late in the day. In sum, the developed wildlife waters provided an important resource for native species and allowed scientists to remotely observe wildlife behavior and document water use (O'Brien *et al*. 2006).

Although used by resident birds, wildlife waters do not appear to play an important role for migrating birds in southwest Arizona. Bird surveys of washes with and without water developments found no differences in the migratory bird communities with respect to species richness, abundance or density. Resident birds, in contrast, were very much attracted to water developments, using them for drinking and bathing, particularly in a dry (2004) vs. a wet (2005) year (Lynn *et al*. 2006). In a related experiment, migratory birds were competing in an unfamiliar landscape with resident birds for limited water resources. Experimental ephemeral water sources (40 cm diameter plastic tubs, emptied after each observation period) were set up in areas with > 50% shrub and tree cover vs. < 10% vegetative cover. Both migrant and resident birds were more likely to use water with vegetative cover, and migrants outnumbered resident birds at the experimental waters. Numbers of visits were not high, and the data suggested that migrating birds do not rely on the types of wildlife water developments built on YPG and Kofa NWR, possibly because they are not visible from the altitudes at which migrants fly (Lynn *et al*. 2006). These authors also tested remote color videography at two water developments in 2004. As with direct observations, migrant bird use of wildlife waters was low. More than 20,000 visits by resident birds were recorded in spring and fall, compared to 59 visits by migrants (Lynn *et al*. 2008).

In the desert free water is a critical resource for bats, particularly lactating females. In the late 1990s AGFD began replacing older water catchments with newer designs. The newer catchments use deep troughs and do not have floats, allowing water levels to drop in the troughs. Because of concerns that these water in these troughs might not be accessible to bats, AGFD tested the effects of trough size and depth to water surface on bats. Drinking success was directly observed, and bat call data were collected to aid in identifying bats to species. Successful passes over the water (when bats were able to drink) depended on the depth to the water, not the size of the trough. The higher the water level, the more likely the bats could drink. In the second phase of the study, bat behavior was tested when water levels were low to see if the bats could learn to use the less accessible water. In the larger troughs (122 cm wide by 312 or 434 cm long) the bats were able to use the water. More energy was expended in drinking from the lower water, but the experiment showed that bats might be able to acclimate. The smaller trough (122cm by 130 cm) was not used when the water was low (Rosenstock *et al*. 2010).

Water is a point of concentration for wildlife and has the potential to foster the spread of disease among the animals that visit these sites. AGFD, in collaboration with YPG under a Collection Agreement, studied the water quality of wildlife waters and other water sources on and near YPG. Samples were tested for the water-borne microcystin and nodularin biochemicals, which are toxins produced by blue-green algae in waters having high water temperature, stagnant conditions, and large inputs of organic matter. Although eight genera of blue-green algae were found to be present at a number of water sites on or near YPG, water samples were negative for the presence of microcystin and nodularin (Rosenstock *et al*. 2004). The developed wildlife waters on YPG may not provide conditions necessary for toxin formation and accumulation, or species capable of producing toxin may simply not be present. Studies on water-borne *Trichomonas* were conducted on and near YPG. No *Trichomonas* was detected in water samples. Finally, water quality (pH, sediments, specific chemical components) in developed wildlife waters was within established guidelines for domestic animals, and that constituents of concern were at levels unlikely to adversely affect animal health (Rosenstock *et al*. 2005).

Several invertebrate disease vectors require water for larval development. Biting midges of the genus *Culicoides* are vectors of viruses that cause bluetongue (BTV) and epizootic hemorrhagic disease (EHDV) in wild ungulates. These vectors were studied on and near YPG and of the five *Culicoides* species collected, one species, *C. sonorensis,* is a known vector for both viruses, and another, *C. mohave*, is a suspected vector. No positive insects were found in tests of free-flying, captured adults and adults reared from larvae collected from fine silt or mud at the margins of water treatment brine ponds and one tinaja with suitable larval substrate (Rosenstock *et al*. 2004).). West Nile virus is a contemporary disease associated with water-reliant vectors. This virus, which infects wild birds, mammals, and humans, first appeared in eastern North America in 1999 and has quickly spread westward to all 48 states of the contiguous United States (Centers for Disease Control and Prevention 2003a, 2007). The Centers for Disease Control and Prevention (2003b, 2003c, 2003d, 2003e), indicate that the first human, veterinary, bird, and mosquito indications of West Nile virus appeared in Arizona in 2003. At least 300 species of birds, 35 species of mammals, and two species of reptiles nationwide have tested positive for the presence of West Nile viral RNA or antibodies for the virus (U.S. Geological Survey 2005). Aside from the West Nile virus's effects on humans, the most concerning effects are those on wild bird populations and equine livestock. The number of dead infected birds by May of 2007 was already 4,268 (U.S. Geological Survey 2007). There were 1,086 equine cases of West Nile virus reported nationwide in 2006 with 13 occurring in Arizona (U.S. Department of Agriculture; Animal and Plant Health Inspection Service 2007). With recent arrival in Arizona, the effects of the disease on wildlife, especially birds and wild horses and burros, on and near YPG has yet to be determined. Coordination among YPG ESD, YPG Veterinary Services, U.S. Army Health Command, Arizona Department of Health Services, Yuma County Health Department, BLM, and AGFD regarding monitoring of West Nile virus vector species and the virus's effects on wildlife is ongoing.

5.3 Public Use (Hunting) Management

YPG, in cooperation and coordination with AGFD, has administered hunting in some parts of the installation since 1979. Hunting on the installation currently is administered under USAYPG Regulation No. 210-11 (2006) and in accordance with 10 U.S.C 2671; Ars 200-1, 210-21, and 385-63; 32 CFR 190; DoD D 4715.11; DoD 6055.9STD; DA PAM 420-7; TM-5-633; DA Memoranda SFIM-SW-Z (May 6, 2003) and SFIM-OP-P (March 13, 2003); and other related guidance. Most of YPG functions as wildlife habitat and can be managed as such. However, due to military mission and safety constraints, only a portion of the installation is open to recreational hunting by the public. Table 7 provides a description of the designated hunting areas currently available on the installation. For more information about hunting on YPG, contact the Hunting Program Office at 1-877-788-HUNT. Figure 15 shows the hunting areas on YPG, which are managed by AGFD as portions of GMUs 41, 43A, and 43B, as established by the Arizona Game and Fish Commission. Although not indicated on the map, hunting is permitted on the installation south of the Arizona Public Service transmission line wherever it crosses the southern boundary of the installation; in other words, between the APS transmission line and the southern boundary of YPG. This area along YPG's southern border, south of the APS transmission line, is the only YPG hunting area where range clearance is not required.

Table 7: YPG Designated Hunting Areas

Hunting Area	Acreage	Year Established
Cibola	95,294	1979
Highway 95	8,219	1989
Arrastra	11,648	1989
Martinez	2,694	1989
East Arm	55,178	1993

Prior to 1993, U.S. Highway 95 and Martinez hunting areas were used only for small game (birds). Since 1993, all five areas have been opened for large and small game hunting consistent with AGFD regulations.

All game, including mule deer, desert bighorn sheep, Gambel's quail (*Callipepla gambeli*i), mourning dove (*Zenaida macroura*), white-wing dove (*Z. asiatica*), and Eurasian and African collared doves (*Streptopelia decaocto* and *S. rosogrisea*, respectively) allowed under state law may be hunted on YPG. Hunters must possess annual YPG hunting access permits in addition to required state and federal licenses, permits, and tags. YPG access permits, obtained from YPG's Hunting Program Office, are valid for the current calendar year and must be renewed after December 31. Hunters are required to check in by telephone with YPG Range Control or by telephone or in person at YPG's Police Desk for an area access clearance. Clearances are issued on a first-come-first-served basis, subject to availability. Clearances are valid only for the dates and areas specified, and hunters must check out when departing a hunting area.

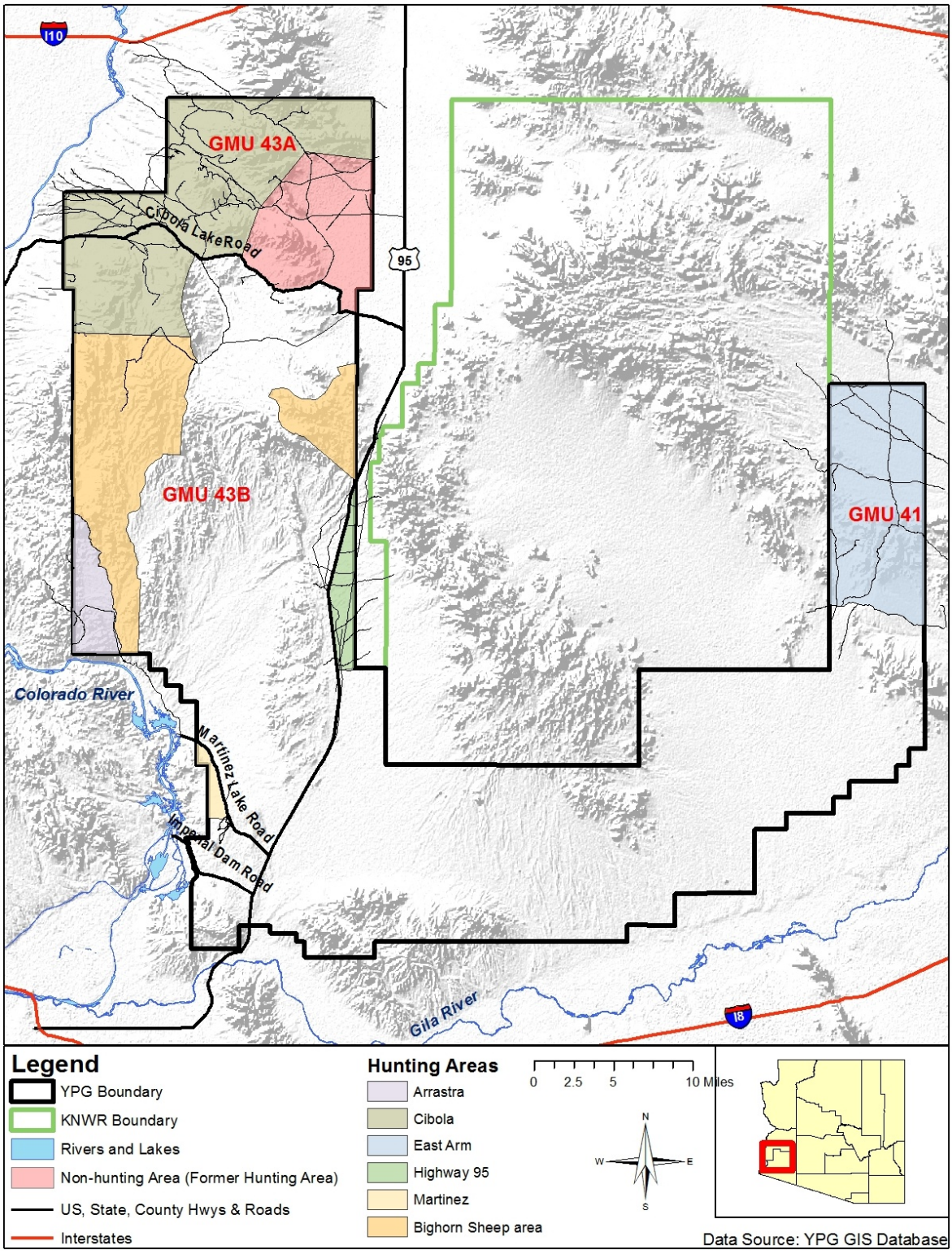

Figure 15: Designated Hunting Areas on U.S. Army Yuma Proving Ground

Hunting recreation on YPG has gradually increased, in both available acreage and number of hunter days, since its inception in 1979. The potential for additional hunting on YPG is limited due to mission constraints and security. Even if testing were terminated in certain areas, extensive clearing of spent munitions and other associated debris would be required before access could be granted. In areas open to hunting, YPG will consider allowing the maximum number of days for hunting according to state law. YPG meets annually with AGFD to assess the opportunity for additional hunting areas in locations where little to no military activities have taken place or are expected to take place and safety concerns are properly mitigated.

All of YPG is designated for military use. Military activities take precedence over wildlife management activities and over all hunting management areas. However, important wildlife habitats such as wildlife watering sites and hunting areas will be considered during planning and conduct of military activities and avoided to the extent practicable. Unavoidable impacts will be minimized or mitigated, as determined through compliance with NEPA (40 CFR 1500–1508).

Wildlife harvest quotas (permit numbers) are determined by the Arizona Game and Fish Commission, based on the recommendations of AGFD and the results of its surveys, including aerial surveys for desert bighorn sheep and mule deer, call count transects for dove, and post-hunting season surveys. YPG contributes to this process as appropriate.

All law enforcement, informational, and other control actions required during or because of the hunting program shall be the primary responsibility of AGFD and YPG. USFWS will participate if federal wildlife laws are involved. YPG, in cooperation with AGFD, is responsible for proper warning of danger areas and conditions to hunters. Posting of installation boundary signs is also the responsibility of YPG. Policing harvest and game law enforcement are conducted by AGFD, USFWS, and YPG security personnel. Checkpoints on YPG are random and mobile; permanent stations are not manned except for those that ban all public access for mission security.

There is no recreational fishery on YPG since naturally occurring waters are ephemeral and do not provide sustainable fish habitat. Man-made water storage ponds are not feasible from a mission or management standpoint to sustain recreational fishing. The proximity of the Colorado River to the installation affords ample fishing recreation for YPG personnel and the public. There is also a recreation area for DoD personnel operated by the MCAS-Yuma at Martinez Lake, about 10 miles north of the YPG main post.

5.4 Management Goals and Objectives

The management goals, objectives, and actions presented in this INRMP seek to maintain biological integrity of ecosystems on YPG to sustain the military mission. All management action will be monitored through the Conservation Program and LCTA program; management will be adapted according to monitoring results.

The following objectives are intended to guide cooperative wildlife management on YPG. Many of the objectives are general in nature to allow flexibility (adaptive management) as priorities change and new management strategies and technologies develop. Specific actions to implement

these objectives are generalized below and will be more specifically developed annually, in cooperation among the signatories, in accordance with the procedures established above. The following objectives are consistent with Arizona's Comprehensive Wildlife Conservation Strategy: 2005-2015. The implementation of the following management actions is subject to the availability of funds, manpower, and other agency resources. Documentation of the status of management actions may include but is not limited to reports; maps; databases; memoranda for record; environmental analyses; and articles in wildlife-related periodicals, scientific journals, newspapers, and internet websites in accordance with existing agency protocols.

5.4.1 Management Objective #1

Survey, monitor, and analyze trend information for wildlife populations

Management Action 1a: Continue the following wildlife (particularly bighorn sheep and mule deer) monitoring and trend analysis on YPG.

- Distribution and population trends of kit foxes
- Aerial surveys of bighorn sheep and mule deer
- Mandatory bighorn sheep hunt check out
- Mule deer hunter questionnaires

Management Action 1b: Continue non-game monitoring and trend analysis.

- Mist net and exit count bat surveys
- Monitor bat roost site viability
- Bird counts, including support and participation in the Arizona Coordinated Bird Monitoring Program
- Nest site distribution of sensitive bird species
- Reptile surveys
- Other data collection in collaboration with partner research institutions based on mutual agreement

Management Action 1c: Conduct baseline surveys of invertebrates on YPG.

- Develop an MOU with a university museum for identification and storage of specimens
- Develop sampling design, and collecting by such methods as pheromone traps, pitfall traps, night time collections at lights, and sweep netting; properly curate specimens
- Modify strategy as needed to sample particular species
- If species of concern are found on YPG, develop and implementing appropriate management plans
- Create database of species collected

Management Action 1d: Continue to monitor wildlife populations for disease.

- Mandatory bighorn sheep hunt check out
- Periodic voluntary tissue/blood collection
- Coordination among YPG ESD, YPG health clinic, YPG veterinary services, U.S. Army Public Health Command, Arizona Department of Health Services, Yuma County Health Department, Yuma County Pest Abatement District, BLM, and AGFD regarding monitoring of west Nile virus vector species and the virus's effects on wildlife

5.4.2 Management Objective #2

Assess wildlife habitat needs and actively manage to provide and protect wildlife habitat.

Management Action 2a: Continue to identify and manage priority habitats to enable YPG to use best management practices to minimize impacts to wildlife because of military mission.

- Mapping and evaluation of unique vegetation communities, xeroriparian areas, wildlife waters, and mines
- Bat mine exit counts and other wildlife surveys
- Site-specific surveys and avoidance, minimization, and mitigation measures for proposed MILCON and testing activities

Management Action 2b: YPG and AGFD will collaborate to identify and map the following areas of special concern. YPG will, to the extent practicable, attempt to avoid impacting those areas.

- Major mesquite bosques
- Bighorn sheep habitat
- Bat roosts
- Mohave fringe-toed lizard habitat
- Desert tortoise habitat
- Washes
- Future Sonoran pronghorn habitat and corridors

Management Action 2c: Continue the following data collection and analysis under the RTLA program, as funding is available.

- Field surveys
- Database maintenance and management
- Data reporting

Management Action 2d: Implement invasive non-native weed management program, to enhance and sustain wildlife habitat.

- Coordination with other agencies through the King of Arizona Cooperative Weed Management Area and the Sonoran Desert Invasive Species Council
- Mapping of weeds with GPS, and creating GIS layer(s)
- Removing weeds by most appropriate means, including mechanical removal, herbicide application, prescribed fire, and/or biological control
- Incorporate new research findings into weed management plan
- Cooperate with researchers investigating non-native invasive species at YPG

Management Action 2e: Continue to maintain or redevelop existing wildlife waters.

- Routine maintenance and supplemental water hauling
- Construction and redevelopment activities involving agency, non-governmental, and other groups

- Redeveloping existing waters in accordance with the AGFD water development team report 2002/2003 (AGFD 2003d) criteria for success and by using the recommended design and materials identified in that report where feasible
- Clean Water Act (CWA), sections 401, 402, and 404 compliance

Management Action 2f: Evaluate sites to develop new wildlife waters.

- Analysis of the effectiveness of existing wildlife waters
- Analysis of existing habitat conditions
- Analysis of wildlife population trends
- Analysis of availability of water

Management Action 2g: Continue to monitor water conditions at wildlife waters.

- AGFD wildlife manager and YPG staff visitation

5.4.3 Management Objective #3

Manage wild horse and burro populations at or below the Appropriate Management Levels (Bureau of Land Management 2010) in coordination with BLM.

Management Action 3a: Continue to support BLM implementation of the Cibola-Trigo Herd Management Plan and 2010 Yuma Field Office Resource Management Plan.

- Aerial surveys
- Vegetation monitoring studies
- Removal and adoption actions
- Removal or fencing of nuisance water sources

5.4.4 Management Objective #4

Survey, monitor, and analyze trend information and assess habitat needs and actively manage to provide and protect habitat for species of special management concern.

Management Action 4a: Continue to inventory, monitor, and maintain populations and habitats used by species of special management concern.

- Site-specific surveys and avoidance, minimization, and mitigation measures to the extent practical for proposed MILCON and testing actions in or near habitats potentially used by species of special management concern
- Developing an individual endangered species management plan in the event that a federally listed, threatened, or endangered species is confirmed as a resident on YPG
- Compliance with the endangered species act
- Supporting implementation of the 2003 USFWS monitoring plan for the American peregrine falcon
- Identifying communities threatened by invasive and non-native plants and implement weed management as described in management objective #2, above
- Continuing to support interagency projects regarding species of special management concern

Management Action 4b: Maintain present populations and current habitat of Morafka's desert tortoise.

- Management of tortoise in accordance with the *Management Plan for the Sonoran Desert Population of the Desert Tortoise in Arizona* (Arizona Interagency Desert Tortoise Team 1996)
- Collaboration with AIDTT in developing and implementing a Morafka's desert tortoise conservation agreement
- Site-specific surveys and avoidance, minimization, and mitigation measures to the extent practical for proposed MILCON and testing actions in or near potential desert tortoise habitat
- Conducting any tortoise relocations in accordance with *Guidelines For Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 2007))
  Note that desert tortoises are extremely rare on YPG, and management may simply consist of avoiding the few remote areas where they have been found

Management Action 4c: Manage Sonoran pronghorn via:

- Collaboration with Sonoran Pronghorn Recovery Team

Management Action 4d: Maintain present habitat and populations of Mohave fringe-toed lizard.

- Monitor occupied dunes for population size and characteristics
- Monitor habitat for invasive species
- Protect habitat from vehicle access, possibly by fencing occupied habitat
- Remove invasive species, particularly Sahara mustard, from occupied habitat

5.4.5 Management Objective #5

Maintain or restore geographic continuity and minimize population isolation among native wildlife populations.

Management Action 5a: Identify and maintain wildlife movement corridors.

- Mapping of vegetation communities, riparian/xeroriparian areas, wildlife waters, wildlife home ranges, and features that have potential to cause habitat fragmentation
- Game and non-game surveys
- Site-specific surveys and implementing avoidance, minimization, and mitigation measures to the extent practical for proposed MILCON and testing actions in or near major wildlife movement corridors
- Data collection in collaboration with partner research institutions based on mutual agreement

5.4.6 Management Objective #6

Relocate Wildlife to Maintain, Enhance, or Restore Viable Populations and Distributions of Native Wildlife.

Management Action 6a: AGFD will continue to evaluate and implement wildlife relocations, particularly of bighorn sheep.

- Analysis of game survey data
- Capture and/or release of animals on YPG

Management Action 6b: Cooperate with USFWS and AGFD to reintroduce species of concern, including federally listed species, where the populations will not interfere with the military mission of YPG.

- Reintroduce populations under section 10(j) of the Endangered Species Act of 1973, as amended

Management Action 6c: Cooperate with AGFD to dispatch or obtain appropriate care for injured wildlife.

- Report dead or injured game species (deer, sheep) to AGFD

Management Action 6d: Survey electric power poles and other mission-related structures where birds have attempted to nest in the past.

- Remove nests early in the breeding season before they are complete
- Where feasible, provide alternate nesting structures

5.4.7 Management Objective #7

Utilize best available scientific knowledge and techniques to manage wildlife.

Management Action 7a: Gather and distribute knowledge.

- Actively participating in the AIDTT, Partners In Flight, Partners for Amphibian and Reptile Conservation, Western Bat Working Group, and other interagency groups
- Utilize GPS and GIS technologies to map and analyze wildlife and habitat and incorporate information into YPG enterprise GIS system
- Supporting wildlife related research on YPG
- Sharing non-military GIS data between YPG and AGFD where appropriate

5.4.8 Management Objective #8

Minimize illegal wildlife take and habitat degradation in remote areas.

Management Action 8a: Continue to support enforcement of federal and state wildlife-related and trespass laws.

- Coordination of law enforcement efforts among YPG, AGFD, and USFWS law enforcement personnel
- YPG law enforcement will assist with hunting security on a case by case basis, within the boundaries of YPG
- Maintaining installation boundary/access markers
- Providing structured hunting opportunities as an alternative to unfavorable activities
- ESD will continue to support hunter access by continuing to sell YPG hunting permits and provide hunter safety briefings

CHAPTER 6 PLAN IMPLEMENTATION

The Sikes Act states that each INRMP "must be reviewed as to operation and effect by the parties thereto on a regular basis, but not less often than every 5 years." This review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the Sikes Act and contribute to the conservation and rehabilitation of natural resources on military installations. Failure to implement the INRMP is a violation of the Sikes Act.

This chapter outlines procedures to implement the INRMP and its associated actions. An INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for "must fund" projects and activities
- Ensures a sufficient number of professionally trained natural resources management staff are available to perform the tasks required by the INRMP
- Coordinates annually with all cooperating offices
- Documents specific INRMP action accomplishments undertaken each year

6.1 Coordination

YPG, USFWS, and AGFD will meet annually to assess INRMP implementation and coordinate ongoing and future projects, and apply adaptive management measures. Ecosystem principles are intended to complement and support local and regional endeavors to conserve multiple habitats and species. YPG continues its efforts to practice responsible stewardship of its lands and natural resources, while maintaining an interest in regional conservation and management planning. Through the NEPA process, AGFD and USFWS will be encouraged to review Environmental Assessments and Environmental Impact Statements.

6.2 Staffing

The responsibility for development, implementation, and maintenance of natural resources management programs is divided among certain YPG staff sections and local, state, and federal conservation organizations. The major responsibilities of each are outlined below.

Installation Garrison Manager:

- Support the natural resources management program by providing staffing, funding, and resources required to effectively manage the natural resources on the installation
- Insure compliance with all U.S. Army, federal, and state laws relative to natural resources on YPG
- Designate a representative to serve as liaison officer to coordinate and schedule natural resources management activities on YPG
- Determine and notify the appropriate state authority of areas to be available for hunting each season
- Periodically review the mission of YPG, together with safety considerations, to determine which areas can be open to public hunting on the installation

Installation Chief of Environmental Sciences Division:

- Provide staff supervision of the Conservation Program
- Assist local, state, and federal organizations with management activities
- Coordinate with AGFD on actions that could impact wildlife

Installation Conservation Staff:

- Prepare management plans and manage all phases of the Natural Resources Management Program on the installation
- Prepare other reports as required by the DA
- Administer the YPG hunting program including issuance of YPG permits, distribution of hunting area maps, collection of license fees, and dissemination of information as appropriate
- Incorporate best management practices into training for military and contractor personnel.
- Oversee NEPA Compliance

Installation Security Officer:

- Cooperate with AGFD regarding enforcement of all hunting, fishing, and trapping laws of the state of Arizona and with USFWS regarding federal wildlife laws
- Ensure against unauthorized entry of individuals into restricted areas
- Provide all law enforcement, informational, and other control actions required during or as a result of hunting periods and any search and rescue operations resulting from such hunts in cooperation with AGFD
- Turn over to a representative of AGFD or USFWS, as appropriate, any wildlife seized as evidence of a violation of law
- Post range boundary signs and proper warning of danger areas and conditions for areas of public access

Arizona Game and Fish Department:

- Manage non-migratory wildlife and enforce all state game rules in cooperation with the installation and cooperatively manage with USFWS all migratory wildlife and threatened and endangered species
- Furnish the Garrison Manager of YPG with current information on state statutes and AGFD rules and orders pertinent to wildlife resource as they become available.
- Coordinate and/or assist in wildlife management research activities being conducted on YPG
- Provide notice three weeks prior to desired entry to mutually accepted areas of YPG where wildlife management activities are required. Such activities may include wildlife surveys, construction, redevelopment, or maintenance of game water resources, water hauling, capture and/or release of wildlife, wildlife research activities, and other wildlife management activities. If three weeks advance notice is not feasible, access to sites may be denied because of mission activities. The purpose of the three weeks' notice is to comply with range scheduling timelines and allow time for ESD review of planned actions for NEPA compliance.

- AGFD personnel will comply with all YPG regulations and policies concerning range access
- AGFD personnel will comply with ESD NEPA policies, including full advance disclosure of planned activities
- Coordinate and schedule periods of hunting and wildlife management activities on YPG
- Provide law enforcement, informational, and other control actions required during or as a result of hunting periods and any search and rescue operations resulting from such hunts in cooperation with YPG

U.S. Fish and Wildlife Service:

- Provide technical advice and assistance to the Garrison Manager of YPG, or his delegate, on matters concerning migratory wildlife, threatened and endangered species, and federal law enforcement

U.S. Bureau of Land Management:

- Serve as lead cooperator on wild horse and burro management

6.3 INRMP Implementation Costs

One of the criteria (listed above in this chapter) for evaluating implementation is that YPG actively request, receive, and use funds for "must fund" projects and activities. Specific management objectives and actions are achieved through implementation of well planned and coordinated natural resources projects. Proposed projects listed in Table 8 are tentative based on availability of funding and changes in requirements to support the overall goal of the INRMP.

Table 8: Projects Anticipated Under the Updated INRMP (FY 2012 – 2016)

Fiscal Year	Proposed Project	Estimated Cost*
2012	• Mesquite bosque surveys, bighorn sheep monitoring, Hwy 95 wildlife connectivity, wildlife water cameras	$125,000
	• Sensitive species surveys and habitat monitoring	$100,000
	• Mule deer habitat use	$75,000
	FY 2012 Total	***$300,000***
2013	• Horse and burro removal	$100,000
	• Non-native invasive plant survey and removal; native plant survey and mapping	$50,000
	• Game and nongame wildlife monitoring, habitat monitoring and restoration	$307,500
	FY 2013 Total	***$457,500***
2014	• Horse and burro removal	$102,500
	• Non-native invasive plant survey and removal; native plant survey and mapping	$51,250
	• Game and nongame wildlife monitoring, habitat monitoring and restoration	$315,190
	FY 2014 Total	***$468,940***
2015	• Horse and burro removal	$105,000
	• Non-native invasive plant survey and removal; native plant survey and	$52,500

Fiscal Year	Proposed Project	Estimated Cost*
	mapping • Game and nongame wildlife monitoring, habitat monitoring and restoration	$323,000
	FY 2015 Total	***$480,500***
2016	• Horse and burro removal	$107,700
	• Non-native invasive plant survey and removal; native plant survey and mapping	$53,800
	• Game and nongame wildlife monitoring, habitat monitoring and restoration	$331,000
	FY 2016 Total	***$492,500***
	FY 2012-2016 INRMP TOTAL	**$2,199,440**

* The schedule and funding for implementing management actions (and/or specific projects) are subject to change.

6.4 Funding Options

The following funding options and sources are subject to change.

6.4.1 Appropriated Funds

YPG Garrison shall request and implement funding for the implementation of the INRMP through standard Army procedures and in accordance with standard policy. Cooperative agreements may be entered into with states, local governments, NGOs, and individuals for the improvement of natural resources or to benefit natural resources on YPG and state-owned training sites. Funding and services may be contributed on a matching basis to defray the cost of programs, projects, and activities under the agreement (Sikes Act).

6.4.2 Other Sources of Funding

Legacy Resource Management Program: This program was established in 1990 to provide financial assistance to DoD efforts to preserve natural and cultural heritage, and is a source of conservation management funds for projects directly related to the DoD mission. It is not a grant program; funding requires the recipient(s) to enter into a contractual obligation with DoD to provide services for an agreed amount of money. Legacy funding has an expiration date and periods of performance that must be satisfactorily met.

The Program assists DoD in protecting and enhancing resources while supporting military readiness. A legacy project may involve regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, and/or monitoring and predicting migratory patterns of birds and animals.

Fish and Wildlife Hunting Program: The funds received from the sale of hunting permits on YPG will be used only on YPG for the protection, conservation, and management wildlife in accordance with established policy (Sikes Act).

6.5 Plan Amendments and Revisions

Representatives of the signatories of this plan will meet at least annually (usually in January or February) to review and plan INRMP implementation. Representatives from other agencies may be invited, as appropriate. Topics for the annual meetings may include, but are not limited to, the status of the overall implementation of the INRMP, the hunting program, habitat projects, research activities, wildlife law enforcement, access, military activities with the potential to affect wildlife, wildlife management activities with the potential to affect military mission, and any required amendments or changes to the plan.

Specific projects and actions are reviewed and adjusted as necessary, in cooperation with representatives of the signatories to this plan. Any of the three signatories may propose projects to be conducted on YPG; however, YPG reserves the right to approve and prioritize its funding requests and/or deny access for projects if conflicts with the military mission or national security requirements. Projects may be proposed at any time of year, but the timing of the annual meeting is set to make best use of the military budget cycle, providing an opportunity to submit specific projects for the following federal fiscal year and beyond. Typically, projects (funded wholly or in part by the Department of Army) may be identified five or more years out, with rough estimates of cost. Projects are made more specific as the funding target year approaches. Specific project proposals with detailed cost estimates are required approximately 18 months prior to execution. Changes to projects can usually be accommodated with approval from the funding agency.

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CHAPTER 7 ENVIRONMENTAL CONSEQUENCES

This chapter of the document assesses known, potential, and reasonably foreseeable environmental consequences, and cumulative effects related to implementing the INRMP and managing natural resources at U.S. Army YPG. It does not evaluate the impacts of the military mission on the environment.

The VECs, or resource areas, identified in Chapter 3, *Affected Environment* and significance criteria specific to each of the VECs (section 7.1) was used to determine the level of impacts associated with both the proposed action alternative (section 7.2) and no action alternative (section 7.3). Implementing the proposed action is the Garrison's preferred alternative to accomplishing natural resources management on the installation. Section 7.4 discusses cumulative effects associated with the proposed action and Section 7.5 presents a summary of the potential environmental consequences associated with the no action alternative and the preferred alternative (proposed action).

As discussed in Section 1.4.3, *Description of the Proposed Action and Alternatives*, the EA addresses two alternatives—the proposed action and the no action alternative. Other management alternatives were considered during the screening process, but eliminated because they were economically infeasible, ecologically unsound, or incompatible with the requirements of the military mission. Section 5.0, *Ecosystem Management*, provides a description of the methods used to develop management measures for each resource area and the rationale for why certain management measures were selected. Therefore, the analytical framework supporting each resource area is not repeated in this section. This approach supports Army guidance for concurrent preparation and integration of the INRMP and NEPA documentation.

The YPG INRMP is a "dynamic" document that focuses on a 5-year planning period based on past and present actions. Short-term management practices included in the plan have been developed without compromising long-range goals and objectives. Because the plan will be modified over time, additional environmental analyses may be required as new management measures are developed over the long-term (i.e., beyond 5-years).

7.1 Significance Criteria

Environmental effects can be direct, indirect, or cumulative. The requirements set forth in 40 CFR 1508.27 are the basis for assessment of potential environmental impacts and their significance. Impacts are evaluated at three levels: (1) No impact—no impact is predicted; (2) No significant impact—an effect is predicted, but the impact does not meet the intensity/context significance criteria for the specific resource; and (3) significant impact—an effect that meets the intensity/context significance criteria for the specific resource is expected. Analysis of impact significance was evaluated based on significance criteria used in the *U.S. Army Yuma Proving Ground Range Wide Environmental Impact Statement*, (U.S. Army Yuma Proving Ground, 2001a) and adapted for use in this analysis. YPG developed the significance criterion described in Table 9 using compliance standards, best professional judgment, and stakeholder input.

Table 9: Significance Criteria Used to Evaluate Environmental Effects of the INRMP

Valued Environmental Component	Significance Criteria used in this Analysis
Air Quality	• Emissions exceed air quality standard established under the CAA • Contributes considerably to an existing air quality violation • Exposes sensitive receptors to substantial pollutant concentrations • Results in an increase of a criteria pollutant for any designated non-attainment area
Biological Resources	• Habitat necessary for all or part of the life cycle of a species is lost because of the proposed action (e.g. lambing areas, migratory corridors, or wildlife watering areas) • Threatened or endangered species are adversely affected • A regional or local species is extirpated • Ecological processes are damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired
Cultural Resources	• Prehistoric and historic sites eligible for the NRHP are adversely affected • Native American religious or other cultural activity areas are adversely impacted
Hazardous and Toxic Substances	• The environment or public is adversely affected due to an unregulated or permitted release of a hazardous or toxic substance to the air, water, soil during transport, storage, or handling • Increased risk for an accidental spill of hazardous or toxic substances in or near a body of water or a desert wash • Violation of one or more applicable regulations • Increased risk of danger to the public or environment during the storage, transport, or use of hazardous or toxic substances
Health and Safety	• Public or YPG personnel health or safety is adversely affected • Established Federal, State, and local health and safety laws and regulations are violated • A new off-post safety hazard is created
Land Use	• Impacts to land use would be significant if the land is degraded so it cannot be used for current or planned use • Results in conflicts with established off-post land use (especially along the boundary), existing YPG land uses, or existing recreational opportunities
Soil Resources	• Activities result in severe soil erosion or sedimentation occur • Soil subsidence occurs over large areas • Permanent contamination of soil occurs that would restrict future land use • Would disturb more than 25,000 ft^2 of desert pavement
Transportation and Infrastructure	• Transportation characteristics are reduced to a level that impacts safety or movement of people, goods, and services • Utilities or infrastructure are taxed beyond their capacity to support installation mission requirements • A substantial negative affect to the YPG mission occurs

Valued Environmental Component	Significance Criteria used in this Analysis
Visual and Aesthetic Values	• Panoramic views or scenic beauty of specific areas are permanently degraded o Red Bluff Mountain (Kofa) o White Tanks (Kofa – East Arm) o Needles Eye (Cibola) o La Posa Dunes (Cibola) o Gould, Mohave, Indian, McAllister, and Yuma Wash o Mohave Peak (Cibola) o Muggins Mountains (Laguna) o Camp Laguna (Laguna)
Water Resources	• Surface water is contaminated by storm water runoff to levels above Federal or State water quality standards • "Waters of the U.S." are degraded by actions that exceed limits authorized under the CWA, as amended • Groundwater is depleted to the degree that subsidence causes fissures to form • Groundwater quality is degraded below established CWA standards • Substantially alters the existing drainage pattern of the site or area, including the alteration of the course of a wash, stream, or river in a manner that would result in substantial erosion, siltation, or flooding onsite or offsite

In assessing the overall significance of an environmental effect, the following were also considered in the context of the proposed action:

- ***Is the effect likely to be controversial?***
- ***Are there any potential cumulative effects?***
- ***Would the action establish a precedent for future actions that could result in significant effects?***

7.2 Proposed Action (Preferred Alternative)

Implementation of the management actions in the proposed action involve mapping, data collection, surveys, development or maintenance of wildlife waters, wildlife relocations, managing the YPG hunting program, and collection of wildlife for disease monitoring and research. Management of invasive plants is critical to both wildlife habitat and military use of the range. Compared to the no action alternative, environmental conditions at USAYPG would improve because of implementing an updated INRMP. Therefore, the proposed action is the preferred alternative to accomplish natural resources management activities on the installation.

7.2.1 Air Resources

Impacts to air resources may result from fugitive dust (PM_{10} and $PM_{2.5}$) emissions due to earth-moving activities during the development of wildlife waters from vehicles driving on unpaved access roads and naturally occurring high wind events. Wildlife water development within the PM_{10} nonattainment area (see figure in chapter 3) may produce minimal emissions. However, no wildlife water developments are planned for this area due to existing availability of water (e.g. Colorado and Gila Rivers, canals, and agricultural lands) in the area. Therefore, implementation of the proposed action will not have a significant effect on air quality or air resources.

Mitigation Measures

- Implement dust-control measures such as dispersing water, gravel, or dust palliatives on unpaved roads; minimizing the area of disturbance; covering haul trucks; revegetation; or limiting ground-disturbing activities during high wind events

7.2.2 Biological Resources

Approval and implementation of the INRMP has the potential to impact biological resources. Most impacts will be neutral or positive (e.g., removal of competition by invasive species). Most activities will involve surveying for plants and wildlife, removal of invasive plant species, habitat activities including development of new wildlife waters and creation or maintenance of wildlife corridors, and implementation of the hunting program. These activities may disturb soil, disturb wildlife, introduce weeds, and have the potential to create unforeseen consequences. Some specific impacts include the following:

- Overall INRMP programs and management action are beneficial
- Protection of species and their habitat
- Removal of invasive plants – beneficial to native plant and animal species, but may disturb soil, and removal of large tamarisks will affect views
- Revegetation of disturbed areas – beneficial effect
- Construction of wildlife waters – beneficial to some species, unknown to others
- Permitted collection of wildlife
- Incidental but minor taking of wildlife by INRMP management actions
- Destruction of biological soil crusts from off-road driving and other soil disturbance (e.g. to install wildlife waters or remove invasive plant species)
- Potential nontarget effects because of herbicide use on invasive plant species
- Hunting program effects – destruction of soil crusts and plants, disturbance of wildlife, introduction of weed seeds

Mitigation Measures

The best mitigation is to prevent activities from reaching a level where impacts are significant. Mitigation should be tailored to the nature of the proposed action, its anticipated effects, and the density and expected response of wildlife to the action. Since each proposed action is different, the development of an appropriate mitigation plan may require coordination with AGFD and USFWS. Peer reviews in the Dig Permit and Record of Environmental Consideration (REC) systems currently being implemented by YPG ESD effectively address potential impacts before they occur. In addition to using these ESD tools, the following actions will be taken:

- To the extent practicable, avoid and minimize disturbance during the breeding and nesting season of sensitive species to prevent injury and mortality of young
- Avoid trimming trees during the breeding and migrating season (March 15th to September 15th)
- To the extent practicable, project activities within desert tortoise habitat should be scheduled when tortoises are inactive (typically November 1 to March 1). Note that few tortoises have been observed on YPG within the past decade, and tortoise habitat on the installation remains to be mapped
- Notify USFWS and AGFD if Sonoran pronghorn are observed on the installation or injured during mission activities
- To the extent practicable, avoid construction activities on mountaintops during the bighorn sheep lambing season (primarily January 1 to April 30)
- Conduct project-specific environmental reviews to identify natural resources that may be affected
- Modify project boundaries or location, if feasible, to avoid impacting sensitive species and habitats
- Limit vehicle use to existing roads and facilities to the extent practicable
- Following project completion, restoration efforts should be tailored to the characteristics of the site and the nature of project impacts identified in the mitigation plan
- Conduct plant surveys for rare natives and plants listed in the Arizona Plant Law, and, when feasible, protect in situ or remove and plant elsewhere if military activities will result in death of vegetation
- Vehicles used to implement INRMP may carry weed seeds, particularly if soil clings to the tires or body of the vehicle. Assess the actual occurrence of weed seed vectoring and institute vehicle wash stations, if cost of weeds exceeds cost of prevention measures

7.2.3 Cultural Resources

There is always the potential for inadvertent discovery of previously unidentified archaeological deposits not discovered during the initial inventory process. Workers will take the following actions if archaeological materials are discovered during construction or excavation activities.

Mitigation Measures

- Conduct project-specific environmental review to identify any cultural resources that may be affected
- Modify project boundaries or location, if feasible, to avoid cultural resources. Brief construction personnel on the procedures and policy should cultural resources be inadvertently discovered at a project location
    - If avoidance is not feasible, mitigation of effects and consultation with the SHPO and Tribes is required
- In the event of an unanticipated archaeological or historical cultural resource discover, cease all activity in the area until the discovery has been evaluated and consultation with the SHPO and Tribes has been completed
- Follow guidance in YPG ICRMP

- In the event of an unanticipated archaeological or historical cultural resource discovery, all activity shall stop, the YPG Cultural Resources Manager notified, and materials shall undergo review as required under the NHPA.
- In the event that Native American human remains or items of cultural patrimony are discovered, federal law directs specific procedures that must be followed and establishes criminal and civil penalties for noncompliance. If human remains are encountered, all project activity on or near the discovery site shall cease immediately. The human remains shall be protected from further disturbance, and the Cultural Resources Manager notified immediately.
- If it is determined that human remains encountered during a project are not of Native American origin, then the Emergency Services Directorate will be notified immediately. This office will contact the County Medical Examiner or Coroner for further action.

7.2.4 Hazardous and Toxic Substances

The use of pesticides/herbicides in and around YPG could affect wildlife and habitat. However, herbicides would be used only in limited quantities to control invasive species and pesticides and would be used in accordance with the YPG Integrated Pest Management Plan and the Army's pesticide reduction goals. Pesticide use by Military housing contractors is not regulated by these policies.

Vehicles and/or other equipment used during surveys, mapping, construction of wildlife waters, or other activities may potentially release (or spill) fuels, hydraulic fluids, and lubricants. However, spills or releases would be small and localized. Best Management Practices (BMPs) would be implemented to minimize the potential for accidents to occur. Accidental spills would result in a less than significant impact to public health and the environment; therefore, the proposed action would not result in significant impacts.

Mitigation Measures

- Comply with the BMPs listed in the Spill Prevention, Control, and Countermeasures Plan (SPCCP) and Installation Spill Contingency Plan (ISCP) and the YPG Integrated Pest Management Plan

7.2.5 Health and Safety

In areas where Phase I, II, or III investigations or UXO may be encountered, site-specific determinations will be made by the YPG ESD to determine requirements or mitigation measures necessary to avoid or minimize to the potential for adverse effects on the health and safety of YPG personnel or the public. The following are examples of potential mitigation measures

Mitigation Measures

- All natural resources management activities will also be coordinated through the YPG Range Safety and Operations offices to determine if the sites are located in areas of known or potential UXO contamination and the level of escort required from explosives ordnance disposal prior to initiating any natural resources management activities associated with the INRMP

- Explosive ordinance disposal (EOD) escort will be used in areas with high potential to encounter UXO
- All personnel performing natural resources work are required to participate in a range safety briefing, and this along with the standard practices set forth for CERCLA or RCRA sites will minimize risks to the health and safety of survey crews

Projects associated with the implementation of the INRMP would not involve extensive use of chemical pesticides; therefore, implementation of the INRMP would not result in any impacts involving hazardous materials on the installation and no impacts to public safety will result.

7.2.6 Land Use

Under the proposed action, overall ecosystem sustainability would be achieved and sensitive habitat and species-at-risk populations would be maintained or enhanced. Future large-scale negative impacts to military mission, such as listing of Endangered Species and/or designation of Critical Habitat may be avoided, thereby minimizing conflicts and adverse impacts on the primary use of YPG's land base for the conduct of military testing and training activities.

Mitigation Measures

- Comply with all federal, state, local, and YPG policy to ensure implementation has the minimum impact on concurrent land uses
- Ensure all projects are adequately analyzed in YPG mission planning activities

7.2.7 Soil Resources

Soil-disturbing activities from operations related to habitat restoration projects could increase erosion from wind or storm events in the project areas. Vehicles and equipment used in restoration, survey, or monitoring activities may release pollutants that could contaminate soils, such as oils or other fluids. To avoid or minimize potential impacts personnel will use the following BMPs and equipment used will be maintained in good working condition.

Mitigation Measures

- Use existing access roads to access projects areas the extent practicable
- Preserve native vegetation to the maximum extent practicable and re-vegetate disturbed areas, when possible
- Use standard erosion controls, such as mulching, slope protection, and temporary silt fencing

7.2.8 Transportation and Infrastructure

Implementing an updated INRMP and the associated processes and procedures for initiating natural resources projects with our partner agencies would avoid the potential for conflicts to occur that could delay or adversely affect road or utility work planned by YPG or other agencies. Accordingly, implementing the proposed action would have an overall beneficial effect on the YPG and regional transportation and infrastructure.

7.2.9 Water Resources

Construction of wildlife water developments in washes or tinajas may have short-terms effects on water flow. The intent of each project is to capture and reserve water for wildlife use. Drainage in the area will continue; however, a portion of the drainage will be diverted into a catchment or retained in a catchment.

Vehicles and equipment used for supplemental water hauling for wildlife waters potentially may release pollutants that could contaminate surface water and vehicle fluids, including oil, grease, petroleum, and coolants, could be carried offsite during a storm event. Waste generated by personnel and or equipment during development of wildlife waters may potentially affect surface water resources. However, the following BMPs and methods are utilized to avoid or minimize the potential for an unregulated release of substances that could adversely affect surface or groundwater on the or near the installation.

Mitigation Measures

- Comply with all applicable federal, state, and local laws and regulations such as CWA Section 404 and AZ Dept of Water Resources Water Rights
- Prepare a Storm Water Pollution Prevention Plan (SWPPP) for individual quarry sites. Implementation of BMPs will help reduce or eliminate pollutants in storm water discharges and non-storm water discharges from the quarry during periods of activity and inactivity
- Minimize erosion by avoiding washes and drainage areas during establishment and operation of quarries
- Ensure that all wildlife waters continue to capture and make available to wildlife the minimum amount of water necessary to sustain wildlife populations (normally a minute fraction of the total water input onto the landscape by rainfall and runoff)

7.2.10 Visual and Aesthetic Values

Under the proposed action, the development and maintenance of wildlife waters or habitat restoration projects may have a temporary visual impact during construction. However, after construction is completed, the development would have minimal impact on visual and aesthetic values.

Overall, impacts of the proposed action to the visual resources will be beneficial because implementation of the INRMP will increase environmental awareness through training and will enhance management of YPG's natural resources. For example, coordinating a comprehensive invasive species plan with our partner agencies will result in approaches that are more effective in controlling their spread into areas designated for their visual and aesthetic values.

7.3 No Action Alternative

Adoption of the no action alternative would mean that YPG's 5-year INRMP update (this INRMP) would not be implemented and current natural resource management practices at USAYPG would continue, "as is." Existing conditions and management practices presented in Section 3.0, Affected Environment, would continue and no new initiatives would be established.

Potential consequences associated with the no action alternative are discussed in this section for each resource area described in Section 3.0, Affected Environment. Section 7.4 summarizes the analysis of potential consequences for the no action alternative and compares them to the proposed action. As shown, no significant or adverse effects would be expected. Under the no action alternative, the environmental conditions at USAYPG would not benefit from the management measures associated with implementing the proposed INRMP.

7.3.1 Air Resources

If an updated INRMP is not implemented, new habitat restoration projects are not likely to occur. This would mean that windblown dust could continue to occur in areas where exiting erosion of surface crusts have occurred.

7.3.2 Biological Resources

Without an updated INRMP and associated process and procedure, natural resources projects that would benefit biological resources on and around the installation would not be conducted in a coordinated and comprehensive manner.

7.3.3 Cultural Resources

Under the no action alternative, the current INRMP would continue to be implemented, although newly identified cultural resources might not be included in the original INRMP. The primary concern regarding cultural resources is to protect prehistoric and historic sites located within the boundaries of the installation. Under the no action alternative, the original INRMP would be followed to initiate consultation and coordination natural resource management activities that have the potential to impact historic or cultural resources.

7.3.4 Hazardous and Toxic Substances

YPG does not currently use hazardous or toxic substances extensively as part of the natural resources management program; therefore, adverse impacts would occur under the no action alternative.

7.3.5 Health and Safety

Adverse impacts to health and safety could occur if an updated INRMP is not implemented because natural resources management activities proposed by YPG or partner agencies would not be coordinated effectively and could result in information essential to securing the safety of workers and the public not being exchanged. In example, it is essential that wild horse and burro round up projects be coordinated early with YPG range control and safety office to determine the potential to encounter UXO during activities and thereby ensuring the safety of personnel involved in the round up.

7.3.6 Land Use

Adverse impacts to land use on and around the installation could occur if an updated INRMP is not implemented because natural resources management activities proposed by YPG or partner agencies could result in conflicts with mission activities or adjacent land use.

7.3.7 Soil Resources

New habitat restoration activities, such as re-vegetation of currently disturbed soil would not occur under the no action alternative; therefore, soil erosion could occur at a greater pace in some areas.

7.3.8 Transportation and Infrastructure

Adverse impacts to transportation and infrastructure associated with the no action alternative could result from not having process and procedures that are compatible with the current process and procedures used by our partner agencies. In example, lack of coordinating these efforts using updated processes and procedures that are compatible with partner agencies could result in habitat restoration or biological survey or inventory projects conflicting with utility or road improvement work planned by the YPG Department of Public Works or other agencies.

7.3.9 Water Resources

Under the no action alternative the development or maintenance of additional wildlife, waters are not anticipated; therefore, the no action alternative will have minimal impacts to water resources and no mitigation has been identified.

7.3.10 Visual and Aesthetic Values

Under the no action alternative, a comprehensive and coordinated approach to control invasive species would not be accomplished. As a result, invasive species could become more established in areas of visual and aesthetic values on or adjacent to the installation.

7.4 Cumulative Effects

Cumulative impacts are "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or proponent is conducting the undertaking." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

CEQ guidelines state that cumulative effects analyses should be limited to effects that can be evaluated meaningfully by decision-makers. These guidelines further state that the area to use in defining the cumulative impacts geographical boundary should extend to the point at which the resource is no longer affected significantly (Council on Environmental Quality, 1997).

Effects of the implementation of this plan on the region can be spatially considered along with the required implementation of INRMPs from other federal and state agencies, including the MCAS-Yuma and the Barry M. Goldwater Range (BMGR), the recently completed resource management plan for the BLM Yuma Field Office (U.S. Department of Interior January 2010) as well as other state and federal agencies.

Implementation of the INRMP would result in a comprehensive environmental strategy for USAYPG that represents compliance, restoration, prevention, and conservation; improves the existing management approach for natural resources on the installation; and meets legal and policy requirements consistent with national natural resources management philosophies.

Implementation would be expected to improve existing environmental conditions on the installation, as shown by the potential for beneficial effects in Table 10.

Growth and development on lands adjacent to the installation is not expected to occur on a large scale, as most of the land is already under in Federal management and used for ecosystem purposes such as wildlife refuges. Therefore, adverse cumulative effects are not expected to result when added to the effects of activities associated with the proposed management measures contained in the INRMP.

The overall management of natural resources on the installation and other state or federally managed land in the region will benefit from the collaborative and coordinated approach proposed under the updated INRMP. Therefore, the effects of the implementation are expected to result in minor incremental benefit toward the management and preservation of natural resources within the ecoregion.

7.5 Summary Comparison of Environmental Consequences

Table 10 presents a summary of the potential environmental consequences described above for the proposed action alternative (section 7.2) and the no action alternative (section 7.3). Cumulative effects are also included to provide a more comprehensive snap shot of potential effects.

Table 10: Summary of Potential Environmental Consequences

Resource Area (VEC)	Proposed Action (preferred alternative)	No Action
Air Quality	Beneficial/No significant impact (B/NSI)	No significant impact (NSI)
Biological Resources	B/NSI	NSI
Cultural Resources	NSI	NSI
Hazardous and Toxic Substances	NSI	NSI
Health and Safety	NSI	NSI
Land Use	B/NSI	NSI
Soil Resources	B/NSI	NSI
Transportation and Infrastructure	B/NSI	NSI
Visual and Aesthetic Values	B/NSI	NSI
Water Resources	NSI	NSI
Cumulative Effects	**B/NSI**	NSI

Other VECs Considered	Determination - and Rationale for eliminating from detailed analysis
Coastal Zone Management	Not Applicable – YPG is not located in a coastal area, and no activities associated with the INRMP (proposed action or no action) that would affect any coastal resources.
Environmental Justice	No Impact – Activities associated with INRMP will not disproportionately affect minority and/or low-income populations through substantial degradation of air or water quality or exposure to hazardous materials, substances, or waste.

Other VECs Considered	Determination - and Rationale for eliminating from detailed analysis
Floodplains	No Impact – No construction or other modification of a floodplain area are associated with the INRMP.
Geology, Geography	No Impact – The scale of activities associated with the INRMP cannot reasonably be expected to affect these large-scale resource areas.
Meteorological Resources (Climate)	Negligible or No Impact – Various actions associated with the INRMP, such as the use of vehicles and aircraft for water hauling, construction, wildlife captures, and surveys will not emit greenhouse gases into the atmosphere in meaningful or quantifiable amount.
Noise	Negligible of No Impact – Impacts to noise would be temporary and infrequent, such as that associated with survey over-flights and wildlife waters construction/renovation.
Physiography and Topography	Negligible or No Impact – Activities associated with the INRMP are localized and scale cannot reasonably be expected to affect these large-scale resource areas.
Prime Farmland	Not Applicable – YPG does not contain prime farmlands; therefore, no activities associated with INRMP will affect any prime farmland.
Socioeconomic	Negligible or No Impact – Potential impacts associated with management of natural resources at YPG would be limited to recreational hunting activities; however, access is restricted to specified areas due to the nature of the installation mission. Permit fees generated are nominal and do not have a measurable affect on regional socioeconomics.
Wild and Scenic Rivers	Not Applicable – There are no designated Wild and Scenic Rivers located on Yuma Proving Ground.

7.6 Other Environmental Management Considerations

7.6.1 Irreversible or Irretrievable Commitment of Resources

Section 102(A) (v) of the NEPA requires that environmental analysis include identification of ". . . any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that are not replaceable within a reasonable period. Implementation of an updated INRMP would result in only minor commitments of such resources as fuel for vehicle use and herbicides used to restore native vegetation.

7.6.2 Conflicts with Federal, State, or Local Land Use Plans, Policies, and Controls

The proposed implementation of an updated INRMP would allow mission-essential activities to continue while providing a method for ensuring compliance with applicable federal, state, and local natural resources laws. Since activities that could result in a potential impact to installation natural resources are coordinated with federal and state agencies, as appropriate, conflicts with federal, regional, state, or local land use plans, policies, or controls are not anticipated.

CHAPTER 8 CONCLUSIONS

The purpose for natural resources management is to have a positive effect on the environment. The analysis in this document concludes that implementation of the proposed action will produce an overall positive effect on the environment. In contrast, adverse or no environmental impacts are associated with implementation of the no action alternative.

8.1 INRMP Summary

This updated INRMP reflects the commitment set forth by the Army to conserve, protect, and enhance the natural resources necessary to accomplish the military testing and training mission at USAYPG. The primary purpose and objective of this document is to present an implementable INRMP that guides USAYPG in meeting mission requirements, achieving natural resource management goals, and complying with environmental policies and regulations. In addition, the NEPA analysis required for undertaking this major federal action (i.e., implementation of this plan) is embedded within the INRMP. The resultant "planning assessment" includes a comprehensive description, evaluation, and assessment of environmental conditions and natural resources on the installation.

This INRMP is the final plan that will direct the YPG natural resources management program and an ecosystem approach was used to develop the management measures for each resource area. Implementation of the management measures will maintain, protect, and enhance the ecological integrity of the training lands and the biological communities inhabiting them. The estimated average annual funding necessary to implement this INRMP is $439,888. The estimated total over the 5-year span for this updated INRMP is $2,199,440.

Command and management support is essential for the implementation of this INRMP and is required for many of the natural resources management projects described herein. This INRMP has the full support of the YPG Commander and Garrison Manager.

8.2 NEPA Findings and Conclusions

The EA portion of this plan[7] analyzed the proposed action of implementing the updated INRMP by comparing the potential environmental consequences to the affected environment or existing conditions. VECs at YPG and in the region were evaluated against the activities and actions expected to occur under the updated INRMP. The preliminary evaluation found that impacts would not occur to many resources typically considered as VECs in a NEPA analysis, and these were not carried forward for further detailed consideration in the NEPA evaluation; see Chapter 3 for a discussion of those VECs eliminated from further analysis. It was determined that the proposed action will have less than significant impact on the quality of the human and natural environment. Further, there will be no significant cumulative effects. Beneficial effects include ecosystem sustainability, wildlife population maintenance and enhancement, and developing a comprehensive approach for invasive species control.

[7] Table 1 in Chapter 1 provides a reader's guide as a cross reference for the NEPA related chapters and sections.

Implementation of the proposed action will not result in a significant impact on the resource areas or ecosystem associated with YPG and a current INRMP will facilitate compliance with federal and state laws applicable to natural resources management on the installation while allowing mission-essential activities to continue. Therefore, preparation of an EIS is not necessary and a Draft FNSI is included below to allow the public and other stakeholders the opportunity to provide feedback and comments before USAYPG issues a final decision document and implements the proposed action.

DRAFT

FINDING OF NO SIGNIFICANT IMPACT

TITLE OF ACTION: *Implementation of the U.S. Army Yuma Proving Ground Integrated Natural Resources Management Plan.*

BACKGROUND: The YPG INRMP was developed to ensure sound land management, environmental stewardship, and compliance with all relevant laws, regulations, and applicable state and federal management plans, are consider during mission and project planning activities and that no net loss of mission capacity results from meeting natural resources stewardship responsibilities. Previously, separate NEPA analysis was completed for implementation of the INRMP and subsequent updates. This update incorporates the NEPA analysis fully into the INRMP as a single document.

The INRMP portion of the document provides management measures that have been developed by considering various alternatives for meeting natural resource-specific goals and objectives established for the installation. The INRMP also provides the rationale for why certain management measures have been selected for implementation and others have not, based on analysis of screening criteria specific to the natural resource. The EA portions of the document "carries forward" the INRMP's selected management measures as the Proposed Action (preferred alternative).

The INRMP and integrated NEPA analysis does not address the potential impacts of the military mission and support activities on the quality of the natural and human environment. Rather, it identifies and evaluates potential impacts related to the natural resources management measures developed for implementation.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES:
Since other management alternatives were considered and eliminated from further consideration in developing the INRMP, the EA addresses only the proposed action and the no action alternative (maintain current management measures and practices).

Proposed Action - The Proposed Action (preferred alternative) is to implement the policies, projects and programs (Chapter 4), and management goals and objectives (Chapter 5) presented in this INRMP. The Proposed Action focuses on management of the ecosystems rather than individual species, and because ecosystems cross boundaries, partnerships are required to achieve shared goals. The Proposed Action would apply ecosystem management to sustain the ecological health and integrity of the natural desert ecosystems required for multipurpose

military testing and training. Ecosystem management considers the public needs and desires in management decisions and applies best available knowledge and technologies to implement adaptive management techniques.

No Action Alternative - With the no action alternative, current management policies remain in effect and existing natural resources management at YPG persists as the status quo. The 1997 INRMP would be used and YPG will continue to coordinate with U.S. Fish and Wildlife Service (USFWS), and Arizona Game and Fish Department (AGFD), Bureau of Land Management (BLM), other federal and state agencies, Non-governmental organizations, and the public to guide natural resources management decisions within its boundaries. However, without an updated INRMP YPG's management, data collection, and reporting could be inconsistent with partners and result in inadequate or ineffective management of natural resources. Under the no action alternative, YPG would be out of compliance with the Sikes Act requirements to maintain an updated INRMP and DoD's goal of management of natural resources from an ecosystem approach would not be met.

SUMMARY OF ENVIRONMENTAL EFFECTS: A broad range of valued environmental components or resources were considered for analysis of potential effects related to implementation of the INRMP. The analysis found that no significant impacts to environmental resources would result from the implementation of the updated INRMP at Yuma Proving Ground.

Cumulative impacts of the proposed action were also analyzed to evaluate the potential for incremental effects on a regional scale. The effects of implementing an updated INRMP, and required updates, were spatially considered along with the required implementation of INRMPs from other federal and state agencies, including the MCAS-Yuma and the Barry M. Goldwater Range, the recently completed resource management plan for the BLM Yuma Field Office (U.S. Department of Interior January 2010) as well as natural resource management plans for other state and federal agencies.

Implementation of the INRMP would result in a comprehensive environmental strategy for YPG that represents compliance, restoration, prevention, and conservation; improves the existing management approach for natural resources on the installation; and meets legal and policy requirements consistent with national natural resources management philosophies. Implementation would be expected to improve existing environmental conditions on the installation.

Growth and development on lands adjacent to the installation is not expected to occur on a large scale, as most of the land is already under in Federal management and used for ecosystem purposes such as wildlife refuges. Therefore, adverse cumulative effects are not expected to result when added to the effects of activities associated with the proposed management measures contained in the INRMP.

The overall management of natural resources on the installation and other state or federally managed land in the region will benefit from the collaborative and coordinated approach proposed under the updated INRMP. Therefore, the effects of the implementation are expected

to result in minor incremental benefit toward the management and preservation of natural resources within the ecoregion.

COORDINATION AND PUBLIC PARTICIPATION: The Natural Resource Management on Military Lands Act of 1960 (16 U.S.C. 670 *et seq.*), commonly known as the Sikes Act, as amended according to the Sikes Act Improvement Act of 1997 requires that INRMPs be prepared in cooperation with the USFWS, and the head of the state fish and wildlife agency for the State in which the military installation concerned is located. This updated INRMP for YPG has been prepared in accordance with that requirement and reflects the mutual agreement of the AGFD and the USFWS for the conservation, protection, and management of fish and wildlife resources located on the installation and for which YPG has a management responsibility.

Scoping letters were also sent to Federal, State, tribal, and local agencies; and to public stakeholders on December 22, 2011 inviting comments and input on the NEPA and natural resources management elements of the INRMP. No substantive responses or comments were received prior to completion of the INRMP/EA.

CONCLUSION: The YPG Environmental Sciences Division has evaluated the potential environmental impacts associated with the proposed action and alternatives considered. Based on the NEPA analysis presented in the updated *Integrated Natural Resources Management Plan for U.S Army Yuma Proving Ground* (USAYPG 2012) there would be no significant environmental impacts associated with implementing the natural resources management process, procedures, and projects as presented in the updated plan. Therefore, preparation of an Environmental Impact Statement is not required and a FNSI is the appropriate decision document to conclude the NEPA process related to implementation of an updated INRMP for Yuma Proving Ground.

I have read and concur with the findings and analyses documented in the Environmental Assessment and hereby approve the Finding of No Significant Impact.

SIGNATURE PENDING CONCLUSION OF PUBLIC REVIEW

Garrison Manager Date

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NOTE: This section is in draft form and will be finalized prior to publication of final INRMP

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ACKNOWLEDGEMENTS

NOTE: This section will be completed prior to publication of final INRMP

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APPENDIX A – AGENCY AND STAKEHOLDER COORDINATION

Arizona Game and Fish Department Coordination
U.S. Fish and Wildlife Service Coordination
Scoping letter to Stakeholders and Distribution List

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October 30, 2011

Dr. Laura Merrill
Natural Resources Manager
U.S. Army Garrison - Yuma
Environmental Sciences Division
IMWE-YMA-PWE, 301 C Street
Yuma, AZ 85365-9498

Re: United States Army Garrison Yuma Proving Ground Integrated Natural Resources Management Plan

Dear Dr. Merrill:

The Arizona Game and Fish Department (Department) has reviewed the August 29, 2011 United States Army Garrison Yuma Proving Ground Integrated Natural Resources Management Plan (Plan). The Department appreciates the opportunity to work with the Department of the Army (Army) in developing the Plan, because we recognize the importance in supporting the military mission while managing the ecological health of natural resources found on the U.S. Army Yuma Proving Ground (YPG). The Department's Research Branch also appreciates the support and working relationship developed with the Conservation Program and other YPG staff over the last 10 years. The collaborative research and monitoring efforts have yielded a wealth of information that can inform this revised INRMP and conservation of important wildlife resources on the installation.

General Comments

1. Department personnel encourage meeting with you to clarify any of our comments or concerns, as well as to further assist the Army in developing and implementing appropriate guidelines and objectives for the benefit of fish, wildlife, and associated recreation.

2. We recommend the Plan reference and incorporate, where appropriate, the Department's guidelines to help minimize impacts to fish and wildlife populations and habitats that often coincide with development and other forms of habitat disturbance. Some guidelines are on the Department's website at: http://www.azgfd.gov/hgis/guidelines.aspx.

    - Wildlife Friendly Guidelines
    - Western Burrowing Owl Information
    - Fencing Guidelines
    - Wind Energy Guidelines
    - Conservation Easements
    - Solar Energy Guidelines

- Tortoise Handling Guidelines
- Mitigation Measures for Desert Tortoises
- Survey Guidelines for Consultants
- Bridge Guidelines
- Culvert Guidelines

However, please contact the Department when incorporating specific guideline criteria into planning documents or projects to ensure the most up-to-date information is used. Often, new information or technology is available before it is readily accessible on the Department website or other publicly-accessible locations due to a time lag.

3. The Department recommends YPG strive to identify, protect, and conserve desert washes and riparian areas to the extent possible. Although desert washes and riparian areas typically account for less than five percent of the landscape, they are often the most diverse, widely-occupied, and often-utilized habitats by wildlife and vegetation. These habitats are critical in many ecological processes, including providing key habitats for feeding, reproduction, thermal refugia, resting, migration, and dispersal of wildlife across the landscape, facilitating bankline stabilization, and serving as the natural drainage arterial system throughout watersheds, as well as providing numerous educational and recreational opportunities for the public. In order to protect and conserve these valuable features, where appropriate, we recommend:

    a. Avoid disturbance within the high-water mark of floodways;
    b. Maintaining undisturbed buffer areas measured from the edge of the high water mark to the boundary of 100-year floodways;
    c. Implementing wildlife-friendly development standards (for example, wildlife-friendly fences, low lighting, native vegetation, etc.) within 500-year floodways.

4. We recommend YPG incorporate the Department's Wildlife and Wildlife Habitat Compensation Policy (Attached) into the Plan. The Department, by and through the Arizona Game and Fish Commission has jurisdictional authority (*A.R.S. 17*) for management of the states wildlife resources and seeks adequate compensation for habitat losses resulting from activities on YPG. Habitat compensation plans will seek compensation at a 100% level, where feasible, and should be developed using habitat resource category designations.

5. The Department recommends YPG perform a Cumulative Effects Analysis of development and disturbance activities that have occurred since the signing of the 1997 Integrated Natural Resource Management Plan. We believe a comprehensive analysis should take place every five years corresponding to the five year INRMP review. This will help identify impacts to wildlife and wildlife habitat and help coordinate future management of the installation.

6. We recommend that data within the YPG INRMP be expanded to include more recent information where available. Please incorporate information from the attached list of

recommended studies that have occurred on YPG and elsewhere within southwest Arizona.

7. The Department recommends that barring any problems or issues specific to the YPG mission, YPG should strive to manage wildlife resources consistent with the rest of the state and with wildlife management plans and policies that have been vetted through the public process.

Specific Comments

The Department respectfully recommends incorporating the following editorial changes to the Plan to address fish and wildlife populations, habitats, and associated recreation opportunities.

Chapter 1: Introduction

1. 1.1 Purpose – Include the following statement at the end of the second paragraph on page 1.
    - *The final signed plan will reflect the mutual agreement of all cooperating parties concerning the conservation, protection, and management of fish and wildlife resources.*

2. 1.4.5 Interagency Administration, Coordination, and Review – Change the first sentence of the first paragraph on page 12 to the following:
    - *AZGFD is the state wildlife management agency that has public trust responsibilities for all species of fish and wildlife within the state of Arizona as directed by Title 17 of the A.R.S.*

3. 1.4.5 Interagency Administration, Coordination, and Review – Edit the third bullet in the Previous Agreements section on page 12 to the following.
    - *Integrated Natural Resources Management Plan, U.S. Army Yuma Proving Ground, dated 1997, and all previous versions of the YPG INRMP*.

4. 1.5.2 Other Federal and State Agencies – Make the following edits and additions to the third paragraph on page 15:
    - ARS 17-231 states that the AZGFD may "enter into agreements with the federal government…for management studies, measures or procedures for or relating to the preservation and propagation of wildlife and expend funds for carrying out such agreements." *In addition, the Department is given priority into entering into contracts with YPG to implement INRMP objectives as outlined in the Sikes Act (Sec. 670a. [Section 101]).* The AZGFD Region 4 office in Yuma handles most of the Department's day-to-day coordination with YPG. Although all Yuma AZGFD staff likely have responsibilities for YPG natural resources, the ~~Region Habitat Specialist~~ *Regional Supervisor* serves as the principle liaison. YPG also relies on professional staff at the state office level for specific projects. Primary natural resources management activities with YPG include law enforcement, wildlife monitoring, and habitat improvement. AZGFD gets almost all of its funding from license sales. The agency provides the equipment and supplies necessary to accomplish its mission throughout the region, including YPG.

5. 1.5.2 Other Federal and State Agencies – Delete the sentence below that is found under Arizona Game and Fish Department.
    - ~~AZGFD gets almost all of its funding from license sales~~.

Chapter 3: Affected Environment

6. 3.2 Wildlife of Special Concern in Arizona Occurring on YPG – Edit the first sentence in the fourth paragraph on page 27 to the following:
    - AZGFD recognizes rare wildlife as Wildlife of Special Concern (WSC) ~~in Arizona~~ *whose occurrence may be in jeopardy or with known or perceived threats or population declines* (AZGFD 1996).

7. 3.2.1 Ecosystems, Natural Communities, Flora, and Fauna – Incorporate and cite recent information provided by Jason Associates on mesquite bosques found within YPG on the North Cibola Range.

8. 3.2.2 Potential Sensitive Plan Species at YPG – Nichol's Turk's Head Cactus on page 29:
    - It is the Department's understanding that the Nichol's Turk Head Cactus has never been verified on YPG and the nearest confirmed location is in Pima County.

9. 3.2.3 Southwestern Bald Eagle – Edit the second sentence in the second paragraph on page 30 to the following:
    - New nest sites along the *Colorado*, Gila, Bill Williams, and Agua Fria drainages indicate that the population may be increasing.

10. 3.2.3 Morafka's Desert Tortoise – Include results on page 30 and 31 from recent desert tortoise surveys conducted by AZGFD Contracts Group and the habitat model developed for the species.

11. 3.2.3 California Leaf-nosed Bat – Edit the third sentence in the fourth paragraph on page 33 to the following:
    - It roosts in ~~mines and caves, occurring in~~ several mines on YPG *and has been detected in auditory surveys conducted at AZGFD catchment#529 on the North Cibola Range* (Castner et al. 1993, 1995).

12. 3.2.3 Western Yellow Bat – Edit the fourth sentence in the third paragraph on page 34 to the following:
    - Western yellow bat occurrence and associated habitat are uncommon on YPG; however, one specimen from YPG was tentatively identified during a mist net survey in Vinegaroon Wash (Castner et al. 1993), *and another was captured at Lake Alex (AGFD, unpublished data).*

13. 3.2.3 Osprey – Make the following edits and additions to the third paragraph on page 35:
    - In Arizona, it ~~is~~ primarily ~~found~~ *nests* at lakes in the White Mountains and across the Mogollon Plateau, with a few occurrences along the Salt and Gila rivers (AZGFD1996). Nesting habitat for the osprey, which is trees near lakes and rivers, does not occur at

YPG. *However, it is a regular migrant and winter resident along the Lower Colorado River (Rosenberg et al. 1991).* Therefore, the osprey is occasionally observed on YPG.

14. 3.2.3 Other Species of Concern Observed on YPG – On page 35 include results of recent surveys for the LeConte's thrasher and golden eagle conducted by AZGFD Contracts Group.

15. 3.2.3 Other Species of Concern Observed near YPG – Make the following edits and additions to the fifth paragraph on page 35:
    - The flat-tailed horned lizard (*Phrynosoma ~~m'calli~~ mcallii*) occurs west of the Gila Mountains and south of the Gila River (Foreman 1997). The flat-tailed horned lizard was proposed for federal listing by USFWS ~~(1993)~~ as a threatened species *on 4 separate occasions during 1993-2010*. USFWS ~~(2003) subsequently~~ withdrew its proposal for listing ~~in January 2003~~ each time, citing *primarily* that ~~because~~ threats to the species originally identified in the proposed rule were not as significant as earlier believed and that safeguards provided within the 1997 Conservation Agreement and Rangewide Management Strategy are adequate to prevent extinction of the species.

16. 3.2.3 Sonoran Pronghorn – Summarize and incorporate results from the AZGFD installation wide assessment of potential Sonoran pronghorn habitat and edit the second and fourth sentence of the second paragraph on page 31 to the following:
    - The USFWS *and the AZGFD are* in the process of implementing a project to re-establish this species within its historic range.
    - As part of the project, the *Sonoran Pronghorn Recovery Team* proposed to build a captive-breeding pen for Sonoran pronghorn within the central portion of Kofa NWR and to release up to 20 Sonoran pronghorn from the pen into suitable habitats on Kofa NWR adjacent to the pen site each winter beginning as early as 2013-2014.

17. 3.2.3 Potential Sensitive Animal Species at YPG – Add the attached list of species to Table 3-3 on page 36:
    - There are additions to WSC because the Department has plans to start recognizing species listed under the Species of Greatest Conservation Need.
    - The list identifying Wildlife of Special Concern can be found at the following address: http://www.azgfd.gov/w_c/cwcs_downloads.shtml. Yuma Proving Ground can also obtain current, reliable, objective information on Arizona's plant and wildlife species location and status by utilizing the following address: http://www.azgfd.gov/hgis/.

18. 3.2.4 Migratory Breeding Birds at YPG – Incorporate recent information on avian occurrence at YPG from studies published by Lynn et al. (2006, 2008) and edit the fourth sentence in the second paragraph on page 37 to the following:
    - The sparsely vegetated lower bajadas dominated by creosote (*Larrea tridentata*)/bursage (*Ambrosia* ssp.) plant communities and at some sites by thecreosote/big galleta (*Pleuraphis* spp.) plant communities, resident ~~sage~~ *black-throated* sparrow, LeConte's thrasher, and horned lark (*Eremophila alpestris*) are commonly observed.

3.2.5 Non-Native or Invasive Plant and Pest Species – Edit information within the fourth paragraph on page 37 to the following.

- Some of the most conspicuous non-native ~~wildlife~~ *species* found on YPG are feral horses and burros. *Both are managed by the BLM under the Wild and Free Roaming Horse and Burro Act of 1971 and are discussed in detail in Chapter 5.*

19. 3.2.6 General Wildlife – Update information on bighorn sheep within the fourth paragraph of page 38 to include recent population estimates. In 2010 surveys found 430 sheep in GMU 43B and 43 A.

20. 3.2.6 General Wildlife – Edit information on wild horses and burros within the second paragraph on page 40 to the following:
    - YPG provides habitat for wild burros and horses (Equus spp.). *Neither are considered wildlife by the AGFD as defined in the Wild and Free-Roaming Horse and Burro Act (1971).* ~~Management is guided by~~ *Both are managed by BLM under* the Wild and Free-Roaming Horse and Burro Act (1971). *Management is guided by* the Cibola-Trigo Herd Management Area Plan (HMAP, 1980), and the Resource Management Plan, Yuma Field Office, Bureau of Land Management (2010).

21. 3.2.6 General Wildlife – Update information on wild horses and burros within the third paragraph on page 40. The most recent survey in 2010 estimated approximately 625 burros and 69 horses within the Cibola Trigo HMA.

22. 3.2.6 General Wildlife – Update wildlife corridors and linkages identified within Figure 3-4 on page 39:
    - Wildlife linkages continue to be identified through a collaborative process with various stakeholders as part of the *Arizona's Wildlife Linkages Assessment* (Nordhaugen et al. 2006) and subsequent workshops in various counties throughout Arizona. Therefore, it is recommended that YPG coordinate with the Department to incorporate the most up to date information on wildlife linkages.

23. 3.2.6 General Wildlife - Incorporate AZGFD Game Management Units on page 39 within Figure 3-4 or include an additional map showing them. The Department can provide the shapefile if it is needed.

24. 3.2.6 General Wildlife – Update information on page 42 with the results of small mammal surveys performed by an YPG Environmental Services contractor.

25. 3.2.6 General Wildlife – The US BLM 2003 citation on page 42 is not in the references section

26. 3.2.6 General Wildlife – Delete the third, fourth, and fifth sentences within the second paragraph on page 42.
    - ~~With one known exception, predator control has not been implemented on YPG. This incident involved a mountain lion thought to be preying on bighorn sheep. In 2009, the~~

~~AZGFD shot the lion to protect sheep breeding on Kofa NWR. The incident generated significant controversy.~~

- Rationale – The lion killed on the KOFA National Wildlife Refuge was in accordance with the AZGFD Predation Management Plan (2000) and the Investigative Report and Recommendation for the Kofa Bighorn Sheep Herd white paper by AZGFD and USFWS (2007).

27. 3.2.6 General Wildlife – Edit the sixth sentence in the second paragraph on page 42 to the following:
    - Any future predator control program ~~would~~ should be ~~conducted~~ *implemented* in accordance with the Pest Management Plan for the USA YPG (YPG 1998) and ~~coordinated with AZGFD and, in the case of the mountain lion or coyote, implemented in accordance with~~ AZGFD Predation Management (AZGFD ~~2000~~ *2001*).
        - Rationale – The Department believes that management of predators and other wildlife species should be managed according to AZGFD state wide management plans and policies.

28. 3.2.6 General Wildlife – Edit the first and third sentence in the third paragraph on page 42 to the following:
    - Of the terrestrial small mammals on YPG, rock pocket mouse (~~*Perognathus*~~ *Chaetodipus intermedius*) and Merriam's kangaroo rat (*Dipodomys merriami*) are most often observed during surveys (Ough and deVos 1986; deVos and Ough 1986). The black-tailed jackrabbit *(Lepus californicus*) and desert cottontail (*Sylvilagus audubonii*) also are often noted. The most commonly observed bat species on YPG are the California leaf-nosed bat (*Macrotus californicus*), California myotis (*Myotis californicus*), and ~~western pipistrel (*Pipistrellus hesperus*)~~ *canyon bat (Parastrellus hesperus)* (Castner et al. 1993, 1995; AZGFD 2002).

29. 3.2.6 General Wildlife – Make the following addition to the fourth paragraph on page 42:
    - Lizards, such as the desert horned lizard (*Phrynosoma platyrhinos*), western whiptail (*Aspidoscelis tigris*), and side-blotched lizard (*Uta stansburiana*), commonly are seen throughout YPG. *Interestingly, genetic analyses conducted by Mulcahy et al. (2006) indicated that desert horned lizards on YPG may represent a distinct genotype.*

30. 3.2.6 Invertebrates – Incorporate information on page 43 from the Buchman and Donovan (2002) survey on YPG that discovered one of the highest-diversity assemblages of native bees in North America.

31. 3.10.1 Surface Water Resources – We recommend including surface storage ponds such as Lake Alex and Ivan's well on page 57.

Chapter 5: Ecosystem Management

32. 5.2 Ecosystem Management at YPG - Edit the last sentence on page 87 to the following:

- AZGFD continues to do research at YPG (*e.g., occupancy modeling of Mohave Fringed-toed lizards within the Ehrenburg dune complex*), surveys for sensitive species and habitat (*e.g., golden eagle nest surveys*), and contributes wildlife expertise to YPG.

33. 5.2 Ecosystem Management at YPG – Edit information in the first paragraph on page 88 to include the following:
    - *YPG is participating with MCAS-Yuma and Luke AFB on three separately funded DoD Legacy projects addressing: 1) sensitive bat resources throughout the installations, 2) distribution of LeConte's thrashers, and 3) development of a habitat pattern recognition model for desert tortoises.*

34. 5.2 Ecosystem Management at YPG – Edit information in the first full paragraph on page 89 to the following:
    - Water can be a limiting factor for some wildlife species on YPG. Numerous wildlife water developments have been completed on YPG. *Tinajas* are naturally occurring rock pools that form in bedrock scoured by runoff. Most of the *tinajas* on YPG are small, shallow, and temporary due to evaporation. ~~Because of construction and maintenance programs undertaken by AZGFD to increase capacity and/or improve access, some of these *tinajas* now hold water nearly year round. In addition, about 100 *tinajas* were located and mapped during a 1990 study conducted to evaluate additional sites suitable for development of wildlife waters. AZGFD and Arizona Desert Bighorn Sheep Society have completed many of these projects. AZGFD provides maintenance by trucking water to selected wildlife waters when needed.~~ *During a 1990 study about 100 tinajas were located and mapped to evaluate additional sites suitable for development of wildlife waters. While some have undergone construction and maintenance programs by the AZGFD, their ability to maintain water year round is limited. They have shown to not be as reliable and cost effective as developed waters because they require a helicopter to maintain them. It is important that additional sites are selected for the development of new waters to help offset current costs and support local wildlife. Developed waters are also maintained by the AZGFD by trucking water to sites when needed.* Figure 5-1 shows a map of wildlife water holes on and near YPG, including natural *tinajas*, improved potholes, artificial wildlife-watering facilities, and wild horse and burro watering sites.

35. 5.2 Ecosystem Management at YPG – On page 89 we recommend incorporating additional information on how wildlife waters are important to both non-game and game species. Supporting information can be found in Lynn et al. (2006, 2008), O'Brien et al. (2006), Rabe and Rosenstock (2005), and AGFD Research Branch annual reports to YPG for 2008-2009 and 2010-2011.

36. 5.2 Ecosystem Management at YPG – The Department believes that information on water quality and disease transmission on page 89 should be presented separately. It should also be noted that water quality in developed wildlife waters on YPG were within established guidelines for domestic animals and that several constituents were at levels unlikely to adversely affect animal health. With respect to cyanobacterial toxins, these developed water sources appear to not

provide optimal conditions for toxin formation and accumulation. See Rosenstock et al. (2005) for further details.

37. 5.2 Ecosystem Management at YPG – Incorporate more recent information on page 91 concerning positive results for Hemorrhagic disease (EHD, BTV) in mule deer and bighorn sheep. Initial tests utilized Polymerase-Chain-Reaction (PCR), but subsequent validation using virus isolation and sequencing of PCR products did not confirm these results. Developed wildlife waters do not provide an appropriate environment to support hemorrhagic disease vectors (biting midges, genus *Cullicoides*). The only locations where they were reliably found on and adjacent to YPG were water treatment brine ponds and backwaters along the Colorado and Gila Rivers. See Rosenstock et al. (2004) for further details.

38. 5.2 Ecosystem Management at YPG – Incorporate additional information about West Nile virus within the second paragraph on page 91. Wildlife water developments are likely negligible influence on the transmission of West Nile virus. A number of virus vectors in southwest Arizona are "floodwater" mosquito species that breed in ephemeral pools, which are widespread across the landscape following monsoon storms.

39. 5.3 Public Use (Hunting) Management – The Department requests the following recommendations be incorporated on pages 92 and 93:
    - As identified in the YPG Hunting Program (2009), hunting is permitted on the installation south of the Arizona Public Service Transmission Line wherever it crosses the southern boundary on the installation. No clearance is needed for these areas.
    - We recommend that boundaries of both sheep and general hunting areas be more defined using signs and geographical markers to help prevent hunters from accidentally entering restricted areas.
    - We also recommend that sheep only hunting areas also be accessible to hunt other species during their regulated hunting season.

40. 5.4 Management Goals and Objectives – Where feasible, incorporate project specific information such as agency leads, timelines, general locations, and costs.

41. 5.4 Management Goals and Objectives – Add the following management objective and management action to the list starting on page 94:
    - Management Objective: AZGFD and YPG will cooperatively manage wildlife nuisance issues
    - Management Action: Educate YPG employees about living with Arizona's wildlife

42. 5.4.1 Management Objective #1 – Edit the management actions on page 94 and 95 to following:
    - Management Action: Continue the following ~~game~~ *wildlife* (particularly bighorn sheep and mule deer) monitoring and trend analysis.
        - *Distribution and population trends of kit foxes*
        - Aerial surveys of bighorn sheep and mule deer
        - Mandatory bighorn sheep hunt check out
        - Mule deer hunter questionnaires

- Management Action: Continue non-game monitoring and trend analysis via:
  - Mist net and exit count bat surveys
  - *Monitor bat roost site viability*
  - Reptile surveys
  - *Bird counts, including support and participation in the Arizona Coordinated Bird Monitoring Program.*
  - *Nest site distribution of sensitive bird species*
  - Other data collection in collaboration with partner research institutions based on mutual agreement

43. 5.4.2 Management Object #2 – Add an additional management action on page 95:

YPG and AGFD will collaborate to identify and map the following areas of special concern. YPG will to the extent possible, attempt to avoid impacting those areas and fully mitigate for any loss.

1. *Major mesquite bosques*
2. *Bighorn sheep habitat*
3. *Bat roosts*
4. *Mohave fringe-toed lizard habitat*
5. *Desert tortoise habitat*
6. *Riparian habitat*
7. *Washes*
8. *Future Sonoran pronghorn habitat and corridors*

44. 5.4.3 Management Objective #3 – Edit the management objective on page 96 to the following:
    - ~~Manage Wild Horse and Burro Populations in Coordination with BLM~~ *Yuma Proving Ground will coordinate with the Bureau of Land Management when possible to facilitate the management of horses and burros at or below the Appropriate Management Level*.

45. 5.4.4 Management Objective #4 – Include the following to the Sonoran pronghorn management action on page 97:
    - *Evaluate existing wildlife waters in potential Sonoran pronghorn habitats for redevelopment to pronghorn friendly standards, and evaluate sites in pronghorn habitat to develop new pronghorn waters.*

46. 5.4.7 Management Objective #7 – Add an additional management action on page 98:
    - *Share non-military GIS data between YPG and AZGFD where appropriate*.

47. 5.4.8 Management Objective #8 – Make the following addition to the management action on page 98:
    - *YPG law enforcement assist with hunting security, access, and permit issues.*

48. 5.4.8 Management Objective #8 – Add the following management action on page 98:
    - *Continue to support hunter access*

- *Expand designated hunting areas where feasible*

Chapter 6: Plan Implementation

49. 6.1 Coordination – Incorporate the following addition on page 101:
    - *YPG and AZGFD will meet annually to assess INRMP implementation and coordinate ongoing and future projects.*

50. 6.1 Coordination – The Department respectfully requests that it be included as a partner agency on environmental compliance and other natural resource related issues. Due to the nature of activities on YPG we believe early coordination will help provide adequate review while helping resolve and avoid conflicts and reduce impacts to wildlife.

51. 6.2 Staffing – Incorporate the following addition under Installation Conservation Staff on page 102:
    - *Incorporate Best Management Practices into training for military and contractor personnel.*

52. 6.2 Staffing – Incorporate the following edits on page 102 under Arizona Game and Fish Department:
    - ~~Furnish the Garrison Manager of YPG with current information on state statutes and AZGFD rules and orders pertinent to wildlife resource by July 1 of each year~~. *The Garrison Manager will be provided with new laws and regulations pertinent to natural resources as they become available.*
    - Provide ~~two weeks' notice~~ *advance* notice of desired entry to mutually accepted areas of YPG where wildlife management activities are required. Such activities may include wildlife surveys, construction, redevelopment, or maintenance of game water resources, water hauling, capture and/or release of wildlife, wildlife research activities, and other wildlife management activities.
        - Rationale – Two weeks advance notice is not feasible when performing some management activities.

53. 6.3 INRMP Implementation Costs - Where feasible, provide more detail on all proposed projects, funding, and their timelines.

Chapter 7: Environmental Consequence

54. 7.2.2 Biological Resources – Incorporate the following edits and additions to the Mitigation Measures on page 110:
    - The best mitigation is to prevent activities from reaching a level where impacts are significant. *Mitigation should be tailored to the nature of the proposed action, its anticipated effects, and the density and expected response of wildlife to the action. Since each proposed action is different, the development of an appropriate mitigation plan will require coordination with AZGFD and the FWS.* Peer reviews in the Dig Permit and Record of Environmental Consideration (REC) systems currently being implemented by YPG ESD effectively address potential impacts before they occur. In addition to using these ESD tools, the following actions will be taken:

- To the extent practicable, avoid and minimize disturbance during the breeding *and nesting* season of sensitive species to prevent injury ~~or~~ *and* mortality of young.
- *Avoid trimming trees during the breeding and migrating season (March 15th to September 15th).*
- *If possible, project activities within desert tortoise habitat should be scheduled when tortoises are inactive (typically November 1 to March 1).*
- *When Sonoran pronghorn are documented using YPG, project activities should be scheduled to avoid or minimize disturbance during the fawning season (March-July) where possible.*
- *Conduct project-specific environmental review to identify any natural resources that may be affected.*
- *Modify project boundaries or location, if feasible, to avoid impacting sensitive species and habitats.*
- Cooperate with AGFD to obtain rehabilitation services, as appropriate, for injured wildlife. Juvenile native birds should only be taken to rehabilitation programs as a last resort, for example, if both parents are dead.
- *Vehicle use should be limited to existing or designated routes to the extent possible.*
- *Following project completion, restoration efforts should be tailored to the characteristics of the site and the nature of project impacts identified in the mitigation plan.*
- Conduct plant surveys for rare natives and plants listed in the Arizona Plant Law, and, when feasible, protect in situ or remove and plant elsewhere if military activities will result in death of vegetation.
- Vehicles used to implement INRMP may carry weed seeds, particularly if soil clings to the tires or body of the vehicle. Assess the actual occurrence of weed seed vectoring and institute vehicle wash stations, if cost of weeds exceeds cost of prevention measures.

Conclusion

Thank you for the opportunity to provide comments on the Integrated Natural Resources Management Plan. I look forward to working cooperatively with you in developing guidance that focuses on conserving and managing wildlife and other natural resources in the County for future generations to enjoy. If you have any questions, please contact me or Tab Bommarito at 928-341-4069.

Sincerely,

Samuel P. Barber
Supervisor
Region IV, Yuma

cc: Laura Canaca, PEP Supervisor Habitat Branch
Josh Avey, Chief, Habitat Branch
Jill Bright, Acting Habitat Program Manager, Region IV
Leonard Ordway, Assistant Director, Field Operations

AGFD # M11-09011118

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O'Brien, C.S., S.S. Rosenstock, J.J. Hervert, J.L. Bright, and S.R. Boe. 2005. Landscape-level models of potential habitat for Sonoran pronghorn. Wildlife Society Bulletin 33:24-34

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Table 3-3: Updated list of special status species that may be found within YPG.

Taxa	Tier	Common	Scientific
Amphibian	1a	Lowland Leopard Frog	*Rana yavapaiensis*
Amphibian	1b	Sonoran Desert Toad	*Bufo alvarius*
Bird	1a	Sprague's Pipit	*Anthus spragueii*
Bird	1a	Bald Eagle	*Haliaeetus leucocephalus*
Bird	1b	Golden Eagle	*Aquila chrysaetos*
Bird	1b	Western Burrowing Owl	*Athene cunicularia hypugaea*
Bird	1b	Ferruginous Hawk	*Buteo regalis*
Bird	1b	Gilded Flicker	*Colaptes chrysoides*
Bird	1b	Lincoln's Sparrow	*Melospiza lincolnii*
Bird	1b	Gila Woodpecker	*Melanerpes uropygialis*
Bird	1b	Savannah Sparrow	*Passerculus sandwichensis*
Bird	1b	Abert's Towhee	*Melozone aberti*
Bird	1b	Le Conte's Thrasher	*Toxostoma lecontei*
Bird	1b	Pacific Wren	*Troglodytes pacificus*
Bird	1b	Arizona Bell's Vireo	*Vireo bellii arizonae*
Mammal	1b	Harris' Antelope Squirrel	*Ammospermophilus harrisii*
Mammal	1b	Pale Townsend's Big-eared Bat	*Corynorhinus townsendii pallescens*
Mammal	1b	Greater Western Mastiff Bat	*Eumops perotis californicus*
Mammal	1b	Western Red Bat	*Lasiurus blossevillii*
Mammal	1b	California Leaf-nosed Bat	*Macrotus californicus*
Mammal	1b	Cave Myotis	*Myotis velifer*
Mammal	1b	Yuma Myotis	*Myotis yumanensis*
Mammal	1b	Pocketed Free-tailed Bat	*Nyctinomops femorosaccus*
Mammal	1b	Desert Bighorn Sheep	*Ovis canadensis mexicana*
Mammal	1b	Arizona Pocket Mouse	*Perognathus amplus*
Mammal	1b	Little Pocket Mouse	*Perognathus longimembris*
Mammal	1b	Colorado River Cotton Rat	*Sigmodon arizonae plenus*
Mammal	1b	Yuma Hispid Cotton Rat	*Sigmodon hispidus eremicus*
Mammal	1b	Mexican Free-tailed Bat	*Tadarida brasiliensis*
Mammal	1b	Harquahala Southern Pocket Gopher	*Thomomys bottae subsimilis*
Mammal	1b	Kit Fox	*Vulpes macrotis*
Reptile	1a	Sonoran Desert Tortoise	*Gopherus agassizii (Sonoran Population)*
Reptile	1a	Gila Monster	*Heloderma suspectum*
Reptile	1b	Variable Sandsnake	*Chilomeniscus stramineus*
Reptile	1b	Sonoran Collared Lizard	*Crotaphytus nebrius*
Reptile	1b	Sonoran Coralsnake	*Micruroides euryxanthus*
Reptile	1b	Mohave Fringe-toed Lizard	*Uma scoparia*

United States
Department of the Interior
U.S. FISH AND WILDLIFE SERVICE

Southwest Arizona National Wildlife Refuge Complex
9300 East 28th Street
Yuma, Arizona 85365
(928) 783-7861, (928) 783-8611 fax

24 November 2011

Dr. Laura Merrill
Natural Resources Manager
U.S. Army Garrison – Yuma
Environmental Sciences Division
IMWE-YMA-PWE, 301 C Street
Yuma, Arizona 85365-9498

Re: Integrated Natural Resources Management Plan and Environmental Assessment, Coordination Draft

Dear Dr. Merrill:

The Southwest Arizona National Wildlife Refuge Complex (SWAZNWRC) has reviewed the August 29, 2011 U.S. Army Garrison Yuma Proving Ground Coordination Draft of the Integrated natural Resources Management Plan and Environmental Assessment (Plan). We appreciate the opportunity to review and provide comments on the draft Plan. As two National Wildlife Refuges (Kofa and Imperial NWRs), are contiguous neighbors to the U.S. Army Yuma Proving Ground (YPG), we appreciate the coordination, collaboration, and support rendered over the decades regarding natural resources, conservation of wildlife and habitat, and invasive species control and we look forward to partnership opportunities in the future.

Comments:

1.4.5, page 12 – Edit the second bullet under Agreement to the following:
The USFWS has primary regulatory responsibility over migratory birds and species protected under the Endangered Species Act.

1.5.2, page 15 – Edit the second paragraph, and change the last three sentences to the following:
Refuge managers and staff collaborate and partner with YPG to achieve mutually beneficial natural resource enhancements and developments. USFWS operates primarily on appropriated funds as well as partnerships, and provides its own supplies and resources to perform its mission.

3.2 Biological Resources
Due to anthropomorphic activities in the southwest and invasion of invasive species, the ecological integrity of natural resources has been altered and habitat declines have occurred. We

recommend that YPG consider enhancing wildlife habitat value where appropriate as not to interfere with military operations. Additionally, we request that consideration be given to prohibiting motorized vehicles in appropriate washes not used as a through road. Washes are often the most vegetated areas of the arid southwestern deserts and subsequently provide the greatest amount and highest quality of habitat for birds and other wildlife.

3.2.3. Potential Sensitive Animal Species at YPG
Please reference comments submitted by the Arizona Game and Fish Department (AGFD) regarding species' names and spelling as well as comments regarding feral burros and horses. We will not repeat them here. We concur with the list of additional species of concern that may be present on YPG submitted in AGFD comments (to add to Table 3-3, page 36).

Western Yellow Bat paragraph, page 34– consider adding that a western yellow bat was confirmed at Imperial NWR. Please correct latin species name from *ega* to *xanthinus*. Additional species listed on the AGFD Species of Concern list that may occur on YPG include:

-Western red bat (*Lasiurus blossevillii*) – confirmed near Cibola NWR
- Greater western mastiff bat (*Eumops perotis*) – confirmed at Cibola and Imperial NWRs
- Big free-tailed bat (*Nyctinomops macrotis*) – detected acoustically at Imperial NWR
- Mexican free-tailed bat (*Tadarida brasiliensis*) – detected acoustically at Imperial NWR
- Crested caracara (*Caracara cheriway*) – confirmed at Cibola NWR
- Western burrowing owl (*Athene cunicularia*) – confirmed at Cibola NWR and in Yuma, AZ

3.2.6 General Wildlife
Page 40, last paragraph, second+ sentences – Suggest "In 1980, the population on the HMA was estimated at 1,200 (Phillips 1980) and were subsequently reduced. In 1983, surveys indicated a population estimate of 372 burros (BLM 1997).

Mid-paragraph: Suggest editing sentence to: "During hot, dry periods, wild burros concentrate primarily within three miles of perennial water." Citation?

Penultimate sentence: Suggest editing sentence to: "During the cooler months, burros disperse throughout the HMA, including on YPG lands."

Page 42, second paragraph: We concur with AGFD's requested editing of verbage regarding bighorn sheep and lion predation.

Page 43, Invertebrates – Suggest editing third sentence to: "Another study that focused on both native and non-native pollinators, primarily bees, was conducted to determine the importance of their ecological role in the YPG area."

Page 76, citation of Gasin and Schaal 2002, not listed in References.

Page 77, citation of Esque et al. in review, not listed in References.

Page 77, last paragraph, second sentence: Delete "which borders YPG". This has already been established in the document.

Thank you for the opportunity to provide comments this draft Plan. We look forward to future collaboration with you in support of conservation efforts while recognizing the importance of supporting the military mission. As large land owners and neighbors, we have the opportunity to successfully achieve a dual mission for the benefit of future generations. Please contact Brenda Zaun (Brenda_Zaun@fws.gov) or myself if you have any questions.

Sincerely,

Elaine Johnson

Elaine Johnson
Complex Manager
SW AZ National Wildlife Refuge Manager

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Scoping letters were sent December 22, 2011 to the agencies and organinzation listed below and a copy of the letter follows.

Federal Agencies
Bureau of Indian Affairs
    Fort Yuma Agency
Bureau of Land Management
    Yuma District Office
Marine Corps Air Station Yuma
    Environmental Department
Natural Resources Conservation Service
    Yuma Service Center
U.S. Bureau of Reclamation
    Yuma Area Office
U.S. Customs and Border Protection
    Yuma Sector
U.S. Fish and Wildlife Service
    Arizona Ecological Services Field Office
    Kofa National Wildlife Refuge
    Southwest Arizona National Wildlife Refuge Complex
    Imperial National Wildlife Refuge

Local Agencies
City of Yuma
    Mayor's Office
    Community Development
La Paz County
    Community Development
Natural Resources Conservation District
    Wellton-Mohawk
Western Arizona Council of Governments
Yuma Metropolitan Planning Organization
Yuma Chamber of Commerce
    Military Affairs Committee
Yuma County
    Development Services

State Agencies
Arizona Department of Agriculture
    Native Plant Program
Arizona Department of Environmental Quality
    Air Quality Planning Section
    Federal Project Unit
Arizona Department of Transportation
    Planning and Programming
Arizona Game and Fish Department
    Region IV, Yuma Office
    Habitat Program

Native American Tribes
Ak-Chin Indian Community Council
Chemehuevi Indian Tribe
Cocopah Indian Tribe
Colorado River Indian Tribes
Fort McDowell Yavapai Nation,
Fort Mojave Tribal Council
Gila River Indian Community Council
Hopi Tribe
Quechan Indian Tribe
Salt River Pima-Maricopa Indian Community
San Carlos Apache Tribe
Tohono O'Odham Nation
Yavapai-Apache Nation
Yavapai-Prescott Tribe

Private Organizations and Individuals
Arizona Deer Association
Arizona Desert Bighorn Sheep Society
Arizona Wilderness Coalition
Audubon Society
Center for Biological Diversity
Sierra Club, Grand Canyon Chapter
Yuma Valley Rod and Gun Club

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, YUMA
301 C STREET
YUMA AZ 85365-9498

REPLY TO
ATTENTION OF

December 22, 2011

Environmental Sciences Division

[redacted]

Arizona Department of Environmental Quality

[redacted]

Dear [redacted]:

The U. S. Army Yuma Proving Ground (YPG) has initiated an analysis to evaluate the potential impacts on the quality of the natural and human environment resulting from implementation of an updated Integrated Natural Resources Management Plan (INRMP) for Yuma Proving Ground. The updated INRMP is a dynamic document used by YPG to guide and document the conservation of native plant and animal communities and species on the installation for fiscal years 2012 – 2016 while continuing to sustain the military mission.

Army policy and procedures require that the development and implementation of an INRMP be analyzed under the National Environmental Policy Act (NEPA) (32 CFR 651.10), normally as an Environmental Assessment (32 CFR 651.33(h)). In the past, the Army and other agencies have prepared NEPA analysis and documentation for INRMPs after these plans have been developed. Although this approach complies generally with NEPA regulations and policies, it is cumbersome and often results in the inefficient redundancy associated with developing separate documents. The Council of Environmental Quality encourages NEPA documents to be combined with other agency documents, such as INRMPs, to reduce duplication and paperwork so that agencies can focus on the real purpose of the NEPA analysis: making better decisions. YPG has fully integrated the INRMP and its associated NEPA analysis and documentation into a single plan.

YPG invites the public and other stakeholders to provide input that will assist YPG to identify and evaluate potential impacts on the quality of the natural and human environment from implementation of an updated INRMP for the installation. Questions, concerns, or information related to the INRMP or integrated NEPA analysis may be sent to U.S. Army Garrison Yuma Proving Ground, 301 C Street, IMYM-PWE, Yuma, AZ 85365-9498. You may also contact the YPG NEPA Coordinator at ypgnepa@conus.army.mil or (928) 328-2015, or the YPG Natural Resources Program Manager at laura.d.merrill4.civ@mail.mil or (928) 328-6009.

If you would like to receive a copy of the updated INRMP and integrated NEPA documentation, please return the enclosed postage paid request card indicating your preference for an electronic or printed copy of the relevant documentation, and your return address.

Sincerely,

Richard T. Martin
Garrison Manager

Enclosure

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APPENDIX B – FLORA AND FAUNA SPECIES LISTS

Data Sources used for scientific names:

- Plant species - The Jepson Online Interchange California Floristics (http://www.ucjeps.berkeley.edu/interchange.html) except as noted for some species
- Mammal species - Intergrated Taxonomic Information System (http://www.itis.gov)
- Herpetology species - Integrated Taxonomic Information System (http://www.itis.gov)
- Bird - The Birds of North America Online (http://www.bna.birds.cornell.edu/bna)

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YUMA PROVING GROUND FLORA LISTS

Family	Scientific name	Common name
ANNUALS		
Agavaceae	*Hesperocallis undulata*	Desert lily
Aizoaceae	*Sesuvium verrucosum*	Verrucose seapurslane
	Trianthema portulacastrum	Desert horsepurslane
Amaranthaceae	*Amaranthus fimbriatus*	Fringed amaranth
	Amaranthus palmeri	Carelessweed
	Tidestromia lanuginosa	Wooly tidestromia
	Tidestromia oblongifolia	Arizona honeysweet
Apiaceae	*Bowlesia incana*	Hoary bowlesia
	Daucus pusillus	American wild carrot
Asteraceae	*Acourtia wrightii* †	Brownfoot
	Ambrosia psilostachya	Cuman ragweed
	Atrichoseris platyphylla	Parachute plant
	Baccharis emoryi	Emory's baccharis
	Baileya multiradiata	Desert marigold
	Baileya pleniradiata	Woolly desert marigold
	Calycoseris wrightii	White tackstem
	Chaenactis carphoclinia	Pebble pincushion
	Chaenactis stevioides	Esteve's pincushion
	Dicoria canescens	Desert twinbugs
	Erigeron divergens	Spreading fleabane
	Evax verna	Spring pygmy-cudweed
	Geraea canescens	Hairy desert sunflower
	Helianthus annuus	Common sunflower
	Heterotheca subaxillaris	Camphorweed
	Laennecia coulteri	Coulter's horseweed
	Logfia arizonica	Arizona cottonrose
	Malacothrix glabrata	Smooth desert dandelion
	Monoptilon bellioides	Mojave desert star
	Palafoxia arida	Desert spanish needles
	Pectis papposa	Many-bristle chinchweed
	Perityle emoryi	Emory's rocklily
	Prenanthella exigua	Brightwhite
	Psathyrotes ramosissima	Velvet turtleback
	Rafinesquia neomexicana	New Mexico plumeseed
	Senecio mohavensis	Mojave ragwort
	Stephanomeria exigua	White plume wire lettuce

Family	Scientific name	Common name
	Trichoptilium incisum	Yellow dome
	Uropappus lindleyi	Lindley's silverpuffs
Boraginaceae	*Amsinckia menziesii*	Common fiddleneck
	Amsinckia tessellata	Bristly fiddleneck
	Cryptantha angustifolia	Bristlelobe cryptanatha
	Cryptantha holoptera †	Winged catseye
	Cryptantha maritima	Guadalupe catseye
	Cryptantha micrantha	Purpleroot pick-me-not
	Cryptantha pterocarya	Winged pick-me-not
	Lappula occidentalis	Flatspine stickseed
	Nama demissum	Purple mat
	Nama hispidum	Bristly nama
	Pectocarya heterocarpa	Chuckwalla combseed
	Pectocarya platycarpa	Broad-fruit combseed
	Pectocarya recurvata	Curvenut combseed
	Phacelia crenulata	Cleftleaf wildheliotrope
	Phacelia ivesiana	Ives' phacelia
	Phacelia neglecta	Alkali phacelia
	Phacelia rotundifolia	Roundleaf phacelia
	Pholistoma auritum	Desert fiestaflower
	Plagiobothrys jonesii	Mojave popcorn flower
Brassicaceae	*Descurainia pinnata*	Western tansymustard
	Dithyrea californica	California shield-pod
	Draba cuneifolia	Wedgeleaf draba
	Lepidium lasiocarpum	Shaggyfruit pepperweed
	Lesquerella gordonii	Gordon's bladderpod
	Lesquerella sessilis	Sessile bladderpod
	Streptanthella longirostris	Longbeak streptanthella
Campanulaceae	*Nemacladus glanduliferus*	Glandular threadplant
Caryophyllaceae	*Achyronychia cooperi*	Onyxflower
	Silene antirrhina	Sleepy silene
	Spergularia salina	Salt sandspurry
Chenopodiaceae	*Atriplex elegans*	Wheel-scale saltbush
	Chenopodium pratericola	Desert goosefoot
	Monolepis nuttalliana	Nutall's povertyweed
Euphorbiaceae	*Argythamnia neomexicana* †	New Mexico silverbush
	Argythamnia serrata †	Yuma silverbush
	Chamaesyce micromera	Sonoran sandmat
	Chamaesyce pediculifera	Carrizo mountain sandmat

Family	Scientific name	Common name
	Chamaesyce polycarpa	Smallseed sandmat
	Chamaesyce setiloba	Yuma sandmat
	Euphorbia dentata	Toothed spurge
	Euphorbia eriantha	Beetle spurge
	Stillingia spinulosa	Annual toothleaf
	Tragia nepetifolia	Catnip noseburn
	Tragia ramosa	Branched noseburn
Fabaceae	*Dalea mollis*	Soft dalea
	Dalea mollissima	Hairy dalea
	Hoffmannseggia glauca	Hog-potato
	Lotus salsuginosus	Maresfat
	Lotus strigosus	Strigose bird's-foot-trefoil
	Lupinus arizonicus	Arizona lupine
	Lupinus sparsiflorus	Mojave lupine
	Marina parryi	Parry's dalea
	Phaseolus filiformis	Slimjim bean
	Sesbania herbacea	Bigpod sesbani
	Vicia ludoviciana	Louisiana vetch
Fumariaceae	*Corydalis aurea*	Golden corydalis
	Corydalis curvisiliqua †	Curvepod fumewort
Gentianaceae	*Eustoma exaltatum*	Catchfly prairie-gentian
Geraniaceae	*Erodium texanum*	Texas stork's bill
Hydrophyllaceae	*Eucrypta chrysanthemifolia*	Spotted hideseed
	Eucrypta micrantha	Dainty desert hideseed
Lamiaceae	*Hedeoma nana*	False pennyroyal
	Leonurus cardiaca	Common mothwort
	Salvia columbariae	California chia
	Teucrium cubense	Small coastal germander
Loasaceae	*Mentzelia albicaulis*	Whitestem blazing star
	Mentzelia involucrata	Whitebract blazingstar
	Mentzelia pumila	Dwarf mentzelia
Malvaceae	*Eremalche rotundifolia*	Desert fivespot
	Herissantia crispa	Bladdermallow
	Sida rhombifolia	Cuban jute
	Sphaeralcea coulteri	Coulter's globemallow
	Sphaeralcea orcutti	Carrizo creek globemallow
Montiaceae	*Cistanthe ambigua*	Desert pussypaws
Nyctaginaceae	*Abronia villosa*	Desert sand verbena
	Allionia incarnata	Trailing windmills

Family	Scientific name	Common name
	Boerhavia erecta †	Erect spiderling
	Boerhavia triquetra †	Slender spiderling
	Boerhavia wrightii	Largebract spiderling
Onagraceae	*Camissonia boothii*	Shredding suncup
	Camissonia brevipes	Golden suncup
	Camissonia californica	California suncup
	Camissonia cardiophylla	Heartleaf suncup
	Camissonia chamaenerioides	Longcapsule suncup
	Camissonia claviformis	Browneyes
	Camissonia refracta	Narrowleaf suncup
	Gaura mollis	Velvetweed
	Oenothera deltoides	Birdcage evening-primrose
Orobanchaceae	*Orobanche cooperi*	Desert broomrape
	Orobanche ludoviciana	Louisiana broomrape
Papaveraceae	*Argemone polyanthemos* †	Crested pricklypoppy
	Eschscholzia glyptosperma	Desert goldenpoppy
	Eschscholzia minutiflora	Pygmy goldenpoppy
Pedaliaceae	*Proboscidea althaeifolia*	Devil's claw
Plantaginaceae	*Mohavea confertiflora*	Ghostflower
	Plantago ovata	Ovate plantain
Polemoniaceae	*Eriastrum diffusum*	Diffuse eriastrum
	Gilia latifolia	Broadleaf gilia
	Gilia stellata	Star gilia
	Langloisia setosissima	Moth langloisia
	Linanthus bigelovii	Bigelow desert trumpet
	Linanthus jonesii	Jones' linanthus
	Loeseliastrum schottii	Schott's calico
Polygonaceae	*Chorizanthe brevicornu*	Brittle spineflower
	Chorizanthe corrugata	Wrinkled spineflower
	Chorizanthe rigida	Devil's spineflower
	Eriogonum deflexum	Flatcrown buckwheat
	Eriogonum inflatum	Desert trumpet
	Eriogonum reniforme	Kidneyleaf buckwheat
	Eriogonum thomasii	Thomas' buckwheat
	Polygonum argyrocoleon	Silversheath knotweed
Residaceae	*Oligomeris linifolia*	Lineleaf whitepuff
Solanaceae	*Datura discolor*	Desert thornapple
	Nicotiana clevelandii	Cleveland's tobacco
	Nicotiana obtusifolia	Indian tobacco

Family	Scientific name	Common name
	Physalis crassifolia	Thickleaf groundcherry
Urticaceae	*Parietaria floridana*	Florida pellitory
	Parietaria hespera	Rillita pellitory
Zygophyllaceae	*Kallstroemia californica*	California caltrop
Data Source for plant scientific names: The Jepson Online Interchange California Floristics (http://www.ucjeps.berkeley.edu/interchange.html) except as noted. † Data Source United States Department of Agriculture Plants Database (http://www.plants.usda.gov/java/)		
PERENNIALS		
Acanthaceae	*Justicia californica*	Beleperone, Chuparosa
Agavaceae	*Agave deserti*	Desert agave
	Nolina bigelovii	Bigelow nolina
Anacardiaceae	*Rhus trilobata*	Skunkbush sumac
Aristolochiaceae	*Aristolochia watsonii* †	Watson's dutchman's pipe
Asclepiadaceae	*Asclepias albicans*	Whitestem milkweed
	Asclepias subulata	Rush milkweed
	Funastrum cynanchoides	Fringed twinevine
	Funastrum hirtellum	Hairy milkweed
Asteraceae	*Adenophyllum porophylloides*	San Felipe dogweed
	Ambrosia ambrosioides	Canyon ragweed
	Ambrosia dumosa	White bursage
	Ambrosia ilicifolia	Hollyleaf bursage
	Baccharis salicifolia	Mulefat
	Baccharis sarothroides	Desertbroom baccharis
	Bebbia juncea	Rush sweetbush
	Brickellia atractyloides	Spearleaf brickellia
	Brickellia coulteri †	Coulter's brickellbush
	Encelia farinosa	Brittlebush
	Encelia frutescens	Button brittlebush
	Gutierrezia sarothrae	Broom snakeweed
	Hymenoclea salsola	White burrobush
	Machaeranthera pinnatifida	Lacy tansyaster
	Peucephyllum schottii	Schott's pigmycedar
	Pleurocoronis pluriseta	Bush arrowleaf
	Pluchea odorata	Sweetscent
	Pluchea sericea	Arrowweed
	Porophyllum gracile	Slender poreleaf
	Psilostrophe cooperi	Whitestem paperflower
	Stephanomeria pauciflora	Brown plume wire lettuce
	Trixis californica	American threefold

Family	Scientific name	Common name
	Viguiera parishii	Parish's goldeneye
	Xylorhiza tortifolia	Mojave woody-aster
Berberidaceae	*Berberis haematocarpa*	Red-fruited barberry
Bigoniaceae	*Chilopsis linearis*	Desert willow
Boraginaceae	*Heliotropium curassavicum*	Salt heliotrope
	Tiquilia canescens	Woody crinklemat
	Tiquilia palmeri	Palmer's crinklemat
Cactaceae	*Carnegiea gigantea*	Saguaro
	Cylindropuntia acanthocarpa	Buck-horn cholla
	Cylindropuntia bigelovii	Teddybear cholla
	Cylindropuntia echinocarpa	Silver cholla
	Cylindropuntia leptocaulis †	Christmas cactus
	Cylindropuntia ramosissima	Diamond cholla
	Echinocactus horizonthalonius var. nicholii	Nichol's turkshead cactus
	Echinocereus engelmannii	Engelman's hedgehog cactus
	Echinocereus nicholii	Nichol's hedgehog cactus
	Ferocactus cylindraceus	California barrel cactus
	Ferocactus wislizeni †	Candy barrel cactus
	Mammillaria grahamii	Graham's fish hook cactus
	Mammillaria tetrancistra	Common fish-hook cactus
	Opuntia basilaris	Beavertail prickly pear
	Opuntia kunzei	Devil's cholla
	Peniocereus greggii	Night-blooming cereus
	Sclerocactus johnsonii	Johnson's fishook cactus
Capparaceae	*Koeberlinia spinosa*	Spiny all-thorn
Chenopodiaceae	*Atriplex canescens*	Four-winged saltbush
	Atriplex hymenelytra	Desert holly saltbush
	Atriplex lentiformis	Big saltbush
	Atriplex polycarpa	Cattle saltbush
Crossosomataceae	*Crossosoma bigelovii*	Ragged rockflower
Cucurbitaceae	*Brandegea bigelovii*	Desert starvine
	Cucurbita digitata	Fingerleaf gourd
Cuscutaceae	*Cuscuta californica*	Chaparral dodder
Cyperaceae	*Cyperus laevigatus*	Smooth flatsedge
	Eleocharis geniculata	Canada spikesedge
	Schoenoplectus americanus	American bulrush
	Schoenoplectus maritimus	Cosmopolitan bulrush
	Schoenoplectus pungens	Common threesquare
Ephedraceae	*Ephedra trifurca*	Long leaf mormon tea

Family	Scientific name	Common name
	Ephedra viridis	Green mormon tea
Euphorbiaceae	*Argythamnia adenophora* †	Sonoran silverbush
	Argythamnia lanceolata	Narrowleaf silverbush
	Bernardia incana	Horay myrtle-croton
	Croton californicus	California croton
Fabaceae	*Acacia greggii*	Catclaw acacia
	Caesalpinia virgata	Wand holdback
	Calliandra eriophylla	Pink fairyduster
	Dalea neomexicana †	Downy prairie-clover
	Olneya tesota	Ironwood
	Parkinsonia aculeata	Mexican palo verde
	Parkinsonia florida	Blue palo verde
	Parkinsonia microphylla	Yellow palo verd
	Prosopis glandulosa	Honey mesquite
	Prosopis velutina	Velvet mesquite
	Prosopis pubescens	Screwbean mesquite
	Psorothamnus emoryi	Emory dalea
	Psorothamnus schottii	Schott's dalea
	Psorothamnus spinosus	Smoketree
	Senna covesii	Desert senna
Fouquieriaceae	*Fouquieria splendens*	Ocotillo
Krameriaceae	*Krameria erecta*	Range ratany
	Krameria grayi	White ratany
Lamiaceae	*Hyptis emoryi*	Desert lavender
	Salazaria mexicana	Mexican bladdersage
Malpighiaceae	*Janusia gracilis* †	Slender janusia
Malvaceae	*Hibiscus coulteri*	Desert rosemallow
	Hibiscus denudatus	Paleface hibiscus
	Horsfordia alata	Big feltplant
	Horsfordia newberryi	Yellow feltplant
	Sphaeralcea ambigua	Desert globemallow
	Sphaeralcea emoryi	Emory's globemallow
Najadaceae	*Najas marina*	Spiny naiad
Nyctaginaceae	*Mirabilis bigelovii*	Bigelow four o'clock
Oleaceae	*Menodora scabra*	Rough menodora
Picrodendraceae	*Tetracoccus hallii*	Hall's shrubby spurge
Plantaginaceae	*Penstemon pseudospectabilis*	Bearded tounge
Poaceae	*Achnatherum speciosum*	Desert needle grass
	Aristida adscensionis	Sixweeks threeawn

Family	Scientific name	Common name
	Aristida californica	California threeawn
	Aristida purpurea	Purple threeawn
	Aristida purpurea var. parishii	Parish's threeawn
	Aristida ternipes	Spider threeawn
	Bothriochloa barbinodis	Cane bluestem
	Bouteloua aristidoides	Needle grama
	Bouteloua barbata	Sixweek grama
	Bouteloua trifida	Red grama
	Bromus marginatus	Mountain brome
	Chloris virgata	Feather fingergrass
	Dasyochloa pulchella	Low woollygrass
	Eriochloa acuminata	Tapertip cupgrass
	Eriochloa aristata	Bearded cupgrass
	Heteropogon contortus	Tanglehead
	Leptochloa dubia	Green sprangletop
	Leptochloa fusca	Mexican sprangletop
	Leptochloa panicea	Mucronate sprangltop
	Muhlenbergia microsperma	Littleseed muhly
	Muhlenbergia porteri	Porter's muhly
	Panicum hirticaule	Mexican panic grass
	Pleuraphis rigida	Big galleta
	Poa bigelovii	Bigelow bluegrass
	Sporobolus cryptandrus	Sand dropseed
	Tridens eragrostoides	Lovegrass tridens
	Tridens muticus	Rough tridens
	Urochloa fusca †	Browntop signalgrass
	Vulpia microstachys	Pacific fescue
	Vulpia octoflora	Sixweeks fescue
Polygonaceae	*Eriogonum fasciculatum*	California flattop buckwheat
	Eriogonum wrightii	Bastardsage
Pteridaceae	*Cheilanthes parryi*	Parry's lipfern
Ranunculaceae	*Clematis drummondii*	Drummond's clematis
Rhamnaceae	*Colubrina californica*	Las Animas nakedwood
	Condalia globosa	Bitter snakewood
	Ziziphus obtusifolia	Gray-thorn
Rubiaceae	*Galium stellatum*	Starry bedstraw
Ruppiaceae	*Ruppia maritima*	Widgeongrass
Rutaceae	*Thamnosma montana*	Turpentime broom
Salicaceae	*Populus fremontii*	Fremont's cottonwood

Family	Scientific name	Common name
	Salix exigua	Narrow-leaved willow
Simaroubaceae	*Castela emoryi*	Crucifixion thorn
Simmondsiaceae	*Simmondsia chinensis*	Jojoba
Solanaceae	*Lycium andersonii*	Anderson's wolfberry
	Lycium cooperi	Peach thorn
	Lycium fremontii	Fremont's desert-thorn
	Lycium parishii	Parish's desert-thorn
	Physalis lobata	Purple ground cherry
	Solanum elaeagnifolium	Silverleaf nightshade
Sterculiaceae	*Ayenia microphylla* †	Dense ayenia
Typhaceae	*Typha domingensis*	Southern cattail
Verbenaceae	*Aloysia wrightii*	Wright's bee brush
Viscaceae	*Phoradendron californicum*	Desert mistletoe
Zygophyllaceae	*Fagonia laevis*	California fagonia
	Fagonia pachyacantha	Sticky fagonia
	Larrea tridentata	Creosote bush

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† Data Source United States Department of Agriculture Plants Database (http://www.plants.usda.gov/java/)

INTRODUCED AND INVASIVE SPECIES (* Invasive Species)		
Aizoaceae	*Mesembryanthemum crystallinum* *	Common iceplant
Asteraceae	*Conyza bonariensis*	asthmaweed
	Dimorphotheca sinuata	Glandular cape marigold
	Pseudognaphalium luteoalbum	Jersey cudweed
	Sonchus oleraceus	Common sowthistle
Brassicaceae	*Brassica tournefortii* *	Sahara mustard
	Sisymbrium irio	London rocket
Chenopodiaceae	*Chenopodium album*	Lamb's quarters
	Chenopodium murale	Nettleleaf goosefoot
	Salsola kali *	Russian thistle
	Salsola tragus *	Prickly russian thistle
Fabaceae	*Melilotus indicus*	Annual yellow sweetclover
	Parkinsonia aculeate *	Mexican palo verde
Geraniaceae	*Erodium cicutarium*	Red-stemmed stork's bill
Malvaceae	*Malva parviflora*	Cheeseweed mallow
Myrsinaceae	*Anagallis arvensis*	Scarlet pimpernel
Poaceae	*Cynodon dactylon* *	Bermudagrass
	Dactyloctenium aegyptium	Egyptian grass
	Echinochloa crus-galli	Large barnyard grass

Family	Scientific name	Common name
	Echinochloa crus-pavonis	Gulf cockspur grass
	Eragrostis cilianensis	Stinkgrass
	Pennisetum ciliare *	Buffelgrass
	Pennisetum setaceum *	Crimson fountaingrass
	Phalaris minor	Littleseed canarygrass
	Poa annua	Annual bluegrass
	Polypogon monspeliensis	Annual rabbitsfoot grass
	Schismus arabicus *	Arabian schismus
	Schismus barbatus *	Common mediterranean grass
	Hordeum murinum ssp. leporinum	Hare barley
Portulaceaceae	*Portulaca oleracea*	Little hogweed
Tamaricaceae	*Tamarix aphylla and possible hybrids**	Athel tamarisk and possible hybrids
	Tamarix spp. and hybrids*	salt-cedar types (see text)
Zygophyllaceae	*Tribulus terrestris*	Puncturevine

* Invasive Species
Data Source for invasive plant scientific names: The Jepson Online Interchange California Floristics (http://www.ucjeps.berkeley.edu/interchange.html)

YUMA PROVING GROUND FAUNA LISTS

Family	Scientific name	Common name	State status	USFWS status
MAMMALS				
Canidae	*Canis latrans*	Coyote		
	Vulpes macrotis	Kit fox		
	Urocyon cinereoargenteus	Gray fox		
Procyonidae	*Bassariscus astutus*	Ringtail		
	Procyon lotor	Raccoon		
Mustelidae	*Taxidea taxus*	Badger		
Mephitidae	*Spilogale gracilis*	Western spotted skunk		
	Mephitis mephitis	Striped skunk		
Felidae	*Puma concolor*	Mountain lion		
	Lynx rufus	Bobcat		
Cervidae	*Odocoileus hemionus*	Mule Deer		
Bovidae	*Ovis canadensis mexicana*	Desert Bighorn sheep		
Equidae	*Equus caballus*	Horse		
	Equus asinus	Burro		
Soricidae	*Notiosorex crawfordi*	Crawford's desert shrew		
Phyllostomidae	*Macrotus californicus*	California leaf-nosed bat	WSC	
Vespertilionidae	*Myotis yumanensis*	Yuma myotis		
	Myotis velifer	Cave myotis		
	Myotis californicus	California myotis		
	Parastrellus hesperus	Canyon bat		
	Eptesicus fuscus	Big brown bat		
	Lasiurus blossevillii	Western red bat	WSC	
	Lasiurus xanthinus	Western yellow bat	WSC	
	Lasiurus cinereus	Hoary bat		
	Euderma maculatum	Spotted bat	WSC	
	Corynorhinus townsendii	Townsend's big-eared bat		
	Antrozous pallidus	Pallid bat		
Molossidae	*Tadarida brasiliensis*	Brazilian free-tailed bat		
	Nyctinomops femorosaccus	Pocketed free-tailed bat		
	Nyctinomops macrotis	Big free-tailed bat		
	Eumops perotis	Greater western mastiff bat		
Leporidae	*Sylvilagus audubonii*	Desert Cottontail		
	Lepus californicus	Black-tailed jack rabbit		
Sciuridae	*Ammospermophilus harrisii*	Harris' antelope squirrel		
	Spermophilus tereticaudus	Round-tailed ground squirrel		
Geomyidae	*Thomomys bottae*	Botta's pocket gopher		
Heteromyidae	*Perognathus longimembris*	Little pocket mouse		

Family	Scientific name	Common name	State status	USFWS status
	Perognathus amplus	Arizona pocket mouse		
	Chaetodipus baileyi	Bailey's pocket mouse		
	Chaetodipus intermedius	Rock pocket mouse		
	Chaetodipus penicillatus	Desert pocket mouse		
	Dipodomys deserti	Desert kangaroo rat		
	Dipodomys merriami	Merriam's kangaroo rat		
Cricetidae	*Peromyscus eremicus*	Cactus mouse		
	Peromyscus crinitus	Canyon mouse		
	Peromyscus boylii	Brush mouse		
	Peromyscus maniculatus	Deer mouse		
	Onychomys torridus	Southern grasshopper mouse		
	Neotoma albigula	White-throated woodrat		
	Neotoma lepida	Desert woodrat		
Muridae	*Mus musculus**	House mouse		
OTHER POSSIBLE MAMMALS				
Antilocapridae	*Antilocapra americana sonoriensis*	Sonoran pronghorn		Endangered
Vespertilionidae	*Idionycteris phyllotis*	Allen's big-eared bat		
	Myotis ciliolabrum	Western small-footed bat		
	Myotis volans	Long-legged myotis		
	Myotis occultus	Arizona myotis		
	Lasionycteris noctivagans	Silver-haired bat		
Phyllostomidae	*Leptonycteris curasoae yerbabuenae*	Lesser long-nosed bat		Endangered
Sciuridae	*Ammospermophilus leucurus*	White-tailed antelope squirrel		
	Spermophilus variegatus	Rock squirrel		
Cricetidae	*Sigmodon arizonae plenus*	Coloroado River cotton rat		
	Sigmodon hispidus eremicus	Yuma hispid cotton rat		
	Ondatra zibethicus	Muskrat		
Heteromyidae	*Chaetodipus formosus*	Long-tailed pocket mouse		
Erethizontidae	*Erethizon dorsatum*	North American porcupine		
Tayassuidae	*Pecari tajacu*	Collared peccary (javelina)		
Data Source for mammal scientific names: Intergrated Taxonomic Information System (http://www.itis.gov)				
HERPETOLOGY LIST				
Boidae	*Lichanura trivirgata*	Rosy boa		
Bufonidae	*Anaxyrus punctatus*	Red-spotted toad		
	Incilius alvarius	Sonoran desert toad		
Colubridae	*Phyllorhynchus decurtatus*	Spotted leaf-nosed snake		
	Masticophis flagellum	Coachwhip		

Family	Scientific name	Common name	State status	USFWS status
	Salvadora hexalepis	Western patch-nosed snake		
	Lampropeltis getula	Common kingsnake		
	Rhinocheilus lecontei	Long-nosed snake		
	Sonora semiannulata	Ground snake		
	Chionactis occipitalis	Western shovel-nosed snake		
	Hypsiglena chlorophaea	Night snake		
	Arizona elegans	Glossy snake		
	Pituophis catenifer	Gopher snake		
Crotalidae	*Crotalus atrox*	Western diamondback rattlesnake		
	Crotalus mitchellii	Speckled rattlesnake		
	Crotalus cerastes	Sidewinder		
	Crotalus scutulatus	Mohave rattlesnake		
Crotaphytidae	*Crotaphytus bicintores*	Great Basin collard lizard		
Elapidae	*Micruroides euryxanthus*	Western coral snake		
Eublepharidae	*Coleonyx variegatus*	Western banded gecko		
Gekkonidae	*Hemidactylus turcicus**	Mediterranean house gecko		
Helodermatidae	*Heloderma suspectum*	Gila Monster		
Iguanidae	*Dipsosaurus dorsalis*	Desert iguana		
	Sauromalus ater	Common chuckwalla		
Leptotyphlopidae	*Rena humilis*	Western blind snake		
Phrynosomatidae	*Callisaurus draconoides*	Zebra-tailed lizard		
	Uma scoparia	Mojave fringe-toed lizard	WSC	
	Gambelia wislizenii	Long-nosed leopard lizard		
	Sceloporus magister	Desert spiny lizard		
	Uta stansburiana	Side-blotched lizard		
	Urosaurus gracious	Long-tailed brush lizard		
	Urosaurus ornatus	Tree lizard		
	Phrynosoma platyrhinos	Desert horned lizard		
Scaphiopodidae	*Scaphiopus couchii*	Couch's spadefoot toad		
Teiidae	*Aspidoscelis tigris*	Western whiptail		
Testudinidae	*Gopherus agassizii (G. morafkai)*	Sonoran desert tortoise	WSC	Candidate
OTHER POSSIBLE HERP SPECIES				
Ranidae	*Rana yavapaiensis*	Lowland leopard frog	WSC	
Bufonidae	*Anaxyrus cognatus*	Great plains toad		
	Anaxyrus woodhousei	Woodhouse's toad		
Colubridae	*Chilomeniscus cinctus*	Banded sand snake		

Family	Scientific name	Common name	State status	USFWS status
	Chilomeniscus stramineus	Variable sand snake		
	Diadophis punctatus	Ring-necked snake		
	Masticophis taeniatus	Striped whipsnake		
	Thamnophis marcianus	Checkered gater snake		
	Tantilla hobartsmithi	Sothwestern black-headed snake		
	Trimorphodon biscutatus	Western lyre snake		
Crotalidae	*Crotalus molossus*	Black-tailed rattlesnake		
Crotaphytidae	*Crotaphytus nebrius*	Sonoran collared lizard		
Kinosternidae	*Kinosternon sonoriense*	Sonoran mud turtle		
Phrynosomatidae	*Uma notata*	Colorado desert fringe-toed lizard		
	Uma rufopunctata	Yuman desert fringe-toed lizard		
	Phrynosoma solare	Regal horned lizard		
	Phrynosoma mcallii	Flat-tailed horned lizard	WSC	
Xantusiidae	*Xantusa vigilis*	Desert night lizard		

Data Source for herpetology scientific names: Integrated Taxonomic Information System (http://www.itis.gov)

BIRD LIST

Order	Family	Scientific Name	Common Name	Status
Gaviiformes (Loons)	Gaviidae	*Gavia stellata*	Red-throated Loon	v, a
		Gavia pacifica	Pacific Loon	v, a
		Gavia immer	Common Loon	v
Podicipediformes (Grebes)	Podicipedidae	*Tachybaptus dominicus*	Least Grebe	v, a
		Podilymbus podiceps	Pied-billed Grebe	v
		Podiceps auritus	Horned Grebe	v
		Podiceps grisegena	Red-necked Grebe	v, a
		Podiceps nigricollis	Eared Grebe	*
		Aechmophorus occidentalis	Western Grebe	v
		Aechmophorus clarkii	Clark's Grebe	v, a
Procellariiformes (Tubenoses)	Diomedeidae	*Phoebastria immutabilis*	Laysan Albatross	v, a
Pelecaniformes (Pelicans and Allies)	Pelecanidae	*Pelecanus erythrorhynchos*	American White Pelican	v
		Pelecanus occidentalis	Brown Pelican	*, a
Suliformes (Frigates)	Sulidae	*Sula nebouxii*	Blue-footed Booby	v, a
		Sula leucogaster	Brown Booby	v, a
	Phalacrocoracidae	*Phalacrocorax auritus*	Double-crested Cormorant	v
		Phalacrocorax brasilianus	Neotropic Cormorant	v, a
	Fregatidae	*Fregata magnificens*	Magnificent Frigatebird	v, a
Ciconiiformes (Herons, Ibises, Storks and Allies)	Ardeidae	*Botaurus lentiginosus*	American Bittern	v
		Ixobrychus exilis	Least Bittern	v
		Ardea herodias	Great Blue Heron	*

Order	Family	Scientific Name	Common Name	Status
		Ardea alba	Great Egret	v
		Egretta thula	Snowy Egret	v
		Egretta caerulea	Little Blue Heron	v, a
		Egretta tricolor	Tricolored Heron	v, a
		Egretta rufescens	Reddish Egret	v, a
		Bubulcus ibis	Cattle Egret	*
		Nycticorax nycticorax	Black-crowned Night-Heron	*
		Nyctanassa violacea	Yellow-crowned Night-Heron	v, a
	Threskiornithidae	*Eudocimus albus*	White Ibis	v, a
		Plegadis chihi	White-faced Ibis	v
		Platalea ajaja	Roseate Spoonbill	v, a
	Ciconiidae	*Mycteria americana*	Wood Stork	v
Anseriformes (Swans, Geese and Ducks)	Anatidae	*Dendrocygna bicolor*	Fulvous Whistling-Duck	v
		Cygnus columbianus	Tundra Swan	v
		Anser albifrons	Greater White-fronted Goose	v
		Chen caerulescens	Snow Goose	v
		Chen rossii	Ross's Goose	v
		Branta bernicla	Brant	v, a
		Branta canadensis	Canada Goose	v
		Aix sponsa	Wood Duck	v
		Anas crecca	Green-winged Teal	*
		Anas platyrhynchos	Mallard	*
		Anas acuta	Northern Pintail	*
		Anas discors	Blue-winged Teal	*
		Anas cyanoptera	Cinnamon Teal	*
		Anas clypeata	Northern Shoveler	*
		Anas strepera	Gadwall	*
		Anas americana	American Wigeon	*
		Aythya valisineria	Canvasback	v
		Aythya americana	Redhead	v
		Aythya collaris	Ring-necked Duck	v
		Aythya marila	Greater Scaup	v
		Aythya affinis	Lesser Scaup	v
		Clangula hyemalis	Long-tailed Duck	v, a
		Melanitta perspicillata	Surf Scoter	v, a
		Melanitta fusca	White-winged Scoter	v, a
		Bucephala clangula	Common Goldeneye	v
		Bucephala islandica	Barrow's Goldeneye	v, a
		Bucephala albeola	Bufflehead	v
		Lophodytes cucullatus	Hooded Merganser	v
		Mergus merganser	Common Merganser	v
		Mergus serrator	Red-breasted Merganser	v
		Oxyura jamaicensis	Ruddy Duck	*
Falconiformes (Diurnal Birds of Prey)	Cathartidae	*Cathartes aura*	Turkey Vulture	*, b
	Accipitridae	*Elanus leucurus*	White-tailed Kite	v, a
		Haliaeetus leucocephalus	Bald Eagle	*
		Circus cyaneus	Northern Harrier	*

Order	Family	Scientific Name	Common Name	Status
		Accipiter striatus	Sharp-shinned Hawk	*
		Accipiter cooperii	Cooper's Hawk	*
		Accipiter gentilis	Northern Goshawk	v
		Parabuteo unicinctus	Harris's Hawk	v
		Buteo lineatus	Red-Shouldered Hawk	v, a
		Buteo swainsoni	Swainson's Hawk	v
		Buteo albonotatus	Zone-tailed Hawk	*
		Buteo jamaicensis	Red-tailed Hawk	*, b
		Buteo regalis	Ferruginous Hawk	v
		Buteo lagopus	Rough-legged Hawk	*
		Aquila chrysaetos	Golden Eagle	*
	Falconidae	*Falco sparverius*	American Kestrel	*, b
		Falco columbarius	Merlin	*
		Falco mexicanus	Prairie Falcon	*
		Falco peregrinus	Peregrine Falcon	*
Accipitriformes (Accipiter Birds)	Pandionidae	*Pandion haliaetus*	Osprey	*
Galliformes (Gallinaceous Birds)	Phasianidae	*Phasianus colchicus*	Ring-necked Pheasant	v
	Odontophoridae	*Callipepla gambelii*	Gambel's Quail	*, b
Gruiformes (Cranes, Rails and Allies)	Rallidae	*Laterallus jamaicensis*	Black Rail	v
		Rallus longirostris	Clapper Rail	v
		Rallus limicola	Virginia Rail	v
		Porzana carolina	Sora	v
		Gallinula chloropus	Common Moorhen	v
		Fulica americana	American Coot	v
	Gruidae	*Grus canadensis*	Sandhill Crane	*
Charadriiformes (Shorebirds, Gulls, Auks and Allies)	Charadriidae	*Pluvialis squatarola*	Black-bellied Plover	v
		Pluvialis dominica	American Golden-Plover	v, a
		Charadrius alexandrinus	Snowy Plover	v
		Charadrius semipalmatus	Semipalmated Plover	v
		Charadrius vociferus	Killdeer	*, b
		Charadrius montanus	Mountain Plover	v
	Recurvirostridae	*Himantopus mexicanus*	Black-necked Stilt	*, b
		Recurvirostra americana	American Avocet	*
	Scolopacidae	*Tringa melanoleuca*	Greater Yellowlegs	*
		Tringa flavipes	Lesser Yellowlegs	v
		Tringa solitaria	Solitary Sandpiper	v
		Tringa semipalmata	Willet	v
		Actitis macularius	Spotted Sandpiper	*
		Bartramia longicauda	Upland Sandpiper	v, a
		Numenius phaeopus	Whimbrel	v, a
		Numenius americanus	Long-billed Curlew	*
		Limosa fedoa	Marbled Godwit	v
		Calidris canutus	Red Knot	v, a
		Calidris alba	Sanderling	v
		Calidris mauri	Western Sandpiper	v
		Calidris minutilla	Least Sandpiper	v

Order	Family	Scientific Name	Common Name	Status
		Calidris bairdii	Baird's Sandpiper	v, a
		Calidris melanotos	Pectoral Sandpiper	v
		Calidris alpina	Dunlin	v
		Limnodromus scolopaceus	Long-billed Dowitcher	v
		Gallinago gallinago	Common Snipe	v
		Phalaropus tricolor	Wilson's Phalarope	*
		Phalaropus lobatus	Red-necked Phalarope	v
		Phalaropus fulicarius	Red Phalarope	v, a
	Stercorariidae	*Stercorarius parasiticus*	Parasitic Jaeger	v, a
	Laridae	*Leucophaeus pipixcan*	Franklin's Gull	v
		Chroicocephalus philadelphia	Bonaparte's Gull	v
		Larus heermanni	Heermann's Gull	v, a
		Larus delawarensis	Ring-billed Gull	*
		Larus californicus	California Gull	*
		Larus argentatus	Herring Gull	v, a
		Larus glaucescens	Glaucous-winged Gull	v, a
		Xema sabini	Sabine's Gull	v, a
		Gelochelidon nilotica	Gull-billed Tern	v, a
		Hydroprogne caspia	Caspian Tern	v
		Sterna hirundo	Common Tern	v
		Sterna forsteri	Forster's Tern	v
		Sternula antillarum	Least Tern	v, a
		Chlidonias niger	Black Tern	v
		Rynchops niger	Black Skimmer	v, a
Columbiformes (Pigeons and Doves)	Columbidae	*Columba livia*	Rock Pigeon	*
		Patagioenas fasciata	Band-tailed Pigeon	v, a
		Zenaida asiatica	White-winged Dove	*, b
		Zenaida macroura	Mourning Dove	*, b
		Columbina inca	Inca Dove	*
		Columbina passerina	Common Ground-Dove	*, b
Cuculiformes (Cuckoos and Allies)	Cuculidae	*Coccyzus americanus*	Yellow-billed Cuckoo	v, a
		Geococcyx californianus	Greater Roadrunner	*, b
Strigiformes (Owls)	Tytonidae	*Tyto alba*	Barn Owl	*, b
	Strigidae	*Otus flammeolus*	Flammulated Owl	v, a
		Megascops kennicottii	Western Screech-Owl	*, b
		Bubo virginianus	Great Horned Owl	*, b
		Micrathene whitneyi	Elf Owl	*, b
		Athene cunicularia	Burrowing Owl	*
		Asio otus	Long-eared Owl	*
		Asio flammeus	Short-eared Owl	v
		Aegolius acadicus	Northern Saw-whet Owl	v
Caprimulgiformes (Goatsuckers and Allies)	Caprimulgidae	*Chordeiles acutipennis*	Lesser Nighthawk	*, b
		Phalaenoptilus nuttallii	Common Poorwill	*
Apodiformes	Apodidae	*Chaetura vauxi*	Vaux's Swift	*

Order	Family	Scientific Name	Common Name	Status
(Swifts and Hummingbirds)		*Aeronautes saxatalis*	White-throated swift	*, b
	Trochilidae	*Archilochus alexandri*	Black-chinned Hummingbird	*
		Calypte anna	Anna's Hummingbird	v
		Calypte costae	Costa's Hummingbird	*, b
		Stellula calliope	Calliope Hummingbird	v
		Selasphorus rufus	Rufous Hummingbird	*
Coraciiformes (Kingfishers and Allies)	Alcedinidae	*Megaceryle alcyon*	Belted Kingfisher	*
Piciformes (Woodpeckers and Allies)	Picidae	*Melanerpes lewis*	Lewis's Woodpecker	v
		Melanerpes uropygialis	Gila Woodpecker	*, b
		Sphyrapicus nuchalis	Red-naped Sapsucker	v
		Picoides scalaris	Ladder-backed Woodpecker	*, b
		Colaptes auratus	Northern Flicker	*, b
		Colaptes chrysoides	Gilded Flicker	*, b
Passeriformes (Perching Birds)	Tyrannidae	*Contopus cooperi*	Olive-sided Flycatcher	*
		Contopus sordidulus	Western Wood-Pewee	*
		Empidonax traillii	Willow Flycatcher	v
		Empidonax hammondii	Hammond's Flycatcher	*
		Empidonax oberholseri	Dusky Flycatcher	v
		Empidonax wrightii	Gray Flycatcher	*
		Empidonax difficilis	Pacific-slope Flycatcher	*
		Empidonax occidentalis	Cordilleran Flycatcher	v
		Sayornis nigricans	Black Phoebe	*
		Sayornis phoebe	Eastern Phoebe	v, a
		Sayornis saya	Say's Phoebe	*, b
		Pyrocephalus rubinus	Vermilion Flycatcher	*
		Myiarchus cinerascens	Ash-throated Flycatcher	*, b
		Myiarchus tyrannulus	Brown-crested Flycatcher	*
		Tyrannus melancholicus	Tropical Kingbird	v, a
		Tyrannus vociferans	Cassin's Kingbird	*, b
		Tyrannus verticalis	Western Kingbird	*, b
	Laniidae	*Lanius ludovicianus*	Loggerhead Shrike	*, b
	Vireonidae	*Vireo bellii arizonae*	Bell's Vireo	*
		Vireo vicinior	Gray Vireo	v
		Vireo cassinii	Cassin's Vireo	*
		Vireo huttoni	Hutton's Vireo	v, a
		Vireo gilvus	Warbling Vireo	*
		Vireo olivaceus	Red-eyed Vireo	v, a
	Corvidae	*Cyanocitta stelleri*	Steller's Jay	v, a
		Aphelocoma californica	Western Scrub-Jay	v
		Gymnorhinus cyanocephalus	Pinyon Jay	v
		Nucifraga columbiana	Clark's Nutcracker	v, a
		Corvus corax	Common Raven	*
	Alaudidae	*Eremophila alpestris*	Horned Lark	*, b
	Hirundindae	*Progne subis*	Purple Martin	*, b
		Tachycineta bicolor	Tree Swallow	*

Order	Family	Scientific Name	Common Name	Status
		Tachycineta thalassina	Violet-green Swallow	*
		Stelgidopteryx serripennis	Northern Rough-winged Swallow	*, b
		Riparia riparia	Bank Swallow	v
		Petrochelidon pyrrhonota	Cliff Swallow	*
		Hirundo rustica	Barn Swallow	*
	Remizidae	*Auriparus flaviceps*	Verdin	*, b
	Sittidae	*Sitta canadensis*	Red-breasted Nuthatch	v
		Sitta carolinensis	White-breasted Nuthatch	v, a
	Certhiidae	*Certhia americana*	Brown Creeper	v
	Troglodytidae	*Campylorhynchus brunneicapillus*	Cactus Wren	*, b
		Salpinctes obsoletus	Rock Wren	*, b
		Catherpes mexicanus	Canyon Wren	*, b
		Thryomanes bewickii	Bewick's Wren	v
		Troglodytes aedon	House Wren	*
		Cistothorus palustris	Marsh Wren	v
	Regulidae	*Regulus satrapa*	Golden-crowned Kinglet	v, a
		Regulus calendula	Ruby-crowned Kinglet	*
	Sylviidae	*Polioptila caerulea*	Blue-gray Gnatcatcher	*
		Polioptila melanura	Black-tailed Gnatcatcher	*, b
	Turdidae	*Sialia mexicana*	Western Bluebird	v
		Sialia currucoides	Mountain Bluebird	v
		Myadestes townsendi	Townsend's Solitaire	v
		Catharus ustulatus	Swainson's Thrush	*
		Catharus guttatus	Hermit Thrush	*
		Turdus migratorius	American Robin	v
		Ixoreus naevius	Varied Thrush	v, a
	Mimidae	*Dumetella carolinensis*	Gray Catbird	v
		Mimus polyglottos	Northern Mockingbird	*, b
		Oreoscoptes montanus	Sage Thrasher	*
		Toxostoma rufum	Brown Thrasher	*, b
		Toxostoma bendirei	Bendire's Thrasher	*, b
		Toxostoma curvirostre	Curve-billed Thrasher	v
		Toxostoma crissale	Crissal Thrasher	*, b
		Toxostoma lecontei	Le Conte's Thrasher	*, b
	Sturnidae	*Sturnus vulgaris*	European Starling	*, b
	Motacillidae	*Anthus rubescens*	American Pipit	v
		Anthus spragueii	Sprague's Pipit	v, a
	Bombycillidae	*Bombycilla cedrorum*	Cedar Waxwing	*
	Ptilogonatidae	*Phainopepla nitens*	Phainopepla	*, b
	Parulidae	*Vermivora chrysoptera*	Golden-winged Warbler	*, a
		Oreothlypis celata	Orange-crowned Warbler	*
		Oreothlypis ruficapilla	Nashville Warbler	*
		Oreothlypis virginiae	Virginia's Warbler	*
		Oreothlypis luciae	Lucy's Warbler	*, b
		Parula americana	Northern Parula	v, a

Order	Family	Scientific Name	Common Name	Status
		Dendroica petechia	Yellow Warbler	*
		Dendroica coronata	Yellow-rumped Warbler	*
		Dendroica nigrescens	Black-throated Gray Warbler	*
		Dendroica townsendi	Townsend's Warbler	*
		Dendroica occidentalis	Hermit Warbler	*
		Dendroica palmarum	Palm Warbler	v, a
		Dendroica striata	Blackpoll Warbler	v, a
		Setophaga ruticilla	American Redstart	v
		Protonotaria citrea	Prothonotary Warbler	v, a
		Parkesia noveboracensis	Northern Waterthrush	v, a
		Oporornis tolmiei	MacGillivray's Warbler	*
		Geothlypis trichas	Common Yellowthroat	*
		Wilsonia pusilla	Wilson's Warbler	*
		Myioborus pictus	Painted Redstart	v, a
		Icteria virens	Yellow-breasted Chat	v
	Cardinalidae	*Piranga flava*	Hepatic Tanager	v, a
		Piranga rubra	Summer Tanager	v
		Piranga ludoviciana	Western Tanager	*
	Emberizidae	*Pipilo chlorurus*	Green-tailed Towhee	*
		Pipilo maculatus	Spotted Towhee	v
		Melozone fuscus	Canyon Towhee	v
		Melozone aberti	Abert's Towhee	*, b
		Spizella passerina	Chipping Sparrow	*
		Spizella breweri	Brewer's Sparrow	*
		Spizella atrogularis	Black-chinned Sparrow	*
		Pooecetes gramineus	Vesper Sparrow	v
		Chondestes grammacus	Lark Sparrow	v
		Amphispiza bilineata	Black-throated Sparrow	v, b
		Amphispiza belli	Sage Sparrow	v
		Calamospiza melanocorys	Lark Bunting	v
		Passerculus sandwichensis	Savannah Sparrow	v
		Ammodramus savannarum	Grasshopper Sparrow	v
		Passerella iliaca	Fox Sparrow	v
		Melospiza melodia	Song Sparrow	v
		Melospiza lincolnii	Lincoln's Sparrow	v
		Melospiza georgiana	Swamp Sparrow	v, a
		Zonotrichia albicollis	White-throated Sparrow	v, a
		Zonotrichia atricapilla	Golden-crowned Sparrow	v
		Zonotrichia leucophrys	White-crowned Sparrow	*
		Junco hyemalis	Dark-eyed Junco	v
	Calcaridae	*Calcarius lapponicus*	Lapland Longspur	v
		Calcarius ornatus	Chestnut-collared Longspur	v
	Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal	v
		Cardinalis sinuatus	Pyrrhuloxia	v
		Pheucticus melanocephalus	Black-headed Grosbeak	*

Order	Family	Scientific Name	Common Name	Status
		Passerina caerulea	Blue Grosbeak	v
		Passerina amoena	Lazuli Bunting	*
		Passerina cyanea	Indigo Bunting	v
	Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird	*, b
		Sturnella neglecta	Western Meadowlark	*
		Xanthocephalus xanthocephalus	Yellow-headed Blackbird	v
		Euphagus carolinus	Rusty Blackbird	v
		Euphagus cyanocephalus	Brewer's Blackbird	v
		Quiscalus mexicanus	Great-tailed Grackle	*, b
		Molothrus ater	Brown-headed Cowbird	*, b
		Icterus cucullatus	Hooded Oriole	v
		Icterus galbula	Baltimore Oriole	*
		Icterus parisorum	Scott's Oriole	*, b
	Fringillidae	*Carpodacus purpureus*	Purple Finch	v
		Carpodacus cassinii	Cassin's Finch	v
		Carpodacus mexicanus	House Finch	*, b
		Spinus pinus	Pine Siskin	v
		Spinus psaltria	Lesser Goldfinch	*
		Spinus lawrencei	Lawrence's Goldfinch	v
		Spinus tristis	American Goldfinch	v
	Passeridae	*Passer domesticus*	House Sparrow	*, b
Data Source for bird scientific names: The Birds of North America Online (http://www.bna.birds.cornell.edu/bna)				

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FINDING OF NO SIGNIFICANT IMPACT

TITLE OF ACTION: *Implementation of the U.S. Army Yuma Proving Ground Integrated Natural Resources Management Plan.*

BACKGROUND: The YPG INRMP was developed to ensure sound land management, environmental stewardship, and compliance with all relevant laws, regulations, and applicable state and federal management plans, are consider during mission and project planning activities and that no net loss of mission capacity results from meeting natural resources stewardship responsibilities. Previously, separate NEPA analysis was completed for implementation of the INRMP and subsequent updates. This update incorporates the NEPA analysis fully into the INRMP as a single document.

The INRMP portion of the document provides management measures that have been developed by considering various alternatives for meeting natural resource-specific goals and objectives established for the installation. The INRMP also provides the rationale for why certain management measures have been selected for implementation and others have not, based on analysis of screening criteria specific to the natural resource. The EA portions of the document "carries forward" the INRMP's selected management measures as the Proposed Action (preferred alternative).

The INRMP and integrated NEPA analysis does not address the potential impacts of the military mission and support activities on the quality of the natural and human environment. Rather, it identifies and evaluates potential impacts related to the natural resources management measures developed for implementation.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES:
Since other management alternatives were considered and eliminated from further consideration in developing the INRMP, the EA addresses only the proposed action and the no action alternative (maintain current management measures and practices).

Proposed Action - The Proposed Action (preferred alternative) is to implement the policies, projects and programs (Chapter 4), and management goals and objectives (Chapter 5) presented in this INRMP. The Proposed Action focuses on management of the ecosystems rather than individual species, and because ecosystems cross boundaries, partnerships are required to achieve shared goals. The Proposed Action would apply ecosystem management to sustain the ecological health and integrity of the natural desert ecosystems required for multipurpose military testing and training. Ecosystem management considers the public needs and desires in management decisions and applies best available knowledge and technologies to implement adaptive management techniques.

No Action Alternative - With the no action alternative, current management policies remain in effect and existing natural resources management at YPG persists as the status quo. The 1997 INRMP would be used and YPG will continue to coordinate with U.S. Fish and Wildlife Service (USFWS), and Arizona Game and Fish Department (AGFD), Bureau of Land Management

(BLM), other federal and state agencies, Non-governmental organizations, and the public to guide natural resources management decisions within its boundaries. However, without an updated INRMP YPG's management, data collection, and reporting could be inconsistent with partners and result in inadequate or ineffective management of natural resources. Under the no action alternative, YPG would be out of compliance with the Sikes Act requirements to maintain an updated INRMP and DoD's goal of management of natural resources from an ecosystem approach would not be met.

SUMMARY OF ENVIRONMENTAL EFFECTS: A broad range of valued environmental components or resources were considered for analysis of potential effects related to implementation of the INRMP. The analysis found that no significant impacts to environmental resources would result from the implementation of the updated INRMP at Yuma Proving Ground.

Cumulative impacts of the proposed action were also analyzed to evaluate the potential for incremental effects on a regional scale. The effects of implementing an updated INRMP, and required updates, were spatially considered along with the required implementation of INRMPs from other federal and state agencies, including the MCAS-Yuma and the Barry M. Goldwater Range, the recently completed resource management plan for the BLM Yuma Field Office (U.S. Department of Interior January 2010) as well as natural resource management plans for other state and federal agencies.

Implementation of the INRMP would result in a comprehensive environmental strategy for YPG that represents compliance, restoration, prevention, and conservation; improves the existing management approach for natural resources on the installation; and meets legal and policy requirements consistent with national natural resources management philosophies. Implementation would be expected to improve existing environmental conditions on the installation.

Growth and development on lands adjacent to the installation is not expected to occur on a large scale, as most of the land is already under in Federal management and used for ecosystem purposes such as wildlife refuges. Therefore, adverse cumulative effects are not expected to result when added to the effects of activities associated with the proposed management measures contained in the INRMP.

The overall management of natural resources on the installation and other state or federally managed land in the region will benefit from the collaborative and coordinated approach proposed under the updated INRMP. Therefore, the effects of the implementation are expected to result in minor incremental benefit toward the management and preservation of natural resources within the ecoregion.

COORDINATION AND PUBLIC PARTICIPATION: The Natural Resource Management on Military Lands Act of 1960 (16 U.S.C. 670 *et seq.*), commonly known as the Sikes Act, as amended according to the Sikes Act Improvement Act of 1997 requires that INRMPs be prepared in cooperation with the USFWS, and the head of the state fish and wildlife agency for the State in which the military installation concerned is located. This updated INRMP for YPG

has been prepared in accordance with that requirement and reflects the mutual agreement of the AGFD and the USFWS for the conservation, protection, and management of fish and wildlife resources located on the installation and for which YPG has a management responsibility.

Scoping letters were also sent to Federal, State, tribal, and local agencies; and to public stakeholders on December 22, 2011 inviting comments and input on the NEPA and natural resources management elements of the INRMP. No substantive responses or comments were received prior to completion of the INRMP/EA.

CONCLUSION: The YPG Environmental Sciences Division has evaluated the potential environmental impacts associated with the proposed action and alternatives considered. Based on the NEPA analysis presented in the updated *Integrated Natural Resources Management Plan for U.S Army Yuma Proving Ground* (USAYPG 2012) there would be no significant environmental impacts associated with implementing the natural resources management process, procedures, and projects as presented in the updated plan. Therefore, preparation of an Environmental Impact Statement is not required and a FNSI is the appropriate decision document to conclude the NEPA process related to implementation of an updated INRMP for Yuma Proving Ground.

I have read and concur with the findings and analyses documented in the Environmental Assessment and hereby approve the Finding of No Significant Impact.

SIGNATURE PENDING CONCLUSION OF PUBLIC REVIEW

RICHARD T. MARTIN Date
Garrison Manager