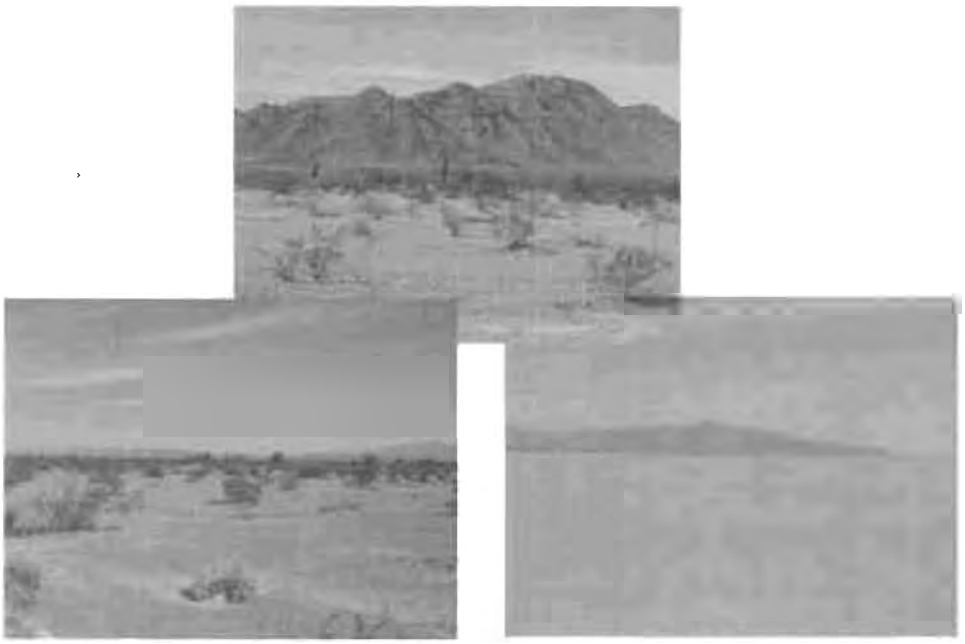
ENVIRONMENTAL ASSESSMENT

La Posa Drop Zone Proposed Expansion and De-Brushing Area Yuma Proving Ground



U.S. Army Garrison
Yuma Proving Ground

April 2008

Environmental Assessment

La Posa Drop Zone Proposed Expansion and De-Brushing Area

Prepared For:

U.S. Army Garrison
Yuma Proving Ground

April 2008

FINDING OF NO SIGNIFICANT IMPACT
LA POSA DROP ZONE PROPOSED DE-BRUSHING AREA
YUMA PROVING GROUND, ARIZONA

RESPONSIBLE AGENCY: United States Army Garrison (USAG) Yuma Proving Ground (YPG).

COOPERATING AGENCY: National Aeronautics and Space Administration (NASA), Washington D.C.

POINT OF CONTACT: Mr. Charles F. Ruenp, Chief, Environmental Sciences, US Army Garrison, Yuma, Environmental Sciences, IMWE-YMA-PWE, 301 C Street, Bldg 303, Yuma, Arizona 85365-9498

REPORT DESIGNATION: Environmental Assessment (EA)

BACKGROUND: The primary mission of YPG is to provide the best flexible, responsive, innovative, and diverse set of testing capabilities and services in a desert environment in order to meet the current and future needs of the U.S. Armed Forces. Materials tested at YPG include medium artillery, target acquisition equipment and armament, vehicles, munitions, personnel, supply parachute systems, and specialized equipment. These types of activities require large open areas with associated safety and buffer zones.

Defense system development requires consistent updating and modernization in order to meet the current and future needs of the U.S. military and civilian agencies. YPG is committed to its continuing development of modern, specialized test facilities with advanced data acquisition capabilities.

DESCRIPTION OF THE PROPOSED ACTION

The overall purpose of the project is to expand and de-brush the existing La Posa Drop Zone (DZ) by approximately 1,050 acres to support the continued military readiness requirements and the upcoming NASA Constellation Program, which includes the Ares I Crew Launch Vehicle (CLV), Ares V Heavy Lift Launch Vehicle (HLLV) and the Orion Crew Exploration Vehicle (CEV). The expansion of the La Posa DZ would support the Constellation Program by accommodating drop testing of the parachute systems that would help recover the first stage of the Ares I CLV and the Orion CEV. The main, and largest, parachute is 150 feet in diameter, weighs 2,000 pounds, and is the largest parachute of its kind that has been tested. It is expected to be clustered as the program progresses (a total of three main parachutes per airdrop). The two secondary chutes are each 40 feet in diameter. The expansion area must be cleared of brush to ensure that the highly specialized and expensive test parachutes are not snagged or damaged by the vegetation during drop testing and recovery operations. There is not a current drop zone available in the U.S. that meets the size, topographical, and meteorological requirements to support drop testing of the NASA equipment. The La Posa DZ is also needed to support numerous military readiness exercises which will occur concurrently with the Constellation Program. The proposed action will support both military and NASA activities.

ALTERNATIVES TO PROPOSED ACTION

As required by the National Environmental Policy Act (NEPA), YPG will also consider taking no action. By taking no action, the La Posa DZ would remain unchanged and YPG would continue to use the DZ in its current condition, where large-scale drops are not possible. Under the no action alternative, YPG would be unable to support increased military readiness requirements and the NASA program.

Several locations, both within and outside of YPG, were considered as drop zones for this mission. However, given the large area required to accommodate parachutes for NASA's Orion CEV and Ares I CLV, as well as topographical and meteorological restraints, these locations did not meet the criteria and were eliminated from further analysis.

SUMMARY OF FINDINGS OF THE PROPOSED ACTION

Air Quality. Short-term fugitive dust (PM_{10}) emissions would occur from de-brushing activities and from vehicle use on dirt roads during that activity and during recovery activities following air drop operations. These emissions, while moderate in duration, would be mitigated through standard dust minimization practices (i.e., spraying water) and through schedule coordination based on meteorological conditions.

Aesthetics. The proposed expanded area of the La Posa DZ is not immediately adjacent to Cibola Lake Road but may be partially visible to the general public from some spots along the road. No new roads or structures would be constructed as part of this expansion. The only change in visual resource is the removal of current vegetation from the expansion area, which would be localized yet long-term (and minor).

Biological Resources. Implementation of the Proposed Action would result in disturbance of wildlife, vegetation, and habitat from vegetation clearing and increased air drop activity in the project area, and the associated increased vehicular traffic and human presence. Overall, the clearing of vegetation under the Proposed Action would have a long-term and localized impact to a broadly occurring resource, thereby resulting in a minor impact to vegetation communities in the area. Adverse impacts to biological resources as a result of implementation of the Proposed Action can be minimized through mitigation and would include the following:

- Management of biological resources under the Integrated Natural Resources Management Plan (INRMP).
- Adherence to wildlife and conservation management practices to ensure that the habitat necessary for all or part of the life cycle of a species is not lost and that the ecological processes are not damaged to the extent that YPG biodiversity is impaired or ecosystems are no longer sustainable.
- Limitation of areas that are cleared of all vegetation to the extent of the Proposed Action area.
- Development of a separate mitigation plan if any State-listed sensitive species are discovered during construction activities.
- Procedures outlined in the Migratory Bird Treaty Act and National Defense Authorization Act will be followed for the protection or mitigation of impacts to migratory birds.
- Implementation of standard salvage and relocation protocol for plants listed under the Arizona Native Plant Law that may be impacted by the expansion of the La Posa Drop Zone.
- Salvage and relocation of woody debris to other parts of YPG to enhance migratory and gallinaceous bird habitat.

Cultural Resources. The entire proposed project area (1,050 acre parcel west and adjacent to the existing La Posa DZ) has been surveyed for cultural resources and no new archaeological sites were discovered. Therefore, no cultural resources eligible for the National Register of Historic Places are known to exist in the proposed project area and the Proposed Action would have no impact on cultural resources.

Geology and Soils. Ground disturbance from de-brushing and vehicle use in expanded areas of the La Posa DZ could result in accelerated soil erosion. However, soils within the proposed project area have been previously disturbed from use of the existing La Posa DZ. It is expected that the existing environmental programs at YPG and proposed mitigation measures would reduce the potential impacts of the proposed project on soils, which would be localized but long term (minor).

Health and Safety. The Proposed Action is consistent with other de-brushing activities that have previously occurred within the current boundaries of the La Posa DZ and would not result in an increased potential for impacts to worker safety at the Proposed Action work-site. Because standard safety requirements would be

followed, no additional impacts would result from project implementation. YPG has standard operating procedures (SOPs) in place for Range Operations (YP-YTRO-P1000) and Air Delivery Operations (YP-YTAP-P-3001). No additional mitigations are required.

Land Use. The Proposed Action would not degrade the land to a degree that it affects any existing land use. There are no known activities currently planned in the vicinity that would be affected and the Proposed Action would not affect off-post land. Although public hunting is allowed adjacent to the proposed project area, the area is currently closed to hunting activities. No new closures to hunting areas would occur, and public hunting would not be impacted under the Proposed Action or the no action alternative. In some instances, bird hunting opportunities may be enhanced by transplanting woody debris from the project site to areas that are open to hunting. Implementation of the Proposed Action is aligned with the intended land use and is determined to be consistent with YPG management goals.

Noise. Although there would be a short-term increase in noise generated from de-brushing activities under the Proposed Action, there are no known noise sensitive receptors in the project area. Therefore, there would be negligible noise impacts.

Transportation, Utilities, and Infrastructure. Access to the project area is provided via U.S. Highway 95 and Cibola Lake Road, an existing maintained gravel/dirt road. Temporary closure to Cibola Lake Road currently occurs during active drop operations at the La Posa DZ. This practice would also be instituted during military and NASA test-operations that may occur if the Proposed Action is implemented. Vehicles, including transportation of a crane for use during recovery operations, would also travel these roads during de-brushing and during air drop operations. The impacts to transportation, utilities, and infrastructure under the Proposed Action would therefore be negligible.

Socioeconomics. Short-term adverse impacts would not result in disproportionately high and adverse effects to minority and low income populations. Expenditures associated with project activities under the Proposed Action would have a short-term beneficial impact on the local economy and would be evenly distributed within the region, thereby not disproportionately affecting a single population.

Water Resources. Ground disturbance resulting from de-brushing and from the use of the expanded La Posa DZ could result in accelerated erosion and sedimentation. Sediment could enter surface water in the form of stormwater runoff; however the spatial separation between the proposed project area and the Colorado River, along with the scarcity of rainfall precludes transport of sediment to this surface water body. Due to the extreme depth to groundwater and the high evaporation rate for the area, no impact to groundwater is anticipated.

SUMMARY OF CUMULATIVE IMPACTS

The cumulative impact of implementing this action along with other past, present, or future projects in the Region of Influence were assessed in the attached EA and no significant cumulative impacts were identified.

SUMMARY OF FINDINGS FOR THE NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no additional adverse impacts beyond the current impacts of range operations and the environmental and natural resource management at the YPG.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED PROJECT

Most known impacts resulting from implementation of the Proposed Action would be mitigated through project planning and design measures, consultation with appropriate agencies, and the use of Best Management Practices. Therefore, most potential adverse impacts would be avoided, and those that could not be avoided would not result in a significant impact to the environment. Unavoidable environmental impacts that would occur as a result of the Proposed Action would include the release of minimal amounts of

pollutants into the atmosphere; minor impacts on aesthetics, biological resources, geology and soils, and beneficial impacts on socioeconomics.

The EA determined that no significant impacts would occur as a result of the construction, operation, and maintenance of an expanded drop zone area adjacent to the existing La Posa DZ at the YPG. Therefore, preparation of an EIS is not required.

Carol L. Coleman
Garrison Manager

4.15.08
Date:

COVER SHEET

Responsible Agency: United States Army Garrison (USAG) Yuma Proving Ground (YPG).

Cooperating Agency: National Aeronautics and Space Administration; Washington, DC

Proposed Action: Expansion of the existing La Posa Drop Zone (DZ) by approximately 1,050 acres to support YPG's ongoing test mission.

Point of Contact: Mr. Charles F. Ruerup, Chief, Environmental Sciences, US Army Garrison, Yuma, Environmental Sciences, IMWE-YMA-PWE, 301 C Street, Bldg 303, Yuma, Arizona 85365-9498

Report Designation: Environmental Assessment (EA)

Abstract: The USAG Yuma Proving Ground proposes to expand the existing La Posa Drop Zone (DZ) by approximately 1,050 acres to support YPG's ongoing test mission and parameters, which includes a future specialized parachute drop testing program.

The proposed 1,050-acre project area is located west of U.S. Highway 95 and is bordered to the east by the existing La Posa DZ and to the west by the Trigo Mountains. The overall purpose of the project is to expand and de-brush the existing DZ to support future military readiness requirements and the National Aeronautic and Space Administration's (NASA) Constellation Program, which includes the Ares I Crew Launch Vehicle (CLV), Ares V Heavy Lift Launch Vehicle (HLLV) and the Orion Crew Exploration Vehicle (CEV). The expansion of the La Posa DZ would support the Constellation Program by accommodating drop testing of the parachute systems that will help recover the first stage of the Ares I CLV and the Orion CEV. The expansion area must be cleared of brush to ensure that the highly specialized and expensive test parachutes are not snagged or damaged by the vegetation during drop testing and recovery operations.

As required by NEPA, the USAG Yuma Proving Ground will also consider taking no action. By taking no action, the La Posa DZ would remain unchanged and the USAG Yuma Proving Ground would continue to use the DZ in its current condition. All alternative strategies developed for the expansion of the La Posa DZ, including the No-Action Alternative, will be assessed in the EA.

The following resources were identified for study in the EA: air quality, aesthetics, biological resources, cultural resources, general public safety and health, land use, noise, socioeconomics, geology and soils, transportation, and water resources.

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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
agl	above ground level
APE	Area of Potential Effects
APP	Aquifer Protection Permit
AQCR	Air Quality Control Region
AR	Army Regulation
AZPDES	Arizona Pollutant Discharge Elimination System
bgs	below ground surface
BLM	Bureau of Land Management
BMGR	Barry M. Goldwater Range
BMP	Best Management Practice
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CEQ	Council on Environmental Quality
CEV	Crew Exploration Vehicle
CFR	Code of Federal Regulations
CLV	Crew Launch Vehicle
COC	Community of Comparison
COE	U.S. Army Corps of Engineers
CWA	Clean Water Act
dB	decibel
DNL	day-night average sound level
DZ	Drop Zone
EA	Environmental Assessment
EAC	Early Action Compact
ECUT	Electronic Common Use Test
EIS	Environmental Impact Statement
ENMP	Environmental Noise Management Program
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
ft	feet
GPS	global positioning system
HLLV	Heavy Lift Launch Vehicle
ICP	Integrated Contingency Plan
ICUZ	Installation Compatible Use Zone
ID	Interdisciplinary Team
INRMP	Integrated Natural Resources Management Plan

ACRONYMS AND ABBREVIATIONS (CONT)

ITAM	Integrated Training Area Management
km^2	square kilometers
KTM	Kineto Tracking Mount
lbs	pounds
LUPZ	land use planning zone
MCAS	Marine Corps Air Station
mg/m^3	milligrams per cubic meter
mi^2	square miles
mph	miles per hour
msl	mean seal level
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NEAP	Natural Event Action Plan
NEPA	National Environmental Policy Act
NET	National Emission Trends
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
OSHA	Occupational Safety and Health Administration
PM_{10}	particulate matter equal to or less than 10 micrometers in aerodynamic diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RTLA	Range and Training Land Assessment
RWEIS	Range Wide Environmental Impact Statement
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SPCCP	Spill Prevention Control and Countermeasure Plan
SPL	sound pressure level
sq ft	square feet
SWPPP	Storm Water Pollution Prevention Plan
TCP	Traditional Cultural Properties
TFW	Tactical Fighter Wing
tpy	tons per year
TSP	total suspended particulate

ACRONYMS AND ABBREVIATIONS (CONT)

$\mu g/m^3$	micrograms per cubic meter
UAV	Unmanned Aerial Vehicle
USAF	United States Air Force
USAG	United States Army Garrison
USC	United States Code
USCB	United States Census Bureau
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
UST	underground storage tank
UXO	unexploded ordnance
VOC	volatile organic compound
WRCC	Western Regional Climate Center
YPG	Yuma Proving Ground

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CHAPTER 1
PURPOSE OF AND NEED FOR ACTION

The United States Army Garrison (USAG) Yuma Proving Ground (YPG), located in southwest Arizona (Figure 1), is the Army's primary location for testing and evaluation of air cargo delivery of military equipment and personnel in a desert environment. The YPG Aviation and Air Delivery Systems Division proposes to expand the existing La Posa Drop Zone (DZ) to support YPG's ongoing test mission and parameters, which includes a future specialized parachute drop testing program for the National Aeronautic and Space Administration's (NASA) Constellation Program. NASA is a cooperating agency for this EA. The proposed 1,050-acre project area is located in the northwest portion of the YPG, known as the Cibola Region.

YPG completed a *Range Wide Environmental Impact Statement* (RWEIS) in 2001. This Environmental Assessment (EA) is tiered from the RWEIS (U.S. Army Yuma Proving Ground [YPG] 2001a) and has been prepared to support the decision making process pursuant to the requirements of the National Environmental Policy Act (NEPA) and Army Regulation (AR) 200-2 (32 Code of Federal Regulations [CFR], Part 651). This EA addresses the Proposed Action, reasonable alternatives to the Proposed Action, and site specific information and potential impacts on environmental resources associated with the implementation of the La Posa DZ project.

The Constellation Program is scheduled to be completed in phases over several decades, and a Constellation Programmatic Environmental Impact Statement (PEIS) Notice of Intent was published in September 2006. The anticipated completion date of the PEIS is no later than February 2008. However, in order to meet the aggressive schedule necessary to develop the Constellation Program in time to succeed the Space Shuttle program, planning for drop testing of the parachute systems was initiated prior to completion of the PEIS. Specifically, NASA proposes to conduct drop testing of the parachute systems for Orion and the Ares I at Yuma Proving Ground in the La Posa Drop Zone. If not begun early, the drop testing of the parachute systems and, subsequently, the overall schedule of the Constellation Program would be delayed.

1.1 BACKGROUND

The primary mission of YPG is to provide the best flexible, responsive, innovative, and diverse set of testing capabilities and services in a desert environment in order to meet the current and future needs of the U.S. Armed Forces. Materials tested by YPG include medium artillery, target acquisition equipment and armament, vehicles, munitions, personnel, supply parachute systems, and specialized equipment. These types of activities require large open areas with associated safety and buffer zones. YPG encompasses approximately 3,380 square kilometers (km^2) (1,309 square miles) of land and consists of three primary geographic regions: Cibola, Kofa, and Laguna.

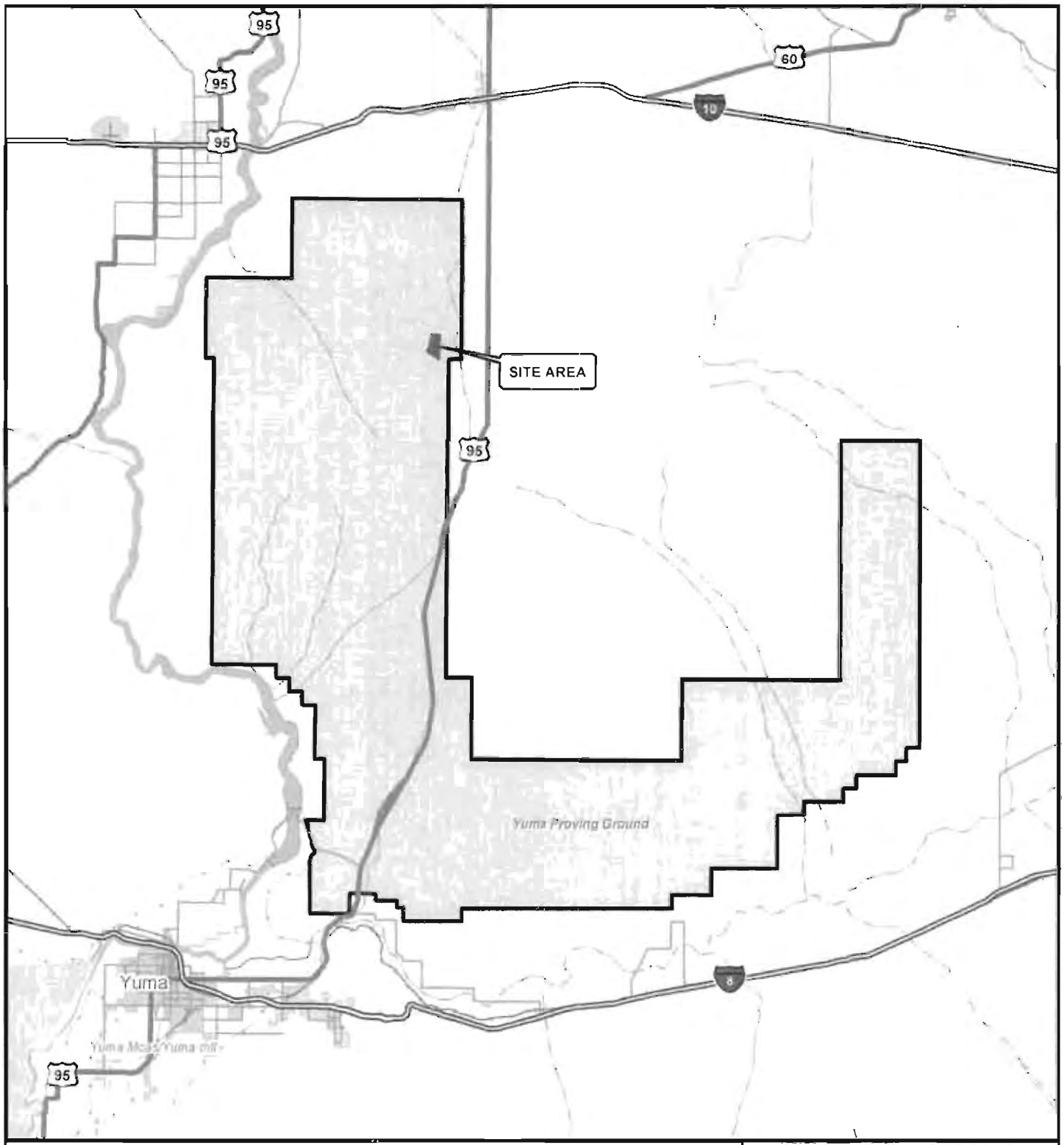
The La Posa DZ is approximately 4.5 miles in length and can accommodate drop point approaches from either the south or the north end of the DZ. Drop zones are designated areas that are used by military aircrews to conduct cargo and personnel airdrop operations (Stewart

2001 *in* YPG 2007a). A drop zone is required to provide airlift aircraft, such as the C-130 and C-17 transport aircraft, with designated areas to practice deployment of airdrops or, as in the case at YPG, to test equipment associated with airdrops.

Current use of the La Posa DZ includes personnel and equipment drops ranging in size from soda bottle size items to large vehicles (up to 42,000 pounds [lbs]). Drops occur at altitudes predominantly at 1,200 feet above ground level (agl) (or 2,500 feet above mean sea level [msl]). Recently (since April 2007), the drop schedule has been approximately 1 "drop week" per month. One drop week involves multiple aircraft and up to 75 operations per day. Drop week schedule is typically Monday through Thursday, but can be extended to include Friday and Saturday as well, if needed. Most drops create a 40-foot long footprint. Current parachute sizes range in diameter from 12 inches to 160 feet.

1.2 LOCATION AND SETTING

As shown in Figure 2, the proposed project area is located west of U.S. Highway 95 and is bordered to the east by the existing La Posa DZ and to the west by the Trigo Mountains. The southwest Arizona region is characterized by expansive plains and mountainous terrain consisting of sparse Sonoran Desert habitat.



0 10 20

SCALE IN MILES

LEGEND

PROPOSED ACTION AREA

INSTALLATION BOUNDARY

SOURCE: ESRI STREETMAP USA, 2005

N

WESTON SOLUTIONS

FIGURE 1
SITE VICINITY MAP
YUMA PROVING GROUND
YUMA, ARIZONA

DATE	PROJECT NO	SCALE
DEC 2007	03686.536.004.4000	AS SHOWN

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LEGEND

- ROADS
- PROPOSED ACTION AREA
- DROP ZONES
- NO BRUSH CLEARANCE
- INSTALLATION BOUNDARY

SOURCE: YUMA PROVING GROUNDS

N

0 0.5 1

SCALE IN MILES

WESTON SOLUTIONS

FIGURE 1
SITE VICINITY MAP
YUMA PROVING GROUNDS
YUMA, ARIZONA

DATE	PROJECT NO	SCALE
MAR 2008	03886.536.004.7000	AS SHOWN

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1.3 PURPOSE OF THE PROPOSED ACTION

Defense system development requires consistent updating and modernization in order to meet the current and future needs of the U.S. military and civilian agencies. YPG is committed to its continuing development of modern, specialized test facilities with advanced data acquisition capabilities. The purpose of the Proposed Action is to support YPG's overall mission of providing premier testing facilities for the changing needs of U.S. Armed Forces and other federal agencies.

1.4 NEED FOR THE PROPOSED ACTION

The expansion of the La Posa DZ would support future military readiness requirements and the NASA Constellation Program, which includes the Ares I Crew Launch Vehicle (CLV), Ares V Heavy Lift Launch Vehicle (HLLV) and the Orion Crew Exploration Vehicle (CEV). The Proposed Action is needed by the Constellation Program to support drop testing of the parachute systems that help recover the first stage of the Ares I CLV and the Orion CEV.

The Missions of NASA's Constellation Program are as follows:

- Replacement of the Space Shuttle (expected to be retired in 2010) for continued support of the International Space Station
- Return of astronauts to the moon and establishment of a lunar outpost
- Preparation for Mars expedition

The Orion CEV weighs between 18,000 and 25,000 lbs and is approximately 16 feet in diameter. The Ares I CLV test article weighs approximately 90,000 lbs. These items would be dropped from a U.S. Air Force C-17 cargo airplane from approximately 16,500 feet agl. Dropping over 60,000 lbs in a single package is rare because of the limited military need to airdrop that much weight and the limited capability of the currently fielded airdrop hardware (maximum fielded equipment limitation is 60,000 lbs). The drop tests for the Orion CEV would be conducted using a full-scale weight, and sub-scale size version of the crew module. However, in order to meet the cargo capacity and cargo bay dimensions of the C-17 airplane, scaled models of the Ares I CLV would be used for these drop tests. The weight of the Orion CEV would be to scale for this airdrop testing, but not the height because the C-17 does not have adequate vertical clearance.

The parachute systems for the Orion CEV and Ares I CLV are multi-staged, consisting of primary and secondary parachute systems. The main, and largest, parachute is 150 feet in diameter and weighs 2,000 pounds. The main parachute is the largest chute of its kind that has been tested and is expected to be clustered as the program progresses (a total of three main parachutes per airdrop). The two secondary chutes are each 40 feet in diameter. All parachutes will be recovered as they are fragile and expensive. The Proposed Action would support the preservation and recovery of these highly specialized parachutes.

1.5 SCOPING

Informal scoping was conducted and the appropriate agencies and interested parties, including Indian Tribes were contacted by mail. Chapter 6 of this EA lists the agencies, interested parties, and/or individuals that were contacted. Issues identified during scoping, relevant to the project were addressed by either project design or mitigation. However, no significant issues were raised with the proposed project.

1.6 DECISION FRAMEWORK

The USAG YPG staff will review the EA and determine whether the project would result in significant environmental impacts, as defined by 40 CFR 1508.27. If the project results in significant environmental impacts, an Environmental Impact Statement (EIS) will be prepared. If no significant impacts are identified, a Finding of No Significant Impact (FONSI) will be signed, approving the alternative selected. 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 implementation of mitigation measures.

CHAPTER 2
ALTERNATIVES INCLUDING THE PROPOSED ACTION

The Interdisciplinary Team (ID Team), composed of members of the Test Officer Aviation and Air Delivery Systems Division and the USAG-Yuma Environmental Sciences Division, developed alternatives to the Proposed Action, which responded to the purpose and need and addressed key issues that were identified during the scoping process. This chapter describes the Proposed Action and No-Action Alternative. Alternatives considered, but eliminated from the detailed study are also addressed.

2.1 ALTERNATIVE DEVELOPMENT

The ID Team considered all of the issues revealed during scoping and adjusted the Proposed Action to resolve those issues. In some cases, this was addressed by adding mitigation to the project and in other cases the design of the project was modified. The alternatives considered in the Proposed Action were based on three criteria. To be considered, the alternatives should:

1) Reduce or avoid significant effects or "impacts" of the Proposed Action
2) Not adversely affect other existing capabilities of YPG
3) Provide a representative test environment for the current theater of operations

2.2 ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM DETAILED STUDY

The size of the proposed drop zone is determined by the size of the items to be tested, which currently ranges from soda bottles to large vehicles, but may increase to include rocket boosters in the future. The location of the drop zone must be on relatively flat terrain, with sparse vegetation and have relatively low wind conditions. Infrastructure required specifically for parachute performance tracking includes Kineto Tracking Mounts (KTM), which record azimuth and elevation to calculate rate of decent.

Several locations, both within and outside of YPG, were considered as drop zones for this mission. However, given the large area required to accommodate parachutes for NASA's Orion CEV and Ares I CLV, as well as the other conditions mentioned above, these locations did not meet the criteria. These other sites, as well as the reasons for their elimination from further study, are listed below:

1) **Other locations within YPG** – Other drop zones located within YPG are too small, have population and altitude restrictions that would not allow this type of drop, and are used heavily by other YPG programs.
2) **Mojave Desert** – The large washes and trees and the uneven terrain of the Mojave Desert do not fulfill the identified drop zone requirements.
3) **Edwards Air Force Base** – Meteorological conditions at Edwards do not meet the required conditions. Wind velocities typically exceed the 6-knot wind restriction.

4) **U.S. Army Fort Irwin** – This Army base is not available because all of the useable terrain is reserved for support of the National Training Center.

5) **U.S. Army White Sands Missile Range** – This area has conflicting mission requirements that would not allow a drop zone.

6) **Naval Air Weapons Station China Lake** – This area is too windy and there are scheduling conflicts.

7) **U.S. Army Fort Bragg** – This area is too small and too populated to accommodate a drop zone.

8) **Barry M. Goldwater Air Force Range (BMGR)** – This area does not have the appropriate infrastructure in place to accommodate instrumentation requirements. In addition, the BMGR has conflicting missions.

2.3 ALTERNATIVES CONSIDERED

Two alternatives were considered and evaluated during the analysis process based on the parameters required to accomplish the test mission.

2.3.1 Proposed Action

The Proposed Action, expansion of the La Posa DZ, is the preferred alternative because it would support YPG's overall mission of providing adequate testing facilities that satisfy the changing needs of the Armed Forces and other federal agencies. Specifically, the implementation of the Proposed Action would fulfill the need for a drop zone area sufficient to accommodate current NASA testing needs and increase the availability of suitable drop zones for military readiness activities. The Proposed Action would support NASA's Constellation Program by accommodating drop testing of the parachute systems that help recover the first stage of the Ares I CLV and the Orion CEV.

The Orion CEV weighs between 18,000 and 25,000 lbs and is approximately 16 feet in diameter. The Ares I CLV test article weighs approximately 90,000 lbs. These items would be dropped from a U.S. Air Force C-17 cargo airplane from approximately 16,500 feet agl. Dropping over 60,000 lbs in a single package is rare because of the limited military need to airdrop that much weight and the limited capability of the currently fielded airdrop hardware (maximum fielded equipment limitation is 60,000 lbs). The drop tests for the Orion CEV would be conducted using a full-scale weight, and sub-scale size version of the crew module. However, in order to meet the cargo capacity and cargo bay dimensions of the C-17 airplane, scaled models of the Ares I CLV would be used for these drop tests. The weight of the Orion CEV would be to scale for this airdrop testing, but not the height because the C-17 does not have adequate vertical clearance.

The parachute systems for the Orion CEV and Ares I CLV are multi-staged, consisting of primary and secondary parachute systems. The main, and largest, parachute is 150 feet in diameter and weighs 2,000 pounds. The main parachute is the largest chute of its kind that has been tested and is expected to be clustered as the program progresses (a total of three main parachutes per airdrop). The two secondary chutes are each 40 feet in diameter. All parachutes

will be recovered as they are fragile and expensive. The Proposed Action would support the preservation and recovery of these highly specialized parachutes.

Expansion of the La Posa DZ area was chosen as the Proposed Action because of the availability of appropriate terrain as well as the fact that the DZ has the required radar, global positioning system (GPS) tracking, and fiber optics capabilities in place. The expansion area must be cleared of brush to ensure that the highly specialized and expensive test parachutes are not snagged or damaged by the vegetation during drop testing and recovery operations. A portion of the La Posa DZ has been previously cleared to accommodate other missions. Vegetation clearing took place in 2005 and again in November 2007. Brush is currently removed by dragging a chain over the vegetation to pull up roots; however, larger items may require a chain-saw followed by stump removal. This is the most economical approach to de-brush an area of this size. Pesticides will not be used to facilitate or accomplish de-brushing.

Construction of buildings or other structures would not be required. An existing road provides vehicle access to the La Posa DZ for recovery of airdrops. A crane that can lift up to 120,000 lbs will be required to recover some dropped equipment. The current road system is sufficient to provide needed access to the area. No additional roads would be required as part of the Proposed Action.

The proposed schedule for NASA airdrops is as follows: Three drops are scheduled for fiscal year 2008, three drops in fiscal year 2009, and ten drops in fiscal year 2010. The La Posa DZ would continue to support other military drop testing missions in addition to the NASA drops.

2.3.2 No-Action Alternative

The No-Action Alternative considers the current scenario at YPG, where large-scale drops are not possible at the La Posa DZ. Parachute drop testing critical to the success of NASA's next generation launch vehicle system, the Ares I, would not be conducted and YPG would loose this important test capability. Impedance of NASA's crew module testing program could consequently adversely impact related programs at the Marshall Space Flight Center, Johnson Space Center, and Kennedy Space Center.

If the Proposed Action is not constructed, a suitable test area for the airdrop of the NASA Ares I module would not be available at YPG. The existing La Posa DZ does not meet the areal requirements for such testing. The lack of this capability would result in the loss of opportunities to test and evaluate large scale airdrops as a means to support NASA space programs as well as large-scale military drops. This alternative does not support the mission of YPG to provide premier facilities for developmental and operational testing.

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CHAPTER 3
AFFECTED ENVIRONMENT

3.1 AIR QUALITY

This section discusses the existing air quality and climate for the proposed project area and surrounding region. The proposed project area lies entirely within La Paz County but borders the western edge of Yuma County. The region of influence (ROI) for this resource encompasses portions of Yuma County and La Paz County.

3.1.1 Climate and Meteorology

YPG is located in the Sonoran Desert, a low-elevation, hot, and arid desert. Clear skies, low relative humidity, slight rainfall, and large, daily temperature variations characterize the climate. Average annual precipitation is 3.74 inches, most of which falls in August/September and December through February (Western Regional Climate Center [WRCC] 2007). The arid condition is responsible for one of the main air pollution problems in the region, fugitive dust.

Winds come mainly from the west during the summer and from the north in the late fall and winter months. Surface winds are generally light with average velocities of 4 to 6 miles per hour (mph). Peak gusts average 16 mph in the winter months and 22 mph in the summer. Winds are light at night, rapidly increasing just after sunrise. The prevailing direction is from the north-northwest from late autumn until early spring. Sand and dust storms can occur during any month and frequently reduce visibility to 3 to 5 miles, but are generally in short duration (YPG 1997).

3.1.2 Regulatory Setting

Under authority of the Clean Air Act (CAA), the Environmental Protection Agency (EPA) has promulgated primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), ozone, sulfur dioxide, and lead. Primary standards are adopted to protect public health (i.e., the health of "sensitive" populations such as asthmatics, children, and the elderly). Secondary standards are adopted to protect public welfare (i.e., protection against decreased visibility, damage to animals, crops, vegetation, and buildings).

Title I of the CAA gives each State the responsibility to develop and administer air quality programs in their state. The Arizona Department of Environmental Quality (ADEQ) administers the air quality program for the State of Arizona.

3.1.3 Existing Air Quality Within the Project Area

The EPA classifies the air quality within an Air Quality Control Region (AQCR) according to whether the region meets federal primary and secondary air quality standards. An AQCR or portion of an AQCR may be classified as attainment, nonattainment, or unclassified with regard to the air quality standards for each of the six criteria pollutants. An area is considered an attainment area for only those criteria pollutants for which the national standards are being met.

"Nonattainment" describes a condition in which standards for one or more of the six pollutants are not being met in an area. "Unclassified" indicates that air quality in the area cannot be classified and the area is treated as attainment. An area may have all three classifications for different criteria pollutants.

Air quality within the ROI is in attainment for five of the six criteria pollutants. Only PM_{10} is in nonattainment in a portion of the ROI. The Proposed Action may affect PM_{10} and therefore this criteria pollutant is analyzed.

3.1.3.1 Particulate Matter

The primary air pollutant of concern in Yuma County is PM_{10}. PM_{10} is defined as particulate matter that has an aerodynamic mean particle size of 10 microns in diameter or less. It is mostly composed of dust particles, sulfate, and nitrates. PM_{10} is a byproduct of fuel combustion and wind erosion of soil and unpaved roads, and is directly emitted into the atmosphere through these processes.

The Yuma area was designated as a moderate PM_{10} nonattainment area under the 1990 Clean Air Act Amendments (CAAA). Only a small portion of the southwest corner of YPG (south of Barranca Road) lies within the Nonattainment Area; however, the proposed project may produce PM_{10} emissions that could affect the Yuma PM_{10} planning area depending on prevailing wind conditions. The proposed project area is approximately 40 miles northeast of the Nonattainment Area boundary.

3.2 AESTHETICS

Aesthetics generally involve visual resources, which are defined as the natural and man-made features that give a particular area its aesthetic quality. These features form the overall impression that an observer receives of an area or its landscape character. Topography, landforms, vegetation, bodies of water, manmade features, and the degree of panoramic view available are considered characteristics of an area if they are inherent to the structure and function of the landscape. The ROI for this resource is the North Cibola Region.

3.2.1 Existing Landscape Character

YPG is characterized by rugged mountains, broad alluvial plains, and sparse desert vegetation. The North Cibola Region, where the proposed project is located, contains several major landforms that are considered visually sensitive, such as the Needle Eye, Mojave Peak, and the La Posa Dunes, all of which lie to the south of the proposed project area.

The closest of the three major landforms to the proposed action area, the La Posa Dunes are 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 Western whiptail lizard (YPG 2001a).

In addition, washes that flow into the Colorado River are major topographic features within the Cibola Region. They have been found to be rich in wildlife. Important areas of special interest

in the Cibola Region include the Mojave, Gould, Indian, McAllister, and Yuma Washes. None of these washes are near the Proposed Action site.

3.3 BIOLOGICAL RESOURCES

This section describes existing conditions of biological resources within the ROI including vegetation, wildlife, special status species, and feral animals. The ROI includes the approximately 1,050 acre parcel of land that is the proposed project area and extends, as applicable, outside this area according to species migration and habitat usage. This description will serve as the baseline for the evaluation of the alternatives.

The biological resources found within the ROI are adapted to the extreme daily temperatures and limited precipitation of a desert ecosystem. Wildlife species vary by habitat. Many wildlife species are active only after dark (nocturnal), when temperatures are cooler.

The Army manages biological resources according to environmental law and Army regulations. Management of natural resources on YPG is outlined in the installation Integrated Natural Resources Management Plan (INRMP) (YPG 1997). The INRMP manages Army properties with the intent of conserving and protecting the natural environment to the extent possible within the constraints of the Army mission. Arizona Game and Fish Department (AGFD) shares responsibility for general wildlife management, while U.S. Fish and Wildlife Service (USFWS) is responsible for the Endangered Species Act (ESA) and migratory birds.

All of YPG is designated for military use. A variety of military equipment, methods, and systems are tested in the Cibola Region (YPG 2001a). However, important wildlife habitats such as wildlife watering sites are considered during the planning and execution of military activities, and avoided to the extent practicable. Unavoidable impacts are minimized or mitigated, as determined through compliance with the NEPA (40 CFR 1500-1508) (YPG 1997).

3.3.1 Vegetation

The extreme aridity of the Sonoran Desert characterizes the types of vegetation that persist in this region. The region is depicted by open plains predominantly covered sparsely with drought-tolerant trees, shrubs, grasses, and cacti. The ROI is located within the Lowland Sonoran Desert scrub community where vegetation is dominated by low, open stands of creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) with occasional cacti. Smaller areas that have low, undrained and salt-affected soils commonly are dominated by saltbush, acacia, and mesquites (AGFD 2006).

Notable vegetation in the ROI includes mesquite bosques (also known as mesquite thickets). These thickets are relatively small areas (i.e., ranging from 0.5 to 3.0 acres in size) of dense vegetation characterized by a closed canopy of mesquite trees (average height about 10 feet) with an understory of grasses (e.g., Galletta grass [*Pleuraphis rigida*]), shrubs (e.g., Anderson wolfberry [*Lycium andersonii*], globemallow [*Sphaeralcea ambigua*], and catclaw acacia [*Acacia greggii*]), and forbs (e.g., *Dalea* spp. [prarie clover]). Washes typically run thorough these thickets. The mesquite bosques in the proposed project area are not typical bosques, as they are found in low energy wash areas without cut banks or riparian vegetation (Hoon 2008).

These plant species were identified from two site visits (the 2007 Weston site visit and the December 19, 2007 site visit by YPG biologists), the Yuma Proving Ground's Perennial Plant List (YPG 2001b), and the Annual Wildflowers Plant List (YPG 2001c). The plant species either observed or likely found within the ROI (i.e., found in the Lowland Sonoran Desertscrub community) are shown in the table below (Table 2). Many of the plant species observed within the project area are on the Arizona Native Plant List as protected species (AZDA 2006 and YPG 2007b).

Table 1 Plant Species Likely Found Within the ROI.

Scientific Name	Common Name	Level Of Protection[1]	Life Form
Acacia greggii	catclaw acacia	None	Tree
Ambrosia dumosa	white bursage/burrobush	None	Native shrub
Argemone polyanthemos	Crested pricklepoppy	None	Annual forb
Bebbia juncea	sweetbush/Chuckwalla's delight	None	Native shrub
Carnegia gigantea	saguaro	"Highly Safeguarded"	Native cactus
Castela empryi	crucifixion thorn	"Salvage Restricted"	Shrub
Chamaesyce micromera	Sonoran sandmat/desert spurge	None	Annual native forb
Dalea spp.	Dalea/prairie clover	None	Perennial native forb
Encelia farinosa	white brittlebush/goldenhills	None	Native shrub
Fagonia pachyacantha	sticky fagonia/fagonbush	None	Native shrub
Fouquieria splendens	ocotillo	"Salvage Restricted"	Native shrub
Larrea tridentate	creosote bush	None	Native shrub
Lycium andersonii	Anderson wolfberry	None	Shrub
Lycium fremontii	Fremont's desertthorn	None	Shrub
Lycium parishii	Parish's desertthorn	None	Shrub
Muhlenbergia porteri	bush mulhy	None	Grass
Olneya tesotaa	desert ironwood	"Salvage Assessed"	Native tree
Opuntia ramosissima	diamond cholla/branched pencil cholla	"Salvage Restricted"	Native cactus
Parkinsonia florida (Benth. ex A. Gray) S. Watson	blue palo verde	"Salvage Assessed" (listed as *Cercidium floridum* Benth.)	Native tree
Parkinsonia microphylla (Torr.)	yellow palo verde	"Salvage Assessed" (listed as *Cercidium microphyllum* (Torr.) Rose & Johnst.)	Native tree
Pleuraphis rigida	big galletta	None	Native grass
Plantago ovata	desert Indianwheat	None	Annual native forb

Scientific Name	Common Name	Level Of Protection[1]	Life Form
Prosopis glandulosa Torr. *var. torreyana* (L.D. Benson) M.C. Johnst.	Western honey mesquite	"Salvage Assessed"	Native shrub or tree
Prosopis pubescens Benth.	screwbean mesquite	"Salvage Assessed"	Native shrub or tree
Prosopis velutina Woot.	velvet mesquite	"Salvage Assessed"	Native shrub or tree
Schismus arabicus	Arabian schismus	None	Annual introduced grass
Sphaeralcea ambigua	globemallow	None	Shrub
Ziziphus obtusifolia	graythorn	None	Tree

[1] Protected under Arizona Native Plant Laws (Arizona Department of Agriculture 2005)

3.3.2 Wildlife

The most common types of wildlife found within YPG include big game mammals, small game birds and mammals, predatory and fur-bearing mammals, migratory birds, and reptiles (YPG 2001a).

Large game animals are the desert bighorn sheep (*Ovis canadensis*) and mule deer (*Odocoileus hemionus*). Predatory and fur-bearing mammals include the coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenteus*), ringtail cat (*Bassariscus astutus*), badger (*Taxidea spp.*), spotted skunk (*Mephitis spp.*), striped skunk (*Mephitis mephitis*), mountain lion (*Puma concolor*), and bobcat (*Lynx rufus*). Smaller mammals include desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), and round-tailed ground squirrel (*Spermophilus tereticaudus*). At least 16 species of bats are known to occur on the installation (Castner, Snow, and Noel, 1995 *in* YPG 2001a). Wild burros and feral horses can also be found roaming through the ROI (YPG 1997). The kingsnake (*Lampropeltis getula*), western diamondback rattlesnake (*Crotalus atrox*), and lizards, such as the Western whiptail lizard (*Cnemidophorus* spp.), are common reptiles that may be found in the ROI.

The diversity (numbers of types) of birds is extremely high in Sonoran Desert scrub habitats in comparison to other ecological regions in the country, such as tundra, forests, or woodlands (YPG 2001a). Resident species common to most of the desert areas of YPG include the Gambel's quail (*Callipepla gambelii*), cactus wren (*Campylorhynchus brunneicapillus*), black-throated sparrow (*Amphispiza bilineata*), roadrunner (*Geococcyx californianus*), mockingbird (*Mimus polyglottos*), and black-tailed gnatcatcher (*Polioptila caerulea*). White-winged (*Zenaida asiatica*) and mourning doves (*Zenaida macroura*) may be seasonally abundant. Raptors found commonly throughout the area are the American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*) and red-tailed hawk (*Buteo jamaicensis*) (YPG 1997). Waterfowl species are found at the four sewage lagoons on YPG, which are all located within 2 miles of the airfield.

According to the Memorandum of Agreement between the Federal Aviation Administration (FAA) and various federal agencies (including the U.S. Army) to address aircraft-wildlife collisions (strikes), the majority (approximately 70 percent) of the wildlife strikes between 1990-1999 involved the avian species groups of gulls, waterfowl, and raptors (FAA 2003 and Dolbeer et al 2000). Bird species most commonly found within the ROI that are included in this category are raptors such as the turkey vulture and the red-tailed hawk. Doves, which are also found in the ROI, followed raptors as the next largest group involved in airstrikes.

3.3.3 Habitat

Even though the landscape may appear barren, a wide variety of habitats support various species on YPG. Wildlife species are associated with specific habitat types that provide food and cover from weather and predators. Larger mammals and birds travel frequently to specific habitats and have seasonal activity patterns and use large portions of the installation. Less mobile animals such as the smaller mammals and reptiles can be adapted to specific habitat types and usage and are often limited to specific areas.

The Trigo Mountains that broadly border the ROI to the west provide habitat for desert bighorn sheep. North facing slopes of mountain ranges harbor plant and animal species that otherwise would not survive on the arid plains of lower elevations (YPG 2001a). The foothills of the South Trigo Mountains fan out over the landscape and create shallow draws and washes in the landscape that eventually flow into a tributary of the Mohave Wash (YPG 2006a) and provide habitat for mixed shrubs.

The ROI is dominated by the low, open desert scrub community through which many small desert washes flow. These smaller washes feed into larger washes, which also transect the ROI, and support many species of trees, shrubs, and cacti. Nearly all wildlife species utilize the larger tree-lined desert washes for some portion of the life cycle (Kennedy, 1996a in YPG 2001a). These large washes support the thickest vegetative cover of trees and shrubs on the YPG (i.e., mesquite bosques) and the highest densities and richest diversity of desert avifauna (YPG 1997 and YPG 2001a). This closed canopy mesquite bosque habitat type is referred to as xeroriparian. In otherwise inhospitable environs, migratory birds, bats, reptiles and amphibians use mesquite bosques in desert washes extensively for foraging, resting, shade, cover, and (for some bird species) nesting (Kennedy, 1996b in YPG 2001a). Mule deer use washes for cover, forage, and travel. Predators at YPG, such as bobcats, are found almost exclusively in washes (YPG 2001a).

Man-made catchments for wildlife (guzzlers) are typically created by AGFD as mitigation for other development (Gibbons 2008). Desert bighorn sheep utilize these catchments for drinking. Mule deer drink from lower-elevation watering sites. Mammals, bats, and birds also depend on these water sources. White-winged doves are commonly observed watering during summer. There are no guzzlers in the ROI but they are found in the surrounding areas of the Cibola Region (AGFD, 2004a). Wildlife found within the ROI could reasonably travel to nearby guzzlers to obtain drinking water.

3.3.4 Special Status Species

"Special status species" are the wildlife or plant species that have been recognized by either the federal or state government as having special management needs due to limited distribution, limited numbers, or significant population declines. Such species include those designated as endangered, threatened, rare, protected, sensitive, or species of special concern to the USFWS, the Bureau of Land Management (BLM), and the AGFD (YPG 2007b). As of October 2007, no plants or resident animal species with protection under the Federal Endangered Species Act are known to exist in the vicinity (3 miles) of the La Posa DZ, which is adjacent to the ROI (AGFD 2007).

A number of species, including the Sonoran desert tortoise (*Gopherus agassizii*) and the California leaf nosed bat (*Macrotus californicus*) are listed as a Wildlife Species of Concern by the State of Arizona, but their preferred habitat (rocky foothills/grassland and caves, respectively) does not include the open desert scrub community that comprises the majority of the ROI (AGFD 2004b). The following species are listed by the Arizona BLM as Sensitive Species (BLM 2000) and are associated with the open scrub and mesquite bosque type of habitat found in the ROI: the loggerhead shrike (*Lanius ludovicianus*), the Cowles fringe-toed lizard (*Uma notata rufopunctata*), the desert rosy boa (*Charina trivirgata gracia*), and the western burrowing owl (*Athene cunicularia hypugaea*) (as well as an active owl burrow site) (AGFD 2004b and AGFD 2008).

Occasionally a federally protected bird will stray from riparian habitats along the Colorado River during storms or during migration in the fall or spring. For example, the federally endangered peregrine falcon and endangered California brown pelican have been observed on the YPG installation and identified as transient species (50 CFR Part 17) (YPG 2001a). The southwestern bald eagle has also been identified as a transient species on YPG. Although delisted from its federal threatened status in June 2007, the bald eagle remains protected under the Bald Eagle Protection Act and the Migratory Bird Act (USFWS 2007).

Four plants generally considered to be rare are found on YPG: desert night blooming cereus, California snakewood, spiny sand spurge, and Hall shrub spurge (Yuma Proving Ground, 1995a in YPG 2001a). The closest known populations of Nichol Turk's-head cactus (*Echinocactus horizonthalonius* var. *nicholii*), a small barrel shaped cactus listed as endangered by the USFWS, are near Casa Grande, AZ (YPG 2001a). The Nichol Turk's-head cactus was not observed within the project area (Gibbons 2007).

3.4 CULTURAL RESOURCE

3.4.1 Definition of Resource

Cultural resources include any prehistoric or historic district, site, building, structure, or 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 1966 National Historic Preservation Act (NHPA) (Public Law 89-665, as amended by Public Law 96-515; 16 United States Code [USC] 470 et seq.) provides for the establishment of

the NRHP to include districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, and culture. Section 106 of the Act 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 Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) an opportunity to comment with regard to the undertaking. The NRHP eligibility criteria have been defined by the Secretary of the Interior's Standards for Evaluation (36 CFR 60). Cultural resources are considered to be NRHP eligible if they display:

The quality of significance in American history, architecture, archeology, engineering, and culture that are present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, workmanship, feeling, and association, and

a) that are associated with events that have made a significant contribution to the broad patterns of American history; or

b) that are associated with the lives of persons significant in our past; or

c) that embody the distinctive characteristic of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant or distinguishable entity whose components may lack individual distinction; or

d) that have yielded, or may likely yield, information important in prehistory or history.

The process of agency reviews and assessment of the effect of an undertaking on cultural resources is set forth in the implementing regulations formulated by the ACHP (36 CFR 800, Protection of Historic Properties). Other applicable laws and guidelines include the following:

- Executive Order (EO) 11593: Protection and Enhancement of Cultural Environment (16 USC 470 [Supp. 1, 1971])
- Native American Graves Protection and Repatriation Act (Public Law 101 – 601; USC 3001 – 3013)
- Determination of Eligibility for Inclusion in the National Register of Historic Places (36 CFR 63)
- Curation of Federally Owned and Federally Administered Archaeological Collections (36 CFR 79)
- Archaeological Resources Protection Act (16 USC 460)
- Archaeological and Historical Preservation Act (PL 93-291)

Section 101(d) (6) (B) of the 1966 NHPA requires federal agencies to consult with Indian tribes that attach religious or cultural significance to historic properties. Compliance with 36 CFR 800.2, which implements consultations with Native Americans, may be conducted by federal agencies as part of a government undertaking.

3.4.2 Pre-Contact Background

3.4.2.1 Paleoindian Period (ca. 10,000 B.C. to 7,500 B.C.)

The Paleoindian period (10,000 B.C. to 7,500 B.C.) evinces the first well-dated Native American occupation of the region. Artifacts that can be attributed to the Paleoindian period have been found in the general region, but such finds are extremely rare and are therefore not discussed further. The Paleoindian lifestyle was similar to that of the early Archaic, but one which had only begun to adapt to warmer climes following the close of the ice age.

3.4.2.2 Archaic Period (ca. 7,500 B.C. to 150 A.D.)

The Archaic period (7,500 B.C. to 700 A.D.) is poorly represented in the Lower Colorado River Valley and surrounding margins because few sites have been securely dated to this interval. However, many flaked stone sites that lack diagnostic projectile points or other tools could date to this period. The typical settlement pattern appears to have been transient, with small nomadic bands inhabiting the valley floors along major watercourses (Stone 1991). Settlements were likely seasonal or semi-permanent in accordance with the availability of wild plant and animal resources in any particular area. In later times limited agriculture supplemented hunting and gathering; however, it is unclear when the cultivation of domesticates first appeared along the Lower Colorado River.

3.4.2.3 Patayan Period (ca. 150 A.D. to 1,500 A.D.)

The Patayan (or Late Prehistoric) Period (700 A.D. to 1500 A.D.) saw the introduction of floodplain horticulture, ceramics, and the bow and arrow. Native American populations in the vicinity of the Proposed Action appear to have expanded dramatically at this time, although Patayan sites with ceramics are more easily recognized as Patayan than are either Patayan or Archaic sites with just flaked stone artifacts. Only limited knowledge exists about the Patayan because few Patayan sites have been excavated. The group occupied western Arizona, including the Lower Colorado River basin and the lower reaches of the Gila River, as well as the peripheral desert regions (Waters 1982). Unfortunately, a sound chronology for the Patayan is lacking because so few sites have been excavated and few absolute dates based on radiocarbon, tree-ring, or archaeomagnetic methods have resulted. The absence of multi-component or deeply stratified sites, which would enable at least relative dating, and the confusion associated with ceramic types and their production dates further compound this problem. Site types typically identified include trails, rock shrines, and habitation sites that have rock rings, rock piles, clearings in the desert pavement, and artifact scatters (Stone 1991; McGuire 1982). Lower Colorado Buff Ware is the primary diagnostic artifact of this culture. Little is known about settlement and subsistence practices.

3.4.3 Historic Background

3.4.3.1 Native American Groups

Three or four historically recognized groups used the Lower Colorado River Valley. The Yuma, and other Yuman-speaking people, occupied the Lower Colorado River Valley and parts of the

Lower Gila River Valley at the time of European arrival to the area. Archaeological and ethnohistoric data indicate trade, warfare, alliance, and migration characterized these groups.

Quechan, or Yumas, primarily occupied the Lower Colorado River Valley and surrounding region. The Yavapai typically occupied areas to the north and east, while the Cocopah occupied regions immediately to the south, including the Colorado River Delta. Pima, Maricopa, and Tohono O'odham (Papago) occupied the Gila River valleys and deserts to the east and southeast.

3.4.3.2 Early Exploration, Settlement, and Mining

Spanish exploration of the Lower Colorado area began with the visits of Alcarón and Melchior Diaz in 1540, ushering in the Historic period. The impact of 16th century exploration on Native peoples appears to have been relatively minimal in the Lower Colorado area, although elsewhere severe epidemics appear to have preceded Euroamerican colonization (Cook 1978). In the following century, however, Spanish settlement of the colonial frontier quickly engendered increased raiding, inter-group military/political alliances, and slave-trading in the Lower Colorado River area (Forbes 1965). This was also a period of increased movement of Native American groups along the Colorado River corridor (Forbes 1965). At least by the time of the 1701-1702 Kino expedition, the Quechan were established in the Yuma area and controlled a territory from 20 miles north of Yuma to just south of Pilot Knob. They held an area some 20 miles up the Gila River in Arizona to the Sand Hills in the west. The establishment of Yuma Crossing and Fort Yuma in 1852 brought increased Euroamerican settlement to the area.

Gold and silver mining in the region generally began with placer claims, because the ore (float) was available on the surface and easily extracted by individuals with minimal skills or technology. The earliest claims in the region (1862) were near La Paz. Once the surface float materials were exhausted, miners began to search for lode deposits that were locked inside bedrock formations. Lode mining was more labor intensive and required greater capital investment than placer mining. In addition, lodes were often found as oxides that needed complex reduction facilities to extract the ores. Mining districts near the project area included La Cholla (1930s-1940s), Plomosa (early 1900s), Cibola (1890s-1950s), Alamo Springs (early 1900s), and Kofa (late 1800s to early 1900s, until 1954). No information is available for the nearest mine—Tweed Mine—located six miles (10 kilometers) south.

3.4.4 Cultural Resource Investigations at the Proposed Action Area

The ROI for the Proposed Action area covers an approximate 1,050-acre parcel immediately west of the existing La Posa DZ. For the purposes of the cultural resource surveys the Area of Potential Effects (APE) for the proposed de-brushing area is comprised of approximately 1,261 acres west and north of the existing DZ. As of November 2007, the Arizona statewide AZSITE database and the YPG cultural resource files list seven Class III cultural resource surveys and nine archeological sites within one mile of the proposed La Posa DZ expansion area. Two previously conducted surveys covered areas within the existing La Posa DZ in addition to 312 acres of the Proposed Action area. Therefore, the focus of the current cultural resource surveys was on the remaining 979 acres that had not been surveyed.

Prehistoric sites are scarce near the proposed project area and include trails, and artifact scatters with flaked stone and ceramics. Rock rings and cleared areas are found at sites and as isolated features. Many prehistoric sites in this region are located on terraces above river floodplains and are surface manifestations with few diagnostic artifacts that cannot be dated to a specific prehistoric period. Long-term habitation sites are extremely rare.

Historic sites near the proposed project area include military sites and road segments. Historic sites tend to occupy transportation corridors along river valleys, between mountain ranges, and over mountain passes, and are often located at or near the same locations as prehistoric sites, indicating similar needs for access to water and other resources.

3.4.5 Site Specific Archaeology

The Proposed Action area covers an approximate 1,050-acre parcel immediately west of the existing La Posa DZ. The APE surveyed for the proposed de-brushing area is comprised of approximately 1,261 acres west and north of the existing DZ. Because records research indicated approximately 312 acres of the APE within the Proposed Action area had been previously surveyed for cultural resources, the current survey was conducted on the remaining 979 acres that had not been surveyed (Schaefer 1988).

The entire 979 acres has been surveyed for cultural resources by Northland Research, Inc. and no new archaeological sites were discovered (Dosh and Carpenter 2007).

3.5 HEALTH AND SAFETY

The occupational and public health and safety impacts associated with an action address both potentially affected workers and the general public. Impacts to workers are common to industrial and construction settings. Such impacts can include specific job related safety issues, fugitive dust, or other types of occupational exposures.

The health and safety of workers and the public is managed by the YPG Safety Division. Emergency medical facilities at YPG are limited to emergency medical technicians who are on staff 24 hours a day. Transport time to a hospital is approximately 60 minutes by ambulance and 15 minutes by air. Serious injuries or illness are treated in the City of Yuma at the Yuma Regional Medical Center. Helicopters from YPG and Marine Corps Air Station (MCAS) Yuma are available for emergency transportation. Fire protection at YPG is provided by fire stations at Laguna Army Airfield, Kofa Firing Range, and the Main Administrative Area. The YPG Police Services Branch provides law enforcement personnel and security services on YPG.

Personnel working on YPG are exposed to a number of risks and hazards from the environment and military operations. The proposed project area is located in a remote part of the Sonoran Desert where extreme climate and rugged terrain pose potential hazards to personnel working outdoors. Daytime temperatures during the summer months typically exceed 110 °F. Personnel working outdoors would potentially be exposed to heat exhaustion and dehydration from severe heat. Other environmental risks that personnel would be exposed to include, but are not limited to, insect bites, snake bites, and some forms of vegetation.

Although the proposed project area has not been identified as an area of known or potential unexploded ordnance (UXO), all areas within YPG have that potential (YPG 2001a). In addition to the hazards posed by climate, terrain and UXO, electromagnetic radiation generated from radar components, communications equipment, and power supplies in weapons systems; and laser radiation used for aircraft and other armament systems could also pose serious risk to personnel.

3.5.1 General Public Safety and Health

The public is prohibited from trespassing onto firing and maneuver ranges. Warning signs are posted in appropriate locations throughout the installation. All personnel and visitors are required to inform YPG Range Control of their plan to travel and to obtain a range clearance number before entry to the range. Before access to a range is granted, safety briefings are conducted. All personnel and visitors to the Cibola Region are required to view the YPG Range Safety video prior to entry. Scarcity of water, extreme heat, abandoned mines, dangerous wildlife (e.g., rattlesnakes, Africanized honey bees, and scorpions), and UXO are potentially life-threatening issues to members of the general public, as well as to YPG personnel.

3.6 LAND USE

YPG encompasses 838,174 acres (1,309 square miles) of land, of which 837,764 acres are controlled by the Army. The military installation is configured in an irregular "U" shape (Figure 1), extending approximately 58 miles north-south and 54 miles east-west (YPG 2001a). YPG is comprised of the Cibola, Kofa, and Laguna Regions. The land base of YPG is dedicated to military testing and evaluation that requires most land to be reserved for firing ranges, impact areas, mobility test courses, and drop zones. These types of activities require large open areas with associated safety and buffer zones to help preserve land use compatibility within YPG (YPG 2001a). The 500,000 acres of ranges and impact zones have not been considered for any other use because the developing technology is inadequate for rehabilitating these lands for alternate uses (i.e., low density housing, mobile home parks, grazing) (YPG 2001a).

The 455,000 acres of Cibola Region are divided into north and south components. The North Cibola Region is comprised of large plains surrounded by the Trigo Mountains to the west and the Chocolate Mountains to the south. The proposed project area would encompass approximately 1,050 acres (1.6 square miles) in the North Cibola Region. Land within the site area is set aside for use by the Army for conducting mission support assigned to YPG. Due to its size, isolation, and natural barriers of the surrounding mountains, the Cibola Region was developed for aircraft armament testing and is home to the West Environmental Test Area and the Castle Dome Heliport Annex areas (YPG 2001a). The ROI for land use includes the entire North Cibola Region.

Land use at YPG is managed by the Army according to three goals: to promote the most efficient and cost effective land use plan; to promote compatible and future coordinated land use decisions by Federal, State, county, and local agencies; and to maximize the well-being and quality of life for installation personnel and neighboring residents. YPG also manages land use through the

Installation Compatible Use Zone (ICUZ) noise management program (now referred to as the Environmental Noise Management Program [ENMP]) (YPG 2001).

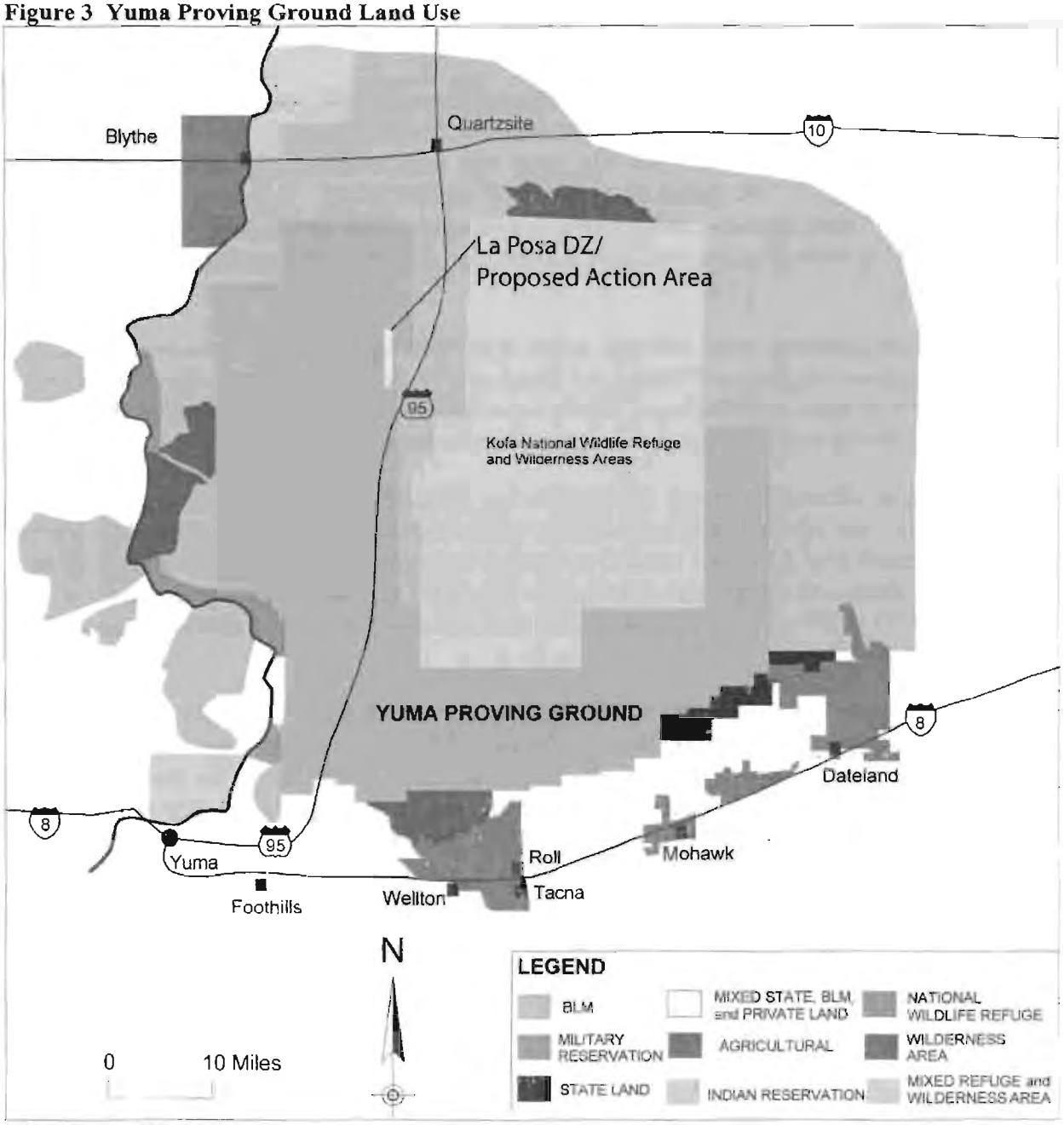
Approximately 410 acres (0.64 square miles) of patented mines are located in the entire YPG, neither leased nor controlled by the Army. In addition, the installation leases 7,562 acres (11.8 square miles) of state-owned land, and 320 acres (0.5 square miles) of privately-owned land. Off-post land available to YPG totals 612 acres (0.95 square miles). This land, available under various use permit arrangements, consists of about 40 acres (0.06 square miles) at the Blaisdell Railroad Siding Site and 40 acres of electric transmission line and other easements (YPG, 1995b in YPG 2001a).

An extensive, but primitive, road network exists in the Cibola Region that provides access for military personnel to facilities. Cibola Lake Road and Corral Road transect the North Cibola Region in a general east-west direction. Cibola Lake Road, which is located south of the project area, is open to public access although the surrounding land is closed.

Public hunting is currently allowed adjacent to the proposed project area during designated hunting seasons. The adjacent area lies partially within the AGFD Hunting Region IV – Yuma, Game Management Unit 43A, and is open to hunting bighorn sheep, mule deer, dove, quail and waterfowl. Of these, only mule deer and bighorn sheep are expected with any frequency in the project area (YPG 2007b). The proposed project area is located in a newly restricted area where hunting is not allowed.

The majority of land bordering YPG is managed by the USFWS and the BLM. The USFWS manages the Kofa National Wildlife Refuge (NWR), Cibola NWR, and Imperial NWR areas (Figure 3). Wilderness areas managed by the BLM include locations within the Kofa NWR, the Muggins Mountains, the New Water Mountains, and the Trigo Mountains. The nearest town north of the ROI is Quartzsite, which is located in La Paz County. BLM lands surround Quartzsite, the population of which fluctuates depending on the season with the highest concentrations between October and April due to the influx of winter vacationers and retirees who visit the surrounding area (YPG 2001a). Present buffer zones along the installation boundary represent the absolute minimum for accomplishment of YPG's assigned missions (YPG 2007b). A land use study found that YPG activity is generally compatible with surrounding land use (Hermann Zillgens Associates, 1992 *in* YPG 2001a).

Figure 3 Yuma Proving Ground Land Use



(Map Source: YPG 2001a)

3.7 NOISE

Noise is defined as a sound that, if loud enough, can induce hearing loss or is otherwise undesirable because it interferes with ordinary daily activities, such as communication or sleep. A human's reaction to noise varies according to the duration, type, and characteristics of the source; distance between the source and receiver; receiver's sensitivity; background noise level; and time of day. The ROI for this resource is YPG.

The day-night level (DNL) is a primary descriptor for military noise, except small arms. The DNL is the time weighted energy average sound level with a 10-decibel (dB) penalty added to the nighttime levels (2200 to 0700 hours). The DNL noise metric may be further defined, as appropriate, by the installation with a specific, designated time period (for example, annual average DNL, average busy month DNL). The typical assessment period over which the noise energy is averaged is 250 days for the active Army installations and 104 days for Army Reserve and National Guard installations. The use of average busy month DNL is appropriate when the operating tempo is significantly different during certain peak periods of the year (Department of the Army 2007). AR 200-1 identifies noise zones I, II, III, and the land use planning zone (LUPZ). These noise zones are land use planning areas for the purpose of maintaining uses that are compatible with the existing and future noise environments. The LUPZ contour is used to better predict noise impacts when levels of operations at airfields or larger caliber weapons ranges are above average.

A noise-sensitive receptor is commonly defined as the occupants of any facility where a state of quietness is a basis for use, such as a residence, hospital, or church. The area surrounding the affected area is undeveloped and unpopulated; therefore, there are no noise-sensitive receptors at or near the project site. The main source of noise on YPG comes from transportation, weapons firing, and aviation activities.

3.8 SOCIOECONOMICS

The socioeconomic status of YPG and the region are addressed in this section.

3.8.1 Demographic Setting

The USAG YPG is located in southwestern Arizona near the Arizona–California border. YPG is approximately 125 miles west of Phoenix, Arizona and 180 miles east of San Diego, California. YPG extends into two counties, La Paz County and Yuma County. The proposed project area is located in La Paz County. The nearest city to YPG is the City of Yuma, which lies 24 miles to the south. The City of Yuma does not fall within the La Paz County limits, but due to its proximity to the installation it will be used as the ROI.

According to the USCB, the 2000 estimated population for La Paz County was 19,715, which represents an approximate 42 percent increase from 1990 to 2000. The City of Yuma experienced an almost equal growth rate from 1990 to 2000 compared to La Paz County. For the City of Yuma, the 2000 population estimate of 77,515 when compared to the 1990 population of 54,923 represents an increase of 41 percent over the ten year period. Population growth for the State of Arizona from 1990 to 2000 was approximately 40 percent, and the nationwide population growth was 13 percent from 1990 to 2000.

3.8.2 Environmental Justice Methodology

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, provides that "each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs,

policies, and activities on minority populations and low-income populations." In an accompanying Presidential memorandum, the President specified that federal agencies shall analyze the environmental effects of their proposed actions on minority and low-income communities, including human health, economic, and social effects when such analysis is required by NEPA.

Disadvantaged groups within the ROI, including low-income and minority communities, are specifically considered in order to assess the potential for disproportionate occurrence of impacts. For the purposes of this analysis, disadvantaged groups are defined as follows:

- *Minority Population:* Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; and some other race. For the 2000 Census, race and Hispanic origin (ethnicity) were considered two separate concepts and were recorded separately. For the purposes of this analysis, the total minority race population will be separate from the total Hispanic population to determine total minority race population from the Hispanic total within the affected areas.

- *Low-Income Population*: Persons living below the poverty level, according to income data collected in the 2000 US Census.

Table 3 summarizes Census data on minority and low-income populations for the City of Yuma and La Paz County. Additional information is provided for the State of Arizona and the U.S. (USCB 2007a-h).

Table 2 City of Yuma and La Paz County Census Data

Demographic Area	Total Population	Total Hispanic/ Latino Population	Percent Hispanic/ Latino	Total Minority Race Population[1]	Percent Minority Race	All Income Levels[2]	Total Low-Income Population	Percent Low Income
City of Yuma	77,515	35,400	45.7	21,525	27.8	74,347	10,910	17.7
La Paz County	19,715	4,420	22.4	4,568	23.2	19,383	3,798	19.6
State of Arizona	5,130,632	1,295,617	25.3	1,110,495	21.6	5,021,238	398,669	13.9
United States	281,421,906	35,305,818	12.5	63,135,052	22.4	273,882,232	33,899,812	12.4

Source: USCB 2007a-h

(1) Minority Race includes Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; and some other race.

(2) All income levels include everyone except those in institutions, military group quarters, and college dormitories, and unrelated individuals under 15 years old.

3.8.3 Employment and Income Trends

YPG Economic Activity and Contribution. The following information is summarized from the Fiscal Year 2003, 2005, and 2006 YPG Economic Impact Data.

YPG is an active consumer in the La Paz County and Yuma County economy through its purchase of standard goods and services and its requirements for high technology items and services related to its mission (YPG 2003). According to the fiscal year 2006 YPG Economic

Impact Data, the approximate annual payroll for government civilian employees is 61 million dollars and the estimated contractor payroll is 103 million dollars (YPG 2006b). Annual expenditures for contract awards and modifications are an estimated 164 million dollars, a 20 percent increase from the previous year (YPG 2006b). The number of on-base jobs, including both military and civilian is 2,198.

Regional Employment and Income. According to the 2000 Census, per capita personal income in the City of Yuma was 29.03 percent lower than the U.S. average (USCB 2007i). In 2000, the City of Yuma's unemployment rate was 4.9 percent, which was higher than the state average for that period (3.4 percent) and the U.S. average (3.7 percent) (USCB 2007j, USCB 2007k, and USCB 2007l). In the City of Yuma, the leading non-governmental industries in 2000 were educational, health, and social services (22.3 percent of working civilian population); retail trade (14.8 percent of working civilian population); public administration (12.5 percent of working civilian population); and arts, entertainment, recreation, accommodation, and food services (9.9 percent of working civilian population) (USCB 2007j). Twenty-five percent of the population in the City of Yuma work for federal, state, or local governments (USCB 2007j).

3.9 GEOLOGY AND SOILS

The ROI for this resource is the La Posa DZ expansion area. This section describes the existing geologic and soil conditions in the ROI that would be affected by implementation of the Proposed Action.

3.9.1.1 Regional Geology

YPG is located in the basin and range physiographic province. The mountain ranges within and surrounding YPG are composed of igneous rocks (formed from molten rock), including extrusive (volcanic rock), and intrusive (granite and related crystalline rocks); sedimentary rocks (cemented and consolidated sediments), and metamorphic rocks (changed by heat and pressure).

The Palomas and Tank Mountains contain mostly extrusive igneous rocks with lesser amounts of metamorphic rocks. Intrusive igneous rocks are also found in the southern part of the Palomas Mountains. The Muggins Mountains are made up of metamorphic and extrusive igneous rocks with some sedimentary rocks. The Middle Mountains are composed of mostly extrusive igneous rocks with metamorphic and sedimentary rocks. The Trigo and Chocolate Mountains are largely extrusive igneous rocks with some metamorphic rocks. The basins or lowlands between mountain ranges are composed of alluvium (YPG 2001a).

3.9.1.2 Soil Formations

The surface soils of YPG were mapped and described by the U.S. Department of Agricultural Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service) and have been classified as aridic and hyperthermic. Mean soil temperatures are at least 72°F with more than a 9°F difference between summer and winter temperatures Soil depth at YPG ranges from moderately deep in alluvial basins to very shallow in the mountain regions where bedrock is often exposed (YPG 2001a).

The majority of YPG soils have been characterized as ranging from extremely gravelly or cobbled sand, to very fine, sandy loam. The soils on YPG are protected from erosion by the presence of cryptogamic crusts, desert pavement, and vegetation. Soil type, along with elevation and climate; help determine the composition of natural vegetation.

Soil formations that occur within the proposed project area are the Riverbend family-Carrizo family complex, the Cristobal-Gunsight family complex, and the Gilman family–Harqua family complex (Cochran, 1991). The Riverbend-Carrizo and Cristobal-Gunsight family complexes are cobbly sandy soils, characterized as containing many small to large stones, resulting in high drainage patterns, and moderate rapid rates of permeability. The slopes of these soil complexes range from one to three percent resulting in occasional to rare flooding (Cochran, 1991).

Gilman family–Harqua family complex soils are found throughout the La Posa DZ and consist of gravelly, fine, sandy loam. This soil complex is well-drained with moderate to moderately slow permeability rating and have been described as "desert pavement". The slope of this soil complex ranges from zero to two percent with rare flooding (Cochran, 1991).

3.10 TRANSPORTATION

The description of the affected environment associated with transportation focuses on roads and traffic patterns. U.S. Highway 95 is the principal access route to the North Cibola Region from the installation. U.S. Highway 95 runs north to south from the U.S.-Mexico border through the City of Yuma and the town of Quartzsite serving as a major truck route between Yuma and Quartzite. The heaviest traffic periods on U.S. Highway 95 are at the beginning (5:00 a.m. to 7:00 a.m.) and end (3:30 p.m. to 5:30 p.m.) of the workday. As many as 5,000 vehicles a day travel U.S. Highway 95 to or beyond the installation (YPG 2001a).

3.10.1 Cibola Range Road System

The north and south Cibola Ranges consist of large plains surrounded by mountains and are predominately for aircraft armament firing. An extensive, but primitive, road network is necessary for military personnel to reach laser sites and microwave stations, transfer portable instrumentation, place and retrieve stationary or moving targets, and pick up cargo in drop zones (YPG 2001a). Cibola Lake Road and Corral Road transect the north Cibola Region in a general east-west direction. Both of these roads lie to the south of the Proposed Action area. Cibola Lake Road is open to public access, but surrounding land is closed. Currently, both the Cibola Lake Road and the Corral Road experience temporary (i.e., short duration) road closures during drop zone activities.

3.11 WATER RESOURCES

The presence of water resources at YPG is restricted by the high evaporation pan rate (107 inches per year) and low precipitation rates (average 3.74 inches per year) characteristic of the high desert region (YPG 2001a and WRCC 2007). In general, water resources are balanced by precipitation, infiltration, evapotranspiration, runoff (i.e., water that neither infiltrates nor evaporates), and changes in soil moisture. For example, the highly permeable nature of desert soils allows large amounts of precipitation to infiltrate during the gentle and longer-term fall

(August to September) rainfalls when evapotranspiration rates are low. Alternately, the short, intense nature of summer rains often produces a volume of water that exceeds the soil infiltration rate. Much of this water becomes runoff that quickly evaporates in the summer heat, which typically exceeds 100 °F.

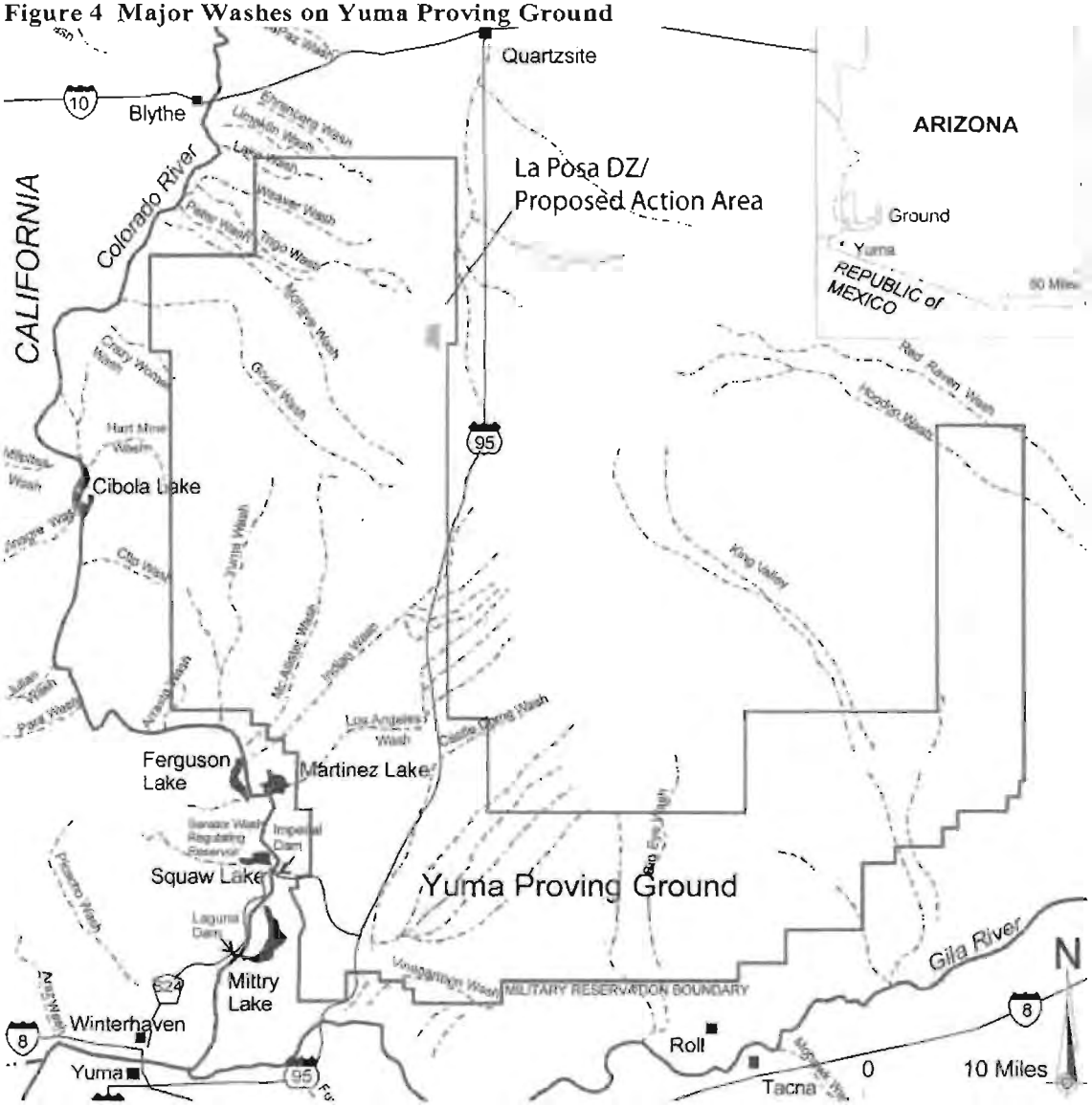
The ROI for water resources (i.e., groundwater, surface water, and wetland areas) at YPG includes resources located either entirely or partly within the northern portion of the Cibola Region of YPG and includes the associated receiving waters. Included in this discussion of water resources is regulatory framework that protects these resources.

3.11.1 Surface Drainage

The only permanent surface water sources near the ROI, the Colorado and Gila Rivers, are located outside YPG boundaries. The Colorado River traverses a generally north-south direction to the west of the Cibola Region and receives surface drainage through the many washes of this area. The Gila River traverses an east-west direction to the south of YPG and is not influenced by drainage from the ROI (YPG 2001).

Infrequent rainfall produces localized flash-flooding and temporary surface water, especially during fall thunderstorms. Therefore, most of the year, desert washes are dry. But during heavy rainstorms, these washes drain surface water (Entech Engineers, Inc., 1987 *in* YPG 2001a). Washes vary in size, from between approximately 1 meter in width and depth, to over 1 kilometer in width and 10 meters in depth. The numerous smaller channels within the washes change course during major flood events (YPG 2001a). The major washes located within the ROI that drain the area to the northwest include: Mohave Wash, Trigo Wash, Peter Wash, Weaver Wash, and Lake Wash (Figure 4) (YPG 2001a). Tyson Wash, another major wash that drains the actual proposed project area, is located to the east of the ROI, parallel to Highway 95. Present within the ROI are numerous smaller and unnamed washes where much of the precipitation is absorbed into the soil (infiltration), supported by the fact that no sediment is found in Tyson Wash (Hoon, 2008).

Figure 4 Major Washes on Yuma Proving Ground



(Map Source: YPG 2001a)

As described in Section 3.3 Biological Resources, desert washes and associated mesquite bosques are critically important to the protection and maintenance of living resources because they provide wintering, foraging, cover, and nesting habitats to a diversity of wildlife species, which is otherwise not provided by the open desert scrub community. Washes also regulate surface water flow during periods of heavy rainfall and serve to filter out waterborne sediment and associated pollutants (AR200-3, Section 2-21 *in* YPG 1997). None of the washes within the proposed project area are large enough to be considered waters of the U.S. and work within them will not require a COE 404 permit.

Wildlife guzzlers, as described in Section 3.3.3, are not present in the proposed project area but are found surrounding the area (Gibbons, 2008).

3.11.2 Wetlands

A few small wetlands are present at YPG, as identified by the National Wetlands Inventory conducted by the USFWS (YPG 1997). These areas include manmade sewage and drainage ponds, the main canal area, and various natural desert washes (USFWS 1981). In the arid southwest deserts, washes perform the same important functions and values as wetlands contribute to other parts of the country (YPG 1997). Although there are small unnamed washes located within the proposed project area, they are not considered wetlands.

3.11.3 Groundwater

The ROI is located on the La Posa Plain, which is referred to as the La Posa Plain hydrologic sub-basin by Arizona Department of Water Resources (ADWR) and as the Tyson Wash Hydrologic Unit by the United States Geological Survey (USGS). The Tyson Wash comprises the southern portion of the sub-basin and encompasses about 678 square miles (mi^2). Regional groundwater flow in the Tyson Wash is likely south to north. However, the local groundwater flow direction near the project area may be predominantly from the east due to the location of the main recharge area and the asymmetry of the basin. According to USGS, the estimated recoverable groundwater in the aquifer of the basin is 50 million-acre feet. The estimated annual inflow and outflow to the aquifer is 65 thousand-acre feet (Freethey and Anderson, 1986 *in* YPG 2001a). The potential of the upper Tyson Wash basin as a sustainable groundwater supply is considered to be low to moderate because the alluvium in this part of the upper basin is clay-rich and may have a low permeability (YPG 2007b).

According to a study conducted by the U.S. Bureau of Reclamation from 1992 to 1996, groundwater in the North Cibola Region is located in both perched aquifers and a deep aquifer. Water levels in the area are approximately 200-500 feet below the ground surface (bgs); this estimate is based on water levels of a perched and deep aquifer contoured from well data north of the project area, near Quartzsite, and the water level in the nearby Corral Well (U.S. Bureau of Reclamation, 1993b *in* YPG 2001a). No groundwater wells are located at the site and no wells are proposed (YPG 2007b).

The Colorado and Gila Rivers replenish the groundwater in the Yuma region. Local precipitation and runoff are minor sources of groundwater recharge. The groundwater reservoir under YPG has two water-bearing units. The lower water producing unit is within Tertiary (65 million to three million years ago) rock. The groundwater from this unit is generally mineralized or too deep to be of significance. The second water-producing unit is the Quaternary (three million years ago to present day) alluvium (YPG 2001a).

The Army uses well water for domestic and industrial operations. Groundwater supplied by most wells is nonpotable because of high fluoride levels (Entech Engineers, Inc., 1987 *in* YPG 2001a). Drinking water is either imported in bottles or treated (YPG 2001a).

3.11.4 Regulatory Framework – Federal

Primary federal laws protecting water resources in the ROI include the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA). Wastewater treatment lagoons are permitted and

monitored under the National Pollutant Discharge Elimination System (NPDES) program (Section 402 of the CWA) and the Aquifer Protection Permit (APP) program administered by the State of Arizona. The NPDES program also requires a spill prevention plan. Regulatory authority for NPDES is with the ADEQ. The U.S. Army Corps of Engineers (COE) Los Angeles District, Arizona Section, regulates Section 404 of the CWA, which protects washes, wetlands, and other surface water resources. Drinking water is regulated through ADEQ. Primary drinking water standards are enforceable by Federal regulation. EPA recommends secondary drinking water standards, but each state may choose how to enforce the standards. Environmental programs submit ongoing monitoring and reports to ADEQ and EPA (YPG 2001a).

The Army maintains surface water quality at YPG through environmental programs. To maintain sustainable use of land resources including surface water, the Army developed the Integrated Training Area Management (ITAM) program. Additional protection of surface water from accidental hazardous substance spills is through the environmental programs, Compliance Program. It reports the location and management of hazardous substances to ADEQ per the Spill Prevention Control and Countermeasure Plan (SPCCP) (Gutierrez-Palmenberg, Inc., 1994, revised 1997c *in* YPG 2001a).

3.11.5 Regulatory Framework – State

The Arizona Pollutant Discharge Elimination System (AZPDES) permit program regulates the discharge of pollutants from any point source into waters of the U.S. It requires that all discharging facilities obtain either an individual or general permit, depending on the situation. The primary focus of the individual permitting program is municipal/domestic and non-domestic (industrial) direct discharges (YPG 2007b).

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

This section presents the detailed analysis of environmental impacts associated with the alternatives. Direct and indirect effects and their level of impact, cumulative effects, and means to mitigate adverse environmental impacts are also discussed for each resource. Direct effects are those caused by the action and occur at the same time and place. Indirect effects are those that are reasonably foreseeable consequences of the action but are later in time or further removed in distance from the direct effects. Cumulative effects are the impact on the environment that results from the incremental impact for the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR § 1508.7).

The impacts analysis is based on standardized impact definitions. Impacts identified for each resource are based on the duration, extent, context, intensity, and type of the impact. Summary impact levels (characterized as negligible, minor, moderate, or major) are given for each impact topic. Impact level thresholds, negligible, minor, moderate and major, are described in Table 4 below. An impact level of beneficial is defined as having a positive effect on the resource.

Each resource has an ROI defining the area where effects of proposed and alternative actions would occur, and can include areas off the YPG installation. Unless otherwise indicated, the ROI for impacts analysis is the YPG installation. The alternatives are defined in Section 2.0. A description of the affected environment is detailed in Chapter 3 for each resource area.

Table 3 Standardized Impact Definitions

Impact Level	Negligible	Minor	Moderate	Major
Intensity	Little or no impact to the resource would occur; any change that might occur may be perceptible but difficult to measure.	Change in a resource would occur, but no substantial resource impact would result. The change in the resource would be perceptible but would not alter the condition of the resource.	Noticeable change in a resource would occur and this change would alter the condition or appearance of the resource, but the integrity of the resource would remain.	Substantial impact or change in a resource area would occur that is easily defined and highly noticeable, and that measurably alters the condition or appearance of the resource. Impacts exceed a legal threshold of a substantive law.
Extent	None	Localized -- Impact would occur only at site or its immediate surroundings, and would not extend into the region.	Regional – Impact would affect the resource on a broad regional level, extending well beyond the immediate site.	Statewide – Impact would affect the resource on a state or national level.
Context	Location of impact has no unique relationship to a resource that is broadly occurring. *Destruction of creosote bushes in Sonoran Desert*	The location of impacts does not compromise any ecological component that has unique or mandated protections. Does not fragment key ecological flows of energy, minerals, water, or genetic material. *Loss of recreational opportunities*	Impacts occur that affect the primary resource but the location does not destabilize any key elements or cause major adverse interactions with other resources. Exceeds no offsite threshold but may cause impacts within a limited area where restrictions do not apply. Ecological flows of energy, minerals, water or genetic material have adequate redundancy to allow resources or species a high probability of persistence. *High concentrations of dust within YPG that do not reach post boundary in concentrations that exceed air quality standards*	Impact affects or causes interactions with an important or unique element of a resource that has prominent environmental significance or legal implications. *Vegetation removal in vicinity of endangered plant species*
Duration	None	Temporary – Impact would occur only during project construction. After construction, the resource conditions would return to pre-construction conditions.	Short-term – Impact would extend beyond the time of construction, but would not last more than two years.	Long-term – Impact would likely last more than two years and may continue beyond the lifetime of the project.

Note: The italicized texts are examples.

4.1 EFFECTS COMMON TO ALL ALTERNATIVES CONSIDERED

Effects common to all alternatives are presented in Sections 4.1.1 through 4.1.6 and include land use; noise; socioeconomics; health and safety; transportation, utilities, and infrastructure; and aesthetics. Mitigations related to each resource are taken into consideration when determining the magnitude of effects; in most cases the mitigations reduce the magnitude of effects to an insignificant level. Effects to the resources discussed in this section are considered negligible for either alternative considered; they are covered in this section and dismissed from further discussion.

4.1.1 Aesthetics

The significance of potential impacts on visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. Impacts to areas of aesthetic value are considered significant if the panoramic views or scenic beauty of specific areas are permanently degraded (YPG 2001a).

The proposed project area of the La Posa DZ is not immediately adjacent to Cibola Lake Road but may be partially visible to the general public from some spots along the road. No new roads or structures would be constructed as part of this expansion. The only change in visual resource would be the removal of vegetation from the DZ expansion area.

Under the No-Action Alternative, the La Posa DZ would not be expanded and the aesthetics of the area would remain the same. The proposed location is not identified in the RWEIS as an area of aesthetic and visual value. Therefore, no adverse impacts to aesthetic or visual resources are anticipated. No mitigation or monitoring is required for aesthetic and visual resources.

4.1.2 Health and Safety

Issues addressed in this section relate to potential impacts to public and occupational health and safety associated with operations at YPG. The nature of operations at YPG has inherent health and safety risks. Adherence to established safety standards and procedures prevent or reduce health and safety risks to personnel and the public. Impacts are considered significant if the health or safety of the public or YPG personnel is adversely affected (YPG 2001a).

Access to the Cibola Region is controlled and managed by Range Control through a clearance procedure. Range control must be notified of any movement at the proposed project area. Personnel are not allowed access to the area while air drops are in progress. Cibola Lake Road is a public access road. Temporary closure to this road occurs during active drop operations at the La Posa DZ. This practice would also be instituted during operations that may occur if the Proposed Action is implemented. The entire installation and surrounding areas are considered when allowing for site-specific health and safety at YPG. The Proposed Action site is within the Cibola Range and is well within the boundaries of YPG.

Expansion of the La Posa DZ would present common de-brushing-related hazards to YPG and or contractor personnel. However, the Proposed Action is consistent with other de-brushing

activities that have previously occurred within the current boundaries of the La Posa DZ and would not result in an increased potential for impacts to worker safety at the proposed project work-site. Because standard safety requirements would be followed, no additional impacts would be expected from project implementation.

Standard safety measures would be used to eliminate or minimize the risk of injury during de-brushing activities as well as during parachute drop-testing. Increased air operation activity may present an increased risk to pilots and crew from wildlife-airstrikes. The U.S. Army will cooperate with and support natural resources and safety personnel in the development of a plan to reduce the risk of wildlife-aircraft strikes, according to the Memorandum of Agreement with the FAA (FAA 2003). Procedures and standards for safety during day-to-day operations at YPG are found in AR-385-1 Safety and Occupational Health Program and AR 385-10 Army Safety Program. YPG has SOPs in place for Range Operations (YP-YTRO-P1000) and Air Delivery Operations (YP-YTAP-P-3001). No additional mitigations are required.

The No-Action Alternative would have no effect on health and safety. There would be no adverse impacts to health and safety of the public or YPG personnel under either alternative.

4.1.3 Land Use

The significance of potential impacts to land use is based on the level of sensitivity of an area affected by the Proposed Action.

The land use management program is followed to ensure proposed land use activities are compatible with surrounding activities. This planning considers several factors such as effects of noise and pollution on adjacent communities. In the case of the Proposed Action, the placement of this new drop zone area is adjacent to the existing La Posa DZ, which is compatible with the existing use of the area.

Construction and operation would not degrade the land to a degree that it affects any existing use, except hunting (see below), and there are no known activities currently planned in the vicinity that would be affected. Planned activities may limit future uses of the area but not existing uses and would not affect off-post land. Therefore, implementation of the Proposed Action is aligned with the intended land use and is determined to be consistent with YPG management goals.

Public hunting of bighorn sheep, mule deer, dove, quail and waterfowl is currently allowed within Game Management Unit 43A, which is adjacent to the proposed project area. However, the proposed project area is currently closed to hunting, due to drop zone test activities adjacent to the area (i.e., the current La Posa DZ). No new closures to hunting areas would occur, and public hunting would not be impacted under either alternative.

Under the No-Action Alternative, construction of the new drop zone would not occur and the area may be available for use for other mission related activities in the future. Review would occur at that time to determine if the proposed use is consistent with the intended land use. Under this alternative, seasonal hunting in the area would continue to be prohibited.

4.1.4 Noise

When evaluating noise effects, several aspects are examined, including; 1) the degree to which noise levels generated by de-brushing activities are higher than the ambient noise levels; 2) the degree to which there is hearing loss and/or annoyance; and 3) the proximity of noise-sensitive receptors (i.e., residences) to the noise source. Such an analysis estimates the extent and magnitude of the noise generated by the proposed and alternative actions.

Although there would be a short-term increase in noise generated from de-brushing activities under the Proposed Action, there are no known noise sensitive receptors in the project area. Therefore, there would be negligible noise impacts.

Under the No-Action Alternative, there would be no change to baseline conditions described in Section 3.8. Therefore, there would be no impact on noise.

4.1.5 Socioeconomics

Impacts to socioeconomic factors are considered significant if one or more of the following conditions occur: 1) changes in the number of employees due to downsizing would leave the present public services with funding problems, under-use, and create excess housing; and 2) substantial changes in the number of employees due to growth would overload the public services such as schools, which would increase the demand for housing beyond what is presently available (YPG 2001a). EO 12898 mandates that federal agencies determine if activities have a disproportionate health and/or environmental effect on minority or low-income populations. The percentage of individuals in the minority or low-income categories in Yuma County is far less than the 50 percent threshold and because the action would take place completely within the YPG boundary, any potentially affected populations are geographically removed from the affected area.

De-brushing activities associated with the Proposed Action would cause short-term increases in air and noise emissions for the duration of the de-brushing activities. However, emissions would attenuate rapidly with distance from the de-brushing site and would be evenly distributed throughout the project area, thereby not disproportionately affecting a single population. Short-term solid waste impacts would be limited to the de-brushing and established disposal sites. Short-term traffic congestion would increase on the installation and would equally affect all who transit the area. Therefore, no disproportionate impacts to majority-minority or low-income populations from short-term solid waste and transportation impacts would be expected.

Expenditures associated with project activities under the Proposed Action would have a short-term beneficial impact on the local economy. It is assumed that workers, both skilled and unskilled, would be drawn from the available work force for the short term and temporary de-brushing phase. As such, short-term positive impacts would be evenly distributed within the region, thereby not disproportionately affecting a single population. During de-brushing activities, no new personnel would inhabit housing in the City of Yuma or La Paz County. The increase in jobs is not expected to significantly improve the local economy, alter employment trends, or result in population growth within the City of Yuma or the region.

Under the No-Action Alternative, there would be no change in the baseline conditions for population, employment and income trends, and housing characteristics; therefore, the environmental justice population would not be affected.

Based on available information, no disproportionately high and/or adverse human health or environmental effects on the environmental justice population is projected from either alternative. No mitigation or monitoring is required for socioeconomic issues. Based on available information, no disproportionately high and/or adverse human health or environmental effects on minority and/or low-income communities are projected from either alternative. No mitigation or monitoring is required for socioeconomic issues.

4.1.6 Transportation, Utilities, and Infrastructure

Transportation, utilities, and infrastructure are evaluated for the potential disruption or improvement of current transportation patterns and systems, and deterioration or improvements of existing levels of service. Impacts are considered significant if the following conditions occur: 1) utilities or infrastructure are taxed beyond their capacity to support installation mission requirements; and 2) transportation characteristics are reduced to a level that impacts safety or movement of people, goods, and services (YPG 2001a).

Access to the proposed project area is provided via U.S. Highway 95 and Cibola Lake Road, an existing maintained gravel/dirt road. An additional primitive road transverses the current La Posa DZ. This road is not open to public access. During the construction phase (consisting of de-brushing the site) of the Proposed Action, vehicles would travel to the project site on U.S. Highway 95 and Cibola Lake Road, but this would be of short duration and is not expected to create a noticeable increase in vehicle traffic. Vehicles, including transportation of a crane for use during recovery operations, would also travel these roads during air drop operations. Temporary closure of Cibola Lake Road is required during current airdrop operations. This practice would continue if the Proposed Action were implemented. The road closure is currently and would continue to be short in duration (i.e., approximately 10 minutes) and would not represent a change in procedure.

Implementation of the No-Action Alternative would not change existing conditions in the area and travel on the existing Cibola Lake Road would continue to consist of through traffic. Actions under either alternative considered would not tax utilities or infrastructure beyond capacity or affect transportation; therefore adverse impacts are not anticipated. No mitigation or monitoring is required for transportation, utilities, and infrastructure.

4.2 AIR QUALITY

Impacts to air quality are considered significant if an action exceeds emission limits established under the CAA (YPG 2001a).

4.2.1 Proposed Action

Arizona Administrative Code (A.A.C.) Title 18, R-18-2-604 through 607 requires that reasonable precautions be taken to limit excessive amounts of particulate matter from being

airborne during construction activities in urban and suburban open areas and/or during the operation of motor vehicles in a dry wash, river bed or open area. There would be short-duration increases in PM_{10} emissions from dust generated by construction related activities (i.e., vegetation clearing) and operational recovery vehicle traffic along dirt roads and across the desert during operation of the DZ. Mitigation strategies to reduce the amount of airborne particulate matter are discussed in Section 4.6.3. Dust emissions can vary substantially on a daily basis depending on levels of vehicular activity and size of retrieval equipment, specific operations, and the prevailing meteorological conditions. However, since the Proposed Action would not occur in a PM_{10} non-attainment area, this should not represent an air quality problem.

There would also be minor localized air pollution emissions on YPG due to combustion emissions from vehicles used to observe the airdrop and to retrieve the payloads. Three drops associated with the NASA Constellation Program are scheduled for fiscal year 2008, three drops are scheduled in fiscal year 2009, and ten drops are scheduled in fiscal year 2010. Only minor localized exhaust emissions are expected to occur and based on the number of drops scheduled for this mission in the next three years, emissions would not substantially increase total YPG emissions. No additional impact to air quality is anticipated.

4.2.2 No-Action Alternative

If the Proposed Action was not implemented, there would be no change in air resources in emissions on or off YPG and no significant impacts would be associated with this alternative.

4.2.3 Mitigation and Monitoring

Increased dust emissions resulting from the proposed construction activities would be a short-term adverse impact that could be mitigated though standard dust minimization practices, such as regularly watering exposed soils and the application of approved soil stabilization agents for longer term efforts. To further minimize negative air impacts, de-brushing activities and air drop missions should be scheduled with forecasted meteorological conditions such as wind speed and direction in mind. Implementation of a mitigation and monitoring plan utilizing air quality monitors would ensure PM_{10} emissions stay below State mandated levels and that dust generated as a result of drop zone activities does not migrate off the installation.

4.3 BIOLOGICAL RESOURCES

Potential physical impacts such as habitat loss, noise, and impacts on water resources, are evaluated to assess potential adverse effects on biological resources resulting from implementation of the alternatives. Impacts to biological resources are considered significant if any of the following conditions occurs (YPG 2001a):

- A regional or local species is extirpated.
- Threatened, endangered, or state special status species are adversely affected.
- Ecologic processes are damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired.

- Habitat necessary for all or part of the life cycle of a species is lost as a result of the action alternative (e.g., lambing areas, travel corridors, or wildlife watering areas).

4.3.1 Proposed Action

Implementation of the Proposed Action would result in disturbance of wildlife, vegetation, and habitat from vegetation clearing and increased air drop activity in the proposed project area, and the associated increased vehicle traffic and human presence. The proposed project area is comprised primarily of alluvial fans and desert washes, surrounded by mountainous terrain, all of which provide suitable wildlife and desert plant habitat.

Vegetation

Aside from the existing military use of designated artillery impact zones, drop zones and vehicle test ranges, the desert environment of YPG experiences minimal use. Some vegetation has already been removed for maintenance of existing testing areas and ranges (YPG 1997). Overall, the clearing of vegetation from desert scrub communities under the Proposed Action would have a long-term (major) and localized (minor-moderate) impact to this vegetation community. This dominant community would remain relatively unfragmented by the clearing of brush (minor in context), which would result in a perceptible loss of habitat (minor). Overall, the Proposed Action would result in a minor impact to desert scrub vegetation communities in the area.

Impacts from the Proposed Action to the mesquite bosques/desert wash community would be different because although this habitat is sporadic in the ROI, it is high value. The Proposed brush clearance area excludes three separate areas of mesquite bosques and desert washes, which if cleared would segment large portions of this high value habitat. The avoidance of these three areas along the western and northern borders of the proposed project area helps ensure that these habitats will not be segmented, which will help reduce ecological fragmentation and promote continued water and wildlife movements through desert washes. The retention of high value habitat near areas of clearing is important because these areas would provide habitat necessary for all or part of a species' lifecycle. Species displaced from the cleared areas could conceivably move to these mesquite bosque areas for shelter, foraging, etc. Clearing of the remaining mesquite bosques within the proposed project area would result in a noticeable (moderate) yet localized (minor) change in the availability of these communities within the ROI. This de-brushing would lead to a minor impact (in context) to this specialized habitat that will last long-term (major). Overall, the impacts from the Proposed Action on mesquite bosques would be moderate.

Adverse impacts to biological resources as a result of implementation of the Proposed Action can be minimized with appropriate mitigation described in Section 4.3.3.

Wildlife

Wildlife utilizes the transition areas between mountainous areas, washes within the surrounding mountains, and the Colorado River corridor west of the proposed project area for migration. It is possible that some wildlife species may travel through the proposed project area, but with the human presence and noise disturbance, the animals may circumvent the area.

De-brushing activities associated with the Proposed Action would temporarily displace wildlife from suitable habitat in the immediate vicinity of the project area. Smaller, less mobile species could inadvertently be killed during de-brushing; however, there would be no long-term impacts to populations of such species or other wildlife under the Proposed Action because of the temporary nature of the de-brushing activities.

Common wildlife attractants at airports include such features as wetlands or ponded water, roosting habitats, and edible vegetation. Four sewage lagoons are located within 2 miles of the airfield, which attract waterfowl. While the bird species most commonly involved in strikes such as raptors, doves, and waterfowl may be found in the project area, gulls are not. Additionally, the Yuma area populations of turkey vultures, red-tailed hawks, and mourning doves are generally declining or stable (Section 3.3.2). As discussed in Section 3.3.2, typical aircraft operations are associated with bird and/or wildlife collisions (strikes), which can injure wildlife and humans and damage aircraft. According to the FAA's Memorandum of Agreement, 90 percent of civilian aircraft-wildlife strikes occur on or near United States airports when aircraft are below 2,000 feet agl (FAA 2003). Under the Proposed Action, the aircraft will perform drops from approximately 16,500 feet agl, which is well below the altitude of the majority of documented strikes. For this reason, the Proposed Action would have no impact on birds through aircraft strikes.

Collisions with mammals may also be a potential problem at some airports. The possibility of mammal-aircraft strikes is not an issue for the Proposed Action because the aircraft will not be landing in the proposed project area. For this reason and for the reasons outlined above, the Proposed Action would have no impact on mammals through aircraft strikes.

There is a risk that an animal present in the ROI during a drop could be killed by impact of the dropped item. However, as mentioned above, the absence of vegetation in addition to the noise and other vehicle disturbance would likely deter most wildlife species from loafing in the ROI. For this reason, the Proposed Action would have a negligible impact on smaller, less motile species (reptiles and mammals) of death from impact.

Additionally, human presence, regardless of activity, is often enough to disturb animals or cause them to avoid areas. The additional jet aircraft overflights performing air drops would result in an increased level of noise in the proposed project area. Studies on the effects of aircraft noise on wildlife have provided evidence that effects of such noise on mammals such as bighorn sheep and other ungulates are transient and of short duration and suggest that the animals habituate to the sounds (Workman et al. 1992, Krausman et al. 1993, Weisenberger et al. 1996 in United States Air Force [USAF] 2000). Similarly, the impacts to raptors and other birds (e.g., waterfowl) from aircraft low-level flights were found to be brief and not detrimental to

reproductive success (Smith et al. 1988, Lamp 1989, Ellis et al. 1991, Grubb and Bowerman 1997 *in* USAF 2000).

Other potential sources of impacts to wildlife from aircraft overflights are the visual effect of the approaching aircraft and the associated subsonic noise. Visual impacts are not expected to be an issue under the Proposed Action because the aircraft will perform drops from approximately 16,500 feet agl, which is higher than the altitude accounting for most reactions to visual stimuli by wildlife (Lamp 1989 and Bowles 1995 *in* USAF 2000).

Because aircraft currently operate in the existing La Posa DZ adjacent to the proposed project area, it is anticipated that wildlife species residing at and in the vicinity of the proposed project area consist of those habituated to human disturbance and aircraft noise. The same scenario would occur with activity in the proposed project area. Predatory birds often pursue prey around clearings such as drop zones, so an expansion of a cleared area could benefit these species (YPG 2001). Overall, the localized and long-term impacts from the expansion of the drop zone under the Proposed Action on the widespread wildlife populations would be minor.

Habitat

Clearing of vegetation in the proposed project area could adversely affect wildlife that utilize washes as migratory corridors and browse the vegetation along the way. However, similar habitat is abundant in adjacent areas and throughout YPG. Provisions of the Migratory Bird Treaty Act and National Defense Authorization Act outline the military's procedures for protection of migratory birds when planning and executing military readiness activities. Movement of vehicles during construction could disturb or displace (both temporarily and in the long-term) larger mammals, especially bighorn sheep and mule deer that may be present. Few conflicts are expected with any biological resources as a result of expanding the La Posa DZ primarily due to the existing use of the nearby area as a drop zone. The removal of vegetation removes wildlife habitat. Small mammals and reptiles would likely be directly affected by such activity (YPG 2001). Therefore the clearing of vegetation that serves as habitat would result in long-term and localized impact to a broadly occurring resource, for an overall minor impact to wildlife habitat in the area.

Special Status Species

At present, no federally-listed endangered, threatened, proposed or candidate plant or animal species are known to occur at the proposed project area. The loggerhead shrike, Cowles fringe-toed lizard, and the desert rosy boa, all federal species of concern, could use the open terrain of the proposed project area for feeding or cover, but there is similar and plentiful habitat in the surrounding area that could be utilized instead. Therefore, implementation of the Proposed Action is not expected to adversely impact any federally listed or sensitive species.

4.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no additional adverse impacts to biological resources beyond the current impacts of range operations and the environmental and natural resource management at YPG.

4.3.3 Mitigation and Monitoring

Mitigation measures, including limiting areas that are cleared of all vegetation to the extent of the impact area for the expanded drop zone, would be implemented to minimize potential adverse effects to biological resources as a result of implementing the Proposed Action. Biological resources would continue to be managed under the INRMP and all applicable environmental laws with the intent of managing military installation lands to support the military mission while providing sustainable populations of biological resources. Wildlife and conservation management practices would be followed in order to ensure that the habitat necessary for all or part of the life cycle of a species is not lost and that the ecological processes are not damaged to the extent that YPG biodiversity is impaired or ecosystems are no longer sustainable. Procedures outlined in the Migratory Bird Treaty Act and National Defense Authorization Act will be followed for the protection or mitigation of impacts to migratory birds.

Standard salvage and relocation protocol would be used for plants listed under the Arizona Native Plant Law that may be impacted by the expansion of the La Posa Drop Zone. Approximately 29 saguaro cacti were noted within the proposed project area, which will be relocated prior to de-brushing (Gibbons 2008).

If any sensitive species are discovered during construction activities, a separate mitigation plan would be prepared, if necessary, to protect them. To the extent possible, special consideration would be given to habitat in washes within the proposed de-brushing area, and impacts to these areas would be minimized. Because considerable, long-term surface disturbance to wildlife habitat would result from construction of the expanded drop zone, YPG would continue to consult with AGFD to develop appropriate mitigations for this adverse affect. This consultation could include development or redevelopment of wildlife water sources in the area.

As indicated by their participation in the Memorandum of Agreement to Address Aircraft-Wildlife Strikes (FAA 2003), the U.S. Army will cooperate and support natural resources and safety personnel in the development of a plan to reduce the risk of wildlife-aircraft strikes.

4.4 CULTURAL RESOURCES

YPG mission activities have the potential to significantly impact cultural resources. Implementation of any of the alternatives will have a significant impact if one or more of the following criteria are met:

- Prehistoric and historic sites eligible for the NRHP are adversely affected.
- Native American religious or other cultural activity areas are adversely impacted (USAYPG 2006b).

4.4.1 Proposed Action

There are no cultural resource sites in the APE as defined for the Proposed Action. Therefore, there would be no effect on cultural resources as a result of the implementation of the Proposed Action.

4.4.2 No-Action Alternative

Under the No-Action Alternative, there would be no additional adverse impacts to cultural resources beyond the current impacts of range operations and the environmental and natural resource management at YPG.

4.4.3 Mitigation and Monitoring

Section 106 of the NHPA (36 CFR Part 800) requires Federal agencies to take into account the effects of their activities and programs on historic properties that are eligible or considered eligible for listing on the NRHP, and provide the ACHP with a reasonable opportunity to comment with regard to such undertakings. Unanticipated discoveries of archeological remains may occur even in areas that have been previously surveyed. In case of such a discovery, all activities in the area of the find would be stopped, and the YPG Cultural Resources Manager would be notified immediately. These resources, if discovered, would be managed in accordance with 36 CFR 800. The YPG Cultural Resources Manager would assess the significance of the discovered resources in accordance with the NRHP evaluation criteria, in consultation with the SHPO and Native American Tribes, and would make appropriate recommendations. Additional mitigations are listed in the RWEIS (YPG 2001a, page 105).

YPG will consult with local tribes regarding Traditional Cultural Properties (TCPs) through the Section 106 consultation process. Additional archaeological survey and Section 106 consultation would be required for any planned or future ancillary structures or other developments outside the APE.

4.5 SOIL RESOURCES

Impacts to soil resources are considered significant if the following conditions occur (YPG 2001a):

- Activities result in severe soil erosion.
- Soil subsidence occurs over large areas.
- Permanent contamination of soil occurs that would restrict future land use.

4.5.1 Proposed Action

The Proposed Action includes de-brushing approximately 1,050 acres immediately west of the existing La Posa DZ. The de-brushing activities would cause impacts to local topography features and could potentially produce soil erosion, or contamination of soils that would restrict future land use at YPG. Some areas of soil at the proposed La Posa DZ expansion area have been previously disturbed by off-road traffic and are not in a pristine state. Examples of these types of disturbances to surface crusts and desert pavement can be seen throughout most of YPG valley areas (Cochran 1991, YPG 2001a).

Soil erosion due to past activities is light and the Proposed Action is expected to have added impacts on the site. Healthy plant communities indicate healthy soil conditions (YPG 1999). In order to facilitate drop zone testing and recovery, the plant community associated within the

proposed DZ expansion area would be changed. Vegetation, primarily in the small unnamed washes within the 1,050 acre DZ expansion area, would be cleared except for saguaro cactus, which would be transplanted out of the area. From this clearing activity, soils that once were anchored by plant roots or cover would be subject to wind and water erosion effects.

Disturbance and compaction of soils would also occur when retrieval vehicles and equipment leave the established roads and traverse the desert pavement to pick up airdrop loads. Retrieval operations would use established roads, washes, and adjacent surfaces to the maximum extent possible. Each airdrop retrieval would leave an impression in the soil surface. Such impacts would be widespread within and adjacent to the DZ expansion area. Disturbed areas would be susceptible to some wind and water erosion.

Soil contamination should not result from these proposed activities unless a retrieval vehicle experiences an accidental fuel or petroleum product leak from the vehicle fuel tank. In that incident, personnel would utilize the spill reporting procedure by informing Range Control that contact with the Fire Department and Environmental Sciences was required. Any spilled material would be collected and disposed in accordance with the USAG YPG Integrated Contingency Plan (ICP) (YPG 2000).

Aside from the existing military use of designated artillery impact zones, drop zones and vehicle test ranges, the desert environment of YPG experiences minimal use. Most of the vegetation in the existing La Posa DZ has already been removed for parachute drop testing. Overall, the clearing of vegetation under the Proposed Action would have a long-term and localized impact to topographic features at the proposed DZ expansion area and could potentially produce soil erosion. However, the proposed activities would not result in severe soil erosion, soil subsidence over large areas, or permanent contamination resulting in restriction of future land use. Adverse impacts to soil resources as a result of implementation of the Proposed Action can be minimized with appropriate mitigation described in Section 4.2.3.

4.5.2 No-Action Alternative

Under the No-Action Alternative, there would be no additional adverse impacts to soil resources beyond the current impacts of range operations and the environmental and natural resource management at YPG.

4.5.3 Mitigation and Monitoring

YPG currently maintains several environmental plans and programs designed to assist with monitoring and maintaining its natural environmental resources: the Range and Training Land Assessment (RTLA), ITAM, and the INRMP. These programs provide scientific and management information for the monitoring of natural resources on the installation, with specific emphasis on lands where training and testing activities occur.

Through the implementation of proper procedures and best management practices (BMPs) during de-brushing and operation, impacts to the soils resource would be minimized. BMPs include the application of sprayed water during de-brushing efforts to control fugitive dust

emissions; the periodic application of environmentally sound soil stabilizing agents to the cleared area of the drop zone as an added soil stabilizing measure; and the use of waddles throughout the cleared area to control erosion.

4.6 WATER RESOURCES

This section assesses the potential project impacts to surface and groundwater resources as defined in Section 3.3, Water Resources. Impacts to water resources are considered significant if one or more of the following significance criteria are met (YPG 2001a):

- Surface water is contaminated by stormwater 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 CWA standards.

4.6.1 Proposed Action– Surface Water

Existing dirt/gravel roads would be used for transportation to and from the proposed project area, as the project area is located adjacent to the existing La Posa DZ. Disturbance from potential increased vehicle use of the existing dirt/gravel roads could result in increased erosion and sedimentation after rainstorms. Use of the roads is not expected during rainstorms or when surface soils contain significant moisture and are subject to rut development (which could redirect surface water flow). Because of the lack of permanent surface water features in the project area, no impacts from vehicle use of existing roads to surface water are expected.

Surface disturbance from construction activities related to the Proposed Action has the potential to alter natural hydrologic features. The proposed action would include de-brushing of the entire 1,050-acre proposed expansion area. The non-wash areas are sparsely vegetated whereas the washes are vegetated with higher concentrations of trees and brush. Based on observations from the 2007 site visit, as well as review of available aerial photographs, it is assumed that 60 percent to 70 percent of the proposed action area is covered with vegetation that would need to be removed (Figure 5).

Figure 5 Proposed De-brushing Area (overall view on left; drainage area on right)

Removal of vegetation in these areas would potentially alter the surface layer of soil by disturbing the protective layer of desert pavement. The flow of stormwater runoff could be accelerated or redirected away from natural washes. This activity could lead to higher sediment yields entering drainage systems, causing siltation and increased flooding. Although the combination of low precipitation and high evaporation at YPG prevents surface water build-up and/or infiltration into the soil, the high angle gradients of desert pavement and exposed outcrops of surface rock would have the potential for transport to washes throughout the proposed project area. However, the spatial separation between the proposed project area and the Colorado River (about 20 miles), in addition to the lack of other permanent surface water features in the ROI that could receive sediment, would reduce the potential impact to surface waters from the Proposed Action to temporary and localized; therefore, minor overall.

4.6.2 Proposed Action– Groundwater

Due to the depth of groundwater in the area and the low annual rainfall, no impact is anticipated from construction or operational activities associated with the Proposed Action.

4.6.3 No-Action Alternative – Surface Water

Under the No-Action Alternative, there would be no additional adverse impacts to surface water beyond the current impacts of range operations and the environmental and natural resource management at YPG.

4.6.4 No-Action Alternative – Groundwater

Under the No-Action Alternative, there would be no additional adverse impacts to groundwater beyond the current impacts of range operations and the environmental and natural resource management at YPG.

4.6.5 Mitigation and Monitoring

YPG currently maintains several environmental plans and programs designed to assist with monitoring and maintaining its natural environmental resources, including the RTLA, the ITAM, and the INRMP. These programs provide scientific and management information for the monitoring of natural resources on the installation, with specific emphasis on lands where training and testing activities occur. Inclusion of the proposed site in these monitoring and mitigation programs would ensure that any adverse impacts are identified, mitigated where possible, and monitored. Special consideration would be given to draws and washes in the proposed project area, and impacts to these areas would be minimized to the greatest extent possible.

A Stormwater Pollution Prevention Plan (SWPPP) would be required because the Proposed Action would disturb land greater than 1 acre in size. The SWPPP would identify BMPs that are key to controlling pollutants in stormwater discharge and may include both temporary and permanent stabilization measures.

In areas of potential sheet (overland) flow, piles of brush that have been cleared from the project area will be gathered and placed to help moderate this flow to prevent excessive erosion and control sediment transport. The brush piles would serve the same purpose as silt fences, so no silt fences would be needed.

4.7 CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of an action, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects (CEQ 1997b *in* YPG 2007b). Cumulative impacts can result from minor, but collectively substantial actions undertaken over a period of time by various agencies (Federal, State, and local) or individuals. A discussion of cumulative impacts resulting from projects proposed, under construction, recently completed, or anticipated for implementation in the near future is a NEPA requirement (CEQ 1987 *in* YPG 2007b).

Cultural resource surveys of the proposed site were performed to determine the need for project specific precautions regarding management of environmental resources. The resulting data were used to evaluate potential direct, indirect, and cumulative impacts, and to plan for mitigation and monitoring as required. BMPs would limit impacts to soils, water resources, biological resources, cultural resources, and air quality from vehicular traffic, construction activities, and testing.

No additional projects that would need to be included in the cumulative impacts analysis are in the foreseeable future. Seven other projects have occurred in the North Cibola Region of YPG in the recent past and each of these have ongoing operations.

- Mojave Drop Zone located southwest of the proposed project area in 2001
- Joint Experimentation Range Complex (JERC) I Test Facility located northwest of the proposed project area in 2004
- JERC II Test Complex located west of the proposed project area in 2006
- JERC III Test Complex located west of the proposed project area in 2007
- Electronic Common Use Test (ECUT) Site located southeast of the proposed project site in 2007
- C17 Airstrip located south of the proposed project area and Corral Road in the early 1990s as a landing strip for C-17 planes
- Unmanned Aerial Vehicle (UAV) Airstrip located south of the proposed project area and Corral Road

A FONSI was signed for each of the first four projects indicating no adverse effects to the environment were anticipated. These projects are similar in purpose and all facilities conform to the YPG test mission for the area. Cumulative impacts limited to the resources listed above could be expected to result from these projects due to their geographic location proximity within the project area. However, not all facilities would be in use at the same time and even the combined effects would be below significant criteria standards.

Given the localized nature of the Proposed Action, its location adjacent to the existing La Posa DZ, and the designation of land use within the proposed project area for Army mission support, it is expected that the Proposed Action would not contribute more than a negligible (barely perceptible and immeasurable) incremental cumulative impact to any of the resources analyzed in Chapter 4. There would be no incremental cumulative impacts from the No-Action Alternative. By maintaining mission objectives while ensuring compliance with environmental regulations, YPG demonstrates its commitment to sound stewardship of public land.

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CHAPTER 5
CONCLUSIONS

This EA has evaluated the potential for impacts associated with the Proposed Action and No-Action Alternatives. Based on this evaluation it was determined that impacts to soils, water, biological resources, cultural resources, and air quality could result from implementation of the Proposed Action. The potential for adverse impacts would be minimized to the extent possible through implementation of mitigation measures and BMPs. All aspects of the Proposed Action would follow applicable plans, policies, and procedures. Impacts to land use, noise, socioeconomics, health and safety, aesthetics, transportation, utilities, and infrastructure were analyzed in Chapter 4 and determined to be non-existent or negligible. Below is a brief summary of the conclusions reached after analysis of impacts to the resources in Chapter 4. Included in the summary are resource-specific mitigation measures.

5.1 SOILS

Ground disturbance from clearing of vegetation and vehicle use of the expansion of the La Posa DZ could result in accelerated soil erosion. Soils within the proposed project area have been previously disturbed in some areas from the operation of the existing La Posa DZ. In addition to the existing environmental programs at YPG, a number of mitigation measures have been proposed to reduce the potential impacts of the proposed project on soils:

- YPG would confine vehicular traffic to established roads as much as possible.
- BMPs such as standard erosion control measures (water spray, environmentally-sound soil stabilizing agents, and waddles), would be implemented.

5.2 WATER RESOURCES

Ground disturbance from construction and use of the expansion of the La Posa DZ could result in accelerated erosion and sedimentation. Sediment could enter surface water in the form of stormwater runoff; however the spatial separation between the proposed project area and the Colorado River, along with the scarcity of rainfall precludes transport of sediment to this surface water body. Due to the extreme depth to groundwater and the high evaporation rate for the area, no impact to groundwater is anticipated.

- BMPs designed to reduce impacts to soils also protect water resources. Implementation of BMPs during construction would limit impacts to soils resulting from de-brushing activities and vehicular traffic. Special consideration would be given to draws and washes in the project area, and impacts to these areas would be minimized to the extent possible.
- In areas of potential sheet (overland) flow, piles of brush that have been cleared from the project area will be gathered and placed to help moderate this flow to prevent excessive erosion and control sediment transport. The brush piles would serve the same purpose as silt fences, so no silt fences would be needed.

- A SWPPP would be developed to identify BMPs that would minimize impacts to washes.

5.3 BIOLOGICAL RESOURCES

Disturbance to wildlife, vegetation, and habitat can result from construction and operations of the La Posa DZ expansion project area. In addition to the existing environmental programs at YPG, a number of mitigation measures have been proposed to reduce the potential impacts of the proposed project on biological resources:

- Standard salvage and relocation protocol would be used for plants listed under the Arizona Native Plant Law.
- Wildlife and conservation management practices would be followed in order to ensure that the habitat necessary for all or part of the life cycle of a species is not lost and the ecological processes are not damaged to the extent that YPG biodiversity is impaired or ecosystems are no longer sustainable.
- To the extent possible, special consideration would be given to habitat in washes (i.e., mesquite bosques) within in the proposed de-brushing area, and impacts to these areas would be minimized.
- Procedures outlined in the Migratory Bird Treaty Act and National Defense Authorization Act will be followed for the protection or mitigation of impacts to migratory birds.
- If any sensitive species are discovered during construction activities, a separate mitigation plan will be prepared, if necessary, to protect them.

5.4 CULTURAL RESOURCES

An approximate 1,050-acre parcel west and adjacent to the existing drop zone encompassing the proposed project area has been subjected to a 100 percent cultural resources survey. No new sites were discovered during this survey, nor are there any previously recorded sites within this area. In the event that buried cultural resources are discovered during construction or use of the La Posa DZ expansion area, the following actions will be implemented.

- In the event of an inadvertent discovery of a potential cultural resource site, the guidelines outlined in the Integrated Cultural Resources Management Plan will be implemented.
- When required, mitigation strategies would be coordinated with the SHPO and Native American Tribes.

5.5 AIR QUALITY

Short-term dust emissions would occur from de-brushing activities and from vehicle use on dirt roads during that activity and during recovery activities following air drop operations. These emissions could be mitigated through standard dust minimization practices and through schedule coordination based on meteorological conditions.

5.6 SUMMARY/RECOMMENDATIONS

The analysis for this site-specific proposal for implementation of the Proposed Action Alternative and all applicable mitigation measures did not reveal the potential for significant environmental effects; therefore, it is determined that a FONSI is warranted and preparation of an EIS is not necessary.

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CHAPTER 6
LISTING OF PREPARERS, AGENCIES, AND PERSONS CONSULTED

- ACC PMS/CEV; Newport News, VA
- AhaMaKav Cultural Society; Mojave Valley, AZ
- Ak-Chin Indian Community; Maricopa, AZ
- Arizona Deer Association; Mesa, AZ
- Arizona Desert Bighorn Sheep Society; Mesa, AZ
- Arizona Department of Agriculture: Phoenix, AZ
- Arizona Department of Environmental Quality; Phoenix, AZ
- Arizona Game and Fish Department; Phoenix, AZ
- Arizona Game and Fish Department; Yuma, AZ
- Arizona Wilderness Coalition; Prescott, AZ
- Audubon Society; Yuma, AZ
- Bureau of Indian Affairs; Phoenix, AZ
- Bureau of Indian Affairs; Yuma, AZ
- Bureau of Land Management; Yuma, AZ
- Bureau of Reclamation: Yuma, AZ
- Chemehuevi Indian Tribe; Havasu Lake, CA
- City of Yuma; Yuma, AZ
- Cocopah Indian Tribe; Somerton, AZ
- Colorado River Tribe; Parker, AZ
- Cultural Affairs Office, Tohono O'Odham Nation; Sells, AZ
- Fort McDowell Yavapai Nation; Fountain Hills, AZ
- Fort Mojave Tribal Council; Parker, AZ
- Gila River Indian community; Sacaton, AZ
- Hia-Ced O'Odham Office; Sells, AZ
- Imperial National Wildlife Refuge; Yuma, AZ
- Kofa National Wildlife Refuge; Yuma, AZ
- La Paz County; Parker, AZ
- MCAS Environmental Department; Yuma, AZ
- Pueblo of Zuni
- The Quechan Tribe; Yuma, AZ
- Salt River Pima-Maricopa Indian community; Scottsdale, AZ
- San Carlos Tribe; San Carlos, AZ
- Sierra Club; Phoenix, AZ
- Southwest Arizona National Wildlife Refuge Complex
- Tohono O'Odham Nation; Sells, AZ
- U.S. Border Patrol; Yuma, AZ
- U.S. Fish and Wildlife Service; Phoenix, AZ
- U.S. Environmental Protection Agency, Region IX; San Francisco, CA
- Wellton – Mohawk Natural Resources Conservation District; Roll, AZ
- Yavapai-Apache Community; Camp Verde, AZ
- Yavapai-Prescott Tribe; Prescott, AZ

- Yuma County Development Services; Yuma, AZ
- Yuma Valley Rod and Gun Club; Yuma, AZ

6.1 TECHNICAL PREPARERS

Technical preparers of this document included staff at USAG Yuma, NASA, and Weston Solutions, Inc., the environmental contractor.

6.1.1 U.S. Army Garrison Yuma

- Chief, Environmental Sciences Division – Charles F. Ruerup
- Conservation Manager – Randy English
- Wildlife Biologist – Jason Gibbons
- Cultural Resources Manager – Meg McDonald
- Archaeologist – Karla James
- Test Officer Aviation and Air Delivery Systems Division – Patrick Serani

6.1.2 Environmental Contractual Support

Weston Solutions, Inc. (WESTON®) prepared this environmental assessment for the USAG Yuma Environmental Sciences. Northland Research, Inc., as a subcontractor to WESTON conducted a cultural resources survey at the proposed project area and also contributed to the cultural resources section of the EA. The following individuals made technical contributions during the preparation of this EA:

Weston Solutions, Inc.

- Program Manager – Paige Rhodes
- Project Manager / Senior Geoscientist – Rick Logsdon
- Environmental Scientist – Barb Wethington
- Senior Biologist Specialist – Kimberli S. Busse
- Associate Project Scientist – Elisa Morales
- Technical Editor – Tamara Carroll

Northland Research, Inc.

- Principal Investigator – David J. Dechambre
- Project Archeologist – Steven G. Dosh
- Project Archeologist – Christina M. Carpenter

6.2 COOPERATING AGENCIES

- National Aeronautics and Space Administration; Washington, D.C., Environmental Management Division – Kathleen Callister

6.3 COMMENT AND REVIEW PERIOD

A Draft EA and FONSI was provided to the agencies and individuals listed in Chapter 6. The Draft EA and FONSI were also available for public comment during a 30-day review period

from 20 January 2008 through 20 February 2008. The announcement of the public comment period of the Draft EA and FONSI was published in the local Yuma newspaper (The Sun) in accordance with 32 CFR Part 651, Subpart B, Section 651.14 (b)(2). The publisher's Affidavit of Publication is included in Appendix A of this document.

Comments received for the Draft EA and FONSI from the agencies and individuals listed in Chapter 6 were addressed during the comment period and incorporated into this Final EA document. Additional copies of the Final EA are available upon request. Inquiries should be directed to: U.S. Army Garrison Yuma, Environmental Sciences Division, 301 C Street (IMWE-YMA-PWE); Yuma, AZ 85365-9498; by calling (928) 328-2977, or submitting a fax to (928) 328-6696.

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CHAPTER 7
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APPENDIX A

Publisher's Affidavit of Publication

Publisher's Affidavit of Publication

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STATE OF ARIZONA }
COUNTY OF YUMA }

PUBLIC NOTICE
NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR THE LA POSA DROP ZONE PROPOSED DE-BRUSHING AREA AT YUMA PROVING GROUND, ARIZONA

An Environmental Assessment (EA) has been prepared to analyze the proposed expansion and de-brushing of the La Posa Drop Zone at the United States Army Garrison (USAG) Yuma Proving Ground (YPG). The Proposed Action, expansion of the La Posa DZ, would support YPG's overall mission of providing adequate testing facilities that satisfy the changing needs of the Armed Forces and other federal agencies. The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Army guidance on implementing NEPA, evaluates potential impacts of the proposed and alternative actions, including the No Action Alternative, on the environment. Based on the EA, USAG has prepared a proposed Finding of No Significant Impact (FONSI). Copies of the EA and proposed FONSI are available at the US Army Garrison, Yuma, Environmental Sciences Department, IMWE-YMA-PWE, 301 C Street, Bldg 303, Yuma, AZ 85365-9498, (928) 328-2128. Comments may be submitted through 20 February 2008 and be provided to Mr. Charles F. Ruerup, US Army Garrison, Yuma, Environmental Sciences, IMWE-YMA-PWE, 301 C Street, Bldg 303, Yuma, AZ 85365-9498, (928) 328-2977, or Charles.Ruerup@us.army.mil.

PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et seq. All written comments received during the comment period will be made available to the public and considered during the Final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

Daily January 20, 23, 2008
#L36563

Julie Moreno or Patrick Norris, having been first duly sworn, deposes and says: that The Sun is a newspaper of general circulation published daily in the City of Yuma, County of Yuma, State of Arizona; that (s)he is the publisher or business manager of said paper; that the

PUBLIC NOTICE

a printed copy of which, as it appeared in said paper, is hereto attached and made a part of this affidavit, was published in The Sun

For TWO issues; that the date of the first publication of said PUBLIC NOTICE

was JANUARY 20 ,2008 and the date of the last publication being JANUARY 23 ,2008 and that the dates when said PUBLIC NOTICE

was printed and published in said paper were

JANUARY 20, 23, 2008

Subscribed and sworn to before me, by the said Julie Moreno or Patrick Norris

24th day of January, 2008

Virgen P. Perez
Notary Public

My commission expires May 10, 2009

OFFICIAL SEAL
VIRGEN P PEREZ
Notary Public State of Arizona
YUMA COUNTY
My Comm Expires MAY 10 2009