FINAL
ENVIRONMENTAL ASSESSMENT

JTF-6 FENCE
CONSTRUCTION PROJECT
YUMA COUNTY, ARIZONA

Prepared for

Joint Task Force Six
Fort Bliss, Texas

MAY 1998

(This page intentionally left blank.)

FINDING OF NO SIGNIFICANT IMPACT
FOR THE
JOINT TASK FORCE SIX OPERATION
BORDER FENCE PROJECT
YUMA, ARIZONA

The primary purpose of the Proposed Action is to assist in fulfilling the U.S. Border Patrol's mission to reduce illegal drug trafficking along the U.S.- Mexico border and by maximizing the effectiveness of the Border Patrol. The Proposed Action would involve the construction of a fence, two feet north of the U.S.-Mexico border beginning at the existing landing mat fence and extending approximately 3.3 miles to the east, south of Yuma, Arizona and north of San Luis, Mexico. Military personnel to be utilized during the fence construction would be from an U.S. Military Engineer Battalion. It is anticipated that approximately 70 military personnel would be required to complete the Proposed Action.

In addition to the Proposed Action, there were three other alternatives evaluated as part of this environmental impact analysis: 1) No-Action Alternative; 2) Alternative Fencing Materials; and 3) Alternative Distance from the International Border. The No-Action Alternative was carried throughout the analysis, and would be reflected in the baseline environmental conditions of the area. However, with this alternative, there would be the continued socioeconomic concerns relating to the illegal drug trafficking and criminal activity. The Alternative Fencing Materials and Alternative Fence Location alternatives were eliminated from further consideration because they would not assist the Border Patrol in the accomplishment of their mission, and offered the same if not greater, potential for environmental concerns as the Proposed Action.

A Programmatic Environmental Impact Statement (PEIS) was prepared in 1994 for the Immigration and Naturalization Service (INS) and JTF-6 proposed projects that facilitate Law Enforcement Agencies (LEAs) missions to reduce illegal drug activity along the southwestern border of the U.S. The PEIS addresses the cumulative effects of past and reasonably foreseeable projects undertaken by JTF-6 for numerous LEAs in the four southwestern states (Texas, New Mexico, Arizona, and California). This Environmental Assessment (EA) for the Proposed Action tiers from the PEIS completed for JTF-6 and INS activities along the U.S. – Mexico border (U.S. Army 1994). Cooperating agencies involved with the Proposed Action include the U.S. Border Patrol, the INS, and JTF-6.

There would be no significant areas of environmental concern associated with the Proposed Action. There could be some insignificant environmental issues associated with the proposed fence construction activities (i.e., air, geological resources, biological resources, and noise); however, these would be temporary in nature and easily mitigated through sound engineering practices. Additionally, a storm water pollution prevention plan (SWPPP) has been developed and would be implemented as part of the Proposed

Action. Under the Proposed Action, there would be a beneficial socioeconomic impact to the area in the form of a reduction in drug trafficking and related criminal activities. There would be no impact to land use, water resources, cultural resources, aesthetics or solid/hazardous waste generation or management as part of the Proposed Action.

Based on the results of the EA and the environmental design measures to be incorporated as part of the Proposed Action, it has been concluded that the Proposed Action will not have a significant adverse effect on the environment.

27 May 1998
Date

JAMES J. LOVELACE, JR
Brigadier General, U.S. Army
Commanding

EXECUTIVE SUMMARY

As a result of the high rate of violent crime, the continual damage to our Nation's health and economy, and strains on vital relationships with international allies; the United States (U.S.) Congress developed the National Drug Control Strategy (NDCS) and incorporated the Department of Defense (DoD) into this new plan. The Secretary of Defense established Joint Task Force Six (JTF-6) to coordinate all DoD counter-drug support to Federal, state, and local law enforcement agencies (LEAs) in an effort to curtail drug smuggling activities into the U.S. and protect national security. JTF-6 was assigned to assist LEAs who have drug interdiction responsibilities in the continental U.S. This assistance includes operational and training efforts, design and construction of law enforcement facilities and infrastructure, or logistical actions provided there is a link to drug interdiction. In turn, the assistance would provide all or part of the mission-essential training elements for the military unit involved in the assistance.

This Environmental Assessment (EA) addresses the potential impacts associated with the proposed fence construction along the U.S.-Mexico border in Yuma County, Arizona. The Proposed Action would involve the construction of a fence two feet north of the U.S.-Mexico border beginning at the existing landing mat fence and extending approximately 3.3 miles to the east, south of Yuma, Arizona and north of San Luis, Mexico. Materials to be used for the proposed fence would either be steel landing mat or sheet metal fence. The purpose of the Proposed Action is to minimize the influx of illegal contraband (i.e., drugs) from entering the U.S., and to reduce crime along the boundary area through the use of deterrent measures and by maximizing the effectiveness of the Border Patrol.

A Programmatic Environmental Impact Statement (PEIS) was prepared in 1994 for the Immigration and Naturalization Service (INS) and Joint Task Force Six (JTF-6) proposed projects that facilitate Law Enforcement Agencies (LEAs) missions to reduce illegal drug activity along the southwestern border of the U.S. The PEIS addresses the cumulative effects of past and reasonably-foreseeable projects undertaken by JTF-6 for numerous LEAs in the four southwestern states (Texas, New Mexico, Arizona, and California). This Environmental Assessment (EA) for the Proposed Action tiers from the PEIS completed for JTF-6 and INS activities along the U.S-Mexico border (U.S. Army 1994). Cooperating agencies involved with the Proposed Action include the Border Patrol, INS, and JTF-6.

In addition to the Proposed Action, there were three other alternatives evaluated as part of this environmental impact analysis: 1) No-Action Alternative; 2) Alternative Fencing Materials; and 3) Alternative Distance from the International Border. The No-Action Alternative was carried throughout the analysis, and would be reflected in the baseline environmental conditions of the area. However, with this alternative there would be no reduction in illegal drug trafficking and criminal activity. The Alternative Fencing Materials and Alternative Fence Location alternatives were eliminated from further consideration because they would not assist the Border Patrol in the accomplishment of

their mission, and offered the same, if not greater, potential for environmental concerns as the Proposed Action.

There would be no significant areas of environmental concern associated with the Proposed Action. There could be some insignificant environmental issues associated with the proposed fence construction activities (i.e., air, geological resources, biological resources, and noise); however, these would be temporary in nature and easily mitigated through sound engineering practices. Additionally, a storm water pollution prevention plan (SWPPP) has been developed and would be implemented as part of the Proposed Action. Under the Proposed Action, there would be a beneficial socioeconomic impact to the area in the form of a reduction in drug trafficking and related criminal activities. There would be no impact to land use, water resources, cultural resources, aesthetics or solid/hazardous waste generation or management as part of the Proposed Action.

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

TABLE OF CONTENTS (cont.)

Figures

Tables

Appendices

ACRONYMS AND ABBREVIATIONS

ADWR	Arizona Department of Water Resources
ASM	Arizona State Museum
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
dB	decibel
dBA	A-weighted decibel
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
F	Fahrenheit
FONSI	Finding of No Significant Impact
FY	fiscal year
HC	exhaust hydrocarbons
HCHO	aldehydes
HMTA	Hazardous Materials Transportation Act
INS	Immigration and Naturalization Service
JTF-6	Joint Task Force Six

ACRONYMS AND ABBREVIATIONS (cont.)

LEA	law enforcement agency
METL	mission essential task list
NDCS	National Drug Control Strategy
NEPA	National Environmental Policy Act
NESL	Navajo Endangered Species List
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	Native Plant Law
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PEIS	Programmatic Environmental Impact Statement
PL	Public Law
PM_{10}	particulates less than 10 microns
POE	Port of Entry
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SAIC	Science Applications International Corporation
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer

ACRONYMS AND ABBREVIATIONS (cont.)

SIP	state implementation plan
SO_x	sulfur oxides
SWPPP	storm water pollution prevention plan
TSCA	Toxic Substances Control Act
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
WSCA	wildlife of species of concern in Arizona

1. INTRODUCTION

1.1 PROJECT BACKGROUND

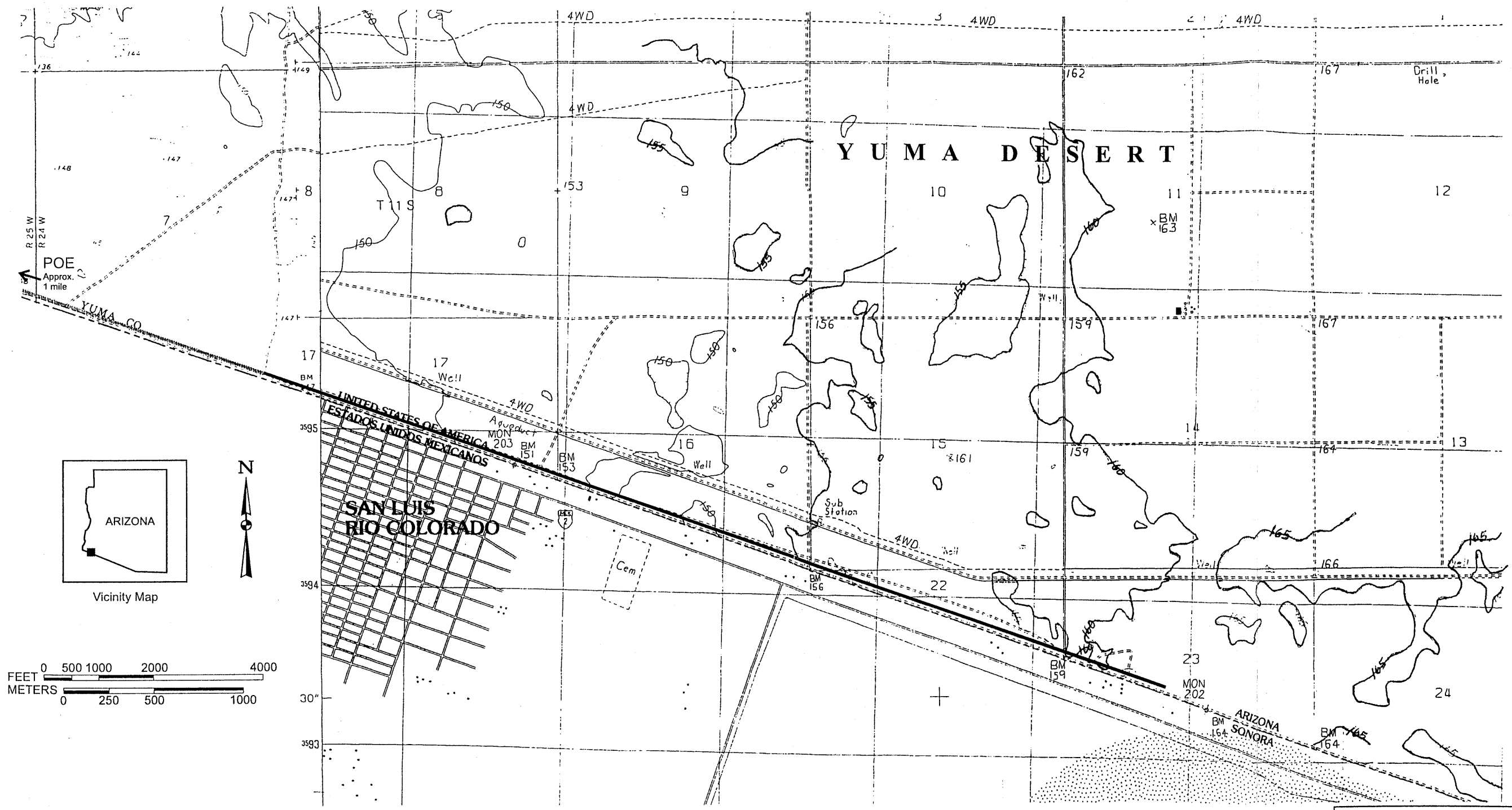
The United States (U.S.) is experiencing high levels of drug use and high amounts of drug-related crime. Negative impacts of widespread drug use on our society continue to affect the work force, educational and medical systems, general law and order, and traditional family values and structure. As a result of these high rates of violent crime, the continual damage to our Nation's health and economy, and strains on vital relationships with international allies; the U.S. Congress developed the National Drug Control Strategy (NDCS) and incorporated the Department of Defense (DoD) in the new strategy. The Secretary of Defense established Joint Task Force Six (JTF-6) in November 1989 to coordinate all DoD counter-drug support to Federal, state, and local law enforcement agencies (LEAs) in an effort to curtail drug smuggling activities into the U.S. and protect national security. As a Joint Service Agency, JTF-6 was assigned to assist LEAs that have drug interdiction responsibilities in the southwestern U.S. This assistance includes operational and training efforts, design and construction of law enforcement facilities and infrastructure, or logistical actions provided there is a link to drug interdiction. The assistance in turn, would provide all or part of the mission-essential training elements for the military unit involved in the assistance.

This Environmental Assessment (EA) addresses the potential impacts associated with the proposed fence construction along 3.3 miles of the U.S.-Mexico border in Yuma County, Arizona. This document is tiered from a Programmatic Environmental Impact Statement (PEIS) completed for a broad scope of JTF-6 activities along the U.S.-Mexico border (U.S. Army 1994). This EA was prepared by Associated Consulting Engineers, Inc. under subcontract to Science Applications International Corporation (SAIC) for the Fort Worth District U.S. Army Corps of Engineers (USACE).

1.2 LOCATION OF PROPOSED ACTION

The proposed project site is located along the U.S.-Mexico border south of the city of Yuma in Yuma County, Arizona. The Proposed Action is to construct approximately 3.3 miles of border fence north of the U.S.-Mexico border, south of Yuma, Arizona and north of San Luis, Mexico. The proposed project would begin at the existing landing mat fence and extend approximately 3.3 miles to the east following the U.S.-Mexico border. Materials to be used for the proposed fence would either be steel landing mat or sheet metal fence. Figure 1-1 (Project Area) shows the location of the Proposed Action.

(This page intentionally left blank.)



60-foot Wide Project Area for Proposed Border Fence (Not to Scale)

Existing Fence Area (Not to scale)

JTF-6 FENCE PROJECT

Yuma County, Arizona T.11S.R.24W. Secs. 7,17,16,15,22,23

FIGURE 1-1. LOCATION OF PROPOSED ACTION. YUMA, ARIZONA

Base map from USGS 7.5' Quadrangles: Gadsen, Ariz. and South of Somerton, Ariz.

1.3 PURPOSE AND NEED

The purpose of the Proposed Action is to minimize the influx of illegal contraband (i.e., drugs) from entering the U.S., and to reduce crime along the boundary area through the use of deterrent measures and maximizing the effectiveness of the Border Patrol. The Proposed Action would involve extending the existing border fence approximately 3.3 miles to the east of the existing landing mat fence as a means to create a more formidable physical barrier to prevent illegal drug traffic into the U.S. Currently in this area there is a six- to eight-foot dirt berm with occasional sections of six-strand, barbed-wire fence at the top. In most areas, the barbed-wire fence is either nonexistent or broken. Photographs of the site conditions are presented in Appendix A.

As a result, overland smuggling poses a significant and continual threat in this area. Unauthorized foot and vehicle traffic across the border in the project area was evident during the site visit (November 1997). Vehicle tracks were particularly noticeable over the lower areas of the berm. The construction of a new fence would assist in the reduction of the flow of illegal drug traffic entering the U.S. and would aid in the apprehension of narcotics traffickers. The proposed fence would increase the effectiveness of the Border Patrol agents by deterring and controlling movement north across the border, thereby reducing illegal traffic into the southernmost neighborhoods of Yuma, Arizona. In addition to providing a greater physical barrier against illegal drug traffic into the U.S., the proposed fence would require less maintenance that the existing fence; therefore, the proposed construction would reduce operational costs.

Information provided by the Border Patrol at the Yuma Station, indicated that in fiscal year (FY - October through September) 1996 the total number of apprehensions was 28,310 and in FY 1997 the number was 30,177. For FY 1996, the total dollar value of seized narcotics (including marijuana, heroin, cocaine, methamphetamines, etc.) was $64,797,094. In 1997 this amount was $37,384,845. According to Border Patrol personnel, the reduction in the dollar amount seized for narcotics could be attributed to the reassignment of manpower to other border areas. Fencing along the Yuma border would reduce the ease with which narcotics are brought across the border into this area of the U.S.; possibly off-setting the reduction in Border Patrol manpower.

Another objective of the Proposed Action and alternatives, as well as a required goal for the DoD is to provide training opportunities for U.S. military units. This training would include deployment and redeployment, logistics and design planning, and facility/ infrastructure construction which in turn would satisfy the units' mission essential task list (METL). Under the Proposed Action, unarmed military units, through the JTF-6 program, would provide all of the construction support for the proposed Border Patrol project. Over the past several years the Border Patrol has been the primary beneficiary of JTF-6 support functions such as construction, training, and reconnaissance activities. However, any law enforcement agency involved in interdiction of illegal drugs may request assistance from JTF-6.

1.4 ORGANIZATION OF DOCUMENT

Chapter 1.0 of this EA contains the background and location of the Proposed Action, along with the purpose and need, and any regulations associated with the Proposed Action. Chapter 2.0 provides a detailed analysis of the Proposed Action and all reasonable alternatives, including those that were considered but eliminated from further analysis. Chapter 3.0 describes the baseline environmental conditions. These are the conditions against which the Proposed Action and alternatives are evaluated include soils, air quality, land use, hydrology, biological resources, noise, cultural resources, and socioeconomic status. Chapter 4.0 describes the environmental consequences of the Proposed Action and alternatives. Chapter 5.0 presents environmental design measures, and Chapter 6.0 describes the public involvement for this project. Chapter 7.0 lists the people involved in the preparation of this document and Chapter 8.0 presents the cited references. Appendices included are: (A) Site Photographs, (B) Federal Air Pollutant Standards, (C) Threatened and Endangered Species, (D) Cultural Resources Study, (E) Consultation letters, (F) Storm Water Pollution Prevention Plan, and (G) Notice of Availability.

1.5 APPLICABLE ENVIRONMENTAL STATUTES AND REGULATIONS

This EA was prepared pursuant to Section 102 of the National Environmental Policy Act of 1969 (NEPA), as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) [40 Code of Federal Regulations (CFR) Parts 1500-1508]. The EA should provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) (40 CFR 1508.9). Additionally this EA complies with Army Regulation (AR) 200-2, Environmental Effects of Army Actions (December 23, 1988). Brief summaries of the Federal and state laws, regulations, executive orders (EO), and other entitlements that may be applicable to the proposed project are provided in the following sections.

1.5.1 Environmental Policy

NEPA [42 United States Code (USC) 4321 et seq.], as implemented by the regulations promulgated by the President's CEQ (40 CFR Parts 1500-1508), establishes national policy, sets goals, and provides the means to prevent or eliminate damage to the environment. The principal objectives of NEPA are to ensure that careful consideration of all environmental aspects of proposed Federal actions be made prior to the decision-making processes, and to make environmental information available to the public before decisions are made and actions are taken.

1.5.2 Executive Order 11514, Protection and Enhancement of Environmental Quality

EO 11514, Protection and Enhancement of Environmental Quality, as amended by EO 11991, sets the policy for directing the Federal government in providing leadership in protecting and enhancing the quality of the nation's environment.

1.5.3 Executive Order 12898, Environmental Justice

The purpose of EO 12898 is to avoid the disproportionate placement on minority and low-income populations, of any adverse environmental, economic, social, or health impacts that could result from proposed Federal actions and policies.

1.5.4 Clean Air Act

The Clean Air Act amendments of 1990 established Federal air quality standards. According to air quality information received from Environmental Protection Agency (EPA) Region 9, Yuma County is in attainment with established national and state air quality standards for all pollutants.

1.5.5 Clean Water Act

The Clean Water Act (33 USC 1251 et seq., as amended) establishes Federal limits through the National Pollutant Discharge Elimination System (NPDES) on the amounts of specific pollutants that may be discharged to surface waters in order to restore and maintain the chemical, physical, and biological integrity of the water. Section 404 of the Clean Water Act regulates the discharge of fill material into waters of the U.S. No NPDES permit would be required for the proposed project. However, the proposed project would be greater than 5 acres in size, and would require a storm water pollution prevention plan (SWPPP) (Appendix F).

1.5.6 Endangered Species Act

The Endangered Species Act (16 USC 1531-1543) requires Federal agencies to determine the effects of their actions on endangered or threatened species of fish, wildlife, plants, and critical habitats. Additionally, Federal agencies must take steps to conserve and protect these species.

1.5.7 Cultural Resources Regulations

The National Historic Preservation Act of 1966 (NHPA) (16 USC 470 et seq., as amended) requires Federal agencies to determine the effect of their actions on cultural resources, and to take certain steps to ensure these resources are located, identified, evaluated, and protected. The Archaeological Resources Protection Act (16 USC 470a-11, as amended) protects archaeological resources on Federal lands. If archaeological resources are discovered that could be disturbed during site activities, the Act requires permits for excavating and removing the resources.

1.5.8 Other Regulations

In addition to the above-mentioned regulations, numerous other Federal environmental statutes, regulations, and EOs may apply to the Proposed Action. Adherence to these Federal requirements, as well as state and local regulations, is part of the project description. Additional regulations are listed below.

Federal and State Environmental Statutes and Executive Orders

- American Indian Religious Freedom Act of 1978
- Arizona Native Plant Law
- Arizona Air Quality Standards
- Bald Eagle Protection Act [Public Law (PL) 90-535]
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (PL 96-510), as amended by the Superfund Amendments and Reauthorization Act (SARA) (PL 99-499), 1986
- Federal Compliance with Pollution Control Standards
- Federal Facilities Compliance Act
- Fish and Wildlife Coordination Act, as amended, USC 661, et seq.
- Hazardous Materials Transportation Act (HMTA), 1975
- Resource Conservation and Recovery Act (RCRA) (PL 94-580), 1976
- Safe Drinking Water Act (SDWA), 1974
- Solid Waste Disposal Act, 1980
- Toxic Substances Control Act (TSCA) (PL 94-469)
- Watershed Protection and Flood Prevention Act, 16 USC 1101, et seq.
- Wetlands Conservation Act (PL 101-23)

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action and all reasonable alternatives, including the No-Action Alternative. The Proposed Action would involve the construction of approximately 3.3 miles of fence along the U.S.-Mexico border, south of Yuma, Arizona. Under the No-Action Alternative there would be no new construction. The existing sections of barbed wire fence would remain, and those areas without fencing would continue to be an area of uncontrolled access. No other reasonable alternatives meeting JTF-6/Border Patrol requirements were identified or carried forward for further analysis.

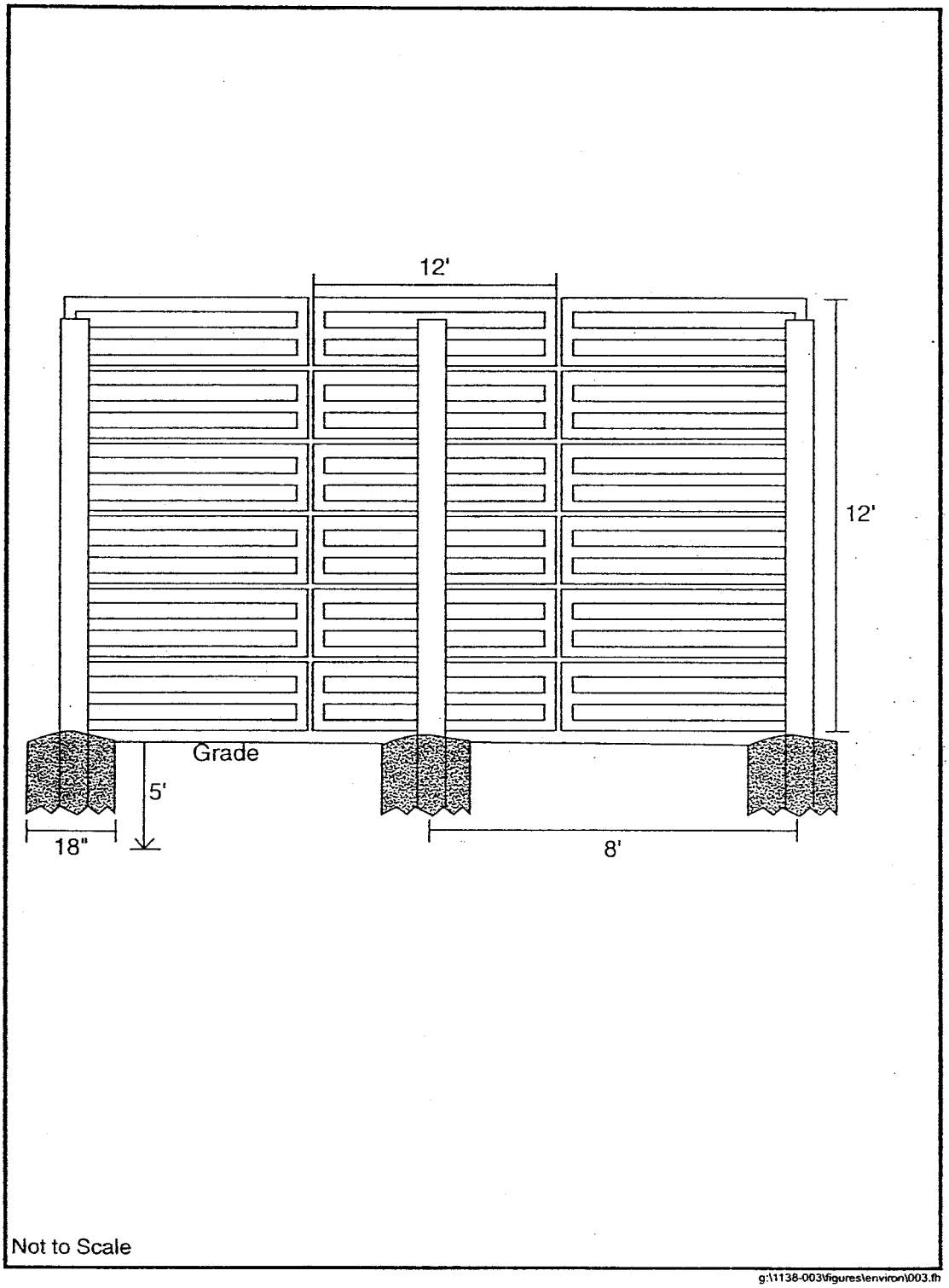
2.1 PROPOSED ACTION

Border fences are located mostly in urbanized areas near the land Points of Entry (POEs). However, virtually the entire U.S.-Mexico border has at one time or another been demarcated by some type of fence. Border fences, particularly near land POEs, could be effective deterrents to illegal drug trafficking (U.S. Army 1997a). The Proposed Action is to construct approximately 3.3 miles of new border fencing along the U.S.-Mexico border, south of Yuma, Arizona and north of San Luis, Mexico.

The proposed fence would connect to the existing landing mat fence and continue approximately 3.3 miles to the east. The proposed fence would replace a six- to eight-foot dirt berm and a six-strand barbed-wire fence currently located in this area, which is approximately two feet north of the international boundary. However, in the area surrounding International Monument Number 203, the fence would be constructed no closer than six feet from the monument with an access gate. The proposed fence would in no way, impede the views from one monument to the next. The current barbed-wire fence structure has missing sections in some places, and is in need of repairs in other places. The existing berm would be removed in the areas in which the proposed fence would be constructed. Construction activities would occur within an approximate 20-meter area north of the U.S.-Mexico border and would be restricted to the U.S. side of the border. An existing unimproved road parallel to the existing fence and berm would be used for access during construction. This road is approximately 13 meters from the northern toe of the berm.

The proposed border fence would be constructed with surplus military supplies similar to the adjacent fence in this area, and would be approximately 15 feet high. Posts would consist of 15-foot drill pipe (four or five inches outside diameter) placed five feet below ground in concrete and spaced eight feet apart. The post holes would be 16 to 18 inches in diameter to provide the necessary support for the structure. The landing mat sections or metal sheeting of similar design and materials would be welded together and attached to the posts with angle iron (Figure 2-1).

Figure 2-1
Steel Landing Mat Fence Design



Although there is an existing dirt road parallel to the fence line, some road improvements could be necessary in this area. Due to the lack of dense vegetation and the flat terrain in the general area, road improvement beyond minimal grading would not be expected. Programmatic details on activities involving road grading are available in the PEIS prepared for JTF-6 activities along the U.S.-Mexico Border (U.S. Army 1994).

If the Proposed Action is implemented on the basis of this EA and a FONSI is issued, the proposed fence construction may begin in the Spring of 1998. The project would take approximately six weeks to complete. U.S. Military Engineer Battalion personnel would be used during the proposed fence construction and road repair, and would be housed in Yuma, Arizona. It is anticipated that approximately 70 military personnel would be required to complete the Proposed Action. Personnel completing the Proposed Action would be expected to work between 7:00 a.m. and 7:00 p.m., six days a week.

Equipment to be used during fence construction and road improvements may include: integrated tool carriers, backhoes with augers, auger trucks, backhoes with breakers, flat bed trucks, graders, water trucks, cranes, forklifts, wire feed welders, torch sets, and chop saws. Equipment and fence materials would be stored at a previously disturbed, prefabrication yard that would be determined prior to construction.

Existing roads would be used for transporting equipment and personnel. Existing turnouts would also be used by equipment during construction to eliminate unnecessary impacts to resources outside of the proposed project area. Through an environmental briefing all personnel would be informed about the limits of the construction area and actions permitted in and out of that area. Additionally, limits would be flagged to ensure that the proposed activities stay within the construction area boundaries.

2.2 NO-ACTION ALTERNATIVE

The No-Action Alternative would continue the use of the six-strand barbed wire fence where ever it currently exists, with no improvements. Although no significant adverse impacts would occur if implemented, the No-Action Alternative would not support the Border Patrol's mission in effectively reducing drug smuggling and trafficking near Yuma, Arizona. Therefore, the No-Action Alternative would jeopardize the Border Patrol's ability to fulfill their mission as described in Chapter 1.0.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.3.1 Alternative Fencing Materials

Alternative fencing materials such as chainlink, barbed-wire, or wood have been considered in the past by the Border Patrol. These materials are not considered to be preferred fencing materials in accomplishing the Border Patrol's mission. Chainlink fencing requires a high level of maintenance, and it is not resistant to cutting and/or

vandalism. Likewise, barbed-wire or wooden fences also require a high level of maintenance, and are easily traversed or compromised. Although these materials may offer some level of deterrent to drug trafficking, they would require constant maintenance due to vandalism and exposure to the natural elements. Furthermore, the environmental impacts that would result from these types of fence materials would be similar to those of the proposed landing mat or sheet metal fence. However, these alternative fencing materials would pose a greater economic impact on Border Patrol budgets. Therefore, this alternative was not carried forward for further analysis.

2.3.2 Alternative Distance from the International Border

The existing border fence is located approximately five feet from the international border. Another alternative discussed for this project included the construction of the proposed fence at a location other than the current distance of five feet from the U.S.-Mexico border. Concerns with this alternative include land acquisition of new areas, disturbance in areas not previously disturbed by either the dirt berm or prior fencing, right-of-entry for construction activities, and additional costs to connect to the existing fence located at the five-foot distance. Due to these constraints, this alternative was eliminated from further consideration and was not carried forward through the analysis.

3. AFFECTED ENVIRONMENT

The affected environment is the baseline against which potential impacts caused by the Proposed Action and the No-Action Alternative are assessed. This chapter focuses on those resources specific to the proposed project area that have the potential to be affected by activities brought on by the proposed fence construction and road improvements. Resources that would most likely be affected (e.g., air, soil, biological resources, noise) by the Proposed Action and No-Action Alternative are described in more detail than those less likely to be affected (e.g., water, cultural, socioeconomic, aesthetic).

3.1 AIR RESOURCES

Air resources describe the existing concentrations of various pollutants, and the climatic and meteorological conditions that influence the quality of the air. Precipitation, wind direction, wind speed, and atmospheric stability are factors that determine the extent of pollutant dispersion.

3.1.1 Climate and Meteorology

Yuma County, Arizona is located in the Sonoran Desert region which is known for its warm winters. The average yearly daily maximum temperature is 87.3° Fahrenheit (F) and the average daily minimum temperature is 53.5°F. The average monthly temperature is 75.2°F and the average yearly rainfall is 2.94 inches. The annual percent of sunshine (based on 4,400 hours per year) is 4,133 hours, or 90 percent. The average relative humidity at approximately 11:00 a.m. in July is 32 percent (City of Yuma 1997).

3.1.2 Air Quality

Yuma County, Arizona is in EPA Region 9 and is currently in attainment with established national and state air quality standards for all pollutants (Appendix B) (EPA 1996). According to EPA's Breathing Easier 1996 publication, Region 9 has shown a substantial improvement in air quality over the last 10 years. Despite an increase in auto travel of almost 50 percent over the past decade, air pollutant levels have decreased overall by about one-third. This decrease can be seen in both a reduction in the number of days in which the are exceeded national air quality standards, and in a reduction in the actual air pollutant concentration levels for six major pollutants.

3.2 LAND USE

The entire proposed project area lies outside of the city limits of Yuma, Arizona. The area for proposed construction along the border is vacant, with the nearest residential area located over 0.5 miles from the proposed project area. No structures or other development areas are located on or adjacent to the proposed project area on the U.S. side of the border. The proposed project area is currently accessed primarily by Border Patrol

agents, local landowners, and illegal drug traffickers. Access along the project site is provided by an undeveloped road parallel to the border.

3.3 GEOLOGICAL RESOURCES

Geological resources include physical surface and subsurface features of the earth such as topography, geology, soils, and the seismic nature of the area. These features are discussed in the following sections.

3.3.1 Geology

Southwest Arizona lies within the Basin and Range Physiographic Province, and is characterized by intensely deformed and intruded strata within numerous relatively elevated and depressed fault blocks. The Basin and Range Province is subdivided into two physiographic sub-provinces: the Mexican Highlands and the Sonoran Desert. The proposed project site lies within the Sonoran Desert sub-province (U.S. Army 1994).

In the Sonoran Desert the linear ranges, usually formed by volcanic uplift, are often surrounded by a skirt of detritus (boulders, rocks, gravel, sand, and soil) that has eroded from the mountains over time. Much of this has been washed down during torrential summer downpours. In the southwest, these detritus skirts or pediments are frequently called bajadas. The substrate is coarser, with large rocks on the upper bajada and smaller or finer rocks at the lower elevation.

The areas between the desert ranges have been filled with water-washed alluvium. This alluvium, or fine soil, forms the extensive flat spaces one usually associates with deserts. The water table may be high on the flatlands, and the drainage is often slow. Poorly drained patches and larger playas become alkaline through accumulation of soluble chemicals.

3.3.2 Soils

The majority of the soils in the proposed project area are in the Superstition Sand series. Gadsden Clay, a secondary soil series, is found just north of the proposed project site.

Information received from the Natural Resource Conservation Service (NRCS) in Tucson, Arizona indicates that soils in the Superstituion Sand series consist of deep, somewhat excessively drained soils on old terraces of the Colorado River. These soils formed in mixed sandy alluvium, with slopes ranging from zero to three percent.

The Gadsden Clay series consists of deep, well-drained soils on flood plains and low terraces. These soils formed in mixed fine-textured alluvium, with slopes of less than one percent.

3.4 WATER RESOURCES

The following sections describe the surface and groundwater sources, water quality and quantity, and surface and subsurface water movement. The hydrological cycle results in the transport of water into various media such as the air, the ground surface, and subsurface. Natural and human-induced factors determine the quality of water resources.

3.4.1 Groundwater

The following information on groundwater resources was obtained through the Arizona Department of Water Resources (ADWR). The Yuma Basin is divided into two major subdivisions based on water-bearing characteristics. The first subdivision forms the upper, principal-water producing part of the aquifer, and consists of recent Colorado and Gila rivers' alluvial deposits. Along the river valleys and Yuma mesa, the alluvium is further divided in descending order into the upper fine-grained zone, the coarse-gravel zone, and the wedge zone. The coarse-gravel zone is the principal water-producing unit.

The second subdivision constitutes the lower part of the basin and includes in descending order, the Bouse Formation, marine sedimentary rocks, volcanic rocks, and nonmarine sedimentary rocks. With the exception of the Bouse Formation and nonmarine sedimentary rocks in the northern part of the area, these highly mineralized and deep units are not considered to be significant sources of groundwater (ADWR 1997).

Regional groundwater flow is to the southwest. Most groundwater recharge comes from the Colorado and Gila rivers, and from the infiltration of irrigation water. Only minor amounts of recharge water are contributed by precipitation and local runoff. ADWR information estimates that approximately 1,000 acre-feet of groundwater enters the basin annually as underflow along the Gila River. When the Colorado River reaches flood stage, it becomes a losing stream and water begins to flow from the river to the groundwater system. During 1983 and 1984, large volumes of water were released from reservoirs upstream resulting in an increased river stage of 17 feet at the gauge in Yuma, Arizona.

Groundwater levels are controlled locally by the use of imported water, drainage ditches, and pumpage for irrigation and drainage. Depth to groundwater in 1988 ranged from less than two to over 500 feet below land surface but, in general, is less than 20 feet below the land surface in agricultural areas (ADWR 1997).

3.4.2 Surface Water

The proposed project site is located in the Yuma basin which covers approximately 750 square miles of southwestern Arizona (Figure 1-1). It is bounded by the Gila and Laguna mountains to the east, the Colorado and Gila rivers to the north and west, and the U.S.-Mexico Border to the south. Elevations within the basin range from 3,156 feet above mean sea level in the Gila Mountains to about 80 feet above mean sea level where the Colorado River crosses the U.S.-Mexico Border (ADWR 1997).

Because of the arid conditions, no perennial streams originate in the area. The Colorado River receives most of its water from the Rocky Mountains of Colorado, and is regulated by dams upstream. Historically, the Gila River was perennial; however, upstream diversions now consume the entire flow except during locally heavy rains. The nearest surface water to the proposed project site is the Colorado River located approximately 3.5 miles from the project area. There are no receiving waters located in or adjacent to the proposed project site.

3.4.3 Water Quality

According to the ADWR, groundwater quality in the Yuma basin varies with depth and location. Total dissolved solids content in 1988 ranged from less than 1,000 to 4,000 milligrams per liter. Extensive groundwater contamination by agricultural pesticides and nitrates exists in the Yuma, Arizona area. The Colorado River is the nearest surface water body in the general project area, and is located approximately 3.5 miles west of the proposed project site. Due to the distance of this water body from the proposed project site, it is unlikely that its' surface water quality would be impacted by the construction activities or operation of the proposed project.

3.5 BIOLOGICAL RESOURCES

Biological resources include plants and animals native to the region around the proposed project site. A site visit was conducted on November 5, 1997 by a biologist from Associated Consulting Engineers, Inc., an environmental scientist from SAIC, the JTF-6 project engineer, an archaeologist from SWCA, Inc., the project manager from the Fort Worth District USACE, and an agent from the Yuma District Border Patrol. A 100-percent pedestrian survey was conducted at the proposed project site in an effort to survey and inventory biological resources located at the site, and evaluate the potential effects the Proposed Action could have on those biological resources. Prior to the site reconnaissance survey, all available project related literature was reviewed, and information from the Arizona Heritage Program was obtained regarding Federally- and state-listed threatened and endangered species.

3.5.1 Vegetation

The Sonora Desert is the hottest of the North American Deserts, but has a distinctly bimodal rainfall pattern which produces a high biological diversity. Trees are usually well developed on the desert ranges and their bajadas. Often abundant on these well-drained soils are blue paloverdes (*Cercidium floridum*), mesquite (*Prosopis glandulosa*), saltbush (*Atriplex canescens*), yucca (*Yucca* sp.), creosote bush (*Larea tridentata*), desert broom (*Baccharis sarothroides*), catclaw acacia (*Acacia greggii*), and saguaro (*Cereus giganteus*). The understory consists of three, four, or even five layers of smaller woody shrubs. Tall chollas (*Opeuntia* sp.) may occur in an array of species. The alluvial lowlands host communities of desert saltbush, wolfberry, and bursage. On coarser soils, creosotebush and bursage communities may stretch for miles. Where the

water table is high, honey or velvet mesquite (*Prosopis* sp.) may form dense woodlands (Arizona Office of Tourism 1995).

Vegetation at the proposed project site is sparse, and consists of saltbush, creosote bush, mesquite, and paloverde. Native grasses such as grama grasses (*Bouteloua curtipendula, B. gracilis*), sacaton (*Sporobolus wrightii*), and Lehman's lovegrass (*Eragrostis lehmanniana*) were observed along the proposed project site.

3.5.2 Wildlife

The Sonoran Desert is rich in animal life, with many species in all groups derived from tropical and subtropical regions. Common desert reptiles include the desert iguana (*Dipsosaurus dorsalis*), Gila monster (*Heloderma suspectum*), leopard lizard (*Gambelia wislizenii*), desert horned lizard (*Phrynosoma platyrhinos*), fringe-toed lizard (*Uma notata*), long-tailed brush lizard (*Urosaurus graciosus*), side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorus tigris*), western blind snake (*Leptotyphlops humilis*), glossy snake (*Arizona elegans*), banded sand snake (*Chilomeniscus cinctus*), western shovel-nosed snake (*Chionactis occipitalis*), spotted leaf-nosed snake (*Phyllorhynchus decurtatus*), western patch-nosed snake (*Salvadora hexalepis*), sidewinder (*Crotalus cerastes*), and the mojave rattlesnake (*Crotalus scutulatus*) (Arizona Office of Tourism 1995).

Common desert mammals include the coyote (*Canis latrans*), javelina (*Dicotyles tajacu*), jaguar (*Felis onca*), bighorn sheep (*Ovis candensis*), striped skunk (*Mephitis mephitis*), jackrabbit (*Lepus californicus*), Pallid bat (*Antrozous pallidus*), western pipistrelle (*Pipistrellus hesperus*), California myotis (*Myotis californicus*), California leaf-nosed bat (*Macrotus californicus*), desert shrew (*Notiosorex crawfordi*), cactus mouse (*Peromyscus eremicus*), southern grasshopper mouse (*Onychomys torridus*), white-throated *woodrat (Neotoma albigula*), round-tailed ground squirrel (*Spermophilus tereticaudus*), Harris' antelope squirrel (*Ammospermophilus harrisii*), and desert cottontail (*Sylvilagus audubonii*).

Common birds species in this area include the turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), merlin (*Falco columbarius*), scaled quail *(Callipepla squamata*), mourning dove *(Zenaida macroura*), burrowing owl (*Speotyto cunicularia*), common poorwill (*Phalaenoptilus nuttallii*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), red-winged blackbird (*Agelaius phoeniceus*), and the greater roadrunner (*Geococcyx californianus*).

Wildlife species noted during the November 1997 site visit included a domestic dog (*Canidae*), a side-blotched lizard, a red-tailed hawk, and a mourning dove. No other species were noted at that time.

3.5.3 Aquatic

Aquatic habitat is limited to that found in the Colorado River approximately 3.5 miles from the proposed project site. There is no known aquatic habitat located within the boundaries or adjacent to the proposed project area.

3.5.4 Threatened and Endangered Species

Many Federally- and state-listed threatened and endangered species of plants, fish, and wildlife may occur in Yuma County, Arizona. The state-listed species were provided by the Arizona Natural Heritage Program and the Federal-listed species were provided by the U.S. Fish and Wildlife Service (USFWS). Both of these lists can be found in Table 3-1. Not included on this list is the Sonoran pronghorn (*Antilocapra Americana sonoriensis*), which is also a listed Federal endangered species. Of the species of concern by the USFWS and the Arizona Natural Heritage Program, the flat-tailed horned lizard (*Phrynosoma mcallii*) was proposed for listing under the Endangered Species Act of 1973, as amended. However, the species was withdrawn once a Conservation Agreement was developed and implemented in the Yuma Desert Management Area. Although the proposed project area is outside the Yuma Desert Management Area, the proposed site possesses only marginal habitat for the flat-tailed horned lizard (see Section 3.5.1). The preferred habitat of the flat-tailed horned lizard consists of areas of silica sand with scattered creosote bush, white bursage and some grasses (i.e., big galleta grass). The species is active from February to November, using burrows as protection from the harsh summer sun and during winter hibernation. No evidence of any Federally- or state-listed threatened or endangered species were observed during the November 1997 site visit. Additional information on these species can be found in Appendix C.

3.6 NOISE

The proposed project area is located in a remote area away from noise sensitive land uses such as schools, churches, hospitals, etc. Currently, the adjacent area on the U.S. side of the border is in agricultural use, and an urban highway exists on the Mexico side. As a result, the area is affected by heavy vehicle noise from the Mexico side of the border, and occasional agricultural equipment and trucks on the U.S. side.

3.7 CULTURAL RESOURCES

Historic and archaeological resources are nonrenewable resources whose values may easily be diminished by physical disturbances. These resources are those items, places, or events considered important to a culture or community for reasons of history, tradition, religion, or science.

There are no cultural or historic sites in the proposed project area that qualify for listing on the National Register of Historic Places (NRHP). A Class III archaeological inventory of the 3.3-mile area for the proposed project site was conducted on November 5, 1997.

Table 3-1
List of Threatened, Endangered, or Species of Concern

Common Name	Scientific Name	ESA	Critical Habitat	USFWS	WSCA	NPL	NESL
Great Egret	*Ardea Alba*			S	WC		
Western Yellow-billed cuckoo	*Coccyzus americanus occidentalis*			S	WC		4
Snowy Egret	*Egretta thula*			S	WC		
Southwestern willow flycatcher	*Empidonax trallii extimus*	LE	Y		WC		2
Cactus ferruginous pygmy-owl	*Glaudidium brasilianum cactorum*	LE		S	WC		
Black-necked stilt	*Himantopus mexicanus*			S			
California black rail	*Laterallus jamaicensis Coturniculus*	SC			WC		
Yuma clapper rail	*Rallus longirostris yumanensis*	LE		S	WC		
Razorback sucker	*Xyrauchen texanus*	LE	Y	S	WC		2
California floater	*Anodonta californiensis*	SC					
Spotted bat	*Euderma maculatum*	SC		S	WC		
California leaf-nosed bat	*Macrotus californicus*	SC		S	WC		
Yuma myotis	*Muotis yumanensis*	SC					
Pinacate cactus mouse	*Peromyscus eremicus paragensis*	SC					
Pale townsend's big-eared bat	*Plecotus townsendii pallescens*	SC					
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*	SC					
Parish onion	*Allium parishii*					SR	
Dune spurge	*Chamaesyce platysperma*	SC					
California snakewood	*Colubrina californica*			S			
Gander's crypthantha	*Cryptantha ganderi*	SC					
Dune sunflower	*Helisnthus niveus ssp tephrodes*	SC					
Senita	*Lophocereus schottii*					SR	
Wiggin's cholla	*Opuntia wigginsii*					SR	
Sand food	*Pholisma sonorae*	SC				HS	
Kearney sumac	*Rhus kearneyi*					SR	
Blue sand lily	*Triteleiopsis palmeri*					SR	
California fan palm	*Washingtonia filifera*					SR	
Desert rosy boa	*Charina trivirgata gracia*	SC					
Sonoran desert tortoise	*Gopherus agassizii*	SC		S	WC		
Gila Monster	*Heloderma suspectum*			S			
Flat-tailed horned lizard	*Phrynosoma mcalii*	SC			WC		
Mexican garter snake	*Thamnophis eques megalops*	SC		S	WC		
Cowles fringe-toed lizard	*Uma notata rufopunctata*	SC			WC		

ESA Endangered Species Act (1973 as amended).
LE Listed Endangered: imminent jeopardy of extinction
NESL Navajo Endangered Species List (1997).
NESL(2) Any species or subspecies which is in danger of being eliminated from all or a significant portion of its range on the Navajo Nation.
NESL(4) Any species or subspecies for which the Navajo Fish and Wildlife Department (NF&WD) does not currently have sufficient information to support their being listed in other groups but has reason to consider them.
NPL Native Plant Law: Arizona state-listed category.
S Sensitive: those taxa occurring on National Forests in Arizona which are considered sensitive by the Regional Forester.
SC/SR Species of Concern. The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the USFWS, but neither term has official status.
USFWS U.S. Fish and Wildlife Service: Federal-listed category.
WSCA/WC Wildlife of Species Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona October 1996 Draft.
Critical Habitat Y - critical habitat has been designated.

The file search conducted at the Arizona State Museum (ASM) and State Historic Preservation Office (SHPO) revealed that there are no recorded archaeological sites within the proposed project area, nor within one mile (on the U.S. side of the border). Details on the past history of this area can be found in the complete survey report in Appendix D.

The Class III archaeological survey performed for this analysis consisted of walking a single transect line in a zigzag pattern from the western end of the right-of-way to the eastern end. Because the corridor is only 20 meters wide, the pedestrian survey provided 100 percent coverage of the parcel.

3.8 AESTHETIC RESOURCES

Aesthetic resources consist of the natural and manmade landscape features that appear indigenous to the area and give a particular environment its visual characteristics. The current visual characteristic of the project site is an open sandy desert area. The residential area located to the northwest of the project site is visible, as is development in Mexico. No other development is adjacent to or within sight of the proposed project area. Views of the project area are not available to the general public due to the limited access by the property owners and permitted users.

An existing landing mat fence is located directly south of the residential area. Extending the proposed fence approximately 3.3 miles to the east would not be expected to decrease the aesthetic views in the area.

3.9 SOLID AND HAZARDOUS WASTE

According to Border Patrol representatives, there is no known or suspected toxic and/or hazardous substance contamination within the proposed project site. Additionally, there are no known historic land uses within the project site (such as industrial uses) that might have resulted in toxic or hazardous substance contamination of the underlying soil and/or groundwater resources. However, due to the evidence of illegal and uncontrolled dumping of trash along the fence and immediate vicinity, it is possible that potentially hazardous wastes may have been dumped.

During construction activities, fuels, oils, lubricants, and other hazardous materials will be used. A spill prevention and response plan will be in place prior to construction, and all personnel will be briefed in the implementation and responsibilities of the plan.

3.10 SOCIOECONOMIC DATA

Yuma County is located in the southwestern corner of Arizona near the borders of California; Sonora, Mexico; and Baja California, Mexico. Yuma County's 122,000 residents enjoy a lifestyle rich with history and culture. The city of Yuma

encompasses 28.39 square miles. It is the third largest community in Arizona, with the fourth fastest growing metropolitan area in the Nation.

According to statistics provided by the city, the current population of Yuma, Arizona is 67,143. Approximately 83,000 winter visitors come in to the Yuma, Arizona area annually. Military bases located in the county, such as the Marine Corps Air Station and Yuma Proving Grounds, contribute substantially to the local economy. The tourist industry which is mostly comprised of cross country travelers and winter visitors created an estimated gross revenue in 1995 of over $380 million dollars in Yuma County, Arizona (City of Yuma 1997).

(This page intentionally left blank.)

4. ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

Based on discussions with Border Patrol personnel, Federal and state agencies, and local authorities, as well as comparisons with similar Border Patrol activities, several environmental factors potentially associated with the Proposed Action have been identified. An environmental consequence or impact is defined as a modification in the existing environment brought about by mission and support activities. Impacts can be beneficial or adverse, a primary result of an action (direct) or a secondary result (indirect), and can be permanent or long-lasting (long-term/permanent), or of short duration (short-term/temporary). Impacts can vary in degree from a slightly noticeable change to a total change in the environment.

Short-term impacts would occur during and immediately after the construction of the proposed fence along the border. For this project, short-term impacts are defined as those tied to the first two years following fence construction, whereas long-term impacts are those lasting more than two years.

Impact significance criteria are presented for each affected resource. These criteria are based on existing regulatory standards, scientific and environmental knowledge, and/or best professional judgment. Potential impacts for this project were classified at one of three levels: significant, insignificant (or negligible), and no impact. Significant impacts (as defined in CEQ guidelines 40 CFR 1500-1508) would be those effects that are most substantial, and therefore should receive the greatest attention in the decision-making process. Insignificant impacts would be those impacts that result in changes to the existing environment that could not be easily detected. No-impact actions would not alter the existing environment. In the following discussions, impacts are considered adverse unless identified as beneficial.

Potential environmental consequences to each resource section include the following subcategories:

- Significance Criteria. The level of impact that would qualify as significant, based on regulatory standards, available scientific knowledge, and the best professional judgment of resource specialists.

- Impacts. The level and duration of impacts that would occur as a result of the Proposed Action and the No Action Alternative.

- Mitigation. Mitigation measures that could be applied to avoid or reduce adverse impacts. Mitigation is discussed in Chapter 5.0.

Cumulative impacts and irreversible and irretrievable commitment of resources are discussed in separate sections following the discussions of each specific resource. Cumulative impacts are those which result from the incremental impacts of an action added to other past, present, and reasonably-foreseeable future actions, regardless of who

is responsible for such actions. Irreversible and irretrievable impacts are permanent reductions or losses of resources that, once lost, cannot be regained.

This section of the EA will discuss only those environmental factors that would be impacted by the Proposed Action or the No-Action Alternative. Table 4-1 presents a comparison of the potential impacts by each area of concern.

Table 4-1
Comparison of Potential Impacts

Area of Impact		Proposed Action	No Action
Air Resources	ST:	Insignificant	No Impact
	LT:	No Impact	No Impact
Land Use	ST:	No Impact	No Impact
	LT:	No Impact	No Impact
Geological Resources	ST:	Insignificant	No Impact
	LT:	No Impact	No Impact
Water Resources	ST:	No Impact	No Impact
	LT:	No Impact	No Impact
Cultural Resources	ST:	No Impact	No Impact
	LT:	No Impact	No Impact
Biological Resources	ST:	Insignificant	Insignificant
	LT:	Insignificant	Insignificant
Noise Resources	ST:	Insignificant	No Impact
	LT:	No Impact	No Impact
Aesthetic Resources	ST:	No Impact	No Impact
	LT:	No Impact	No Impact
Solid/Hazardous Waste	ST:	No Impact	No Impact
	LT:	No Impact	No Impact
Socioeconomic	ST:	Beneficial	Insignificant
	LT:	Beneficial	Insignificant

ST = Short-term Impact.

LT = Long-term Impact.

Beneficial = Impact would be favorable, producing an overall benefit.

No Impact = No perceptible impact.

Insignificant = Perceptible, but not significant impacts.

Significant = Potential impact which requires concern.

4.1 AIR RESOURCES

4.1.1 Significance Criteria

Impacts to air quality would be considered significant if activities under the Proposed Action result in a violation of Federal and/or state air quality attainment standards.

4.1.2 Proposed Action

Under the Proposed Action, exhaust pollutants from on-site heavy equipment used for construction and vehicles transporting workers and building materials to the site would be created. Additionally, exhaust emissions would be generated by workers commuting to the site. Either a truck-mounted or hand-held gasoline-powered auger would be used during fence construction, and possibly an excavator would be used to install the concrete anchors. Additional equipment which may be used at the project site includes a portable generator for welding activities, a crane for fence placement, and a compressor for hand-operated tools. It is assumed that as many as four pieces of heavy equipment could be used simultaneously during the construction phase. These pieces would typically be moved on site, and would remain there for the duration of construction.

Air emissions would be generated as a result of fuel combustion from heavy equipment, and fugitive dust due to travel through the construction area. Emissions and fugitive dust associated with the proposed fence construction were evaluated using equipment specific emissions factors from Compilation of Air Pollutant Emission Factor, Volume II: Mobile Sources (AP-42, Fourth Edition; U.S. EPA 1985). These estimations provided the determination that this Proposed Action would be exempt from the requirements of performing an air conformity analysis under 40 CFR 51.853 and Section 176 of the Clean Air Act.

Based on the proposed operation of the construction equipment (eight hours per day, six days a week), total emissions from fuel combustion during construction were estimated for carbon monoxide (CO), exhaust hydrocarbons (HC), nitrogen oxides (NOx), aldehydes (HCHO), sulfur oxides (SOx), and particulates (PM10). Although a quantitative analysis of dust levels was not performed, impacts would be temporary in duration, and would not be expected to be significant. Dust impacts could be managed to a level of insignificance through the use of standard dust control techniques, including roadway watering and dust suppressants. A summary of construction emissions and fugitive dusts from fuel combustion sources is presented in Table 4-2.

Although some fugitive dust would be associated with road use, it would be no greater than current amounts produced; therefore, no emissions would be associated with the existence of the fence, and no longer-term impacts would be expected.

Table 4-2
Summary of Construction Emissions and Fugitive Dust from Fuel Combustion Sources.

Emissions (lbs./hour)*						
Source (#)	**CO**	**HC**	**NO_x**	**HCHO**	**SO_x**	**PM_{10}**
Tool Carrier (4)	2.7	0.608	6.674	0.124	0.572	0.556
Backhoe w/Auger (2)	1.35	0.304	3.382	0.062	0.286	0.278
Backhoe w/Breaker (1)	0.675	0.152	1.691	0.031	0.143	0.139
Flat Bed Truck (5)	8.97	0.96	20.83	0.56	2.27	1.28
Grader (1)	0.151	0.04	0.713	0.012	0.086	0.061
Water Truck (2)	3.588	0.384	8.332	0.224	0.908	0.512
Crane (2)	1.35	0.304	3.382	0.062	0.286	0.278
Forklift (2)	1.35	0.304	3.382	0.062	0.286	0.278
Pickup Truck (6)	4.05	0.912	10.146	0.186	0.858	0.834
4 x 4 Truck (2)	1.35	0.304	3.382	0.062	0.286	0.278
Total (tons) **	**13.482**	**2.256**	**32.738**	**0.731**	**3.158**	**2.373**

* Derived using Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources (U.S. EPA 1985).

** Based on a six week (full-time - six days per week) period or a 12 week (part-time - three days per week) period for the total proposed action completion.

The Proposed Action would not require any permitting action, and would not create any air emissions that would jeopardize the Federal attainment status of the Air Quality Region. Additionally, the Proposed Action would not cause an exceedance in the allowable Prevention of Significant Deterioration (PSD) increment for the region.

4.1.3 No-Action Alternative

Under the No-Action Alternative, baseline conditions would not change; therefore, no impact would be expected from this alternative.

4.1.4 Conformity Analysis

In addition to daily significance criteria set by the state, the Proposed Action is required under Section 176(c) of the Clean Air Act to demonstrate conformance with the appropriate state or Federal Implementation Plan. It is the responsibility of the applicant to demonstrate that emissions associated with the Proposed Action would conform with the applicable implementation plan goals. Conformity with the state implementation plan (SIP) is determined according to EPA's rule, Determining Conformity of General Federal Actions to state or Federal implementation plans, 40 CFR Part 93 (Vol. 58, No. 228 FR63253 of Nov 93). Because implementation of the Proposed Action would not increase the frequency or severity of any existing violation of any standard for gaseous pollutants, these emissions would be within conformance of the SIP.

4.2 LAND USE

4.2.1 Significance Criteria

Impacts to land use would be considered significant if activities under the Proposed Action resulted in a major change of land use.

4.2.2 Proposed Action

Under the Proposed Action, the overall land use of the proposed 3.3-mile extension would not change, and there would be no land acquisition. The proposed construction would not have impacts to grazing and pasture land along the border. Additionally, there would be a beneficial effect as a result of an expected decrease on property damage in the city of Yuma.

4.2.3 No-Action Alternative

Under the No-Action Alternative, baseline conditions would not change; therefore, no impact to land use would be expected.

4.3 GEOLOGICAL RESOURCES

4.3.1 Significance Criteria

Impacts to topography and physiography would be considered significant if disturbance permanently affected prominent landforms or surface drainage patterns. Geologic hazards are defined as seismic events, landslides, subsidence, or increased flooding. Impacts from the Proposed Action would be considered significant if the action increased the likelihood of a geologic hazard. Additionally, impacts to the proposed project site would be considered significant if project facilities were damaged due to a geologic hazard. Impacts to soils would be considered significant if a reduction in soil productivity and/or increased erosion would prevent revegetation after construction.

4.3.2 Proposed Action

It would not be likely that geologic hazards such as seismic events, landslides, subsidence, or increased flooding would have an impact on either the construction of the proposed fence or the operation of the fence. Additionally, construction and maintenance of the proposed fence would not be likely to cause a geologic hazard in the general project area.

Impacts to area soils may occur from construction activities. However, the terrain in the proposed project area and adjacent areas is generally flat, and any water-borne soil erosion from construction or ongoing activities would remain in the immediate area. Proper erosion control measures would be used during the construction phase, thereby having insignificant short- and long-term impacts on the geology and soils of the area.

The probability of any soil contamination occurring during these activities would decrease with the use of secondary containment. No permanent sanitary facilities would be planned for the project site, and any waste material generated during construction would be disposed at an approved waste disposal site.

4.3.3 No-Action Alternative

No impacts to topography or physiography would be expected under the No-Action Alternative.

4.4 WATER RESOURCES

4.4.1 Significance Criteria

Impacts to surface water and groundwater resulting from the Proposed Action would be considered significant if any of the following criteria is applicable to the proposed project:

- surface water quality declined such that existing surface water quality standards would be violated,
- water usage from the underlying aquifer increased significantly so that the usage had an impact on the aquifer,
- surface water quantities were depleted such that water rights of downstream users were violated, or
- groundwater quantity in local stock or domestic wells declined such that the waters would no longer serve their present functions.

4.4.2 Proposed Action

The surficial aquifer is recharged from precipitation at the proposed project site and the surrounding areas. The Proposed Action would not be expected to increase the amount of paved areas within the general area; therefore, no impact to the surficial aquifer recharge area would be expected. If the Proposed Action is implemented only minimal water usage would be expected during the construction phase of the proposed project, and there would be no water usage once construction is completed.

Drainage from the proposed site would be along the existing dirt road north of the fence. There is an irrigation channel approximately 200 meters from the project site, and the nearest surface water resource is the Colorado River which is located approximately 3.5 miles to the west. Although rain events are infrequent, it would be likely that any water generated during a normal storm event would evaporate and/or infiltrate the ground before reaching this surface water source. Temporary impacts such as erosion and sedimentation would be expected during construction; however, given the existing

conditions of the area (loose soil berm with minimal vegetation) effects from erosion would already occur with or without the proposed construction. The minimal erosion impacts that would be associated with the proposed action would further be reduced following the implementation of the methods presented in the SWPPP in Appendix F. Additionally, there are no waters of the U.S. located within the project area; thus, a Section 404 permit for dredging and filling would not be required as a result of the Proposed Action.

4.4.3 No-Action Alternative

No change in baseline conditions would be expected under the No-Action Alternative.

4.5 BIOLOGICAL RESOURCES

4.5.1 Significance Criteria

Impacts to vegetation resulting from the Proposed Action would be considered significant if they resulted in a long-term reduction in vegetation productivity or a permanent change in species composition. Impacts to wetlands and riparian areas would be considered significant if activities resulted in violation of Section 404 of the Clean Water Act or EOs 11988 or 11990. Impacts to wildlife resources would be considered significant if they prevent realization of specified population objectives. Any action that results in the disruption of breeding activities and subsequent reproductive failure would be considered a significant adverse impact. Any action that would adversely affect a Federally- or state-listed threatened or endangered species, a critical habitat, or any recovery program for such species would be considered a significant impact. Any action that would jeopardize a candidate species would be a significant impact.

4.5.2 Proposed Action

4.5.2.1 Vegetation

Fence construction will impact approximately 8.48 acres (approximately 3.5 miles by 20-meter construction zone) along the fence-line route. Most of the proposed project area has been previously cleared upon construction of the soil berm and six-strand barbed-wire fence. Therefore, minimal vegetation was observed along the fence-line route during the November 1997 site visit. Some small or medium size (one to three foot) mesquite and paloverde shrubs were observed along the fence line.

A survey of a 100 percent of the proposed project site was conducted in November 1997. At that time there were no Federal- or state-protected species observed at the site. Therefore, no impacts to native plant species protected by the Arizona Native Plant Law would occur during the proposed construction of the fence. Coordination with the Arizona Department of Agriculture has been conducted to facilitate relocation of protected specimens where necessary with implementation of the Proposed Action.

A survey of a 100 percent of the proposed project site was conducted in November 1997. At that time there were no Federal- or state-protected species observed at the site. Therefore, no impacts to native plant species protected by the Arizona Native Plant Law would occur during the proposed construction of the fence. Coordination with the Arizona Department of Agriculture has been conducted to facilitate relocation of protected specimens where necessary with implementation of the Proposed Action. Additionally, the potential for suitable habitat for these species to exist at the proposed project site is unlikely.

Due to the previous disturbance and the regional abundance of these species, the impact from the proposed fence construction would not be significant. Additionally, there is very little vegetation adjacent to the existing access road; therefore, no significant impacts to this area would occur as a result of the Proposed Action.

4.5.2.2 Wetlands and Floodplains

There are no wetlands or floodplains located adjacent to the Proposed Action site or within the immediate surrounding area of the project site. Therefore, these resources would not be impacted by the Proposed Action.

4.5.2.3 Fish and Wildlife

The Proposed Action would have no impact on fish species as the proposed construction activities would not take place on or near flowing or standing water. The only wildlife species which could be impacted from the Proposed Action would be small mammal and bird species. As a result of the existing site's limitations as foraging-grass and ground-nesting habitat, impacts to wildlife would be negligible. Long-term impacts to both small mammal and bird populations would be negligible, as well. Larger terrestrial wildlife movements in the proposed construction area may be affected by fence construction. However, due to the active agricultural and urban nature of the proposed construction area (Yuma, Arizona and San Luis, Mexico) and the degraded and disturbed condition of the Proposed Action area, wildlife occurrences within this area are thought to be sporadic. Therefore, impacts on wildlife species would be expected to be minimal, and no wildlife corridors would be interrupted.

4.5.2.4 Threatened and Endangered Species

Under the Endangered Species Act, formal consultation with the USFWS is required for any action that may affect Federally-listed species. Additionally, Federal agencies are required to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any threatened or endangered species. However, it was determined that there are no threatened and endangered species present at the proposed project site. This was confirmed through informal consultation with the USFWS and Arizona Fish and Game Department, and copies of these letters are presented in Appendix E.

During the November 1997 survey of the proposed site, there were no protected species or evidence of their preferred habitats observed. As discussed in Section 3.5.4 the flat-tailed horned lizard prefers a more vegetative area than that associated with the proposed project site. The Sonoran pronghorn prefers broad, intermountain alluvial valleys with creosote-bursage and paloverde-mixed cacti associations. The pygmy-owl (*Cactus ferruginous*) has historically been located near Tucson, Arizona, and prefers mature cottonwood/willow, mesquite bosques and Sonoran desertscrub. The southwestern willow flycatcher is known to occur in riparian habitats along rivers, streams, or other wetlands, where dense growths of willows, arroweed, buttonbrush, tamarisk, Russian olive or other plants are present, often with a scattered overstory of cottonwood. The Yuma clapper rail prefers mature stands of cattails and bulrushes along the margins of shallow ponds with stable water levels. The razorback sucker is a large freshwater fish found in the lower Colorado River basin.

There are no water bodies located within or adjacent to the proposed project area; therefore, there would be no potential habitat to the razorback sucker, Yuma clapper rail, and the southwestern willow flycatcher. Additionally, no mature cottonwood/willows, mesquite bosques, or intermountain alluvial valleys occur within the proposed project area. These plant communities are the preferred habitats for the pygmy-owl and the Soroan pronghorn, respectively.

Based on the information above, it is unlikely that threatened or endangered species occur within the direct project area except on a transient or accidental basis. There is no evidence of these species occurring anywhere near the Proposed Action site. Therefore, it would be expected that the Proposed Action would not have an affect on threatened or endangered species. Additionally, given the relatively small area that would be affected by the Proposed Action and the marginal habitat provided within the proposed site, it would be expected that the Proposed Action would not significantly impact any protected species.

4.5.3 No-Action Alternative

Under the No-Action Alternative, the proposed project area would continue to experience unauthorized foot and vehicle traffic. As a result, vegetation and wildlife species would continue to experience an immeasurable or insignificant level of impact in the proposed project area.

4.6 NOISE

4.6.1 Significance Criteria

An impact would be significant if the magnitude of the noise levels and the proximity of noise-sensitive receptors are influenced by operational noise levels. 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. Livestock, poultry, and some protected species of wildlife are also considered noise-sensitive receptors.

Noise naturally dissipates by atmospheric attenuation as it travels through the air. Some other factors that can effect the amount of attenuation are ground surface, foliage, topography, and humidity. For each doubling of distance from the source, the noise level can be expected to decrease by approximately six decibels (dB). This method is a very conservative estimate of noise levels. A significant impact would be an increase in the ambient noise levels to a level of physical discomfort, or 120 A-weighted decibels (dBA).

4.6.2 Proposed Action

Temporary construction noise impacts vary markedly because the noise intensity of construction equipment ranges widely as a function of the equipment and its level of activity. Short-term construction noise impacts (less than 60 days) tend to occur in discrete phases dominated initially by large earth-moving sources and later by hand-operated tools for finish construction. The noise produced by an assemblage of heavy equipment involved in urban, commercial, and industrial development typically ranges up to about 89 dBA at 50 feet from the source (U.S. Army 1995). Over most of the proposed project area, receptors are located well beyond these distances. Additionally, given the heavy traffic noise resulting from the urban highway and development on the Mexico side of the border and the heavy agricultural equipment on the U.S. side, the noise expected from the proposed construction activities would be short in duration (less than 30 to 60 days), and would be expected to be insignificant. There would be no noise impacts associated with the operation of the proposed fence.

4.6.3 No-Action Alternative

There would be no change in baseline conditions under the No-Action Alternative; therefore, there would be no impact to the proposed project area.

4.7 CULTURAL RESOURCES

4.7.1 Significance Criteria

An impact would be significant to cultural and/or historic resources if project activities result in:

- the destruction or alteration of all or a contributing part of any NRHP eligible cultural or historic site without prior consultation with the SHPO;
- the isolation of an eligible cultural resource from its surrounding environment;
- the introduction of visual, audible, or atmospheric elements that are out of character with a NRHP eligible site or would alter its setting;

4.7.2 Proposed Action

The Proposed Action site is located south of the city of Yuma, in Yuma County, Arizona. As discussed in Section 3.7, a past records search at the ASM and the SHPO's office revealed no recorded sites within the proposed project area or within one mile from it (on the U.S. side of the border). A full archaeological report detailing the past history of this area is presented in Appendix D. No archaeological sites or isolated occurrences were identified during the November 1997 survey. Consequently, there is no reason to suspect the existence of significant archaeological resources below the surface within the project area. No impacts to surface or subsurface archaeological resources would be expected from the implementation of the Proposed Action.

4.7.3 No-Action Alternative

No change in baseline conditions would be expected under the No-Action Alternative.

4.8 SOLID AND HAZARDOUS WASTES

4.8.1 Significance Criteria

An impact would be significant if the environment or construction workers were exposed to potentially harmful concentrations of hazardous or regulated materials, wastes, or substances during an activity. Impacts would result if nonhazardous/regulated and hazardous substances were collected, stored, and/or disposed of improperly. The development and implementation of a spill prevention and response plan would minimize the potential impacts of an accidental release.

4.8.2 Proposed Action

An accidental release could occur as a result of fuels, oils, lubricants, and other hazardous and regulated materials brought on to the site for the proposed construction activities. The specific terms and requirements recommended for the spill prevention and response plan for the Proposed Action are identified in Section 5.5 of this document. Such spills could result in potentially adverse impacts to on-site soils, and threaten the health of the local population, as well as wildlife and vegetation.

Because of the random nature of illegal dumping along the border, it is difficult to determine the location and quantity of hazardous waste that may be present within the project site, particularly along the existing fence line. If hazardous materials or waste is present, there would be a potential for exposure during construction activities. Construction personnel would be informed about the potential to encounter hazardous wastes that may be present on the site from dumping, and the appropriate procedures to use if suspected hazardous contamination is encountered. Under the Proposed Action it is assumed that worker safety risks would be reduced through the implementation of standard safety practices, such as wearing hard hats, steel-toed boots, gloves, ear

protection, face masks, safety vests, and other equipment, where appropriate and/or prescribed by state and/or Federal worker health and safety laws and regulations.

4.8.3 No-Action Alternative

No change in baseline conditions would be expected under the No-Action Alternative.

4.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.9.1 Socioeconomics

The proposed fence construction project could provide direct and indirect economic benefits through incidental purchases made in the local community. The beneficial impacts on the socioeconomic resources in the Region of Influence (ROI) such as population, employment, income, and business sales would be insignificant. The construction would be performed by troops transferred in for this project, and it would not be likely that additional hiring would occur within the local area. Additionally, the construction of the border fence would not induce permanent in- or out-migration to the ROI, and as a result, population would be not impacted.

Direct expenditures of the fence construction would have a minimal impact on employment, income, and sales within the ROI. Although most labor and some materials would be brought into the local area, some expenditures would be expected to occur within the ROI. Short-term increase in local revenues for commercial establishments, trade centers, and retail sales would result from the purchase of supplies and equipment rental. Any potential impacts from the construction activities would easily be absorbed into the broader economy of the ROI.

The socioeconomic benefits resulting from the operation of the proposed fence would also be beneficial to the ROI. By decreasing drug trafficking and smuggling, the Proposed Action would contribute to the reduction of socioeconomic impacts and burdens that currently exist on local law enforcement and the medical community. Additionally, money that would have been spent on illegal drugs, could be shifted to other goods and services within the community.

4.9.2 Environmental Justice

EO 12898 of 11 February 1994 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," provided that each U.S. Federal agency shall identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority and low income populations in the U.S. The proposed construction site is located in a rural area with similar characteristics of the broader ROI. The construction would occur on an existing fence site and would not restrict the flow of legal visitation, trade, or immigration. Therefore, there would be no expected disproportionately high and adverse

impacts on minority or low-income populations. Under the definition of EO 12898, there would be no adverse environmental justice impacts.

4.9.3 No-Action Alternative

Under the No-Action Alternative, the region would continue to experience immeasurable impacts to law enforcement agencies, medical institutions, and other socioeconomic organizations in the community as a result of continued drug trafficking and smuggling. Therefore, there would be an insignificant impact to the socioeconomic resources in the ROI.

4.10 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable commitments of resources would include: a small amount of soil lost through wind and water erosion, a minor loss of small animal habitat due to fence construction, materials, energy and manpower expended during construction of the project, and higher level of noise generated from the construction activities.

4.11 CUMULATIVE IMPACTS

The assessment of cumulative impacts is addressed in NEPA by its reference to interrelations of all components of the natural environment. The CEQ defined cumulative impact as the incremental impact of multiple present and future actions with individually minor but collectively significant effects. Cumulative impact can be concisely defined as the total effect of multiple land uses and developments, including their interrelationships on the environment (Bain et al. 1986).

In order to evaluate cumulative effects of the past and present JTF-6 actions, EAs from previous and current operations in the region, and the PEIS developed for all JTF-6 activities along the U.S.-Mexico border were evaluated. An analysis of each component of the affected environment was completed from the existing EAs in order to identify which would have cumulative impacts as a result of the past and proposed operations. This analysis revealed that land use, air quality, threatened and endangered species, cultural resources, and socioeconomic resources of past and proposed action areas would not be subjected to cumulative impacts due to the temporary nature of construction activities. Water and biological resources (i.e., vegetation and wildlife habitat) would be insignificantly affected cumulatively from past and proposed fence construction actions.

The primary cumulative effect of the past and proposed action would be the permanent loss of vegetation and associated wildlife habitat. As identified in the PEIS, the overall loss of vegetation falls below the projected level for the five-year period. Construction of the landing mat fence may result in only an insignificant loss of wildlife habitat since a barbed-wire fence already exists in many segments along the U.S.-Mexico border.

If a Finding of No Significant Impact (FONSI) is developed and implemented, the Proposed Action would result in the loss of approximately 8.5 acres of degraded/disturbed vegetation. Soil losses have been minimized through the implementation of erosion control measures including waterbars, gabions, reseeding, compaction, and slope control. Although the amount of soils saved is not quantifiable, JTF-6 operations have reduced extant erosion problems in numerous locations.

Air emissions have been produced by vehicles, aircraft, and heavy equipment; however, these have not resulted in significant cumulative impacts due to the short duration of the activities, the dispersion capabilities of the region, and the remote locations of most of the operations. Construction and maintenance activities have had cumulative positive impacts on socioeconomic resources within the border areas and the nation through reductions in illegal drug smuggling activities and, secondarily, through reductions in illegal immigration. Future impacts would be anticipated to occur at a level consistent with past activities and not result in significant adverse effects (U.S. Army 1994).

5. ENVIRONMENTAL MITIGATION MEASURES

This chapter describes environmental mitigation measures that would be implemented as part of the Proposed Action to reduce or eliminate impacts from the proposed fence and road construction. In addition to the specific sections listed below, the mitigation measures identified as part of the PEIS would also be applied to the proposed project in an effort to avoid and minimize potential environmental impacts. Due to the limited nature of the Proposed Action, impacts are expected to be slight. The following mitigation measures described for those resources that could be impacted.

5.1 WATER RESOURCES

All work would cease during heavy rains and would not resume until conditions are suitable for the movement of equipment and materials. As a result of the proposed fence construction techniques, significant impacts on soils in the proposed construction area would not be expected. Mitigation measures for storm water runoff from construction activities for areas greater than five acres would require an individual site-specific SWPPP, as included in Appendix F. In addition to the notification associated with the SWPPP, the Border Patrol or JTF-6 would notify the International Boundary and Water Commission when construction activities begin.

5.2 AIR QUALITY

Mitigation measures would include dust suppression methods to minimize airborne particulate matter that would be created during construction of the proposed fence. Additionally, all construction equipment and vehicles would be required to be kept in good operating condition to minimize exhaust emissions. Standard construction practices would be used to control fugitive dust during the construction phases of the Proposed Action.

5.3 BIOLOGICAL RESOURCES

Impacts to existing vegetation during construction activities would be minimized through avoidance. Additional mitigation measures may include, but are not limited to, the following:

- any sensitive plant or animal species would be relocated in coordination with the appropriate state and Federal agencies;
- sediment control devices in place prior to any soil disturbance;
- secondary containment measures or control devices to contain spills; and
- best management practices during construction to minimize or prevent erosion and soil loss.

5.4 NOISE

During the construction phase, noise impacts would be anticipated at local human receptors. As required by Occupational Safety and Health Administration (OSHA), earplugs would be worn by employees working in environments with continuous noise levels of eight hours per day above 90 dBA. Because of the increased noise sensitivity during quiet hours, time limits on on-site construction activities would be warranted for grading and the use of heavy equipment. On-site activities would be restricted to daylight hours on Monday through Saturday, except in emergency situations, and only maintenance of equipment would be permitted on Sundays. Additionally, all construction equipment would use properly working mufflers, and would be kept in a proper state of tune to reduce backfires. Implementation of these measures would reduce the noise impact to an insignificant level.

5.5 SOLID AND HAZARDOUS WASTES

With proper handling, storage, and/or disposal of hazardous and/or regulated materials there would be no significant adverse impacts to onsite workers and neighboring flora and fauna. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents would be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. Refueling of machinery would be completed following accepted guidelines, and all vehicles would have drip pans during storage to contain minor spills and drips. Although it would be unlikely for a major fuel spill to occur, any spill of five gallons or more would be contained immediately within an earthen dike, and the application of an absorbent material (e.g., granular, pillow, sock, etc.). would be used to absorb and contain the spill. Any major spill of a hazardous or regulated substance would be reported immediately to JTF-6 environmental personnel for proper notification to appropriate Federal and state agencies. Additionally, all personnel would be briefed as to the correct procedures for preventing and responding to a spill. A spill prevention and response plan would be in place prior to the start of construction, and all personnel would be briefed on the implementation and responsibilities of this plan. Adoption and full implementation of the construction measures described above would reduce adverse hazardous/regulated substances impacts to insignificant levels.

All waste oil and solvents would be recycled if practicable. All nonrecyclable hazardous and regulated wastes would be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures.

6. PUBLIC INVOLVEMENT

This chapter discusses consultation and coordination that occurred in the preparation of this document. This includes contacts made during development of the Proposed Action, elimination of alternatives, and writing of the EA. Formal and informal coordination has been conducted with the following agencies:

- U.S. Army Corps of Engineers (Fort Worth and Los Angeles Districts),
- Joint Task Force Six (JTF-6),
- Immigration and Naturalization Service (INS; Border Patrol),
- U.S. Section, International Boundary and Water Commission,
- State Historic Preservation Office (SHPO),
- U.S. Fish and Wildlife Service (USFWS), and
- Arizona Department of Agriculture.

The draft EA was made available for public review. The Notice of Availability (NOA) is included in Appendix G. No other public comments were received concerning the draft EA or the FONSI.

(This page intentionally left blank.)

7. LIST OF PREPARERS

Project Manager	Jill Madden Associated Consulting Engineers, Inc. B.S. in Wildlife and Fisheries Sciences Years of Experience: 16
Technical Editor	Victor Palma Associated Consulting Engineers, Inc. B.S. in Biology M.S. in Aquatic Biology Years of Experience: 18
Peer Review/QA Review	Robin Divine Science Applications International Corporation B.S. in Environmental Geography M.S. in Environmental Management and Geographic Information Systems (GIS) Years of Experience: 9
Archaeologist	Annick Lascaux SWCA Inc. Environmental Consultants B.A. in Anthropology M.A. in Anthropology Years of Experience: 24
Air Quality Specialist	Rex G. McDonnell, III, P.E. McDonnell Engineering, Inc. B.S. in Chemical Engineering Years of Experience: 14
Water Resources Specialist	Kathy Woodlee, P.E. Science Applications International Corporation B.S. in Civil Engineering Years of Experience: 7
Cultural Resources Specialist	James Rudolph B.A. in Anthropology M.A. in Anthropology Ph.D. in Anthropology Years of Experience: 25

Senior Review/QA Review	Gary Baumgartel, P.E. B.S. in Civil Engineering M.S. in Facilities Management Years of Experience: 25
Public Relations Specialist	Dave Harris B.A. in Communications Years of Experience: 8
Technical Editor	Amy St. Germain B.A. in English Years of Experience: 2

8. REFERENCES CITED

Bain, M.B., J.S. Irving, R.D. Olsen, E.A. Stull, and G. W., Witmer. 1986. *Cumulative Impact Assessment: Evaluating the environmental effect of multiple human developments.* ANL/ESS-Tm-309. Argonne National Laboratory, Argonne, Inc. 71 pp.

City of Yuma. 1997. www.ci.yuma.az.us/yumastat.html

Desert USA. 1997. www.desertusa.com/desert.html

Environmental Protection Agency. 1997. www.epa/gov/region09/air/breath96/exec.html

Natural Resource Conservation Service. 1966. *Soil Survey for Yuma County.*

U.S. Army. 1991. *Final Environmental Assessment for the Joint Task Force Six Operation 91024, Douglas, Cochise County, Arizona.* U.S. Army Corps of Engineers, Los Angeles District, Los Angeles, California.

U.S. Army. 1993. *Final Environmental Assessment for the Joint Task Force Six Operation JT089-93, JT094-93, and JT265-93, Douglas, Cochise County, Arizona.* U.S. Army Corps of Engineers, Los Angeles District, Los Angeles, California.

U.S. Army. 1994. *Final Programmatic Environmental Impact Statement, JTF-6 activities along the U.S.-Mexico Border.* U.S. Army Corps of Engineers, Fort Worth District, Fort Worth, Texas.

U.S. Army. 1996. *Final Environmental Assessment, JTF-6 road maintenance and construction, Naco-Douglas, Cochise County, Arizona.* U.S. Army Corps of Engineers, Fort Worth District, Fort Worth, Texas.

U.S. Army. 1997a. *Final Environmental Assessment, JTF-6 border fence construction and maintenance, Calexico, Imperial County, California.* U.S. Army Corps of Engineers, Fort Worth District, Fort Worth, Texas.

U.S. Army. 1997b. *Draft Supplemental Environmental Assessment, JTF-6 fence and road construction, Douglas, Cochise County, Arizona.* U.S. Army Corps of Engineers, Fort Worth District, Fort Worth, Texas.

Yuma County. 1997. www.arizonaguide.com/clients/MMYUMA/000001/001.html

(This page intentionally left blank.)

APPENDIX A

SITE PHOTOGRAPHS OF THE PROPOSED AREA
YUMA, ARIZONA

(This page intentionally left blank.)

Photo No. A-1

Photo No. A-2

Photo No.	Description/Comments
A-1	View of Existing Landing Mat Fence - Facing south
A-2	East end of existing fence line. View facing south.

Photo No. A-3

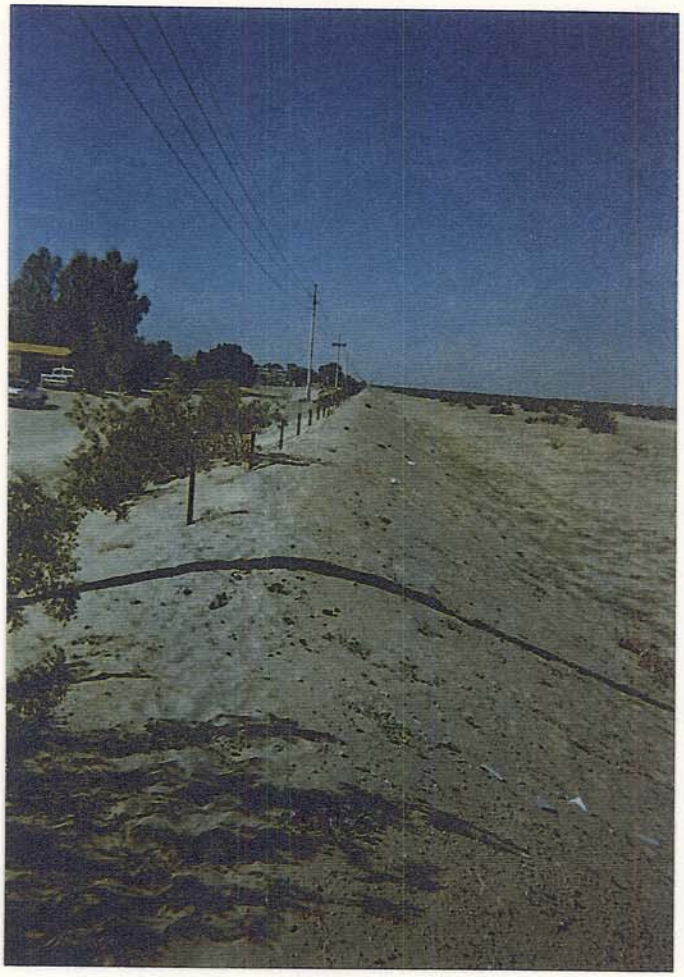


Photo No.	Description/Comments
A-3	View of proposed fence line along US/Mexico border. View facing west.

Photo No. A-4

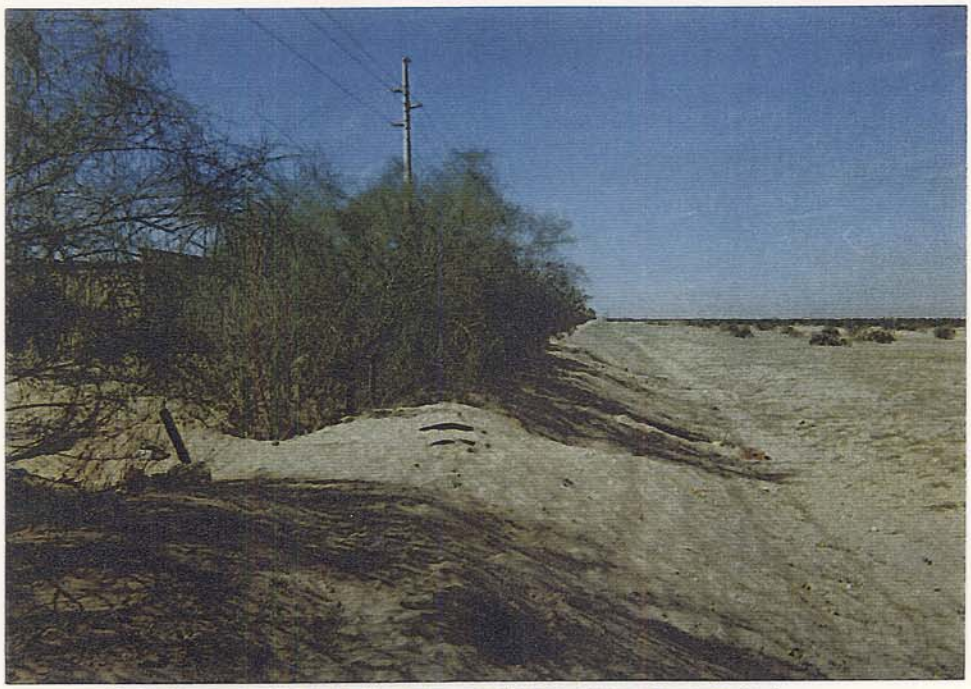


Photo No. A-5

Photo No.	Description/Comments
A-4	View of vegetation found along proposed fence line adjacent to US/Mexico border. View facing west.
A-5	Photo of animal/rodent burrow located near proposed fence line.

APPENDIX B

FEDERAL AIR POLLUTANT STANDARDS

National Ambient Air Quality Standards

Air Pollutant	Type of Average	National Standards* Primary[1] ($\mu g/m^3$)	Secondary[2] ($\mu g/m^3$)
Carbon Monoxide (CO)	1-hr	40,000	---
	8-hr	10,000	---
Inhalable Particulate Matter (PM_{10})	24-hr	150	---
	AAM[3]	50	---
Lead (Pb)	Calendar Quarter	1.5	---
	3-months		
Nitrogen Dioxide (NO_2)	AAM[3]	100	100
Ozone (O_3)	1-hr	235	235
Sulfur Dioxide (SO_2)	30-min	---	---
	3-hr	---	1,300
	24-hr	365	---
	AAM[3]	80	---
Total Suspended Particulate Matter (TSP)	1-hr	---	---
	3-hr	---	---
Hydrogen Sulfide (H_2S)	30-min	---	---
Sulfuric Acid (H_2SO_4)	1-hr	---	---
	24-hr	---	---
Inorganic Fluoride Compounds (as HF)	3-hr	---	---
	12-hr	---	---
	24-hr	---	---
	7-day	---	---
	30-day	---	---
Beryllium	24-hr	---	---
Other Hazardous and Odorous Pollutants	30-min	---	---
	AAM[3]	---	---

1 National Primary Standards establish the level of air quality necessary to protect the public health from any known or anticipated adverse effects of a pollutant, allowing a margin of safety to protect sensitive members of the population.

2 National Secondary Standards establish the level of air quality necessary to protect the public welfare by preventing injury to agricultural crops and livestock, deterioration of materials and property, and adverse impact on the environment.

3 Annual Arithmetic Mean.

4 If it affects a residential area, business, or commercial property.

5 If it affects only a property used for other than residential, recreational, business, or commercial purpose.

* Adapted from 40 CFR 50.

APPENDIX C

THREATENED AND ENDANGERED SPECIES INFORMATION

Appendix C
Threatened and Endangered Species Information

STATUS DEFINITIONS

Arizona Game and Fish Department (AGFD)

Heritage Data Management System (HDMS)

FEDERAL US STATUS

ESA **Endangered Species Act** (1973 as amended)

US Department of Interior. Fish and Wildlife Service

Listed

LE Listed Endangered: imminent jeopardy of extinction.

LT Listed Threatened: imminent jeopardy of becoming Endangered.

XN Experimental Nonessential population.

Proposed for Listing

PE Proposed Endangered.

PT Proposed Threatened.

Candidate (Notice of Review: 1996)

C Candidate. Species for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened under ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

SC Species of Concern. The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the US Fish and Wildlife Service, but neither term has official status (currently all former C2 species).

Critical Habitat (check with State or regional USFWS office for location details)

Y Yes: Critical Habitat has been designated.

P Proposed: Critical Habitat has been proposed.

[/N **No Status**: certain populations of this taxon do not have designated status (check with State or regional USFWS office for details about which populationshave designated status)].

USFS **US Forest Service** (1988 Animals, 1990, Plants)

US Department of Agriculture, Forest Service, Region 3

S Sensitive: those taxa occurring on National Forests in Arizona which are considered sensitive by the Regional Forester.

TRIBAL STATUS

NESL Navajo Endangered Species List (1997)

Navajo Nation, Navajo Fish and Wildlife Department

The Navajo Endangered Species List contains taxa with status from the entire Navajo Nation which includes parts of Arizona, Utah, and New Mexico. In this notebook we provide NESL status for only those taxa whose distribution includes part or all of the Arizona portion of the Navajo Nation.

Groups

1 Those species or subspecies that no longer occur on the Navajo Nation.

2 Any species or subspecies which in sin danger of being eliminated form all or a significant portion of its range on the Navajo Nation.

3 Any species or subspecies which is likely to become an endangered species, within the foreseeable future, throughout all or a significant portion of its range on the Navajo Nation.

4 Any species or subspecies for which the Navajo Fish and Wildlife Department (NF&WD) does not currently have sufficient information to support their being listed in Group 2 or Group 3 but has reason to consider them. The NF&WD will actively seek information on these species to determine if they warrant inclusion in a different group or removal from the list.

MEXICAN STATUS

MEX **Mexican Federal Endangered Species List** (May 16, 1994)

Secretaria de Desarollo Social, NORMA Oficial Mexicana NOM-059-ECOL-1994

The Mexican Federal Endangered Species List contains taxa with status from the entire Mexican Republic and waters under its jurisdiction. In this notebook we provide MEX designations for only those taxa occurring in Arizona and also in Mexico.

P En Peligro de Extincion (Determined Endangered in Mexico): in danger of extinction.

A Amenazada (Determined Threatened in Mexico): could become endangered if factors causing habitat deterioration or population decline continue.

R Rara (Determined Rare in Mexico): populations viable but naturally scarce or restricted to an area of reduced distribution or very specific habitats.

Pr Sujeta a Proteccion Especial (Determined Subject to Special Protection in Mexico): utilization limited due to reduced populations, restricted distribution, or to favor recovery and conservation of the taxon or associated taxa.

[1= One or more subspecies of this species has status in Mexico, but the IIDMS does not track it at the subspecies level (most of these subspecies are endemic to Mexico). Lease consult the NORMA Oficial Mexicana NOM-059-ECOL-1994 for details.]

STATE STATUS

NPL Arizona Native Plant Law (1993)
Arizona Department of Agriculture

HS Highly Safeguarded: no collection allowed.

SR Salvage Restricted: collection only with permit.

ER Export Restricted: transport out of State prohibited.

SA Salvage Assessed: permits required to remove live trees.

HR Harvest Restricted: permits required to remove plant by-products.

WSCA Wildlife of Special Concern in Arizona (1996 in prep)
Arizona Game and Fish Department

WC Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona October 1996 Draft.

LISTED SPECIES

Scientific Name	Common Name	ESA	Critical Habitat	USFS	WSCA	NPL	NESL	Taxonomic Group
COUNTY NAME: YAVAPAI								
Poeciliopsis Occidentalis	Gila Topminnow	LE		S	WC			Fish
Rhinichthys Osculus	Speckled Dace	SC		S				Fish
Syrauchen Texanus	Razorback Sucker	LE	Y	S	WC		2	Fish
Cicindela Oregona Maricopa	Maricopa Tiger Beetle	SC						Invertebrate
Cylloepus Parkeri	Parker's Cylloepus Riffle Beetle	SC		S				Invertebrate
Metrichia Volada	Page Spring Micro Caddisfly	SC						Invertebrate
Pyrgulopsis Glandulosa	Verde Rim Springsnail	SC						Invertebrate
Pyrgulopsis Montezumensis	Montezuma Well Springsnail	SC						Invertebrate
Pyrgulopsis Morrisoni	Page Springsnail	C						Invertebrate
Pyrgulopsis Simplex	Fossil Springsnail	SC						Invertebrate
Pyrgulopsis Sola	Brown Springsnail	SC						Invertebrate
Euderma Maculatum	Spotted Bat	SC		S	WC			Mammal
Lasiurus Blossevillii	Western Red Bat			S	WC			Mammal
Lutra Canadensis Sonora	Southwestern River Otter	SC		S	WC		1	Mammal
Macrotus Californicus	California Leaf Nose Bat	SC		S	WC			Mammal
Microtus Mexicanus Hualpaiensis	Hualapai Mexican Vole	LE		S	WC			Mammal
Myotis Lucifugus Occultus	Occult Little Brown Bat	SC		S				Mammal
Myotis Thysanodes	Fringed Myotis	SC						Mammal
Myotis Velifer	Cave Myotis	SC						Mammal

LISTED SPECIES

Scientific Name	Common Name	ESA	Critical Habitat	USFS	WSCA	NPL	NESL	Taxonomic Group
Plecotus Townsendii Pallescens	Pale Townsend's Big-Eared Bat	SC						Mammal
Sigmodon Arizonae Jacksoni	Yavapai Arizona Cotton Rat	SC						Mammal
Tadarida Brasiliensis	Mexican Free-Tailed Bat			S				Mammal
Abutilon Parishii	Pima Indian Mallow	SC		S		SR		Plant
Agave Arizonica	Arizona Agave	LE		S		HS		Plant
Agave Delamateri	Tonto Basin Agave	SC		S		HS		Plant
Agave Mckelveyana	McKelvey's Agave					SR		Plant
Agave Murpheyi	Hohokam Agave					SR		Plant
Agave Toumeyana Var Bella	Toumey Agave					SR		Plant
Allium Bigelovii	Bigelow Onion					SR		Plant
Erigeron Saxatilis						S		Plant
Erigonum Apachense	Apache Wild-Buckwheat	SC		S		SR		Plant
Eriogonum Ripleyi	Ripley Wild-Buckwheat	SC		S		SR		Plant
Fremontodendron Californicum	Flannel Bush					SR		Plant
Hedeoma Diffusum	Flagstaff Pennyroyal			S		SR	4	Plant
Mammillaria Viridiflora	Varied Fishhook Cactus					SR		Plant
Potentilla Multifoliolata	Arizona Cinquefoil							Plant
Purshia Subintegra	Arizona Cliff Rose	LE		S		HS		Plant
Salvia Dorri Ssp Mearnsii	Verde Valley Sage	SC		S		SR		Plant
Talinum Validulum	Tusayan Flame Flower	SC		S		SR		Plant
Washingtonia Filifera	California Fan Palm					SR		Plant
Charina Trivirgata Gracia	Desert Rosy Boa	SC						Reptile
Gopherus Agassizii (Sonoran Population)	Sonoran Desert Tortoise	SC		S		WC		Reptile

LISTED SPECIES

Scientific Name	Common Name	ESA	Critical Habitat	USFS	WSCA	NPL	NESL	Taxonomic Group
Heloderma Suspectum	Gila Monster			S				Reptile
Thamnophis Eques Megalops	Mexican Garter Snake	SC		S	WC			Reptile
Thamnophis Rufipunctatus	Narrow-Headed Garter Snake	SC		S	WC			Reptile
Uma Scoparia	Mojave Fringe-Toed Lizard				WC			Reptile
COUNTY NAME: YUMA								
Ardea Alba	Great Egret			S	WC			Bird
Coccyzus Americanus Occidentalis	Western Yellow-Billed Cuckoo			S	WC		4	Bird
Egretta Thula	Snowy Egret			S	WC			Bird
Empidonax Traillii Extimus	Southwestern Willow Flycatcher	LE	Y		WC		2	Bird
Glaucidium Brasilianum Cactorum	Cactus Ferruginous Pygmy Owl	LE		S	WC			Bird
Himantopus Mexicanus	Black-Necked Stilt			S				Bird
Laterallus Jamaicensis Coturniculus	California Black Rail	SC			WC			Bird
Rallus Longirostris Yumanensis	Yuma Clapper Rail	LE		S	WC			Bird
Xyrauchen Texanus	Razorback Sucker	LE	Y	S	WC		2	Fish
Anodonta Californiensis	California Floater	SC						Invertebrate
Euderma Maculatum	Spotted Bat	SC		S	WC			Mammal
Macrotus Californicus	California Leaf Nosed Bat	SC		S	WC			Mammal
Myotis Yumanensis	Yuma Myotis	SC						Mammal
Peromyscus Eremicus Papagensis	Pinacate Cactus Mouse	SC						Mammal

LISTED SPECIES

Scientific Name	Common Name	ESA	Critical Habitat	USFS	WSCA	NPL	NESL	Taxonomic Group
Plecotus Townsendii Pallescents	Pale Townsend's Big Eared Bat	SC						Mammal
Sigmodon Hispidus Eremicus	Yuma Hispid Cotton Rat	SC						Mammal
Allium Parishii	Parish Onion					SR		Plant
Chamaesyce Platysperma	Dune Spurge	SC						Plant
Colubrina Californica	California Snakewood			S				Plant
Crypthantha Ganderi	Gander's Cryptantha	SC						Plant
Helianthus Niveus Ssp Tephrodes	Dune Sunflower	SC						Plant
Lophocereus Schottii	Senita					SR		Plant
Opuntia Wigginsii	Wiggin's Cholla					SR		Plant
.Pholisma Sonorae	Sand Food	SC				HS		Plant
Rhus Kearneyi	Kearney Sumac					SR		Plant
Triteleiopsis Palmeri	Blue Sand Lily					SR		Plant
Washingtonia Filifera	California Fan Palm					SR		Plant
Charina Trivirgata Gracia	Desert Rosy Boa	SC						Reptile
Gopherus Agassizii (Sonoran Population)	Sonoran Desert Tortoise	SC			S	WC		Reptile
Heloderma Suspectum	Gila Monster				S			Reptile
Phrynosoma Mcallii	Flat-Tailed Horned Lizard	SC				WC		Reptile
Thamnophis Eques Megalops	Mexican Garter Snake	SC			S	WC		Reptile
Uma Notata Rufopunctata	Cowless Fringe-Toed Lizard	SC				WC		Reptile

If "Y" or "P" is indicated, Critical Habitat has been designated or proposed for the species. Critical Habitat is not necessarily designated or proposed within Arizona or within each county where the species occurs therein. Please contact the local USFWS for details about Critical Habitats and their locations.

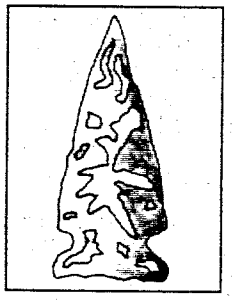
APPENDIX D

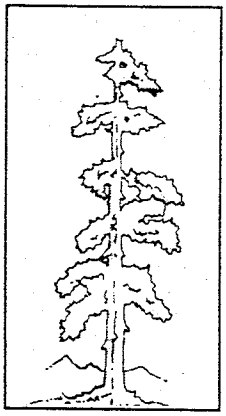
CULTURAL RESOURCES SURVEY

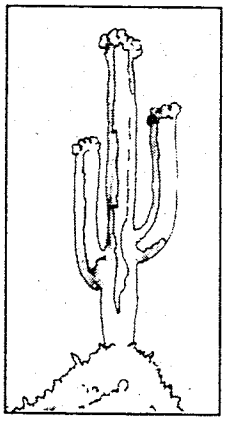
A CLASS III ARCHAEOLOGICAL INVENTORY OF A 3.3 MILE-LONG AND 60 FOOT-WIDE CORRIDOR ALONG THE INTERNATIONAL BORDER SOUTH OF YUMA, YUMA COUNTY, ARIZONA

Submitted to

ASSOCIATED CONSULTING ENGINEERS, INC.







Submitted by

SWCA, INC.
Environmental Consultants

SWCA Archaeological Report No. 97-215

DECEMBER 1997

A CLASS III ARCHAEOLOGICAL INVENTORY OF A 3.3 MILE-LONG AND 60 FOOT-WIDE CORRIDOR ALONG THE INTERNATIONAL BORDER SOUTH OF YUMA, YUMA COUNTY, ARIZONA

Submitted to

ASSOCIATED CONSULTING ENGINEERS, INC.
901 South Mopac Expy, Building II, Suite 165
Austin, Texas 78746
(512) 329-0006

Submitted by

SWCA, INC.
Environmental Consultants
343 South Scott Avenue
Tucson, Arizona 85701
(520) 325-9194

Prepared by

Annick Lascaux

SWCA Archaeological Report No. 97-215

December 2, 1997

TABLE OF CONTENT

List of Figures

List of Tables

ABSTRACT

SPONSOR:	Associated Consulting Engineers, Inc., Austin, Texas.
PROJECT TITLE:	A Class III Archaeological Inventory of A 3.3 Mile-Long and 60 Foot-Wide Corridor Along the International Border, South of Yuma, Yuma County, Arizona.
PROJECT DESCRIPTION:	Archaeological survey of a right-of-way corridor slated for the construction of the international border fence. The right-of-way is located on lands administered by the Bureau of Reclamation therefore, archaeological clearance is required before the federal undertaking.
PROJECT LOCATION:	The right-of-way traverses the following sections: N1/2 Sec 17, S1/2 Sec 16, N1/2 Sec 22, N1/2 NW1/4 Sec 23, Township 11 South, Range 24 West, USGS 7.5' Gadsden and South of Somerton Quadrangles, Yuma County, Arizona.
NUMBER OF ACRES SURVEYED:	Approximately 24
NUMBER OF SITES:	0
NUMBER OF NATIONAL REGISTER ELIGIBLE SITES:	0
COMMENTS:	The pedestrian survey provided one hundred percent coverage of the international border fence right-of-way. No prehistoric nor historical artifacts or cultural features were observed within the surveyed area. SWCA recommends archaeological clearance for the fence right-of-way.

INTRODUCTION

On November 5, 1997, archaeologist Annick Lascaux, of SWCA, Inc., Environmental Consultants, Tucson, conducted an archaeological survey of a 24--acre, 3.3 mile-long and 60 foot-wide right-of-way, along the International Border, South of Yuma, Yuma County, Arizona. The survey was conducted on behalf of Associated Consulting Engineers, Inc., from Austin, Texas. The pedestrian survey was conducted to determine if archaeological resources were present on the project parcel, which is located on land administered by the Bureau of Reclamation, before the implementation of a federal undertaking that will involve the construction of a fence along the border.

THE PROJECT AREA

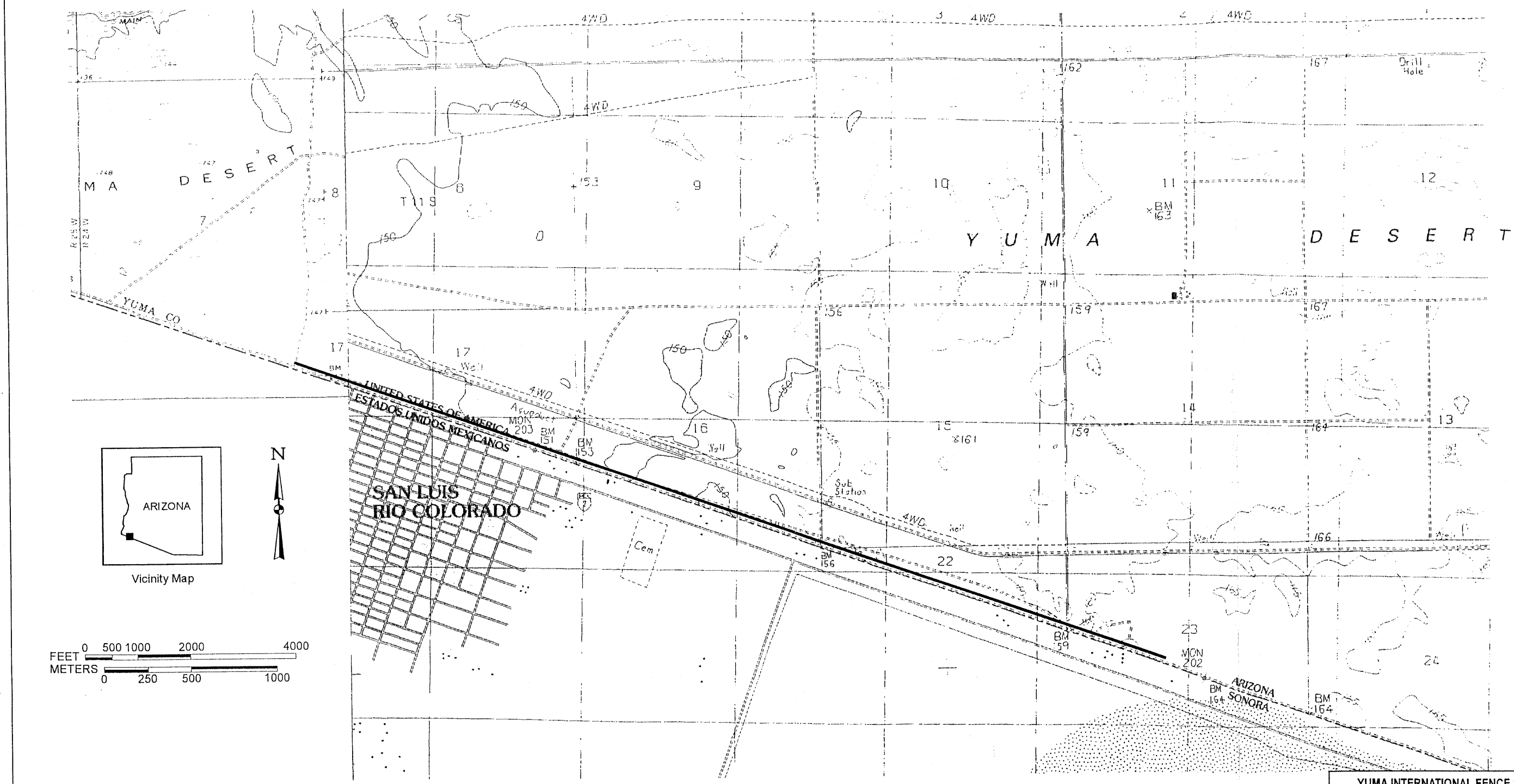
The right-of-way traverses the following sections: N1/2 Sec 17, S1/2 Sec 16, N1/2 Sec 22, N1/2 NW1/4 Sec 23, Township 11 South, Range 24 West, USGS 7.5' Gadsden and South of Somerton Quadrangles, Yuma County, Arizona (Figure 1). Specifically, the parcel is adjacent to the International Border line and extends 60 foot north of it.

The parcel is located on the eastern first terrace of the Colorado River, along the western boundary of the Yuma Desert. The substrate consists of fine silty sand with some gravel that is mounded in small eolian dunes around the vegetation. The closest mountain ranges lie 25 miles to the east and include the Gila and the Tinajas Altas mountains. The natural vegetation is quite sparse and is characteristic of the Lower Colorado River Subdivision of the Sonoran Desert scrub; the creosote-saltbush series typifies the project area (Brown 1994).

PREVIOUS RESEARCH

A file search at the Arizona State Museum (ASM) and at the State Historic Preservation Office (SHPO) revealed no recorded sites within the project area nor within one mile from it (in the United States). Previous archaeological work along the Lower Colorado region includes several surveys that were carried out over the past 75 years. Malcolm Rogers was one of the first archaeologist to work in the area (1928, 1936, 1939, 1945, 1958, and 1966). For three decades, while working for the Museum of Man in San Diego, he surveyed large areas to identify sites and to construct ceramic typologies for use in defining the culture history of the area. Rogers published other papers that were concerned with the pre-ceramic period of the desert southwest, southern California, and the Lower Colorado River. Schroeder (1958) conducted a non-systematic survey of the river area from Davis Dam to the Mexican Border. His work produced a generalization of what was to be found in the area and his ceramic types are still used today. Similar surveys were funded by the Bureau of Reclamation and undertaken by Brooks et al. (1970) and Swarthout and Drover (1981). Brooks conducted a major survey from Needles south, and Swarthout and Drover overview was of a long stretch of river between Davis Dam and the Mexican Border.

Proj. #25-72304	File: RCW\25\72304	Drawing: YUMA_SUR.CDR	Drwn by: RCW	Chk'd by: MS	Date: 11/18/97	Rev:



Vicinity Map

60-foot Wide Archeaological Survey Location

YUMA INTERNATIONAL FENCE SURVEY

Yuma County, Arizona T.11S.R.24W. Secs. 7,17,16,15,22,23

FIGURE 1. PROJECT AREA LOCATION

Associated Consulting Engineers Inc.

SWCA Environmental Consultants Inc.

Base map from USGS 7.5' Quadrangles: Gadsen, Ariz. and South of Somerton, Ariz.

Other projects include surveys along the lower Gila River to its confluence with the Colorado River (Breternitz 1957; Vivian 1965; Wasley and Johnson 1965). However, the majority of the archaeological work (e.g., cultural overviews, non-systematic reconnaissances, systematic Class III surveys, and limited excavations) have been undertaken some distance away from the Colorado River, specifically in the Barry M. Goldwater Range (Ahlstrom 1997:4-1 to 4-31). Of note is the 1982 cultural overview of southwestern Arizona *Hohokam and Patayan: Prehistory of Southwestern Arizona* (McGuire and Schiffer 1982). The document presents a critical assessment of archaeological studies undertaken in southwestern Arizona prior to the late 1970s. Since its publication, numerous surveys have been undertaken that have attempted to address the issues presented by McGuire and Schiffer (see Ahlstrom 1997).

CULTURE HISTORY

Pre-Ceramic Period (10,000 B.C.-A.D. 600)

The Pre-ceramic period refers to a time when the inhabitants of southwestern Arizona relied on wild plants and animals for food and other necessary materials. In the Southwest, critical wild resources are too scattered to support sedentism. Therefore, Pre-ceramic settlement patterns are characterized by mobility, at least until the very end of the period. The western pre-ceramic tradition, developed in the deserts of southern California, western Arizona, and northwestern Sonora, includes as primary units the Malpais, San Dieguito (including San Dieguito I, II, and III), and Amargosa (Amargosa I and II) archaeological complexes and periods.

Hayden (1976) has argued that the Malpais complex was pre-Clovis, though this interpretation has been questioned. Evaluation of the Malpais concept is complicated by three factors: that none of the diagnostic traits identified for the complex is exclusive to it, the unavailability of Malpais assemblages from controlled subsurface contexts, and the use of poorly understood processes formation of desert pavement and development of patination for dating (McGuire 1982:160-164). In her study of lithic artifacts collected by Hayden from surface contexts in the Pinacate, Rosenthal (1979) argued that she could identify a Malpais pattern of tool manufacture.

Following Malpais is San Diegito I, which has been interpreted as being at least partially contemporaneous with the Clovis Paleoindian complex. San Diegito II and III do not occur in southwestern Arizona. One of the most important San Dieguito assemblages from southwestern Arizona consists of the Ventana complex from Ventana Cave, assuming that one accepts Rogers's (1966) and Hayden's (1976) assignment of the assemblage to San Dieguito I. These archaeologists considered the Ventana complex to be late San Dieguito I in age, with the addition of an intrusive Clovis projectile point. The Ventana complex has apparently produced the only radiocarbon date from a San Dieguito I context, 11,300 + 1200 B.P. (Haury and Hayden 1950).

Some additional evidence of the Paleoindian period has been identified in southwestern Arizona. Ezell's (1954) report on a survey conducted in the Northwestern Papaguería mentioned a projectile point in the Folsom tradition, fluted and with the basal third of the edge ground smooth, most closely resembling the Clovis Fluted point and the Ventana point (Ezell 1954:13). Rosenthal (1977) tentatively identified two sites in the Quijotao Valley as being contemporaneous with the Ventana complex. Rosenthal (1979) also identified a San Dieguito pattern of tool manufacture in Hayden's surface lithic assemblages from the Sierra Pinacate. In their overview of southern Arizona, Whittlesey et al. (1994) referred to only one tentative

piece of evidence for post-Clovis Paleoindian use of southwestern Arizona, a projectile point from along the Gila River in the Painted Rocks Reservoir area that, according to Dart et al. (1989), was identified by Wormington as a reworked Folsom point (Whittlesey et al. 1994:197).

The San Dieguito complex of southern California, western Arizona, and northwestern Sonora lacks stone projectile points, but includes a variety of scrapers, choppers, and planes (McGuire 1982:Table 5.1). McGuire (1982:171) repeated Hayden's interpretation of San Dieguito I as representing a basic technology seemingly oriented towards the working of wood (Hayden 1976:284). This interpretation can be questioned, but if it is correct, then the assemblage resembles the Clovis complex in providing a severely biased perspective on an adaptation that must have involved the exploitation of a broad range of plants and animals.

The extinction of large Pleistocene mammals was at least one cause of a shift from a largely hunting economy to the Archaic life way, which was based on the collecting of a broad spectrum of wild plant and animal foods. The Archaic period can be discussed with reference to the Amargosa complex and its numbered subdivisions (Amargosa I and II). However, Huckell's chronology is used here because of its simplicity and its reliance on projectile point styles makes it directly applicable to southwestern Arizona. Huckell (1984) recognizes a Southwestern Archaic consisting of Early (7500-5000 B.C.), Middle (5000-2000/1000 B.C.), and Late (2000/1000 B.C.-A.D. 300 to 600) periods. These periods are characterized by typical projectile-point styles: Lake Mohave, Silver Lake, and the Jay styles in the early Archaic; Pinto, Bajada, San Jose, Chiricahua, and Gypsum in the Middle Archaic; and San Pedro and Elko in the Late Archaic (Huckell 1984; Slaughter et al. 1992).

Because Huckell's framework is largely chronological and deals primarily with projectile point styles, it cannot be said to supplant information presented in terms of the older Amargosa concept. The tool kits described for the Amargosa complex include projectile points that were mounted on atlatl darts or on spears (Slaughter 1992:9), as well as other flaked lithic tools and a variety of grinding implements. Fratt (1992:19) has argued that the presence of ground stone tools, combined with their "virtual absence in the preceding Paleoindian period signals a major change in subsistence away from a focus on big-game hunting and plant gathering with little to no processing to more extensive and intensive plant procurement and processing."

Ceramic Period

During the Ceramic period, technology and subsistence practices continue to change. Ceramics first appear and there is a trend toward increased reliance on plant material and smaller animals for subsistence. Site-type diversification increases and larger sites become more common. Point types are smaller than during the previous period.

The Colorado River, the westernmost segment of the lower Gila River and the adjacent deserts were occupied by a cultural group alternatively known as the Patayan, the Yuma, the Hakataya. Patayan camp sites are usually consist of "rock-outlined jacales, gravel or boulder alignments, rock-filled roasting pits, rock-pile trail shrines, thick dry-laid, low-walled rock or boulder structures, rock-shelters, and bedrock milling stones" (Schroeder 1979:100). Phase designations are based on ceramics, trade wares, and settlement patterns (Colton 1945; Rogers 1945; Waters 1982a).

Table 1. Summary of Patayan Ceramic Complexes

Name	Pottery Types	Date Range (A.D.)
Patayan III	Parker Buff and Red-on-buff, Palomas Buff and Red-on-buff, Colorado Buff and Red-on-buff	1500-1850
Patayan II	Tumco Buff and Red-on-buff, Parker Buff and Red-on-buff, Topoc Buff and Red-on-buff, Salton Buff and Red-on-buff, Palomas Buff and Red-on-buff	1000-1500
Patayan I	Black Mesa Buff and Red-on-buff, Colorado Beige and Red-on-beige, Colorado Red	850-1050

Waters (1982b) has produced the most thorough typology and chronological sequence for the Patayan ceramic tradition. His analysis was based on the work of Malcolm Rogers. The Patayan chronology consists of three periods, Patayan I, II, and III; Table 1 lists the ceramic types that Waters associated with each period and the time ranges that he inferred for each period. The 17 pottery types recognized by Waters are by surface treatment, jar rim form, vessel form, and temper.

Patayan I (A.D. 600-1050)

The five Patayan I types (see Table 1) display traits unique to the first period. These traits include direct 'chimney-neck' rims on jars, the Colorado shoulder on jars, burnishing, red clay slip, rim notching, punctuate and incised decorations, lug and loop handles, and the manufacturing processes of hemispherical casting and basket molding (Waters 1982a:283). Types commonly found east of the Colorado River include Colorado Beige, Colorado Red-on-beige, and Colorado Red. Chronological placement of Patayan I ceramics, in relative terms as earlier than Patayan II and III and in chronometric terms to the interval A.D. 700-1050, was based on associations with dated Hohokam intrusives at two stratigraphic localities, C-14 dates, and the absence of these types at firmly placed Patayan II and III sites (Waters 1982a:283). Waters's beginning date of A.D. 700 was based on a date range for Santa Cruz Red-on-buff of A.D. 700-900. He noted that, if one followed Schiffer (1982) in dating the type to A.D. 875-1000, the beginning date of Patayan I ceramics would need to be revised to around A.D. 850.

Patayan II (A.D. 1050-1500)

The transition from Patayan I to Patayan II ceramic types is marked by the discontinuation of the traits previously identified as unique to Patayan I and the introduction of other traits, including recurved rims, stucco finish, new vessel forms, and an increase in fine-lined geometric designs (Waters 1982a:287). Waters identified ten Patayan II types, including five plain ware types and five decorated versions of those types (see Table 1). Palomas Buff and Red-on-buff occur along the Gila River and in the Western Papaguería (Waters 1982a:Figure 7.5). Dating of Patayan II ceramics (between Patayan I and III, A.D. 1000-1500) is based on: (1) geological association with the 12 m shoreline of Lake Cahuilla, (2)

similarities between Patayan and Hohokam painted designs, (3) associations with intrusive sherds, and (4) the absence of Patayan II types in firmly placed Patayan I or III sites (Waters 1982a:289).

Patayan III-Protohistoric and Early Historical Period (A.D. 1500-?)

As interpreted by Waters, the transition from Patayan II to Patayan III ceramics was subtle. The only new traits introduced were a reinforced band on the rim margins of some vessels and a new form. This new form was a high-necked small-mouthed water olla found in desert regions of California. Except the neck less seed jars, there continued to be refinements in thinness, firing, symmetry, construction, and finer-lined, more symmetrical painted decorations associated with Patayan II forms (Waters 1982a:291). There are six Patayan III types. Palomas Buff and Red-on-buff occur along the Gila River, and Palomas Buff and Colorado Buff have been recorded in the Sierra Pinacate (Waters 1982a:293, Figure 7.6). Dating of the Patayan III types (as post-Patayan II, A.D. 1500-1850) is based on geological associations with Lake Cahuilla, occurrences in historic sites, ages of known historic vessels, and their absence from either Patayan I or II sites (Waters 1982a:291).

Chronological and Cultural Boundaries Issues

The time ranges indicated for Patayan I, II, and III are quite broad, varying in length from 450 to 850 years. Waters (1982b:Figures 7.4-7.6) documented the occurrence of Patayan I, II, and III ceramics at sites in the Gila Bend area. As noted earlier, Patayan ceramics first appear in the Gila Bend area on sites that date to the Sacaton phase. The Sacaton phase has a suggested range of A.D. 975-1150, which overlaps Patayan I's suggested range of A.D. 600-1050. It should be emphasized that the Patayan periods are just that; inferred intervals of time that imply little if anything about other aspects of culture history.

According to Waters (1982a:275), Lower Colorado Buffware was produced and used along the Colorado River from the southern tip of Nevada to the Gulf of California, along the drainage of the lower Gila River, and in the peripheral deserts of western Arizona and southern California. Whether this ware was in fact produced in the deserts of western Arizona is open to question. Studies of ceramic data from the Western Papaguería have shown a separation between the distribution of Lower Colorado Buff Ware on the west, and Hohokam ware (Hohokam Buff Ware and Tucson Basin Brown Ware) on the east. Researchers such as Huckell (1979) and Schroeder (1958) have interpreted these data as indicating that the western area was inhabited by the Patayan (identifiable linguistically as Yumans in the Historic period), whereas the eastern area was occupied by Hohokam or by people with a Hohokam-like cultural pattern (generally inferred in either case as linguistically Piman). Thus, they view the boundary between ceramic wares as an ethnic/linguistic boundary (McGuire 1982:214). This interpretation does, of course, imply that pots equal people. A different viewpoint is advanced by Ezell (1955:372). He argued that the boundary between the ceramic wares was a material culture boundary and not a cultural or ethnic boundary. He cited as evidence the case of the Hia C'ed O'odham, or Sand Papago. The Hia C'ed were linguistically and ethnically O'odham (or Pimans), but they obtained their pottery from the Yumans who lived along the Colorado River.

Historical Period

Yumans of the Lower Colorado and Gila Rivers

Early Historical Period (A.D. 1540-1850)

Yuman speaking groups have inhabited the valleys of the Lower Colorado River and Lower to Middle Gila River since before the beginning of the Early Historical period. There was incessant warfare among the Yuman peoples of the Lower Colorado River during the Early Historical period, and this conflict led, on more than one occasion, to the movement of groups to new locations along the Colorado or Gila rivers (Figure 2). The selection of new homes on one or the other of these rivers is significant and is a reflection of the agricultural habit of the Lowland, or River Yuman tribes. All of these groups practiced agriculture, and in most cases they depended on floodwaters to provide the soil moisture that was needed to grow their crops. The Lowland Yumans were the presumed makers of the Patayan III pottery types that were discussed earlier.

Information on the periodic relocation's of the Yuman tribes, as well as on these peoples' way of life, comes from two sources. The first of these consists of accounts by Spanish explorers and missionaries who visited the Yuman territory. The most important accounts, as summarized and interpreted by Spier (1933) and Kelly (1977), deal with visits by Alarcón in 1540, Oñate in 1605, Kino in 1701, and Garcés in 1771-1776. The second source consists of ethnographic studies that were based on the memories of the groups in question concerning their own histories and the histories of their neighbors, including their adversaries. Among the most important studies are those of Spier (1933), Castetter and Bell (1951), and Kelly (1977).

The tribes of the Colorado River delta who had the most stable homelands during the Early Historical period were the Yumans, or Quechan, who lived at the delta's northern end, and the Cocopa, who inhabited its southern end. The Quechan were observed in the Yuma area by Kino in 1701 and Garcés in 1771-1776, and they have remained in this area to the present day. Their territory, during the Early Historical period, extended up the Gila River as far as Antelope Hill, just east of the modern town of Wellton. The presence of the Cocopa at the southern end of the delta was noted by Oñate in 1605 and Garcés in 1771-1776, and they continued to live in that area into the early twentieth century (Kelly 1977; Spier 1933).

Three groups occupied the area of the delta between the Quechan and Cocopa; they were, roughly from north to south, the Halchidoma, Cohuana, and Halyikwamai. (1) The Halchidoma were reported between the Quechan and Cocopa by Oñate in 1605. By the time of Kino's visit in 1701, they had relocated north of the Quechan, between them and the Mojave, another Yuman tribe. Garcés noted their presence in this area in 1771-1776. There, the Halchidoma were in conflict with both the Quechan and the Mojave. To escape this situation, they fled in 1825-1830 to an unnamed tribe in northern Sonora. In 1833-1838, they left Mexico and went to live with the Maricopa on the Gila River above Gila Bend. (2) The Cohuana were identified between the Quechan and Cocopa by Alarcón in 1540, Oñate in 1605, and Garcés in 1771-1776. After 1776, they moved to a location on the Colorado River north of the Quechan. By 1838-1839, they had been joined there by the Halyikwamai, a group of identical speech. In 1838-1839, the Cohuana-Halyikwamai fled the Colorado River Valley to join the Maricopa. (3) The Halyikwamai were recorded between the Quechan and the Cocopa by Alarcón in 1540, Oñate in 1605, Kino in 1701, and Garcés in 1771-1776. After 1776, they relocated north of the Quechan to the Parker area, where they

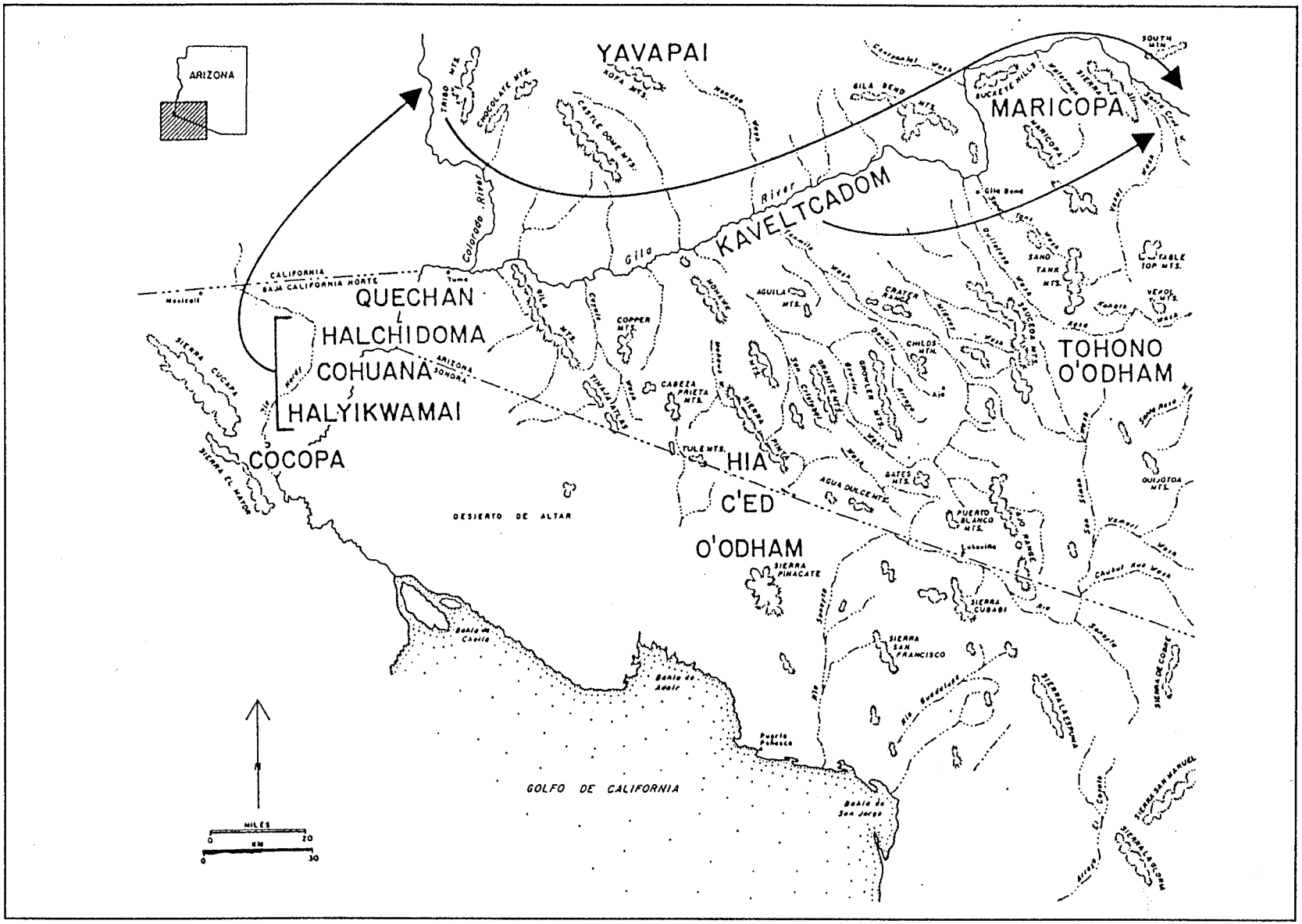


Figure 2. Map of southwestern Arizona showing the Historical period locations of Native American groups (adapted from Ahlstrom 1997: Figure 3.4).

lived with the Halchidoma. As noted, they had merged with the Cohuana by 1838-1839, at which time the Cohuana-Halyikamai fled to the Maricopa (Kelly 1977; Spier 1933).

Three Yuman-speaking groups lived on the Gila River in the Early Historical period. As noted, Quechan territory extended up the lower Gila River as far as Antelope Hill. The other two groups were the Kaveltcadom and the Maricopa. The Kaveltcadom, a band of the Halchidoma, were reported in 1825-1830 to be living on the Gila River from Gila Bend downstream to the Mohawk Mountains. This latter location was about 15 miles upstream from Antelope Hill, the eastern limit of Quechan territory. The Kaveltcadom were said to be wholly on the south side of the river, scattered at considerable intervals. They farmed the bottom land on the river, without dams or ditches, planting only after the seasonal floods. Although the settlements extended westward to Mohawk, the bulk of the population was said to have been nearer Gila Bend (Spier 1933:23-24). Between 1835 and 1846, the Kaveltcadom moved upstream to live with the Maricopa (Spier 1933:39). The Maricopa had lived on the Gila River above its junction with the Salt River since at least 1800. By 1846, they had been joined there by the Cohuana-Halyikwama, Halchidoma, and Kaveltcadom (Spier 1933:18).

Late Historical Period (Post-1850)

By the Late Historical period, the Cohuana, Halyikwama, and Halchidoma had left the Lower Colorado River for the Middle Gila, whereas the Quechan and Cocopa had remained on the delta of the Colorado. Prior to the former's relocation, all five groups had exploited the resources of the delta. As summarized by Stewart (1983:2), all the River Yumans practiced floodwater agriculture, growing corn, beans, and cucurbits in the rich silt deposited in the bottom lands as the spring floods receded. Their diet also included mesquite beans and other wild plant foods, plus fish and small game such as rabbits. Of primary concern here is the extent to which the River Yumans who inhabited the delta of the Colorado ventured into the southwestern desert. According to Castetter and Bell (1951:202), the desert country adjacent to the river, where the current project area is located, yielded few plant foods, and, apart from the Cocopa, the river tribes used little desert food that was available. Stewart's summary of Yuman subsistence identifies two possible motivations for entering the desert, the collecting of wild plant foods and hunting. A third would have involved travel through the desert.

Kelly's (1977) *Cocopa* Ethnography suggests that this group made little use of the desert region lying to the east of their river-delta home. The delta provided the most critical subsistence resources, such as arable land, mesquite pods, fish, wild rice, and small game. To exploit upland and mountain resources, such as pine nuts, agave, palo verde, ironwood, and deer, Cocopas would travel west to the nearby Cocopa Mountains or farther afield to the mountains of Baja California (Castetter and Bell 1951:202; Kelly 1977). As for the area to the east of the delta, this part of the low desert was probably never visited by the Cocopa, except when they traveled through it to reach the Maricopa villages in the Middle Gila (Kelly 1977:20). The route, probably by way of Tinajas Altas, would have had two advantages: it would have been shorter than a route that followed the Colorado and Gila rivers, and it would have avoided the territory of the Cocopas' and Maricopas' common enemy, the Quechan. The Cocopa pursued desert bighorn in the Cocopa Mountains, on the west side of their territory (Castetter and Bell 1951:215), and it is certainly possible that hunters from time to time visited the Gila Mountains and the Tinajas Altas Mountains in pursuit of this quarry. According to Castetter and Bell (1951:215), the Cocopa never hunted pronghorn which would have required traveling to the east of the Gila Mountains.

Castetter and Bell (1951:211) observed that despite the fact that the larger game animals, particularly deer and mountain sheep, were available in small numbers in the mountains and occasionally in the cottonwood groves along the river, and antelope could be hunted in the desert mountains or on the level grassland country, the Colorado River tribes, with the exception of the Cocopa, did not range far when hunting. Therefore game, other than rabbits and wood rats, were relatively unimportant in their native economy and hunting may be regarded as minimal. There is no reference to the pursuit of large game animals in the mountains or valleys east of the Colorado River (Castetter and Bell 1951:214-216).

The Euroamericans (A.D. 1600-present)

The first Spaniard to explore the Lower Colorado River was Francisco de Ulloa, a captain of Cortez. He sailed to the mouth of the Colorado River in 1539. The next year (1540), Hernando de Alarcon traveled up the river probably just north of present day Yuma (Forbes 1965:88); Alarcon was the first Spaniard to make contact with the Colorado River Yumans. Later that year, Melchior Diaz traveled overland to find Alarcon and may have traveled as far north as the Bill Williams River (Forbes 1965:93). Other Spaniards who traveled through the area include Don Juan Onate, the Spanish governor of New Mexico, in 1604 (Stewart 1966) and Jesuit Father Eusibio Kino between 1698 and 1702 (Ives 1939). In 1776, the Anza expedition with Franciscan Father Francisco Garces crossed the Colorado at the Colorado-Gila confluence (Stewart 1966:34). The first Spanish outposts in the area were the Yuma settlement and a mission just north of Yuma, both established in 1780. In 1781, the Yumans, tired of foreign dominance, revolted, killed the priests, and plundered the missions. The Spanish were forced to abandon their attempts to colonize the Colorado River (Forbes 1965:219).

With the Mexican War and the Treaty of Hidalgo in 1850, the Colorado River Valley passed into the hands of the United States which sent a number of military expeditions to the area. Fort Yuma was established in California in 1849, abandoned, and re-established in Arizona in 1851 (Forbes 1965:220). During the 1850s and 1860s, the gold rush to California created a huge market for beef and California was the destination. Few pioneer stockmen tried to raise cattle in Arizona; near Yuma they were the Redondo brothers. The era of the open range that began in the 1880s brought about a boom in cattle ranches Arizona (Sheridan 1995: 129-133). Like any other industry, the cattle industry could not have expanded without the railroad. The Southern Pacific Railroad bridge over the Colorado River at Fort Yuma was completed in 1877 (Sheridan 1995:116) which increasingly facilitated the transport of people and freight, including cattle. Agriculture, specifically the cultivation of alfalfa and cotton, which began in the late 1800s, increased during World War I in all of southern Arizona where irrigation was possible, and especially in Yuma County. By the 1920s, farmers began growing citrus and produce (Sheridan 1995:213-217). To this day, agriculture is still one of the main industries in Yuma County.

SURVEY METHODS

The archaeologist walked a single transect, in a zig-zag pattern, from the western end of the right-of-way, in Section 17, to the eastern end in Section 23. Because the corridor is only slightly over 20 m-wide, the pedestrian survey provided one hundred percent coverage of the parcel. A 20-m interval is required by the Arizona State Museum guidelines for one hundred percent coverage.

SURVEY RESULTS AND RECOMMENDATIONS

No archaeological sites or isolated occurrences were identified during the course of the survey. Consequently, there is no reason to suspect the existence of significant archaeological remains below the surface. SWCA recommends that archaeological clearance be granted for the right-of-way of the international border fence.

REFERENCES

Ahlstrom, Richard V.N. (editor)
1997 *An Archaeological Overview of the Barry M. Goldwater Air Force Range: Living in the Western Papagueria*. Ms. on file, SWCA, Inc. Environmental Consultants, Tucson.

Breternitz, David A.
1957 A Brief Archaeological Survey of the Lower Gila River. *The Kiva* 22(2-3):1-13

Brooks, richard H., Lawrence Alexander, and Robert E. Crabtree
1970 *The 1969/1970 Report on the Archaeological Survey of the Lower Colorado River, Nevada*. Desert Research Institute, University of Nevada, Las Vegas.

Brown, David E., editor
1994 *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City.

Castetter, Edward F. and Willis H. Bell
1951 *Yuman Indian Agriculture*. University of New Mexico Press, Albuquerque.

Colton, Harold S.
1945 The Patayan Problem in the Colorado River Valley. *Southwestern Journal of Anthropology* 1:114-121.

Dart, Allen, Stephen H. Lekson, and Henry D. Wallace
1989 *Historic Properties Management Plan for the U.S. Army Corps of Engineers, Painted Rock Reservoir Project, Southwestern Arizona*. Technical Report No. 88-6. Institute for American Research, Tucson

Ezell, Paul H.
1954 An Archeological Survey of Northwestern Papagueria. *The Kiva* 19(2-4):1-39.

1955 The Archaeological Delineation of a Cultural Boundary in Papaguería. *American Antiquity* 20(4):367-374.

Forbes, Jack D.
1965 *Warriors of the Colorado. The Yumas of the Quechan Nation and their Neighbors*. University of Oklahoma Press, Norman.

Fratt, Lee
1992 Ground Stone in Arizona. In *Making and Using Stone Artifacts: A Context for Evaluating Lithic Sites in Arizona*, by Mark C. Slaughter, Lee Fratt, Kirk Anderson, and Richard V. N. Ahlstrom. Prepared by SWCA, Inc., Environmental Consultants, Tucson. SWCA Archaeological Report No. 92-5. Prepared for the Arizona State Historic Preservation Office, Arizona State Parks Board, Phoenix.

Haury, Emil W., and Julian D. Hayden
1950 *The Stratigraphy and Archaeology of Ventana Cave*. The University of Arizona Press, Tucson.

Hayden, Julian D.
1976 Pre-Altithermal Archaeology in the Sierra Pinacate, Sonora, Mexico. *American Antiquity* 41(3):274-289.

Huckell, Bruce B.
1979 *The Coronet Real Project: Archaeological Investigations on the Luke Range, Southwestern Arizona*. Archaeological Series No. 129. Arizona State Museum, University of Arizona, Tucson.

1984 The Paleo-Indian and Archaic Occupation of the Tucson Basin: An Overview. *The Kiva* 49:133-145.

Ives, Ronald L.
1939 Sedelmayer's Relacion of 1746. *Bureau of American Ethnology*, Bulletin 123, pp.97-117, Washington.

Kelly, William H.
1977 *Cocopa Ethnography*. Anthropological Papers of the University of Arizona, No. 29. The University of Arizona Press, Tucso

McGuire, Randall H.
1982 Problems in Culture History. In *Hohokam and Patayan: Prehistory of Southwestern Arizona*, edited by Randall H. McGuire and Michael B. Schiffer, pp. 153-222. Academic Press, New York.

McGuire, Randall H., and Michael B. Schiffer (editors)
1982 *Hohokam and Patayan: Prehistory of Southwestern Arizona*. Academic Press, New York.

Rogers, Malcolm J.
1928 Remarks on the Archaeology of the Gila River Drainage. *The Arizona Museum Journal* 1(1):21-24.

1936 *Yuman Pottery Making*. San Diego Museum Papers 2.

1939 *Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Areas*. San Diego Museum Papers 3. San Diego.

1945 An Outline of Yuman Prehistory. *Southwestern Journal of Anthropology* 1:167-198.

1958 San Dieguito Implements from the Terraces of the Rincon-Pantano and Rillito Drainage System. *The Kiva* 24:1-23.

1966 *Ancient Hunters of the Far West*. The Union-Tribune Publishing Co., San Diego.

Rosenthal, Eleanore Jane

1977 Aboriginal Land use in the Southwestern Quijotoa Valley, Papago indian reservation, Arizona. *The Kiva* 43:1-10

1979 *Surface Context, Contemporaneity and Cultural Tradition: Chipped Stone Tools from the Sierra Pinacate, Sonora, Mexico*. Unpublished Ph.D. dissertation, University of Arizona, Tucson.

Schiffer, Michael B.

1982 Hohokam Chronology: An Essay on History and Method. In *Hohokam and Patayan: Prehistory of Southwestern Arizona*, edited by Randall H. McGuire and Michael B. Schiffer, pp. 299-344. Academic Press, New York.

Schroeder, Albert H.

1958 Lower Colorado Buff Ware: A Descriptive Revision. In *Pottery Types of the Southwest,* edited by Harold S. Colton. Ceramic Series No. 3D. Museum of Northern Arizona, Flagstaff.

1979 Prehistory: Hakataya. In *Southwest*, edited by Alfonso Ortiz, pp.100-107. Handbook of North American Indians, Vol. 9, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Sheridan, Thomas E.

1995 *Arizona: A History*. Tucson: University of Arizona Press.

Slaughter, Mark C.

1992 Flaked Stone in Arizona. In *Making and Using Stone Artifacts: A Context for Evaluating Lithic Sites in Arizona*, by Mark C. Slaughter, Lee Fratt, Kirk Anderson, and Richard V.N. Ahlstrom, pp. 2.1-2.12. SWCA Archaeological Report No. 92-5. Arizona State Historic Preservation Office, Arizona State Parks Board, Phoenix.

Slaughter, Mark C., Lee Fratt, Kirk Anderson, and Richard V.N. Ahlstrom

1992 *Making and Using Stone Artifacts: A Context for Evaluating Lithic Sites in Arizona.* SWCA Archaeological Report No. 92-5. Arizona State Historic Preservation Office, Arizona State Parks Board, Phoenix.

Spier, Leslie

1933 *Yuman Tribes of the Gila River.* The University of Chicago Press, Chicago. Republished (1978) by Dover Publications, New York.

Stewart, Kenneth M.

1966 The Mohave Indians in Hispanic Times. *The Kiva* 32(1):25-38.

1983 Yumans: Introduction. In *Southwest*, edited by Alfonso Ortiz, pp. 1-3. Handbook of North American Indians, Vol. 10, William G. Sturtevant, general editor. Smithsonian Institution, Washington.

Swarthout, Jeanne and Christopher E. Dover
1981 Final Report for An Archaeological overview for The Lower Colorado river Valley, Arizona, Nevada, and California, Reach 3. Davis Dam to the international Border. Ms. on file at the Bureau of Reclamation, Boulder City, Utah.

Vivian, R. Gwinn
1965 An Archaeological Survey of the Lower Gila River. *The Kiva* 30(4):95-146.

Wasley, William W. and Alfred E. Johnson
1965 *Salvage Archaeology in Painted Rock Reservoir, Western Arizona.* Anthropological Papers No.. 9. University of Arizona, Tucson.

Waters, Michael R.
1982a The Lowland Patayan Ceramic Tradition. In *Hohokam and Patayan: Prehistory of Southwestern Arizona,* edited by Randall H. McGuire and Michael B. Schiffer, pp. 275-297. Academic Press, New York.

1982b The Lowland Patayan Ceramic Typology. In *Hohokam and Patayan: Prehistory of Southwestern Arizona,* edited by Randall H. McGuire and Michael B. Schiffer, pp. 537-590. Academic Press, New York.

Whittlesey, Stephanie M., Richard Ciolek-Torrello, and Matthew A. Sterner
1994 *Southern Arizona, The Last 12,000 Years: A Cultural-Historic Overview for the Western Army National Guard Aviation Training Site.* Statistical Research Technical Series No. 48. Statistical Research, Inc.

APPENDIX E

CONSULTATION LETTERS

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

January 6, 1998

Mr. James McGinnis
Manager, Native Plant Law
Plant Services Division, Arizona Department of Agriculture
1688 West Adams
Phoenix, Arizona 85007

RE: Proposed JTF-6 Activities at Yuma and Nogales, Arizona.

Dear Mr. McGinnis:

The Fort Worth District, U.S. Army Corps of Engineers is preparing two Draft Environmental Assessments for the Joint Task Force Six (JTF-6) for separate projects located in Yuma and Nogales, Arizona.

The proposed project in Yuma, Arizona consists of extending the existing landing mat border fence approximately four miles east parallel to the fence line along the U.S.-Mexico border. Figure A indicates the location of this project. Military personnel involved with this project will be housed in Yuma and are prepared to begin this project in late spring/early summer of 1998.

The second project is located near Nogales, Arizona and consists of installing lighting poles two miles east and west on either side of the Port of Entry. Military personnel performing this project will be housed in Nogales and are prepared to begin this project in early summer 1998 Figure B is enclosed to show the location of this project.

Both projects are located in previously cleared or heavily grazed areas. Please advise our agency of special requirements or permits which may be necessary under the Arizona Native Plant Law to complete the proposed action.

If you require additional information or have any questions, please contact either myself at (817) 978-6382 or Ms. Jill Madden, of Associated Consulting Engineers, at (512) 329-0006. Thank you for your assistance with this project.

Sincerely,

Linda Ashe
Environmental Resources Specialist

Attachments

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

January 6, 1998

Ms. Sabre Schwartz
Arizona Natural Heritage Program
Arizona Game and Fish Department
2222 West Greenway Road
Phoenix, Arizona 85023

RE: Proposed JTF-6 Activities at Yuma and Nogales, Arizona.

Dear Ms. Schwartz:

The Fort Worth District, U.S. Army Corps of Engineers is preparing two Draft Environmental Assessments for the Joint Task Force Six (JTF-6) for separate projects located in Yuma and Nogales, Arizona.

The proposed project in Yuma, Arizona consists of extending the existing landing mat border fence approximately 4 miles east parallel to the fence line along the U.S.-Mexico border. Figure A indicates the location of this project. Military personnel involved with this project will be housed in Yuma and are prepared to begin this project in late spring/early summer of 1998.

The second project is located near Nogales, Arizona and consists of installing lighting poles two miles east and west on either side of the Port of Entry. Military personnel performing this project will be housed in Nogales and are prepared to begin this project in early summer 1998. Figure B is enclosed to show the location of this project.

Information regarding a list of endangered, threatened, or species of concern was obtained through our contractor prior to conducting field work in November and December, 1997. Copies of these lists are enclosed for your information. Please review the enclosed lists to ensure that all appropriate species are included. If information is missing, please provide current information regarding state listed or proposed endangered or threatened species potentially occurring within or adjacent to the proposed project areas within 30 days.

If you require additional information or have any questions, please contact either myself at (817) 978-6382 or Ms. Jill Madden, of Associated Consulting Engineers, at (512) 329-0006. Thank you for your assistance with this project.

Sincerely,

Linda Ashe
Environmental Resources Specialist

Attachments

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

January 6, 1998

Mr. James Garrison
State historic Preservation Officer
800 West Washington, Suite 415
Phoenix, Arizona 85007

RE: Proposed JTF-6 Activities at Yuma and Nogales, Arizona.

Dear Mr. Garrison:

The Fort Worth District, U.S. Army Corps of Engineers (COE) is preparing two Draft Environmental Assessments for the Joint Task Force Six (JTF-6) for separate projects located in Yuma and Nogales, Arizona.

The proposed project in Yuma, Arizona consists of extending the existing landing mat border fence approximately four miles east parallel to the fence line along the U.S.-Mexico border. Figure A indicates the location of this project. A Class III archaeological inventory was conducted on November 5, 1997 for the proposed project site. No archaeological sites or isolated occurrences were identified during the course of the survey. Additionally, a file search was conducted previous to the field survey. No previously recorded sites within the project area or within one mile of the sites were identified. The COE has determined that the proposed Yuma JTF-6 Border Fence project as planned will not involve National Register listed or eligible properties. If potentially significant cultural resources are encountered during project construction, the COE will notify your office pursuant to 36 CFR 800.11.

The second project is located near Nogales, Arizona and consists of installing lighting poles two miles east and west on either side of the Port of Entry. Figure B indicates the location of this project. A Class III archaeological inventory was conducted on December 3, 1997. An archaeological site was identified east of Nogales, as indicated on the enclosed figure. This site is currently being mapped and a full report will be submitted on the findings of the investigation. The recommendation for this project is that this site be avoided when the exact placement of each light is selected.

We request that you review the enclosed information. If you agree with the determinations for both projects, we would appreciate your concurrence. We understand that your response to this request will be made within 30 days following receipt of this letter.

If you require additional information or have any questions, please contact either myself at (817) 978-6388 or Ms. Linda Ashe at (817) 978-6382. Thank you for your assistance with this project.

Sincerely,

Jay Newman, Ph.D.
Archeologist

Attachments

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

January 6, 1998

Mr. Sam Spiller, Field Supervisor
U.S. Fish and Wildlife Service
3616 W. Thomas, Suite 6
Phoenix, Arizona 85019

RE: Proposed JTF-6 Activities at Yuma and Nogales, Arizona.

Dear Mr. Spiller:

The Fort Worth District, U.S. Army Corps of Engineers is preparing two Draft Environmental Assessments for the Joint Task Force Six (JTF-6) for separate projects located in Yuma and Nogales, Arizona.

The proposed project in Yuma, Arizona consists of extending the existing landing mat border fence approximately four miles east, parallel to the fence line along the U.S.-Mexico border. Figure A indicates the location of this project. Military personnel involved with this project will be housed in Yuma and are prepared to begin this project in late spring/early summer of 1998.

The second project is located near Nogales, Arizona and consists of installing lighting poles two miles east and west on either side of the Port of Entry. Military personnel performing this project will be housed in Nogales and are prepared to begin this project in early summer 1998. Figure B is enclosed to show the location of this project.

Both projects are located in previously disturbed or heavily grazed areas. Please provide current information regarding Federally listed or proposed endangered or threatened species potentially occurring within or adjacent to the proposed project areas within 30 days, pursuant to Section 7 of the Endangered Species Act of 1973 (as amended).

If you require additional information or have any questions, please contact either myself at (817) 978-6382 or Ms. Jill Madden, of Associated Consulting Engineers, at (512) 329-0006. Thank you for your assistance with this project.

Sincerely,

Linda Ashe

Linda Ashe
Environmental Resources Specialist

Attachments

United States Department of the Interior
Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
(602) 640-2720 Fax (602) 640-2730

In Reply Refer To:
AESO/SE
2-21-98-I-144

February 11, 1998

Ms. Linda Ashe
Department of the Army
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102-0300

Dear Ms. Ashe:

This letter responds to your February 4, 1998 facsimile request dated January 6, 1998, to our former address for a list of species which are threatened, endangered, or proposed to be listed under the Endangered Species Act of 1973, as amended (Act), that may potentially occur in your project areas. The areas are the Nogales light poles project, Santa Cruz County, and the Yuma landing mat border fence project, Yuma County, Arizona. The enclosed lists may include Candidate species as well. In the past, the U.S. Fish and Wildlife Service has provided project-specific species lists and information. However, staff reductions no longer allow us to provide this detailed level of assistance. We regret any inconvenience this may cause you and hope the enclosed county list of species will be helpful.

The enclosed list of the endangered, threatened, proposed, and candidate species includes all those potentially occurring anywhere in the County where your project occurs. Please note, your project area may not necessarily include all or any of these species. The information provided includes general descriptions, habitat requirements, and other information for each species on your list. Also on the enclosed list is the Code of Federal Regulations (CFR) citation for each listed or proposed species. Additional information can be found in the CFR a and is available at most public libraries. This information should assist you in determining which species may or may not occur within your project area. Site specific surveys could also be helpful and may be needed to verify the presence or absence of a species or its habitat as required for the evaluation of proposed project-related impacts.

Endangered and threatened species are protected by Federal law and must be considered prior to project development. If the Federal action agency determines that listed species or critical habitat may be adversely affected by a federally funded, permitted, or authorized activity, the action agency must request formal consultation with the Service. If the action agency determines that the proposed action may jeopardize a proposed species or destroy or adversely modify proposed critical habitat, the action agency must enter into a section 7 conference with the Service. Candidate species are those which are being considered for addition to the list of threatened or endangered species. Although candidate species have no legal protection under

the Act, we recommend that they be considered in the planning process in the event that they become listed or proposed for listing prior to project completion.

In May of 1997, a multi-agency group completed a Conservation Strategy (enclosed) for the flat-tailed horned lizard, a proposed species for federal listing. With the execution of a Conservation Agreement in June, 1997, which incorporates this strategy, agencies have agreed to take actions protecting or minimizing harm to this species. Because of that agreement, the lizard was withdrawn from consideration for listing. Agencies with land management responsibilities in the Yuma area, for example, Marine Corps, Bureau of Land Management, and Bureau of Reclamation are signatories to this agreement and implementers of this strategy. Mitigation measures in the strategy should be used, as appropriate for the project in the San Luis area.

The Service appreciates your efforts to identify and avoid impacts to listed and sensitive species in your project area. If you have any questions or if we may be of further assistance, please contact Ted Cordery or Tom Gatz.

Sincerely,

Sam F. Spiller
Field Supervisor

Enclosures

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ES)
Director, Arizona Game and Fish Department, Phoenix, AZ

LISTED, PROPOSED, AND CANDIDATE SPECIES FOR THE FOLLOWING COUNTY: SANTA CRUZ

LISTED TOTAL= 18 11/20/97

NAME. CANELO HILLS LADIES' TRESSES *SPIRANTHES DELITESCENS*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: No CFR: 62 FR 665, 01-06-97

DESCRIPTION: SLENDER ERECT MEMBER OF THE ORCHID FAMILY (ORCHIDACEAE). FLOWER: STALK 50 CM TALL, MAY CONTAIN 40 WHITE FLOWERS SPIRALLY ARRANGED ON THE FLOWERING STALK.

COUNTIES: COCHISE, SANTA CRUZ ELEVATION RANGE: about 5000 FT.

HABITAT. FINELY GRAINED, HIGHLY ORGANIC, SATURATED SOILS OF CIENEGAS

POTENTIAL HABITAT OCCURS IN SONORA, MEXICO, BUT NO POPULATIONS HAVE BEEN FOUND.

NAME: HUACHUCA WATER UMBEL *LILAEOPSIS SCHAFFNERIANA ssp RECURVA*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: No CFR: 62 FR 665, 01-06-97

DESCRIPTION: HERBACEOUS, SEMI-AQUATIC PERENNIAL IN THE PARSLEY FAMILY (UMBELLIFERAE) WITH SLENDER ERECT, HOLLOW, LEAVES THAT GROW FROM THE NODES OF CREEPING RHIZOMES. FLOWER: 3 TO 10 FLOWERED UMBELS ARISE FROM ROOT NODES.

COUNTIES: PIMA, SANTA CRUZ. COCHISE ELEVATION RANGE: 3500-6500 FT

HABITAT: CIENEGAS, PERENNIAL LOW GRADIENT STREAMS, WETLANDS

AND IN ADJACENT SONORA, MEXICO, WEST OF THE CONTINENTAL DIVIDE. POPULATIONS ALSO ON FORT HUACHUCA MILITARY RESERVATION.

NAME: PIMA PINEAPPLE CACTUS *CORYPHANTHA SCHEERI ROBUSTISPINA*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: No CFR: 57 FR 14374, 04-20-1992

DESCRIPTION: HEMISHPERICAL STEMS 4-7 INCHES TALL 3-4 INCHES DIAMETER. CENTRAL SPINE 1 INCH LONG STRAW COLORED HOOKED SURROUNDED BY 8-15 RADIAL SPINES. FLOWER: YELLOW SALMON OR RARELY WHITE NARROW FLORAL TUBE.

COUNTIES: PIMA. SANTA CRUZ ELEVATION RANGE: 2300-5000 FT.

HABITAT: SONORAN DESERTSCRUB OR SEMI-DESERT GRASSLAND COMMUNITIES

OCCURS IN ALLUVIAL VALLEYS OR ON HILLSIDES IN ROCKY TO SANDY OR SILTY SOILS. THIS SPECIE CAN BE CONFUSED WITH JUVENILLE BARREL CACTUS (FEROCACTUS). HOWEVER. THE SPINES OF THE LATER ARE FLATTENED, IN CONTRAST WITH THE ROUND CROSS-SECTION OF THE CORYPHANTHA SPINES. ALSO THE AREOLES (SPINE CLUSTERS) OF CORYPHANTHA ARE ON TUBERCULES (BUMPS), WHILE THE AREOLES OF FEROCACTUS ARE ON RIDGES (RIBS).

LISTED, PROPOSED, AND CANDIDATE SPECIES FOR THE FOLLOWING COUNTY: SANTA CRUZ

11/20/97

NAME: JAGUAR, UNITED STATES POPULATION *PANTHERA ONCA*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: No CFR: 62 FR 39147, 7-22-97

DESCRIPTION: MUSCULAR CAT WITH RELATIVELY SHORT, MASSIVE LIMBS AND A DEEP-CHESTED BODY. CINNAMON-BUFF IN COLOR WITH BLACK SPOTS.

ELEVATION RANGE: <8000 FT.

COUNTIES. COCHISE, PIMA, SANTA CRUZ

HABITAT: IN ARIZONA, RANGED WIDELY THROUGHOUT A VARIETY OF HABITATS FROM SONORAN DESERT TO CONIFER FORESTS

MOST RECORDS ARE FROM THE MADREAN EVERGREEN-WOODLAND, SHRUB-INVADED SEMI-DESERT GRASSLAND, AND ALONG RIVERS. HISTORIC RANGE IS CONSIDERED TO HAVE EXTENDED BEYOND THE COUNTIES LISTED ABOVE. REPORTS OF INDIVIDUALS IN THE SOUTHERN PART OF THE STATE CONTINUE TO BE RECEIVED. THE MOST RECENT RECORDS OF A JAGUAR IN THE U.S. ARE FROM THE NEW MEXICO/ARIZONA BORDER AREA AND IN SOUTHCENTRAL ARIZONA, BOTH IN 1996, AND CONFIRMED THROUGH PHOTOGRAPHS. UNCONFIRMED SIGHTINGS AND TRACKS CONTINUE TO BE REPORTED.

NAME: JAGUARUNDI *FELIS YAGOUAROUNDI TOLTECA*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: No CFR: 41 FR 24064; 06-14-76

DESCRIPTION: SMALL CAT WITH SHORT LEGS, SLENDER,ELONGATE BODY; AND LONG TAIL. HEAD SMALL & FLATTENED WITH SHORT ROUNDED EARS. REDDISH-YELLOW OR BLACKISH TO BROWN-GRAY IN COLOR AND WITHOUT SPOTS.

ELEVATION RANGE: 3500-6000 FT.

COUNTIES. SANTA CRUZ. PIMA, COCHISE

HABITAT: CAN BE FOUND IN A VARIETY OF HABITATS (SEE BELOW)

SEMI-ARID THORNY FORESTS, DECIDOUS FORESTS, HUMID PRE-MONTANE FORESTS, UPLAND DRY SAVANNAHS, SWAMPY GRASSLANDS, RIPARIAN AREAS, AND DENSE BRUSH. UNCONFIRMED REPORTS OF INDIVIDUALS IN THE SOUTHERN PART OF THE STATE CONTINUE TO BE RECEIVED. NO SPECIMENS HAVE BEEN COLLECTED IN ARIZONA.

NAME: LESSER LONG-NOSED BAT *LEPTONYCTERIS CURASOAE YERBABUENAE*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 53 FR 38456, 09-30-88

DESCRIPTION: ELONGATED MUZZLE. SMALL LEAF NOSE, AND LONG TONGUE. YELLOWISH BROWN OR GRAY ABOVE AND CINNAMON BROWN BELOW. TAIL MINUTE AND APPEARS TO BE LACKING. EASILY DISTURBED.

ELEVATION RANGE: <6000 FT.

COUNTIES:COCHISE, PIMA, SANTA CRUZ. GRAHAM, PINAL, MARICOPA

HABITAT: DESERT SCRUB HABITAT WITH AGAVE AND COLUNMNAR CACTI PRESENT AS FOOD PLANTS

DAY ROOSTS IN CAVES AND ABANDONED TUNNELS. FORAGES AT NIGHT ON NECTAR, POLLEN, AND FRUIT OF PANICULATE AGAVES AND COLUMNAR CACTI. THIS SPECIES IS MIGRATORY AND IS PRESENT IN ARIZONA . USUALLY FROM APRIL TO SEPTMBER AND SOUTH OF THE BORDER THE REMAINDER OF THE YEAR.

NAME: MEXICAN GRAY WOLF *CANIS LUPUS BAILEYI*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-67; 43 FR 1912, 03-09-78

DESCRIPTION: LARGE DOG-LIKE CARNIVORE WITH VARYING COLOR, BUT USUALLY A SHADE OF GRAY. DISTINCT WHITE LIP LINE AROUND MOUTH. WEIGH 60-90 POUNDS.

ELEVATION RANGE: 4,000-12,00IFT.

COUNTIES: COCHISE, PIMA, SANTA CRUZ

HABITAT: CHAPPARAL, WOODLAND, AND FORESTED AREAS. MAY CROSS DESERT AREAS.

HISTORIC RANGE IS CONSIDERED TO BE LARGER THAN THE COUNTIES LISTED ABOVE. UNCONFIRMED REPORTS OF INDIVIDUALS IN THE SOUTHERN PART OF THE STATE CONTINUE TO BE RECEIVED. INDIVIDUALS MAY STILL PERSIST IN MEXICO.

NAME: OCELOT *FELIS PARDALIS*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 47 FR 31670; 07-21-82

DESCRIPTION: MEDIUM-SIZED SPOTTED CAT WHOSE TAIL IS ABOUT 1/2 THE LENGTH OF HEAD AND BODY. YELLOWISH WITH BLACK STREAKS AND STRIPES RUNNING FROM FRONT TO BACK. TAIL IS SPOTTED AND FACE IS LESS HEAVILY STREAKED THAN THE BACK AND SIDES.

ELEVATION RANGE: <8000 FT.

COUNTIES: SANTA CRUZ, PIMA, COCHISE

HABITAT: HUMID TROPICAL & SUB-TROPICAL FORESTS, SAVANNAHS, AND SEMI-ARID THORNSCRUB.

MAY PERSIST IN PARTLY-CLEARED FORESTS, SECOND-GROWTH WOODLAND, AND ABANDONED CULTIVATION REVERTED TO BRUSH. UNIVERSAL COMPONENT IS PRESENCE OF DENSE COVER. UNCONFIRMED REPORTS OF INDIVIDUALS IN THE SOUTHERN PART OF THE STATE CONTINUE TO BE RECEIVED.

NAME: DESERT PUPFISH *CYPRINODON MACULARIUS*

STATUS: ENDANGERED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 51 FR 10842, 03-31-1986

DESCRIPTION: SMALL (2 INCHES) SMOOTHLY ROUNDED BODY SHAPE WITH NARROW VERTICAL BARS ON THE SIDES. BREEDING MALES BLUE ON HEAD AND SIDES WITH YELLOW ON TAIL. FEMALES & JUVENILES TAN TO OLIVE COLORED BACK AND SILVERY SIDES.

ELEVATION RANGE: <5000 FT.

COUNTIES: LA PAZ, PIMA, GRAHAM, MARICOPA, PINAL, YAVAPAI, SANTA CRUZ

HABITAT: SHALLOW SPRINGS, SMALL STREAMS, AND MARSHES. TOLERATES SALINE & WARM WATER

CRITICAL HABITAT INCLUDES QUITOBAQUITO SPRING, PIMA COUNTY, PORTIONS OF SAN FELIPE CREEK, CARRIZO WASH, AND FISH CREEK WASH, IMPERIAL COUNTY, CALIFORNIA. TWO SUBSPECIES ARE RECOGNIZED: DESERT PUPFISH (C. m. maculans) AND QUITOBAQUITO PUPFISH (C. m. eremus).

NAME: GILA TOPMINNOW *POECILIOPSIS OCCIDENTALIS OCCIDENTALIS*

STATUS: ENDANGERED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-1967
DESCRIPTION: SMALL (2 INCHES), GUPPY-LIKE, LIVE BEARING, LACKS DARK SPOTS ON ITS FINS. BREEDING MALES ARE JET BLACK WITH YELLOW FINS.

ELEVATION RANGE: <4500 FT.

COUNTIES: GILA, PINAL, GRAHAM, YAVAPAI, SANTA CRUZ, PIMA, MARICOPA, LA PAZ

HABITAT: SMALL STREAMS, SPRINGS, AND CIENEGAS VEGETATED SHALLOWS

NAME: SONORA CHUB *GILA DITAENIA*

STATUS: THREATENED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 51 FR 16042, 04-30-1986
DESCRIPTION: MINNOW (<5 INCHES LONG) MODERATELY CHUBBY, DARK-COLORED FISH WITH TWO PROMINENT BLACK LATERAL BANDS ON THE SIDES AND A DARK OVAL SPOT AT THE BASE OF THE TAIL. BREEDING MALES HAVE RED LOWER FINS AND A ORANGE BELLY

ELEVATION RANGE: 3900 FT.

COUNTIES: SANTA CRUZ

HABITAT: PERENNIAL & INTERMITTENT SMALL TO MODERATE STREAMS WITH BOULDERS & CLIFFS

CRITICAL HABITAT IN SYCAMORE CREEK (SANTA CRUZ COUNTY), YANK SPRING TO INTERNATIONAL BORDER, 2.0 Km OF PENASCO CREEK, AND LOWER HALF OF UNNAMED STREAM ENTERING SYSCAMORE CREEK ABOUT 2.4 Km DOWNSTREAM FROM YANKS SPRING. SPECIES EXTENDS INTO MEXICO (ALTAR & MAGDELENA RIVERS).

NAME: AMERICAN PEREGRINE FALCON *FALCO PEREGRINUS ANATUM*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 35 FR 16047, 10-13-70; 35 FR 8495, 06-02-70
DESCRIPTION: A RECLUSIVE, CROW-SIZED FALCON SLATY BLUE ABOVE WHITISH BELOW WITH FINE DARK BARRING. THE HEAD IS BLACK AND APPEARS TO BE MASKED OR HELMETED. WINGS LONG AND POINTED. LOUD WAILING CALLS ARE GIVEN DURING BREEDING PERIOD.

ELEVATION RANGE: 3500-9000 FT.

COUNTIES: MOHAVE COCONINO NAVAJO APACHE SANTA CRUZ MARICOPA COCHISE YAVAPAI GILA PINAL PIMA GREENLEE GRAHAM

HABITAT: CLIFFS AND STEEP TERRAIN USUALLY NEAR WATER OR WOODLANDS WITH ABUNDANT PREY

THIS IS A WIDE-RANGING MIGRATORY BIRD THAT USES A VARIETY OF HABITATS. BREEDING BIRDS ARE YEAR-ROUND RESIDENTS. OTHER BIRDS WINTER AND MIGRATE THROUGH ARIZONA. SPECIES IS ENDANGERED FROM REPRODUCTIVE FAILURE FROM PESTICIDES.

NAME: BALD EAGLE *HALIAEETUS LEUCOCEPHALUS*

STATUS: THREATENED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 60 FR 35999, 07-12-95

DESCRIPTION: LARGE, ADULTS HAVE WHITE HEAD AND TAIL. HEIGHT 28 - 36"; WINGSPAN 66 - 96". 1-4 YRS DARK WITH VARYING DEGREES OF MOTTLED BROWN PLUMAGE. FEET BARE OF FEATHERS.

ELEVATION RANGE: VARIES FT.

COUNTIES: YUMA, LA PAZ, MOHAVE, YAVAPAI, MARICOPA, PINAL, COCONINO, NAVAJO, APACHE, SANTA CRUZ, PIMA, GILA, GRAHAM

HABITAT: LARGE TREES OR CLIFFS NEAR WATER (RESERVOIRS, RIVERS AND STREAMS) WITH ABUNDANT PREY

SOME BIRDS ARE NESTING RESIDENTS WHILE A LARGER NUMBER WINTERS ALONG RIVERS AND RESERVOIRS. AN ESTIMATED 200 TO 300 BIRDS WINTER IN ARIZONA. ONCE ENDANGERED (32 FR 4001, 03-11-1967, 43 FR 6233, 02-14-78) BECAUSE OF REPRODUCTIVE FAILURES FROM PESTICIDE POISONING AND LOSS OF HABITAT. THIS SPECIES WAS DOWN LISTED TO THREATENED ON AUGUST 11, 1995. ILLEGAL SHOOTING, DISTURBANCE, LOSS OF HABITAT CONTINUES TO BE A PROBLEM.

NAME: CACTUS FERRUGINOUS PYGMY-OWL *GLAUCIDIUM BRASILIANUM CACTORUM*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: No CFR: 62 FR 10730, 3-10-97

DESCRIPTION: SMALL (APPROX. 7"), DIURNAL OWL REDDISH BROWN OVERALL WITH CREAM-COLORED BELLY STREAKED WITH REDDISH BROWN. SOME INDIVIDUALS ARE GRAYISH BROWN

ELEVATION RANGE: <4000 FT

COUNTIES: MARICOPA, YUMA, SANTA CRUZ, GRAHAM, GREENLEE, PIMA, PINAL, GILA, YAVAPAI

HABITAT: MATURE COTTONWOOD/WILLOW, MESQUITE BOSQUES, AND SONORAN DESERTSCRUB

RANGE LIMIT IN ARIZONA IS FROM NEW RIVER (NORTH) TO GILA BOX (EAST) TO CABEZA PRIETA MOUNTAINS (WEST). ONLY A FEW DOCUMENTED SITES WHERE THIS SPECIES PERSISTS ARE KNOWN, ADDITIONAL SURVEYS ARE NEEDED. LISTING EFFECTIVE APRIL 9, 1997.

NAME: MEXICAN SPOTTED OWL *STRIX OCCIDENTALIS LUCIDA*

STATUS: THREATENED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 56 FR 14678, 04-11-91

DESCRIPTION: MEDIUM SIZED WITH DARK EYES AND NO EAR TUFTS. BROWNISH AND HEAVILY SPOTTED WITH WHITE OR BEIGE.

ELEVATION RANGE: 4100-9000 FT

COUNTIES: MOHAVE, COCONINO, NAVAJO, APACHE, YAVAPAI, GRAHAM, GREENLEE, COCHISE, SANTA CRUZ, PIMA, PINAL, GILA, MARICOPA

HABITAT: NESTS IN CANYONS AND DENSE FORESTS WITH MULTI-LAYERED FOLIAGE STRUCTURE

GENERALLY NESTS IN OLDER FORESTS OF MIXED CONIFER OR PONDERSA PINE/GAMBEL OAK TYPE. IN CANYONS, AND USE VARIETY OF HABITATS FOR FORAGING. SITES WITH COOL MICROCLIMATES APPEAR TO BE OF IMPORTANCE OR ARE PREFERED.

NAME: NORTHERN APLOMADO FALCON *FALCO FEMORALIS SEPTENTRIONALIS*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 51 FR 6686, 01-25-86

DESCRIPTION: RUFOUS UNDERPARTS, GRAY BACK, LONG BANDED TAIL, AND A DISTINCT BLACK AND WHITE FACIAL PATTERN. SMALLER THAN PEREGRINE LARGER THAN KESTREL. BREEDS BETWEEN MARCH- JUNE

ELEVATION RANGE: 3500-9000 FT.

COUNTIES: COCHISE, SANTA CRUZ

HABITAT: GRASSLAND AND SAVANNAH

SPECIES FORMERLY NESTED IN SOUTHWESTERN US. NOW OCCURS AS AN ACCIDENTAL. GOOD HABITAT HAS LOW GROUND COVER AND MESQUITE OR YUCCA FOR NESTING PLATFORMS. CONTINUED USE OF PESTICIDES IN MEXICO ENDANGERS THIS SPECIES. NO RECENT CONFIRMED REPORTS FOR ARIZONA.

NAME: SOUTHWESTERN WILLOW FLYCATCHER *EMPIDONAX TRAILLII EXTIMUS*

STATUS: ENDANGERED CRITICAL HAB Yes RECOVERY PLAN: No CFR: 60 FR 10694, 02-27-95

DESCRIPTION: SMALL PASSERINE (ABOUT 6") GRAYISH-GREEN BACK AND WINGS. WHITISH THROAT, LIGHT OLIVE-GRAY BREAST AND PALE YELLOWISH BELLY. TWO WINGBARS VISIBLE. EYE-RING FAINT OR ABSENT.

ELEVATION RANGE: <8500 FT

COUNTIES: YAVAPAI, GILA, MARICOPA, MOHAVE, COCONINO, NAVAJO, APACHE, PINAL, LA PAZ, GREENLEE, GRAHAM, YUMA, PIMA, COCHISE, SANTA CRUZ

HABITAT: COTTONWOOD/WILLOW & TAMARISK VEGETATION COMMUNITIES ALONG RIVERS & STREAMS

MIGRATORY RIPARIAN OBLIGATE SPECIES THAT OCCUPIES BREEDING HABITAT FROM LATE APRIL TO SEPTEMBER. DISTRIBUTION WITHIN ITS RANGE IS RESTRICTED TO RIPARIAN CORRIDORS. DIFFICULT TO DISTINGUISH FROM OTHER MEMBERS OF THE EMPIDONAX COMPLEX BY SIGHT ALONE. TRAINING SEMINAR REQUIRED FOR THOSE CONDUCTING FLYCATCHER SURVEYS. CRITICAL HABITAT ON PORTIONS OF THE 100-YEAR FLOODPLAIN ON SAN PEDRO AND VERDE RIVERS; WET BEAVER AND WEST CLEAR CREEKS, INCLUDING TAVASCI MARSH AND ISTER FLAT; THE COLORADO RIVER, THE LITTLE COLORADO RIVER, AND THE WEST, EAST, AND SOUTH FORKS OF THE LITTLE COLORADO RIVER, REFERENCE 60 CFR:62 FR 39129, 7/22/97.

NAME: SONORA TIGER SALAMANDER *AMBYSTOMA TIGRINUM STEBBINSI*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: No CFR: 62 FR 665, 01-06-97

DESCRIPTION: 2.6 TO 4.9" SNOUT-VENT LENGTH WITH LIGHT-COLORED BANDS ON A DARK BACKGROUND. AQUATIC LARVAE ARE UNIFORM DARK COLOR WITH PLUME-LIKE GILLS AND TAIN FINS.

ELEVATION RANGE: 4000-6300 FT.

COUNTIES: SANTA CRUZ, COCHISE

HABITAT: STOCK TANKS AND IMPOUNDED CIENEGAS IN SAN RAFAEL VALLEY, HUACHUCA MOUNTAINS

ALSO OCCURS IN THE FOOTHILLS OF THE EAST SLOPE OF THE PATAGONIA AND HUACHUCA MOUNTAINS. POPULATIONS ALSO ON FORT HUACHUCA.

CANDIDATE TOTAL= 5

NAME: GENTRY INDIGO BUSH *DALEA TENTACULOIDES*

STATUS: CANDIDATE CRITICAL HAB No RECOVERY PLAN: No CFR:

DESCRIPTION: SHRUBBY PERENNIAL IN THE LEGUME FAMILY WITH NUMEROUS STEMS IN OLDER PLANTS, UP TO 6-7 FEET TALL USUALLY LESS. FLOWER: SMALL ROSE-PURPLE APPEAR IN APRIL-JUNE OR SEPT-OCT.

ELEVATION RANGE: 4500 FT.

COUNTIES: SANTA CRUZ, PIMA

HABITAT: FLOODPLAIN TERRACES IN DRY CANYON RIPARIAN AREAS IN PARTIAL SHADE

NAME: GILA CHUB *GILA INTERMEDIA*

STATUS: CANDIDATE CRITICAL HAB No RECOVERY PLAN: No CFR:

DESCRIPTION: DEEP COMPRESSED BODY. FLAT HEAD. DARK OLIVE-GRAY COLOR ABOVE, SILVER SIDES. ENDEMIC TO GILA RIVER BASIN.

ELEVATION RANGE: 2000 - 3500 FT.

COUNTIES: SANTA CRUZ, GILA, GREENLEE, PIMA. COCHISE, GRAHAM, YAVAPAI

HABITAT: POOLS, SPRINGS, CIENEGAS, AND STREAMS

MULTIPLE PRIVATE LANDOWERS, INCLUDING THE NATURE CONSERVANCY, THE AUDUBON SOCIETY, AND OTHERS. ALSO FT. HUACHUCA. SPECIES ALSO FOUND IN SONORA, MEXICO.

NAME: HUACHUCA SPRINGSNAIL *PYRGULOPSIS THOMPSONI*

STATUS: CANDIDATE CRITICAL HAB No RECOVERY PLAN: No CFR:

DESCRIPTION: VERY SMALL (1.7-3.2mm) CONICAL SHELL. IDENTIFICATION MUST BE VERIFIED BY CHARARCTERISTICS OF REPRODUCTIVE ORGANS.

ELEVATION RANGE: 4500-6000 FT.

COUNTIES: COCHISE, SANTA CRUZ

HABITAT: AQUATIC AREAS, SMALL SPRINGS WITH VEGETATION SLOW TO MODERATE FLOW.

INDIVIDUALS FOUND ON FIRM SUBSTANCES (ROOTS, WOOD, AND ROCKS)

LISTED, PROPOSED, AND CANDIDATE SPECIES FOR THE FOLLOWING COUNTY: SANTA CRUZ

11/20/97

NAME: MOUNTAIN PLOVER *CHARADRIUS MONTANUS*

STATUS: CANDIDATE CRITICAL HAB No RECOVERY PLAN: No CFR:

DESCRIPTION: WADING BIRD; COMPACTLY BUILT; IIN BREEDING SEASON WITH WHITE FOREHEAD AND LINE OVER THE EYE; CONTRASTING WITH DARK CROWN; NONDESCRIPT IN WINTER. VOICE IS LOW, VARIABLE WHISTLE. ELEVATION RANGE: 0 FT.

COUNTIES: YUMA, SANTA CRUZ, PIMA, COCHISE

HABITAT:

NAME: CHIRICAHUA LEOPARD FROG *RANA CHIRICAHUENSIS*

STATUS: CANDIDATE CRITICAL HAB No RECOVERY PLAN: No CFR: 59 FR 58996

DESCRIPTION: CREAM COLORED TUBERCULES (spots) ON A DARK BACKGROUND ON THE REAR OF THE THIGH, DORSOLATERAL FOLDS THAT ARE INTERRUPTED AND DEFLECTED MEDIALLY, AND A CALL GIVEN OUT OF WATER DISTINGUISH THIS SPOTTED FROG FROM OTHER LEOPRD ELEVATION RANGE: 3000-8300 FT.

COUNTIES: SANTA CRUZ. APACHE, GILA, PIMA, COCHISE, GREENLEE, GRAHAM, YAVAPAI, COCONINO, NAVAJO

HABITAT: STREAMS, RIVERS, BACKWATERS, PONDS, AND STOCK TANKS THAT ARE FREE FROM INTRODUCED FISH AND BULLFROGS

REQUIRE PERMANENT OR NEARLY PERMANENT WATER SOURCES. POPULATIONS NORTH OF THE GILA RIVER ARE THOUGHT TO BE CLOSELY-RELATED, BUT DISTINCT, UNDESCRIBED SPECIES.

LISTED, PROPOSED, AND CANDIDATE SPECIES FOR THE FOLLOWING COUNTY: YUMA

8/6/97

LISTED TOTAL= 8

NAME: NICHOL'S TURK'S HEAD CACTUS *ECHINOCACTUS HORIZONTHALONIUS VAR NICHOLII*

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: No CFR: 44 FR 61927, 10-26-1979

DESCRIPTION: BLUE-GREEN TO YELLOWISH-GREEN, COLUMNAR, 18 INCHES TALL, 8 INCHES IN DIAMETER. SPINE CLUSTERS HAVE 5 RADIAL & 3 CENTRAL SPINES; ONE DOWNWARD SHORT; 2 SPINES UPWARD AND RED OR BASALLY GRAY. FLOWER:PINK FRUIT:WOOLLY WHITE

ELEVATION RANGE: 2400-4100 FT.

COUNTIES: PINAL, PIMA, YUMA

HABITAT: SONORAN DESERTSCRUB

FOUND IN UNSHADED MICROSITES IN SONORAN DESERTSCRUB ON DISSECTED ALLUVIAL FANS AT THE FOOT OF LIMESTONE MOUNTAINS AND ON INCLINED TERRACES AND SADDLES ON LIMESTONE MOUNTAINSIDES.

NAME: SONORAN PRONGHORN *ANTILOCAPRA AMERICANA SONORIENSIS*

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-67

DESCRIPTION: BUFF ON BACK AND WHITE BELOW, HOOFED WITH SLIGHTLY CURVED BLACK HORNS HAVING A SINGLE PRONG. SMALLEST AND PALEST OF THE PRONGHORN SUBSPECIES.

ELEVATION RANGE: 2000-4000 FT.

COUNTIES: PIMA, YUMA, MARICOPA

HABITAT: BROAD, INTERMOUNTAIN ALLUVIAL VALLEYS WITH CREOSOTE-BURSAGE & PALO VERDE-MIXED CACTI ASSOCIATIONS

TYPICALLY, BAJADAS ARE USED AS FAWNING AREAS AND SANDY DUNE AREAS PROVIDE FOOD SEASONALLY. HISTORIC RANGE WAS PROBABLY LARGER THAN EXISTS TODAY. THIS SUBSPECIES ALSO OCCURS IN MEXICO

NAME: RAZORBACK SUCKER *XYRAUCHEN TEXANUS*

STATUS: ENDANGERED CRITICAL HABITAT: Yes RECOVERY PLAN: No CFR: 55 FR 21154, 05-22-1990; 59 FR 13374, 03-21-1994

DESCRIPTION: LARGE (UP TO 3 FEET AND UP TO 16 POUNDS) LONG, HIGH SHARP-EDGED KEEL-LIKE HUMP BEHIND THE HEAD. HEAD FLATTENED ON TOP, OLIVE-BROWN ABOVE TO YELLOWISH BELOW.

ELEVATION RANGE: <6000 FT.

COUNTIES: GREENLEE, MOHAVE, PINAL, YAVAPAI, YUMA, LA PAZ, MARICOPA (REFUGIA), GILA, COCONINO, GRAHAM

HABITAT: RIVERINE & LACUSTRINE AREAS, GENERALLY NOT IN FAST MOVING WATER AND MAY USE BACKWATERS

SPECIES IS ALSO FOUND IN HORSESHOE RESERVOIR (MARICOPA COUNTY).

NAME: BALD EAGLE *HALIAEETUS LEUCOCEPHALUS*

STATUS: THREATENED CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 60 FR 35999, 07-12-95

DESCRIPTION: LARGE. ADULTS HAVE WHITE HEAD AND TAIL. HEIGHT 28 - 38"; WINGSPAN 66 - 96". 1-4 YRS DARK WITH VARYING DEGREES OF MOTTLED BROWN PLUMAGE. FEET BARE OF FEATHERS.

ELEVATION RANGE: VARIES FT.

COUNTIES: YUMA, LA PAZ, MOHAVE, YAVAPAI, MARICOPA, PINAL, COCONINO, NAVAJO, APACHE, SANTA CRUZ, PIMA, GILA, GRAHAM

HABITAT: LARGE TREES OR CLIFFS NEAR WATER (RESERVOIRS, RIVERS AND STREAMS) WITH ABUNDANT PREY

SOME BIRDS ARE NESTING RESIDENTS WHILE A LARGER NUMBER WINTERS ALONG RIVERS AND RESERVOIRS. AN ESTIMATED 200 TO 300 BIRDS WINTER IN ARIZONA. ONCE ENDANGERED (32 FR 4001, 03-11-1967; 43 FR 6233, 02-14-78) BECAUSE OF REPRODUCTIVE FAILURES FROM PESTICIDE POISONING AND LOSS OF HABITAT, THIS SPECIES WAS DOWN LISTED TO THREATENED ON AUGUST 11, 1995. ILLEGAL SHOOTING, DISTURBANCE, LOSS OF HABITAT CONTINUES TO BE A PROBLEM.

NAME: BROWN PELICAN *PELECANUS OCCIDENTALIS*

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 35 FR 16047, 10-13-70; 35 FR 18320, 12-02-70

DESCRIPTION: LARGE DARK GRAY-BROWN WATER BIRD WITH A POUCH UNDERNEATH LONG BILL AND WEBBED FEET. ADULTS HAVE A WHITE HEAD AND NECK, BROWNISH BLACK BREAST, AND SILVER GRAY UPPER PARTS.

ELEVATION RANGE: VARIES FT.

COUNTIES: LA PAZ YUMA

HABITAT: COASTAL LAND AND ISLANDS

SUBSPECIES IS FOUND ON PACIFIC COAST AND IS ENDANGERED DUE TO PESTICIDES. IT IS AN UNCOMMON TRANSIENT IN ARIZONA ON LOWER COLORADO RIVER. INDIVIDUALS WANDER UP FROM MEXICO IN SUMMER AND FALL. NO BREEDING RECORDS IN ARIZONA.

NAME: CACTUS FERRUGINOUS PYGMY-OWL *GLAUCIDIUM BRASILIANUM CACTORUM*

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: No CFR: 62 FR 10730, 3-10-97

DESCRIPTION: SMALL (APPROX. 7"). DIURNAL OWL REDDISH BROWN OVERALL WITH CREAM-COLORED BELLY STREAKED WITH REDDISH BROWN. SOME INDIVIDUALS ARE GRAYISH BROWN

ELEVATION RANGE: <4000 FT.

COUNTIES: MARICOPA, YUMA, SANTA CRUZ, GRAHAM, GREENLEE, PIMA, PINAL, GILA, YAVAPAI

HABITAT: MATURE COTTONWOOD/WILLOW, MESQUITE BOSQUES, AND SONORAN DESERTSCRUB

RANGE LIMIT IN ARIZONA IS FROM NEW RIVER (NORTH) TO GILA BOX (EAST) TO CABEZA PRIETA MOUNTAINS (WEST). ONLY A FEW DOCUMENTED SITES WHERE THIS SPECIES PERSISTS ARE KNOWN. ADDITIONAL SURVEYS ARE NEEDED. LISTING EFFECTIVE APRIL 9, 1997.

NAME: **SOUTHWESTERN WILLOW FLYCATCHER** *EMPIDONAX TRAILLII EXTIMUS*

STATUS: ENDANGERED CRITICAL HAB Yes RECOVERY PLAN: No CFR: 60 FR 10694, 02-27-95

DESCRIPTION: SMALL PASSERINE (ABOUT 6") GRAYISH-GREEN BACK AND WINGS. WHITISH THROAT. LIGHT OLIVE-GRAY BREAST AND PALE YELLOWISH BELLY. TWO WINGBARS VISIBLE. EYE-RING FAINT OR ABSENT.

ELEVATION RANGE: <8500 FT.

COUNTIES: YAVAPAI, GILA, MARICOPA, MOHAVE, COCONINO, NAVAJO, APACHE, PINAL, LA PAZ, GREENLEE, GRAHAM, YUMA, PIMA, COCHISE, SANTA CRUZ

HABITAT: COTTONWOOD/WILLOW & TAMARISK VEGETATION COMMUNITIES ALONG RIVERS & STREAMS

MIGRATORY RIPARIAN OBLIGATE SPECIES THAT OCCUPIES BREEDING HABITAT FROM LATE APRIL TO SEPTEMBER. DISTRIBUTION WITHIN ITS RANGE IS RESTRICTED TO RIPARIAN CORRIDORS. DIFFICULT TO DISTINGUISH FROM OTHER MEMBERS OF THE EMPIDONAX COMPLEX BY SIGHT ALONE. TRAINING SEMINAR REQUIRED FOR THOSE CONDUCTING FLYCATCHER SURVEYS. CRITICAL HABITAT ON PORTIONS OF THE 100-YEAR FLOODPLAIN ON SAN PEDRO AND VERDE RIVERS; WET BEAVER AND WEST CLEAR CREEKS, INCLUDING TAVASCI MARSH AND ISTER FLAT; THE COLORADO RIVER, THE LITTLE COLORADO RIVER, AND THE WEST, EAST, AND SOUTH FORKS OF THE LITTLE COLORADO RIVER, REFERENCE 60 CFR:62 FR 39129, 7/22/97.

NAME: **YUMA CLAPPER RAIL** *RALLUS LONGIROSTRIS YUMANENSIS*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-67; 48 FR 34182, 07-27-83

DESCRIPTION: WATER BIRD WITH LONG LEGS AND SHORT TAIL. LONG SLENDER DECURVED BILL. MOTTLED BROWN ON GRAY ON ITS RUMP. FLANKS AND UNDERSIDES ARE DARK GRAY WITH NARROW VERTICAL STRIPES PRODUCING A BARRING EFFECT.

ELEVATION RANGE: <4500 FT

COUNTIES: YUMA, LA PAZ, MARICOPA, PINAL, MOHAVE

HABITAT: FRESH WATER AND BRACKISH MARSHES

SPECIES IS ASSOCIATED WITH DENSE EMERGENT RIPARIAN VEGETATION. REQUIRES WET SUBSTRATE (MUDFLAT, SANDBAR) WITH DENSE HERBACEOUS OR WOODY VEGETATION FOR NESTING AND FORAGING. CHANNELIZATION AND MARSH DEVELOPMENT ARE PRIMARY SOURCES OF HABITAT LOSS.

LISTED, PROPOSED, AND CANDIDATE SPECIES FOR THE FOLLOWING COUNTY: YUMA

8/6/97

CANDIDATE TOTAL= 1

NAME: MOUNTAIN PLOVER *CHARADRIUS MONTANUS*

STATUS: CANDIDATE CRITICAL HABITAT: No RECOVERY PLAN: No CFR:

DESCRIPTION:

ELEVATION RANGE: 0 FT.

COUNTIES: YUMA, SANTA CRUZ, PIMA, COCHISE

HABITAT:

Arizona State Parks

February 13, 1998

Jay Newman, Ph.D.
Archaeologist
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102-0300

RE: Yuma County; Proposed JTF-6 Activities at Yuma and Nogales, Arizona; DOD-Corps

300 West Washington
Phoenix, Arizona 85007

Tel & TTY: 602-542-4174
1-800-285-3703
from (520) area code
http://www.pr.state.az.us

General Fax:
602-542-4180

Director's Office Fax:
602-542-4188

Dear Dr. Newman,

Thank you for notifying this office of the above-referenced undertakings. I have reviewed the documentation submitted and have the following comments pursuant to 36 CFR Part 800:

Your letter indicates that the areas of potential effect (APE) for these undertakings have been surveyed. Based on the results of those surveys, you have determined that no historic properties are present within the Yuma APE; we concur with that assessment.

You indicated that an archaeological site was identified in the Nogales APE, and that a report outlining the results of that survey will be forwarded to this office upon completion. We look forward to receiving and reviewing it.

We appreciate your continued cooperation with this office in considering the impact of Federal undertakings on historic preservation. Please call me at (602) 542-7137 if you have questions or concerns.

Sincerely,

Carol Heathington
Compliance Specialist
State Historic Preservation Office

United States Department of the Interior
Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
(602) 640-2720 Fax (602) 640-2730

In Reply Refer To:

AESO/SE
2-21-97-I-269
[CCN 980763]

April 6, 1998

Ms. Linda Ashe
Department of the Army
Corps of Engineers, Fort Worth District
P.O. Box 17300
Fort Worth, Texas 76102-0300

Dear Ms. Ashe:

The Fish and Wildlife Service has reviewed the draft environmental assessment for the Joint Task Force 6 (JTF-6) Fence Construction Project Yuma, Arizona and has the following comments for your consideration.

The Service agrees that the extent of adverse environmental effects from the proposed action is not significant. The project would be placed in an area already affected by the existing berm, road, and proximity to the communities of San Luis and Yuma. Provided that the measures to reduce effects that are described in the document are adhered to, any additional effects from the proposed action should be minimal.

The Service is, however, concerned about the absence of analysis in the assessment concerning the flat-tailed horned lizard, *Phrynosoma mcallii*. This species was proposed for listing under the Endangered Species Act of 1973, as amended. The proposal was withdrawn upon completion of a Conservation Agreement intended to provide protection to the lizard and its habitats in the Yuma area. Implementation of the conservation agreement is crucial to eliminating the need to list the species under ESA. The proposed action is outside of the Yuma Desert Management Area.

Habitat of the lizard in Arizona is dominated by areas of silica sands with scattered creosote bush, white bursage and some grasses such as big galleta grass. Individuals are active from February to November and use burrows to shelter during the very hot periods of summer and for winter hibernation. Use of dirt roads by vehicles for a variety of access needs is a factor in mortality rates of this species either through destruction of occupied burrows or direct mortality. The construction of the fence would increase, temporarily, the traffic on the existing access road. Additionally, the fence will act as a more complete barrier to interchange between areas to the south and north that may have effects to local population stability.

The Service suggests that the assessment include information on the lizard since it is within the project area and a conservation agreement in lieu of listing has been developed to be implemented. We recommend that the construction project also incorporate any applicable mitigation measures to minimize the losses to lizard populations. The Service suggests that any improvements made to the access road be limited to those absolutely necessary for the passage of construction equipment and that the improvements not substantially change the character of the road in such a way as to allow greater vehicle uses. Additionally, we suggest that within the construction area, vehicles and other equipment use as little of the area as is feasible.

Thank you for the opportunity to comment on this project. If you need additional information, or have questions on these comments, please contact Ted Cordery or Lesley Fitzpatrick.

Sincerely,

for

Jennifer Fowler-Propst
Acting Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico (ES)

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

APR 8 1998

Ms. Linda Ashe
Department of the Army, Fort Worth District
Corps of Engineers
P.O.Box 17300
Fort Worth, Texas 76102-0300

Dear Ms. Ashe:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (EA) for the Joint Task Force Six (JTF-6) Fence Construction Project in Yuma, Arizona which was received on March 19, 1998. The United States Section, International Boundary and Water Commission (USIBWC) understands that the draft EA describes potential impacts associated with the proposed action of constructing a fence five feet north of the United States-Mexico border in the San Luis and Yuma County, Arizona area. The fence construction, for which either steel landing mat or sheet metal materials will be used, would begin at the existing landing mat fence approximately 3.5 miles east of the Colorado River and extend approximately 3.3 miles to the east. The area which may be disturbed during this proposed action is no more than nine acres (approximately 3.3 miles long by 20 feet wide). There would be no impact to areas outside of the project area as existing roads would be used for all construction activities. The purpose of the proposed action is to curtail drug smuggling activities into the United States and to reduce crime along the boundary area, and is scheduled to begin in the Spring of 1998.

The proposed fence would replace a 6 to 8 foot dirt berm and a 6 strand barbed-wire fence currently located in the area. Construction of the proposed fence would require leveling spoil material, which would either be used during the project completion, placed along the fence as an additional deterrent, or disposed of by a private contractor. Minimal improvements to existing roads such as grading, filling with commercially purchased soil, and compacting will reduce susceptibility to erosion.

As you know from previous correspondence prepared by our Agency regarding proposed JTF-6 construction/repair/maintenance projects, the USIBWC, by virtue of the 1944 Water Treaty (TS 994; 59 Stat. 1219) and agreements concluded thereunder by the United States and Mexico, is responsible for ensuring that the United States Government meets the obligations incurred in those agreements. To that end, we ask that the proposed fence construction be performed in a manner that will not impact upon: the existing transboundary surface water patterns; and, the visibility and permanency of the international boundary monuments. We also request that all potential sanitation problems be properly addressed to ensure that pollutants do not enter or impact either country. As the USIBWC has informed before, Mexico has from time to time objected to the construction of the border fence.

Regarding the permanency and visibility of the international boundary monuments, the United States and Mexico, through this and predecessor joint commissions, placed and jointly maintain Monument Nos. 178 through 204A in your project area (Yuma County). From the figure indicating the location of the proposed action, it appears that Monument No. 202 is just east of the point of termination of the new fence; however, Monument No. 203 is within the project area. We ask that where the proposed fence is

THE COMMONS, BUILDING C, SUITE 310 • 4171 N. MESA STREET • EL PASO, TEXAS 79902
(915) 534-6700 • FAX (915) 534 - 6660

to be constructed next to the monuments themselves, it must be installed a minimum of 4 feet from the monument on a radius beginning and ending 6 feet from the monument to allow adequate room to set up survey equipment. In addition, a gate must be installed in the fence to allow access to the monuments, and at no time shall the line of sight between monuments be impaired by the fence construction. In order to prevent any encroachment into Mexico, you should confine completely to U.S. territory all work equipment, materials, and personnel associated with this proposed activity, by not allowing them to be closer than 2 feet north of the international boundary.

With respect to preventing transboundary pollution impacts, we note that a storm water pollution prevention plan (SWPPP) will be implemented and adhered to as part of the proposed action. The SWPPP includes erosion sediment and waste disposal controls for reducing sediment and other pollutants in storm water discharges such as: installing straw bale check dams and/or siltation fencing in low areas to reduce slope erosion, control surface water and sedimentation at points of conveyance, and reduce velocity of waters; and, properly collecting, storing, and disposing of all non-hazardous construction waste materials, hazardous waste, and sanitary wastes. Maintenance and inspection procedures and spill prevention practices are also addressed in the SWPPP. Fuels, oils, lubricants, and other hazardous materials will be on-site during construction activities, and all project personnel will be briefed in the implementation and responsibilities of the Spill Prevention Response Plan.

The SWPPP includes the determination that water generated from normal storm events would evaporate or infiltrate before reaching a surface water source, the closest of which is an irrigation canal approximately 20 meters from the project site. The Colorado River is located approximately 3.5 miles west of the proposed project. There are no receiving waters located in or immediately adjacent to the proposed project site. Drainage from the proposed site would be along the existing dirt road north of the fence line, and we understand that all work would cease during heavy rains.

Please advise Mr. Al Goff, USIBWC Yuma Field Office Project Manager at (520)782-1598, of the construction start date. We appreciate the opportunity to comment on this draft EA and coordinate this proposed project with your agency. Please send me two copies of the final EA and call me at (915)832-4143 if you have any questions.

Sincerely,

Yusuf E. Farran, P.E.
Division Engineer
Environmental Management Division

bcc: PELittle;DEFarran;DERobinson;DEPeace;Rubio;McKenna;Goff(Yuma)

THE STATE OF ARIZONA

GAME & FISH DEPARTMENT

2221 West Greenway Road, Phoenix, Arizona 85023-4399 (602) 942-3000
Yuma Office, 9140 E County 10½ Street, Yuma, AZ 85365-3598

Governor
Jane Dee Hull

Commissioners,
Chairman, Michael M. Golightly, Flagstaff
Herb Guenther, Tucson
M. Jean Hassell, Scottsdale
Dennis D. Manning, Alpine

Director
Duane L. Shroufe

Deputy Director
Thomas W. Spalding

April 16, 1998

Ms. Linda Ashe
Department of the Army, Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, TX 76102-0300

Re: Draft Environmental Assessment for the JTP-6 Fence Construction Project Yuma County, Arizona

Dear Ms. Ashe:

The Arizona Game and Fish Department (Department) has reviewed the above-referenced draft Environmental Assessment (EA). Department personnel also inspected the proposed project site on April 15, 1998. The following comments are provided for your consideration.

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the project vicinity.

COMMON NAME	SCIENTIFIC NAME	STATUS
flat-tailed horned lizard	*Phrynosoma mcallii*	WC
sand food	*Pholisma sonorae*	HS
southwestern willow flycatcher	*Empidonax traillii extimus*	LE,WC
Yuma clapper rail	*Rallus longirostris yumanensis*	LE,WC,S

STATUS DEFINITIONS

LE - Listed Endangered. Species identified by the U.S. Fish and Wildlife Service under the Endangered Species Act as being in imminent jeopardy of extinction.

WC - Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known

or perceived threats or population declines, as described by the Department's listing of **Wildlife of Special Concern in Arizona** (WSCA, in prep.). Species included in WSCA are currently the same as those in **Threatened Native Wildlife in Arizona** (1988).

S - **Sensitive.** Species classified as "**sensitive**" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.

HS - **Highly Safeguarded.** Those Arizona native plants whose prospects for survival in this state are in jeopardy or are in danger of extinction, or are likely to become so in the foreseeable future, as described by the Arizona Native Plant Law (1993).

The Department understands that the proposed action involves the construction of approximately 3.3 miles of metal fence along the United States and Mexico border near San Luis, Arizona. The proposed fence would replace a barbed-wire fence which currently extends to the east of an existing metal fence. The Department notes that the area has been previously disturbed by urban and agricultural development and is not near any wetland or riparian areas. For those reasons, the Department does not foresee any significant adverse impacts to the special status species listed above, or other wildlife species, resulting from the proposed action.

Thank you for the opportunity to review and comment on this draft EA. Please send me a copy of the final EA when it becomes available. If you have any questions, please contact me at 520-342-0091.

Sincerely,

Russell K Engel

Russell K. Engel
Habitat Specialist
Region IV, Yuma

cc: John Kennedy, Habitat Program Manager, Region IV
Nancy Olson, Project Evaluation Specialist, Habitat Branch

AGFD# 03-23-98-17

APPENDIX F

STORM WATER POLLUTION PREVENTION PLAN

STORM WATER POLLUTION PREVENTION PLAN

FOR JTF-6 BORDER FENCE PROJECT

YUMA, ARIZONA

FEBRUARY 1998

OWNER CERTIFICATION FOR

YUMA, ARIZONA

JTF-6 FENCE CONSTRUCTION

YUMA, ARIZONA

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

Date Certified

_____

Maurice Moore

U.S. Border Patrol

Yuma Station, Yuma, Arizona

TABLE OF CONTENTS

Attachments

Figures

1. INTRODUCTION

The Yuma, Arizona JTF-6 Fence Construction Project would be located in southern Yuma County, Arizona, and would extend approximately 3.3 miles along the U.S.-Mexico Border south of the city of Yuma, Arizona (Figure 1-1). The proposed project area can be located on the Gadsden and South of Somerton, Arizona Son. 7.5 minute United States Geological Service (USGS) quadrangle maps.

Owner: U.S. Border Patrol
Yuma Sector
Yuma, Arizona 85366-2708

1.1 DESCRIPTION

The proposed project would involve the construction of approximately 3.3 miles of fence in and south of the city of Yuma, in southwestern Yuma County, Arizona. This proposed fence would consist of 3.3 miles of either landing mat or bollard fence. Starting at the east end of the existing landing mat fence, the proposed fence would extend eastward. The height of the proposed fence would be approximately 15 feet with the top tow feet angled at 35 degrees to the north.

The proposed landing mat fence would be constructed of surplus military supplies, previously used in the construction of aircraft landing fields. The proposed fence would consist of one buried section of mat and six above grounds sections placed horizontally. The landing mat sections would be welded together and attached to posts with angle iron.

Construction of the proposed fence would require leveling spoil material that currently exists along the border. This spoil material consists of soil and miscellaneous household waste. Graded soil along the fence would either be used during the project completion, placed along the fence as an additional deterrent, or disposed of by a private contractor.

1.1.1 Soils and Soil Properties

Southwestern Arizona lies within the Basin and Range Physiographic Province, and is characterized by intensely deformed and intruded strata within numerous, relatively elevated and depressed fault blocks. The Basin and Range Province is subdivided into tow physiographic sub-provinces: the Mexican Highlands and the Sonoran Desert. The proposed project site lies within the Sonoran Desert sub-province (U.S. Army 1994).

In the Sonoran Desert the linear ranges, usually formed by volcanic uplift, are often surrounded by a skirt of detritus (boulders, rocks, gravel, sand, and soil) that has eroded from the mountains over time. Much of this has been washed down during torrential summer downpours. In the southwest, these detritus skirts or pediments are frequently called bajadas. The substrate is coarser, with large rocks on the upper bajada and finer at the lower elevation.

The areas between the desert ranges have been filled with water-washed alluvium. This alluvium, or fine soil, produces the extensive flat spaces one usually associates with deserts. The water table may be high on the flatlands, and the drainage is often slow. Poorly drained patches and larger playas become alkaline through accumulation of soluble chemicals.

The majority of the soils in the proposed project area are in the Superstition Sand series. A secondary soil found just north of the project site is the Gadsden Clay. Information received from the Natural Resources Conservation Service (NRCS) in Tucson, Arizona indicates that soils in the Superstition Sand series consist of deep, somewhat excessively drained soils on old terraces of the Colorado River. These soils formed in mixed sandy alluvium, and range in slope from zero to three percent.

The Gadsden Clay series consists of deep, well drained soils on flood plains and low terraces. These soils formed in mixed fine-textured alluvium. Slope is less than one percent, and the mean annual precipitation ranges from two to four inches.

1.1.2 Site Area

The area potentially to be disturbed by constructing a new border fence would be no more than nine acres (approximately 3.3 miles long by 20 feet wide). Construction activities would use existing roads; therefore, no areas would be impacted outside the project area boundaries.

1.1.3 Name of Receiving Waters

There are no receiving waters located in or adjacent to the proposed project site. Drainage from the proposed site would be along the existing dirt road north of the fence line. It would be likely that water generated from normal storm event would evaporate or infiltrate before reaching a surface water source.

2. SEQUENCE OF MAJOR ACTIVITIES

The following major activities would be implemented to reduce sediment and other pollutants in storm water discharges:

- Sensitive areas containing cultural resource sites, unique habitats, rare and endangered plants and animals, and wetlands would be identified prior to the start of construction. These field-surveyed areas would be staked and flagged as possible areas not to be disturbed by repari and/or construciton activities.

- Road construction or improvement and filling with commercially purchased soil would be accomplished using motorized equipment.

- Straw bale check dams and/or siltation fencing would be installed at points of water conveyance to reduce slope erosion on the fence constructions areas and reduce sediment leaving the area. Figure 2-1 shows erosion an sediment controls.

2.1 CONTROLS

2.1.1 Erosion Sediment Controls

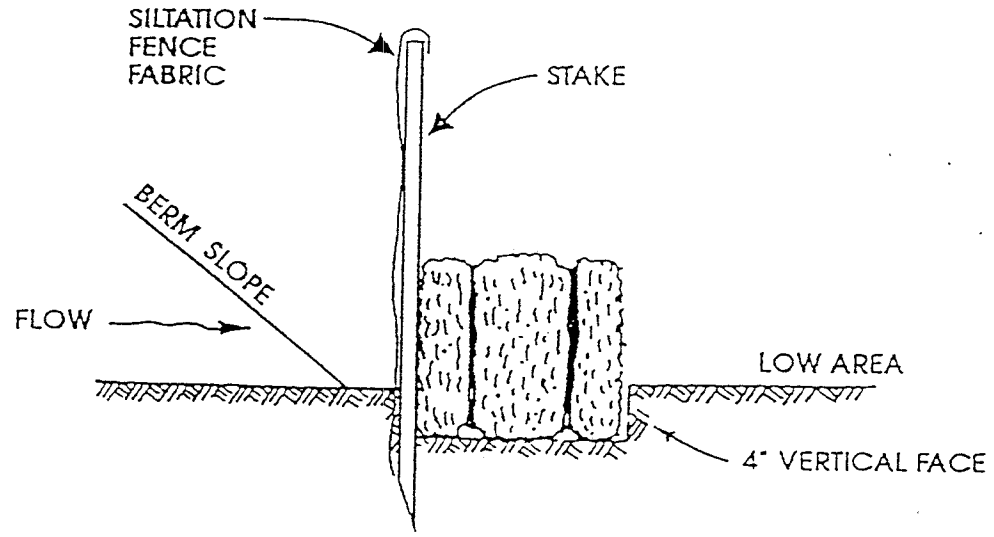
Storm Water Management: Road maintenance would include grading within existing road beds and filled with commercially purchased soil. This material would be compacted to provide an almost impenetrable surface to reduce susceptibility to erosion. Bales of straw and/or a siltation fence would be staked in low areas to control surface water and sedimentation at points of conveyance and to reduce velocity of waters (Figure 2-1).

2.1.2 Waste Disposal Controls

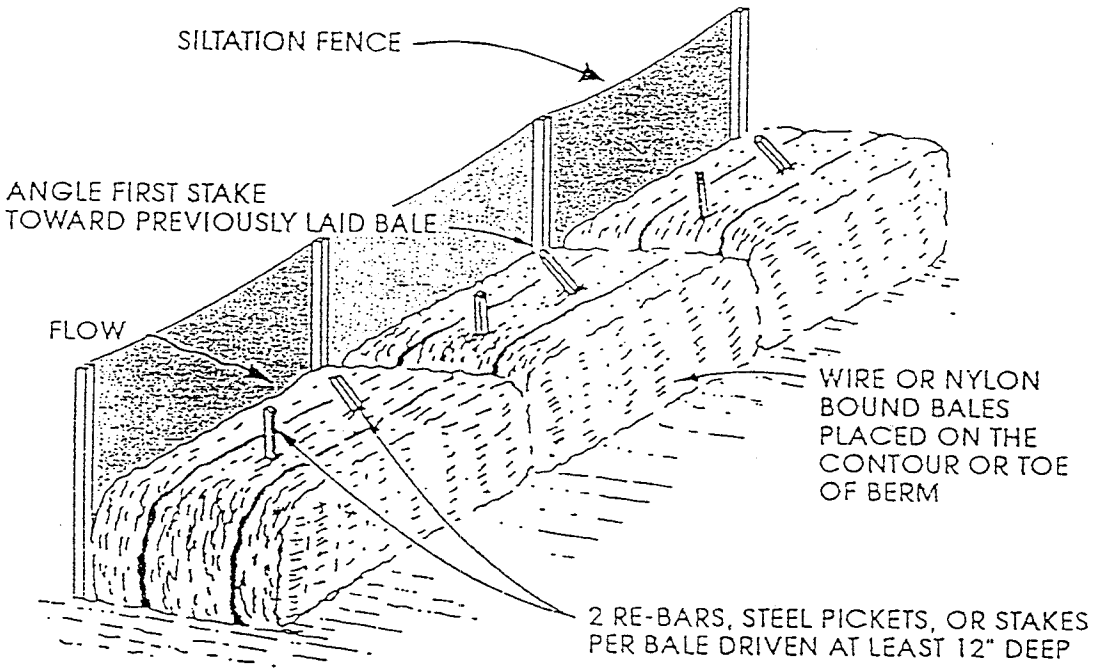
Waste Materials: All non-hazardous construction waste materials (brush, paper, cloth, etc.) would be collected daily, stored in containers and disposed in an approved manner or at a state approved landfill facility. The trash storage containers would meet all local, state, and Federal solid waste management regulations. Containers would have secure, tight-fitting lids and would be emptied as needed. All personnel participating in construction activities would be instructed on the procedure for waste disposal.

Hazardous Waste: All hazardous waste would be transported, handled, stored, and used in strict accordance with local, state, Federal regulations and manufacturers' recommendations.

Sanitary Waste: All sanitary waste would be collected in portable units by a licensed contractor and disposed of at a state-approved facility in accordance with local and state regulations.



Embedding Detail
Straw Bale Barrier



Anchoring Detail
Straw Bale Barrier

Figure 2-1
Erosion and Sediment Controls

3. MAINTENANCE AND INSPECTION PROCEDURES

A blank Notice of Intent (NOI) form is included as Attachment A. This form would be completed and submitted to the Environmental Protection Agency (EPA).

EPA
Storm Water Notice of Intent
P.O. Box 1251
Newington, VA 22122

A copy of this Plan would be sent to the Storm Water Coordinator, Arizona Department of Environmental Quality, the local agency for approval of the construction plans. The owner of the site would submit the NOI prior to the commencement of construction. The completed form would be inserted as Attachment A, and would thereafter be considered part of this storm water pollution prevention plan (SWPPP). Given that the annual rainfall is less than 20 inches, all pollution prevention measures would need to be inspected once a month to identify areas that might contribute to runoff, and evaluate whether the existing SWPPP measures are still adequate to reduce pollutant loadings (Attachment B).

The inspector would thoroughly understand the requirements of the SWPPP and have a basic knowledge of engineering aspects on controlling storm water and reducing runoff pollution. Areas being regraded would be inspected for areas of potential erosion and soil loss from the site. Discharge points would be inspected for signs of erosion or sediment associated with discharge. Built up sediment would be removed when it has reached one-third the height of the siltation fence. Locations where vehicles enter and leave the site would be checked for signs of off-site sediment tracking. Best Management Practices (BMPS) and pollution control maintenance procedures would be inspected for adequacy. The SWPPP would be revised as necessary during the construction period (Attachments B and C), and construction records would be maintained on the project. Additionally, upon completion of the construction a Notice of Termination must be submitted to both EPA and Arizona Department of Environmental Quality (Attachment D).

3.1 INVENTORY FOR STORMWATER POLLUTION PREVENTION PLAN

The following materials have the potential to be on-site during the proposed fence construction:

- Diesel Fuel
- Hydraulic Fluid
- Gasoline

- Transmission Fluid
- Oil
- Marking Paint
- Lubricants

3.2 SPILL PREVENTION

3.2.1 Best Management Practices

The following management practices would be implemented to reduce the risk of spills and accidental exposure of materials and substances to storm water runoff.

Good Housekeeping: No fuel and/or maintenance materials would be stored on-site after working hours. All fuels, fluids, oil, and lubricants would be stored aboard designated and specially manufactured service vehicles and removed from the site after working hours.

Hazardous Materials Storage: All hazardous products would be stored in or aboard designated and specially manufactured service vehicles. The service vehicles would be present only during the time equipment is in operation and would be removed from the site after working hours.

Products would be kept in original sealed containers. Surplus materials would be removed daily after working hours.

3.2.2 Product-Specific Practices

The following product-specific practices would be implemented:

Petroleum Products: All vehicles would be stored, repaired, and refueled on site. All vehicles would be monitored for leaks during regularly scheduled, preventive maintenance actions. Petroleum products would be stored in designated and specially manufactured service vehicles. All products would be kept in original sealed containers during periods of use. All empty containers would be disposed in an approved manner. Spill containment areas would be established at staging areas throughout the construction project, and all equipment would be refueled and repaired within the staging areas. All spills would be promptly cleaned up and reported to applicable regulatory agencies. Equipment would be kept within the spill containment sites to prevent spilled material from reaching and polluting drainage ways. All personnel would be briefed on spill prevention, control, and clean-up procedures. Petroleum products would not be stored on site after working hours.

4. CERTIFICATION OF COMPLIANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS

This SWPPP was prepared in accordance with guidelines published in the Federal Register, Volume 57, Number 175, September 9, 1992. After construction, an USEPA storm water permit for industrial operations would not be required.

ATTACHMENT A

NOTICE OF INTENT (NOI)
FOR CONSTRUCTION

THIS FORM REPLACES PREVIOUS FORM 3510-6 (8-92)
See Reverse for Instructions

Form Approved. OMB No. 2040-0086
Approval expires 8-31-98

NPDES FORM

EPA

United States Environmental Protection Agency
Washington, DC 20460

Notice of Intent (NOI) for Storm Water Discharges Associated with Industrial Activity Under a NPDES Permit

Submission of this Notice of Intent constitutes notice that the party identified in Section II of this form intends to be authorized by a NPDES permit issued for storm water discharges associated with industrial activity in the State identified in Section III of this form. Becoming a permittee obligates such discharger to comply with the terms and conditions of the permit. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.

I. Permit Selection: You **must** indicate the NPDES Storm Water general permit under which you are applying for coverage. Check one of these.

Baseline Industrial ☐ Baseline Construction ☐ Multi-Sector (Group Permit) ☐

II. Facility Operator Information

Name: Phone:

Address: Status of Owner/Operator:

City: State: ZIP Code:

III. Facility/Site Location Information

Name: Is the facility located on Indian Lands? (Y or N) ☐

Address:

City: State: ZIP Code:

Latitude: Longitude: Quarter: Section: Township: Range:

IV. Site Activity Information

MS4 Operator Name:

Receiving Water Body:

If you are filing as a co-permittee, enter storm water general permit number:

SIC or Designated Activity Code: Primary: 2nd:

Is the facility required to submit monitoring data? (1, 2, 3, or 4) ☐

If You Have Another Existing NPDES Permit, Enter Permit Number:

Multi-Sector Permit Applicants Only:

Based on the Instructions provided in Addendum H of the Multi-Sector permit, are species identified in Addendum H in proximity to the storm water discharges to be covered under this permit, or the areas of BMP construction to control those storm water discharges? (Y or N) ☐

Will construction (land disturbing activities) be conducted for storm water controls? (Y or N) ☐

Is applicant subject to and in compliance with a written historic preservation agreement? (Y or N) ☐

V. Additional Information Required for Construction Activities Only

Project Start Date: Completion Date: Estimated Area to be Disturbed (in Acres):

Is the Storm Water Pollution Prevention Plan in compliance with State and/or Local sediment and erosion plans? (Y or N) ☐

VI. Certification:

The certification statement in Box 1 applies to all applicants.
The certification statement in Box 2 applies only to facilities applying for the Multi-Sector storm water general permit.

BOX 1

ALL APPLICANTS

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BOX 2

MULTI-SECTOR STORM WATER GENERAL PERMIT APPLICANTS ONLY:

I certify under penalty of law that I have read and understand Part I.B. eligibility requirements for coverage under the Multi-Sector storm water general permit, including those requirements relating to the protection of species identified in Addendum H.

To the best of my knowledge, the discharges covered under this permit, and construction of BMPs to control storm water run-off, are not likely to and will not likely adversely affect any species identified in Addendum H of the Multi-Sector storm water general permit or are otherwise eligible for coverage due to previous authorization under the Endangered Species Act.

To the best of my knowledge, I further certify that such discharges, and construction of BMPs to control storm water run-off, do not have an effect on properties listed or eligible for listing on the National Register of Historic Places under the National Historic Preservation Act, or are otherwise eligible for coverage due to a previous agreement under the National Historic Preservation Act.

I understand that continued coverage under the Multi-Sector general permit is contingent upon maintaining eligibility as provided for in Part I.B.

Print Name: Date:

Signature: _____

Instructions - EPA Form 3510-6
Notice Of Intent (NOI) For Storm Water Discharges Associated With Industrial Activity To Be Covered Under a NPDES General Permit

Who Must File A Notice Of Intent (NOI) Form

Federal law at 40 CFR Part 122 prohibits point source discharges of storm water associated with industrial activity to a water body(ies) of the U.S. without a National Pollutant Discharge Elimination System (NPDES) permit. The operator of an industrial activity that has such a storm water discharge must submit a NOI to obtain coverage under a NPDES Storm Water General Permit. If you have questions about whether you need a permit under the NPDES Storm Water program, or if you need information as to whether a particular program is administered by EPA or a state agency, telephone or write to the Notice of Intent Processing Center at (703) 931-3230.

Where To File NOI Form

NOIs must be sent to the following address:

Storm Water Notice of Intent (4203)
401 M Street, S.W.
Washington, DC 20460

Completing The Form

You must type or print, using upper-case letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your responses. If you have any questions on this form, call the Notice of Intent Processing Center at (703) 931-3230.

Section I Permit Selection

You must indicate the NPDES storm water general permit under which you are applying for coverage. Check one box only. The Baseline Industrial and Baseline Construction permits were issued in September 1992. The Multi-Sector Permit became effective October 1, 1995.

Section II Facility Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same as the name of the facility. The responsible party is the legal entity that controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

Enter the appropriate letter to indicate the legal status of the operator of the facility: F = Federal; S = State; M = Public (other than federal or state); P = Private

Section III Facility/Site Location Information

Enter the facility's or site's official or legal name and complete street address, including city, state, and ZIP code. Do not provide a P.O. Box number as the street address. **If applying for a Baseline Permit and the facility or site lacks a street address,** indicate the state and either the latitude and longitude of the facility to the nearest 15 seconds or the quarter, section, township, and range (to the nearest quarter section) of the approximate center of the site. **If applying for the Multi-Sector Permit indicate the complete street address and either the latitude and longitude of the facility to the nearest 15 seconds or the quarter, section, township, and range (to the nearest quarter section) of the approximate center of the site.**

All applicants must indicate whether the facility is located on Indian lands.

Section IV Site Activity Information

If the storm water discharges to a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4 (e.g., municipality name, county name) and the receiving water of the discharge from the MS4. (A MS4 is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by a state, city, town, borough, county, parish, district, association, or other public body which is designed or used for collecting or conveying storm water.)

If the facility discharges storm water directly to receiving water(s), enter the name of the receiving water(s).

If you are filing as a co-permittee and a storm water general permit number has been issued, enter the number in the place provided.

Indicate the monitoring status of the facility. Refer to the permit for information on monitoring requirements. Indicate the monitoring status by entering one of the following:

1 = Not subject to monitoring requirements under the conditions of the permit.
2 = Subject to monitoring requirements and required to submit data.
3 = Subject to monitoring requirements but not required to submit data.
4 = Subject to monitoring requirements but submitting certification for monitoring exclusion.

List, in descending order of significance, up to two 4-digit standard industrial classification (SIC) codes that best describe the principal products or services provided at the facility or site identified in Section III of this application. If you are applying for coverage under the construction general permit, enter "CO" (which represents SIC codes 1500-1799).

For industrial activities defined in 40 CFR 122.26(b)(14)(i)-(xi) that do not have SIC codes that accurately describe the principal products produced or services provided, use the following 2-character codes.

HZ = Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA [40 CFR 122.26(b)(14)(iv)];
LF = Landfills, land application sites, and open dumps that receive or have received any industrial wastes, including those that are subject to regulation under subtitle D of RCRA [40 CFR 122.26(b)(14)(v)];
SE = Steam electric power generating facilities, including coal handling sites [40 CFR 122.26(b)(14)(vii)];
TW = Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage [40 CFR 122.26(b)(ix)]; or
CO = Construction activities [40 CFR 122.26(b)(14)(x)].

If there is another NPDES permit presently issued for the facility or site listed in Section III, enter the permit number. If an application for the facility has been submitted but no permit number has been assigned, enter the application number.

Facilities applying for coverage under the Multi-Sector storm water general permit must answer the last three questions in Section IV. Refer to Addendum H of the Multi-Sector general permit for a list of species that are either proposed or listed as threatened or endangered. "BMP" means "Best Management Practices" that are used to control storm water discharges.

Indicate whether any construction will be conducted to install or develop storm water runoff controls.

Section V Additional Information Required for Construction Activities Only

Construction activities must complete Section V in addition to Sections I through IV. Only construction activities need to complete Section V.

Enter the project start date and the estimated completion date for the entire development plan.

Provide an estimate of the total number of acres of the site on which soil will be disturbed (round to the nearest acre).

Indicate whether the storm water pollution prevention plan for the site is in compliance with approved state and/or local sediment and erosion plans, permits, or storm water management plans.

Section VI Certification

Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 0.5 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimates, any other aspect of the collection of information, or suggestions for improving this form, including any suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, 2136, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, or Director, Office of Information and Regulator Affairs, Office of Management and Budget, Washington, DC 20503.

ATTACHMENT B

INSPECTION AND MAINTENANCE REPORT FORM (RAINFALL EVENT)

STORM WATER POLLUTION PREVENTION

INSPECTION AND MAINTENANCE REPORT

Report to be completed:

- If the annual rainfall of an area is greater than 20 inches, inspection shall be inspected every 7 days and within 24 hours of a rainfall event of 0.5 inches or more; or
- If the annual rainfall of an area is less than 20 inches, inspection shall be inspected once a month.

INSPECTOR: _____ DATE: _____

INSPECTOR'S QUALIFICATIONS:

_____

_____

_____

_____

DAYS SINCE LAST RAINFALL: _____ AMOUNT OF LAST RAINFALL: _____

STABILIZATION MEASURES

AREA	DATE SINCE LAST DISTURBED	DATE OF NEXT DISTURBANCE	STABILIZED (YES/NO)	STABILIZED WITH	CONDITION

STABILIZATION REQUIRED:

_____

_____

_____

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

ATTACHMENT C

INSPECTION AND MAINTENANCE REPORT FORM (CHANGES)

STORM WATER POLLUTION PREVENTION

INSPECTION AND MAINTENANCE REPORT
CHANGES

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

_____

_____

_____

_____

REASONS FOR CHANGES:

_____

_____

_____

I certify under penalty of law that this document and all attachments were prepared under my direction of supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

SIGNATURE: _____ DATE: _____

ATTACHMENT D

NOTICE OF TERMINATION (NOT)
FOR CONSTRUCTION

THIS FORM REPLACES PREVIOUS FORM 3510-7 (8-92)
Please See Instructions Before Completing This Form

Form Approved. OMB No. 2040-0086
Approval expires: 8-31-98

NPDES FORM

EPA

United States Environmental Protection Agency
Washington, DC 20460

Notice of Termination (NOT) of Coverage Under a NPDES General Permit for Storm Water Discharges Associated with Industrial Activity

Submission of this Notice of Termination constitutes notice that the party identified in Section II of this form is no longer authorized to discharge storm water associated with industrial activity under the NPDES program. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.

I. Permit Information

NPDES Storm Water General Permit Number: _____

Check Here if You are No Longer the Operator of the Facility: ☐

Check Here if the Storm Water Discharge is Being Terminated: ☐

II. Facility Operator Information

Name: _____ Phone: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

III. Facility/Site Location Information

Name: _____

Address: _____

City: _____ State: _____ ZIP Code: _____

Latitude: _____ Longitude: _____ Quarter: _____ Section: _____ Township: _____ Range: _____

IV. Certification

I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that are authorized by a NPDES general permit have been eliminated or that I am no longer the operator of the facility or construction site. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that discharging pollutants in storm water associated with industrial activity to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the Clean Water Act.

Print Name: _____ Date: _____

Signature: _____

Instructions for Completing Notice of Termination (NOT) Form

Who May File a Notice of Termination (NOT) Form

Permittees who are presently covered under an EPA-issued National Pollutant Discharge Elimination System (NPDES) General Permit (including the 1995 Multi-Sector Permit) for Storm Water Dicharges Associated with Industrial Activity may submit a Notice of Termination (NOT) form when their facilities no longer have any storm water discharges associated with industrial activity as defined in the storm water regulations at 40 CFR 122.26(b)(14), or when they are no longer the operator of the facilities.

For construction activities, elimination of all storm water discharges associated with industrial activity occurs when disturbed soils at the construction site have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all storm water discharges associated with industrial activity from the construction site that are authorized by a NPDES general permit have otherwise been eliminated. Final stabilization means that all soil-disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

Where to File NOT Form

Send this form to the the following address:

Storm Water Notice of Termination (4203)
401 M Street, S.W.
Washington, DC 20460

Completing the Form

Type or print, using upper-case letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions about this form, telephone or write the Notice of Intent Processing Center at (703) 931-3230.

Instructions - EPA Form 3510-7
Notice of Termination (NOT) of Coverage Under The NPDES General Permit for Storm Water Discharges Associated With Industrial Activity

Section I Permit Information

Enter the existing NPDES Storm Water General Permit number assigned to the facility or site identified in Section III. If you do not know the permit number, telephone or write your EPA Regional storm water contact person.

Indicate your reason for submitting this Notice of Termination by checking the appropriate box:

If there has been a change of operator and you are no longer the operator of the facility or site identified in Section III, check the corresponding box.

If all storm water discharges at the facility or site identified in Section III have been terminated, check the corresponding box.

Section II Facility Operator Information

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

Section III Facility/Site Location Information

Enter the facility's or site's official or legal name and complete address, including city, state and ZIP code. If the facility lacks a street address, indicate the state, the latitude and longitude of the facility to the nearest 15 seconds, or the quarter, section, township, and range (to the nearest quarter section) of the approximate center of the site.

Section IV Certification

Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, State, Federal, or other public facility: by either a principal executive officer or ranking elected official.

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 0.5 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of the collection of information, or suggestions for improving this form, including any suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, 2136, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

APPENDIX G

NOTICE OF AVAILABILITY

Public Notice/Notice of Availability

Interested parties are hereby notified that Joint Task Force Six has prepared an Environmental Assessment for the Proposed JTF-Six Mission near Yuma, Yuma County, Arizona. This notice is being issued to interested parties in accordance with the National Environmental Policy Act (NEPA), Public Law 91-190, and regulations for implementing the Procedural Provisions of the NEPA, 40 Code of Federal Regulations 1500-1508. The purpose of the Proposed Action is to construct approximately 4 miles of fence along the United States-Mexico international land border. The proposed fence will extend the existing border fence approximately 4 miles east of Yuma, Arizona.

The EA is available for public inspection beginning March 18, 1998 and ending April 18, 1998. Comments will be accepted for the same 30-day period. The document is available for public viewing at the Yuma Public Library located at 350 S. Third Avenue, Yuma, Arizona. Library hours are 9:00 a.m. to 9:00 p.m.,Tuesday through Thursday; and 9:00 a.m. to 5:00 p.m. on Friday and Saturday. The Library is closed on Sunday and Monday. All questions and comments regarding the Environmental Assessment should be directed, in writing, to the following:

U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE
Room 13A18
819 Taylor Street
Fort Worth, Texas 76102-0300

For further information, contact the Fort Worth District, Corps of Engineers, Technical Manager at (817) 978-6382.

Publisher's Affidavit of Publication

—000—

STATE OF ARIZONA
COUNTY OF YUMA
} ss.

PUBLIC NOTICE/NOTICE OF AVAILABILITY
Interested parties are hereby notified that Joint Task Force Six has prepared an Environmental Assessment for the Proposed JTF-Six Mission near Yuma, Yuma County, Arizona. This notice is being issued to interested parties in accordance with the National Environmental Policy Act (NEPA), Public Law 91-190, and regulations for implementing the Procedural Provisions of the NEPA, 40 Code of Federal Regulations 1500-1508. The purpose of the Proposed Action is to construct approximately 4 miles of fence along the United States-Mexico international land border. The proposed fence will extend the existing border fence approximately 4 miles east of Yuma, Arizona. The EA is available for public inspection beginning March 18, 1998 and ending April 18, 1998. Comments will be accepted for the same 30-day period. The document is available for public viewing at the Yuma Public Library located at 350 S. Third Avenue, Yuma, Arizona. Library hours are 9:00 a.m. to 9:00 p.m., Tuesday through Thursday; and 9:00 a.m. to 5:00 p.m. on Friday and Saturday. The Library is closed on Sunday and Monday. All questions and comments regarding the Environmental Assessment should be directed, in writing, to the following:
U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE
Room 13A18
819 Taylor Street
Fort Worth, Texas 76102-0300
For further information, contact the Fort Worth District, Corps of Engineers, Technical Manager at (817) 978-6382.
Daily March 20, 21, 1998 #8719

Samuel J. Pepper or Lee Knapp, having been first duly sworn, deposes and says: that The Yuma Daily Sun is a newspaper of general circulation published daily in the City of Yuma, County of Yuma, State of Arizona; that he is the publisher or business manager of said paper; that the

PUBLIC NOTICE/NOTICE OF AVAILABILITY

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 Yuma Daily Sun for TWO issues; that the date of the first publication of said PUBLIC NOTICE/NOTICE OF AVAILABILITY

was MARCH 20, 1998, and the date of the last publication being MARCH 21, 1998, and that the dates when said PUBLIC NOTICE/NOTICE OF AVAILABILITY

was printed and published in said paper were

MARCH 20, 21, 1998

Lee Knapp

Subscribed and sworn to before me, by the said Samuel J. Pepper or Lee Knapp

24th day of March, 1998

Virgen P. Perez, Notary Public

My commission expires May 10, 2001

OFFICIAL SEAL
VIRGEN P PEREZ
Notary Public - State of Arizona
YUMA COUNTY
My Comm. Expires MAY 10, 2001