FINAL

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

WHITEWATER DRAW DOUGLAS, COCHISE COUNTY, ARIZONA

Prepared for:
Immigration and Naturalization Service

Prepared By:
U.S. Army Corps of Engineers
Fort Worth District

June 21, 2001

FINDING OF NO SIGNIFICANT IMPACT

Supplemental Environmental Assessment
Whitewater Draw
Douglas, Cochise County, Arizona

The primary purpose of the preferred alternative is to assist in fulfilling the U. S. Border Patrol's (USBP) mission to reduce illegal immigration and drug trafficking along the border by increasing their ability to detect, deter and apprehend illegal entrants. The preferred alternative would allow for the continued access and patrol of the border road along the U.S./Mexico International border in the Whitewater Draw area, southwest of Douglas, Arizona.

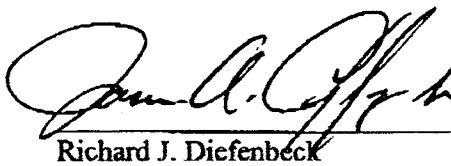
Currently, the border access road along the U.S. and Mexico International border just west of Douglas, Arizona has a drainage problem at the crossing of Whitewater Draw. Two large corrugated metal pipe culverts were installed on the Mexico side of the border and are located approximately 30 feet south of the international border. During even small rainstorms, the culverts back water up onto the U.S. side of the border and make the border patrol road impassable. During these flood events, the USBP has to travel several miles out of the way to cross Whitewater Draw. During non-flood periods, standing water in this area causes damage to the road and presents a possible safety hazard to USBP agents (Baker 2001).

An Environmental Assessment (EA) was prepared to address site-specific actual and potential cumulative effects, beneficial and adverse, of Immigration and Naturalization Service (INS) and USBP activity regarding improvement to the border access road and the construction of a water crossing structure for Whitewater Draw. The EA document supplemented the Final EA for Infrastructure within USBP Naco-Douglas Corridor (INS 2000) and addressed cumulative impacts of past, present, and foreseeable construction and operational actions in the proposed project area.

There were five alternatives evaluated as part of the EA environmental impact analysis: 1) the construction of a low water crossing using concrete culverts within the 60-foot right-of-way (ROW); 2) the construction of a modular panel bridge within the 60-foot ROW; 3) a no action alternative; 4) the construction of a low water crossing with no culverts within the 60-foot ROW; and 5) the construction of any structure (Alternative designs 1, 2, or 4) outside of the 60-foot ROW. Alternatives 1, 2, and 3 were analyzed in the document. However, due to lesser environmental impacts, Alternative 1 is the preferred alternative. Although Alternative 3, was analyzed in the document, there would be continued socioeconomic concerns relating to the illegal alien entry, drug trafficking, and criminal activity. Alternatives 4 and 5 were eliminated from further consideration because they would not assist the USBP in the accomplishment of its mission, presented a greater economic impact, or allowed the same, if not greater, potential for environmental concerns as the other alternatives.

There would be no significant areas of environmental concern associated with either the preferred alternative (Alternative 1) or the bridge alternative (Alternative 2). Possible insignificant environmental issues would be associated with the construction activities and improvements to the surface road (i.e., air, geological resources, biological resources, air and water resources, cultural resources, and noise); however, these would be only temporary in nature and easily mitigated through sound engineering practices. Under the preferred alternative, there is a possible beneficial socioeconomic impact to the area in the form of a reduction in alien entry, drug trafficking, and related criminal activities. There would be no short- or long-term impacts to land use, aesthetics, or solid/hazardous waste generation or management as part of the proposed action.

Based on the findings of this analysis and assuming that all mitigation measures recommended herein are implemented, it has been concluded that the preferred alternative would not have a significant adverse effect on the natural or human environment. The preferred alternative would also allow for an increased or enhanced interdiction of illegal alien entry and drug activities would have positive, indirect socioeconomic benefits.



4/20/01

Richard J. Diefenbeck Date
Director, Office of Administration
Headquarters Facilities and Engineering Division

EXECUTIVE SUMMARY

Proposed Action

This Environmental Assessment (EA) addresses site-specific actual and potential cumulative effects, beneficial and adverse, of the Immigration and Naturalization Service (INS) and U.S. Border Patrol (USBP) activity regarding improvement to the border access road and the construction of a water crossing structure for Whitewater Draw, southwest of Douglas, Cochise County, Arizona. This document supplements the Final EA for Infrastructure within U.S. Border Patrol Naco-Douglas Corridor (INS 2000). This document also addresses cumulative impacts of past, present, and foreseeable future construction and operational actions in the proposed project area. Other EAs consulted in developing cumulative impacts in the proposed project area included the Joint Task Force 6 (JTF-6) Road Maintenance and Construction EA (USACE 1996), the JTF-6 Fence and Road Construction EA (USACE 1997b), the Proposed JTF-6 Light Pole Installation Mission EA (USACE 1998), and the JTF-6 Proposed Fence, Lighting, Road Repair and Improvement Project, Douglas, Cochise County, Arizona (USACE 2001). Military units through the JTF-6 program or through the Army National Guard (ARNG), could provide all the construction support for the proposed USBP project. The ARNG is a military organization with both a Federal and State mission. As a Joint Service Agency, JTF-6 was assigned to assist Law Enforcement Agencies (LEAs) that have drug interdiction responsibilities in the continental United States (U.S.) by providing general operational and engineering support.

Purpose and Need

Currently, the border access road along the U.S. and Mexico International border just west of Douglas, Arizona has a drainage problem at the crossing of Whitewater Draw. Two large corrugated metal pipe (CMP) culverts were installed on the Mexico side of the border and are located approximately 30 feet south of the international border. During even small rainstorms, the culverts back water up onto the U.S. side of the border and make the border patrol road impassable. During these flood events, the USBP has to travel several miles out of the way to cross Whitewater Draw. During non-flood periods, standing water in this area causes damage to the road and presents a possible safety hazard to USBP agents (Baker 2001).

Alternatives Addressed

There were five alternatives evaluated as part of this environmental impact analysis: 1) the construction of a low water crossing using concrete culverts within the 60-foot right-of-way (ROW); 2) the construction of a modular panel bridge within the 60-foot ROW; 3) a No Action Alternative; 4) the construction of a low water crossing with no culverts within the 60-foot ROW; and 5) the construction of any structure (Alternative designs 1, 2, or 4) outside of the 60-foot ROW. Alternatives 1 and 2 are carried through the document for analysis; however, due to lesser environmental impacts, Alternative 1 is the Preferred Alternative. Although Alternative 3, the No Action Alternative, is carried through the document for analysis, there would be continued socioeconomic concerns relating to the illegal alien entry, drug trafficking, and criminal activity. Alternatives 4 and 5 were eliminated from further consideration because they would not assist the USBP in the accomplishment of its mission, presented a greater economic impact, or allowed the same, if not greater, potential for environmental concerns as the other alternatives.

Environmental Impacts

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) are 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.

There would be no significant areas of environmental concern associated with either the Preferred Alternative or the Bridge Alternative (Alternative 2). Possible insignificant environmental issues would be associated with the construction activities and improvements to the surface road (i.e., air, geological resources, biological resources, air and water resources, cultural resources, and noise); however, these would be only temporary in nature and easily mitigated through sound engineering practices. Under the Preferred Alternative, there is a possible beneficial socioeconomic impact to the area in the form of a reduction in alien entry, drug trafficking, and related criminal activities. There would be no short- or long-term impacts to land use, aesthetics, or solid/hazardous waste generation or management as part of the Proposed Action.

Conclusions

Based on the findings of this analysis and assuming that all mitigation measures recommended herein are implemented, no significant adverse impacts would occur from the Preferred Alternative. As previously stated, increased or enhanced interdiction of illegal alien entry and drug activities would have positive, indirect socioeconomic benefits.

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1.0 INTRODUCTION

1.0 INTRODUCTION

This Environmental Assessment (EA) addresses site-specific actual and potential cumulative effects, beneficial and adverse, of the Immigration and Naturalization Service (INS) and U.S. Border Patrol (USBP) activity regarding improvement to the border access road located at Whitewater Draw, west of the Port of Entry (POE) in Douglas, Cochise County, Arizona. For the purposes of the EA, the project area is defined as 0.5-mile area of potential impact centered on the border access road at Whitewater Draw (Figure 1.0).

Currently, the patrol road along the United States (U.S.) and Mexico International border just west of Douglas, Arizona has a drainage problem at the crossing of Whitewater Draw. Two large corrugated metal pipe (CMP) culverts were installed on the Mexico side of the border and are located approximately 30 feet south of the international border. During even small rainstorms, the culverts back water up onto the U.S. side of the border and make the border patrol road impassable. During these flood events, the USBP has to travel several miles out of the way to cross Whitewater Draw. During non-flood periods, standing water in this area causes damage to the road and presents a possible safety hazard to USBP agents (Baker 2001).

Improvements to the border access road, including construction of a crossing at Whitewater Draw, are being proposed by INS and USBP in an effort to enhance the USBP's capability to gain, maintain and extend control of the US/Mexico International Border. This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) Regulations for the Implementation of NEPA, and the INS' Procedures for Implementing NEPA (28 CFR Part 61).

1.1 INS ORGANIZATION

The INS has the responsibility to regulate and control immigration into the U.S. The INS has four major areas of responsibility: (1) facilitate entry of persons legally admissible to the U.S., (2) grant benefits under the Immigration and Nationality Act (INA) of 1952, including assistance to persons seeking permanent resident status or naturalization, (3) prevent unlawful entry, employment or receipt of benefits, and (4) apprehend or remove aliens who enter or remain illegally in the U.S.

To address the latter responsibility, the U.S. Congress in 1924 created the USBP to be the law enforcement arm of the INS. The USBP's primary function is to detect and deter the unlawful entry of aliens and smuggling along the nation's borders between each POE. With the increase in illegal drug trafficking, the USBP also has become the leader for drug interdiction.

Since 1980, an average of 150,000 immigrants have been naturalized every year. At the same time, however, illegal aliens have become a significant issue. INS apprehensions are currently averaging more than 1.5 million illegal aliens per year throughout the country. The INS estimates that there are currently from three to six million illegal aliens in the U.S. Other studies have indicated higher numbers, closer to 10 million (INS 2000).

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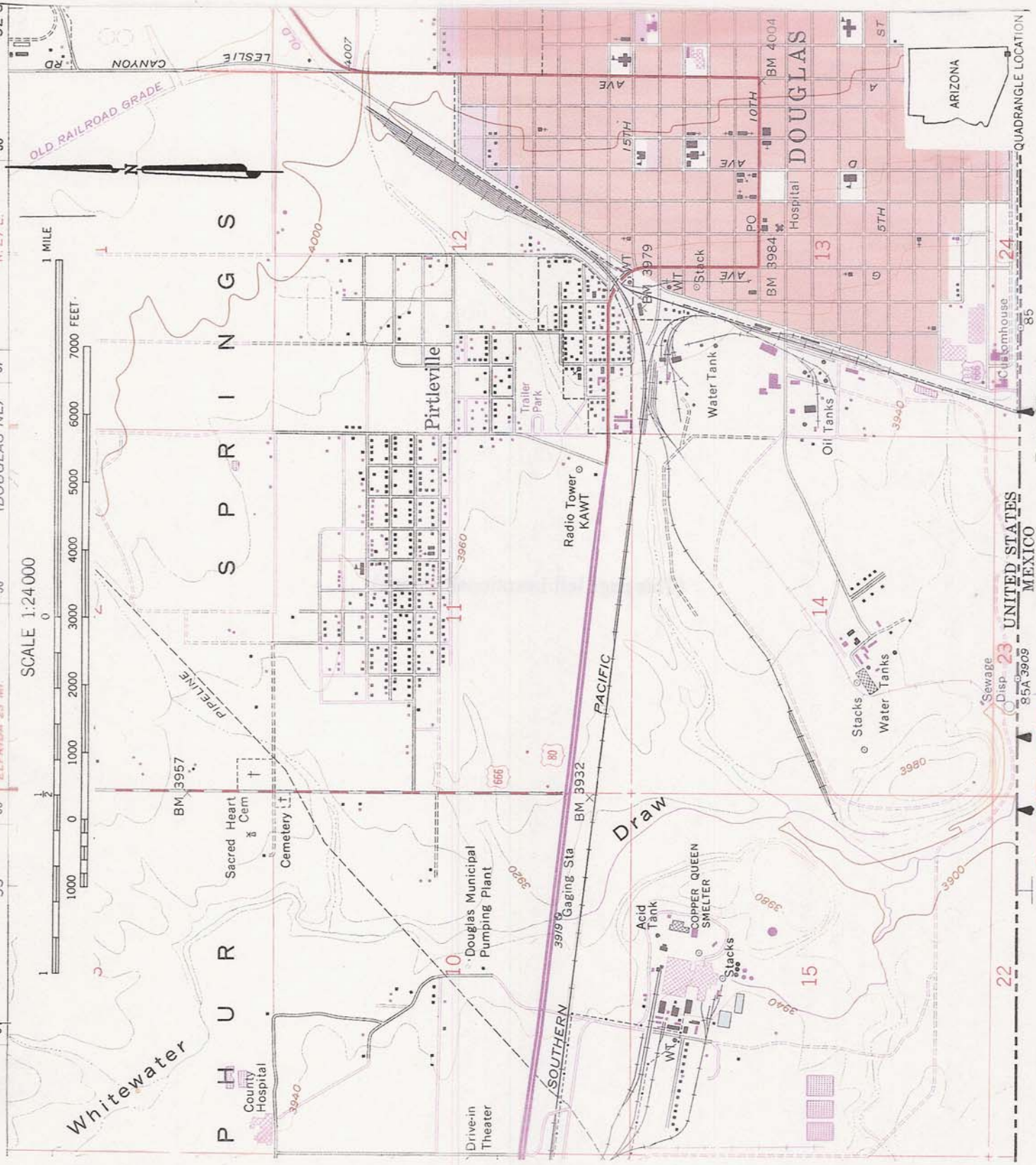

Figure 1.0 Location of Proposed Project Area at Whitewater Draw, Douglas, AZ

The USBP field activities are administered under the Field Operations Division of the INS. As mentioned previously, the USBP's primary function is to detect and prevent the unlawful entry of aliens and smuggling along the nation's borders. With the increase in illegal drug trafficking, the USBP also has assumed a major Federal responsibility for illegal drug interdiction (INS 2000).

1.2 REGULATORY AUTHORITY

The primary source of authority granted to officers of the INS is the INA, found in Title 8 of the U.S. Code (8 USC), and other statutes relating to the immigration and naturalization of aliens. The secondary sources of authority are administrative regulations implementing those statutes, primarily those found in Title 8 of the Code of Federal Regulations (8 CFR Section 287), judicial decisions, and administrative decisions of the Board of Immigration Appeals. In addition, the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) mandates INS to acquire and/or improve equipment and technology along the international border, hire and train new agents for the border region, and develop effective border enforcement strategies.

Subject to constitutional limitations, INS officers may exercise the authority granted to them in the INA. The statutory provisions related to enforcement authority are found in Sections 287(a), 287(b), 287(c), and 287(e) [8 USC § 1357(a, b, c, e)]; Section 235(a) [8 USC §1225]; Sections 274(b) and 274(c) [8USC § 1324(b, c)]; Section 274(a) [8USC §1324(a)]; and Section 274(c) [8USC §1324(c)] of the INA. Other statutory sources of authority are Title 18 of the USC, which has several provisions that specifically relate to enforcement of the immigration and nationality laws; Title 19 [19 USC § 1402(i)], relating to U.S. Customs Service cross-designation of INS officers; and Title 21 [21 USC § 878), relating to Drug Enforcement Agency cross-designation of INS officers (INS 2000).

1.3 PURPOSE AND NEED

The U.S. experiences a substantial influx of illegal immigrants and drugs each year. Both of these illegal activities cost American citizens billions of dollars annually due directly to criminal activities, as well as the cost of apprehension, detention and incarceration of criminals, and indirectly in the loss of property, illegal participation in government programs and increased insurance costs. INS has estimated that there were approximately five million illegal aliens residing in the U.S. in October 1996, and their numbers increased at an average rate of about 275,000 per year between October 1992 and October 1996 (GAO 1997). To combat these rising numbers, the Clinton Administration committed additional resources to law enforcement agencies, including the USBP. The number of agents assigned to the Douglas Station increased from approximately 180 agents in 1996 to over 450 agents in 2000 (INS 2000).

Additionally, the value and number of drug seizures along the southwestern U.S. border represent at least 95% of those made by the USBP throughout the nation. In particular, the USBP Douglas Station has experienced tremendous increases over the past five years, partially in response to successful deterrence programs in other border areas such as Naco, AZ, San Diego, CA, and El Paso, TX (Department of Justice [DOJ], INS 2000).

The Douglas Station experienced a 488% increase in undocumented alien apprehensions and a 52% increase in marijuana seizures from fiscal year (FY) 1994 to FY 1999 (INS 2000). The following information regarding apprehensions of undocumented aliens and marijuana seizures was obtained from the USBP, Douglas Station.

Table 1-1 Seizures and Apprehensions by the Douglas Station.

	Marijuana Seizures (approximate pounds)	**Undocumented Apprehensions** (approximate)
FY 1994	11,000	40,000
FY 1995	12,000	50,000
FY 1996	16,500	135,000
FY 1997	25,500	115,000
FY 1998	26,000	155,000
FY 1999	35,000	205,000
FY 2000	28,000	225,000

Although the number of USBP agents has dramatically increased, the apprehension and seizure data also indicate that the number of illegal entries into the U.S. is increasing every day. These increases have necessitated the construction and implementation of various infrastructure systems to enhance the USBP's ability to detect and apprehend undocumented aliens and drug traffickers.

A study conducted by the Archos Corporation in 1999 found that increasing manpower alone does little to deter illegal drugs, but that combining infrastructure (fence, lights, roads) with manpower can be very effective (INS 1999). Additionally, a study conducted by the USACE Construction Engineering Research Laboratory (CERL) in 1999 concluded that DoD-funded counter-drug fencing projects have been very effective at deterring the flow of illegal drugs and aliens (INS 1999). Thus the combination of sound infrastructure (e.g. roads, fences, barriers, and surveillance systems) coupled with adequate resources (e.g. vehicles, field agents, support personnel, etc.) is essential for the effective enforcement of the border strategy and integral to the success of the USBP to gain, maintain, and extend control of the international border.

As a result of these high levels of drug-related 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 counterdrug 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 continental U.S. by providing general operational and engineering support. In addition, this assistance would provide opportunities for mission-essential training for the military unit involved.

Military units through the JTF-6 program or through the Army National Guard (ARNG), would provide all the construction support for the proposed USBP project. The ARNG is a military organization with both a Federal and State mission. The Federal mission is to augment active duty Army Forces in the event of mobilization with ready units and individuals when directed by Congress. The State mission is to provide support to civil authorities, other agencies, and local communities upon request.

Military training is defined by DoD Instruction 1100.20 (Jan 20, 1997) as instruction of personnel to enhance their capacity to perform specific military functions and tasks; the exercise of one or more military units conducted to enhance their combat readiness; and the instruction and applied exercises for the acquisition and retention of skills, knowledge, and attitudes required to accomplish military tasks. Military training is accomplished as collective training, individual training, or unit training. This training would include general operational and engineering support. Engineering support encompasses those engineer tasks that increase the mobility, survivability, and sustainability of tactical and logistical units. Such tasks include construction and repair of communication, main supply routes, air fields, and logistical facilities.

Specific requirements under DoD Instruction 1100.20 for Innovative Readiness Training (IRT) concerns military training conducted off base in the civilian or agency community that utilizes the units and individuals of the Armed Forces under the jurisdiction of the Secretary of a Military Department or a combatant commander, to assist civilian efforts in addressing civic and community needs of the U.S., its territories and possessions, and the Commonwealth of Puerto Rico as provided for within 10 USC 2012. Examples of IRT activities include, but are not limited to , constructing rural roads and aircraft runways; small building and warehouse construction in remote areas; transporting medical supplies, equipment, and material to medically underserved areas of the country; and providing medical and dental care to Native Americans, Alaska Natives, and other medically underserved communities.

This EA addresses site-specific environmental constraints associated with the proposed construction of a crossing, which would allow access to the border road at Whitewater Draw. This document supplements the Final EA for Infrastructure within U.S. Border Patrol Naco-Douglas Corridor (INS 2000). This document also addresses cumulative impacts of past, present, and foreseeable construction and operational actions in the proposed project area. Other EAs consulted in developing cumulative impacts in the proposed project area included the JTF-6 Road Maintenance and Construction EA (USACE 1996), the JTF-6 Fence and Road Construction EA (USACE 1997b), the Proposed JTF-6 Light Pole Installation Mission EA (USACE 1998), and the JTF-6 Proposed Fence, Lighting, Road Repair and Improvement Project, Douglas, Cochise County, Arizona (USACE 2001).

1.4 ORGANIZATION OF THE DOCUMENT

Chapter 1.0 of this EA contains the background and location of the Proposed Action, along with the purpose and need, and applicable statutes and regulations associated with the Proposed Action. Chapter 2.0 gives a detailed analysis of the Proposed Action and all reasonable alternatives, including the No Action Alternative and those that were considered but eliminated from detailed analysis. Chapter 3.0 describes the baseline environmental conditions against which the impacts of the Proposed Action and alternatives are evaluated. These environmental conditions include

information on soils, air quality, land use, hydrology, biological resources, noise, cultural resources, and the current socioeconomic conditions of the area. Chapter 4.0 describes the environmental consequences of the Proposed Action and alternatives. Chapter 5.0 presents environmental design measures. Chapter 6.0 describes public involvement for this project. Chapter 7.0 lists the preparers

involved in the preparation of this document, Chapter 8.0 presents references cited and Chapter 9.0 includes a list of acronyms and abbreviations. Appendices are: (A) Site Photographs, (B) Federal Air Pollutant Standards, (C) Soils and Floodplain Information, (D) Threatened and Endangered Species, (E) Consultation Letters, (F) Agency Coordination and Response Letters, and (G) Notice of Availability.

1.5 APPLICABLE ENVIRONMENTAL STATUTES AND REGULATIONS

This EA was prepared pursuant to Section 102 of the NEPA, as implemented by the regulations promulgated by CEQ [40 Code of Federal Regulations (CFR) Parts 1500-1508]. This 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 INS NEPA Regulations specified in 28 CFR 61, Army Regulation (AR) 200-2, Environmental Effects of Army Actions (December 23, 1988), AR 200-4, Cultural Resources Management (October 20, 1997), and the National Guard Bureau NEPA Manual. 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 National Environmental Policy Act

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 for carrying out that policy. Section 102(2) of NEPA contains "action-forcing" provisions to make sure that Federal agencies act according to the letter and spirit of the Act. The principal objectives of NEPA are to ensure the careful consideration of environmental aspects of proposed actions in Federal decision-making processes and to look at alternatives that may provide a more environmentally acceptable solution. Additionally, NEPA encourages public dialogue and participation in an agency's planning process and ensures that environmental information is made available to decision makers, and the public before decisions are made and actions are taken.

INS routinely complete individual, site-specific NEPA documents such as an Environmental Impact Statements (EIS), and Environmental Assessments (EA), Categorical Exclusions (CX), and/or Records of Environmental Consideration (REC). INS complies with NEPA in accordance with INS regulations as specified in 28 CFR 61, Appendix C. These procedures shall apply to new efforts associated with all INS actions, including (but not limited to) INS operations; acquisition of real property whether by lease, purchase, or construction; the design, alteration, operation, or maintenance of new and existing INS facilities; and new INS mission activities. These procedures apply to all INS Administrative Centers, Regions, Field Offices, INS staff, contractors, and others who operate under INS oversight.

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 11988, Floodplain Management

EO 11988 directs all Federal agencies to avoid, if possible, development and other activities in the 100-year base floodplain. Where the base floodplain cannot be avoided, special considerations and studies for new facilities and structures are needed. Design and siting are to be based on scientific, engineering, and architectural studies; consideration of human life, natural processes, and cultural resources; and the planned lifespan of the project. Federal agencies are required to 1) reduce the risk of flood loss; 2) minimize the impact of floods on human safety, health, and welfare; and 3) restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility.

1.5.4 Executive Order 12898, Environmental Justice

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

1.5.5 Executive Order 13007, Sacred Sites

The purpose of EO 13007 is to ensure that each executive branch agency with statutory or administrative responsibility for the management of Federal lands shall, as appropriate, promptly implement procedures for the purposes of (1) accommodating access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoiding adverse effects on the physical integrity of such sacred sites. Where appropriate, agencies shall also maintain the confidentiality of sacred sites.

1.5.6 Clean Air Act

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

1.5.7 Clean Water Act

The Clean Water Act (CWA) (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 CWA of 1977 authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of

dredged or fill material into water of the U.S., including wetlands. Waters of the U.S. (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters including interstate wetlands.

1.5.8 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, and to take steps to conserve and protect these species.

1.5.9 Cultural Resources Laws and Regulations

The National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq., as amended) and its implementing regulation, 36 CRF Part 800, require 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 Archeological Resources Protection Act (16 USC 470a-11, as amended) protects archeological resources on Federal lands. If archeological resources that may be disturbed during site activities should be discovered, the NHPA would require permits for excavating and removing the resources. Additionally, the ARNG is required under EO 13175 "Consultation and Coordination with Indian Tribal Governments" to consult with recognized Federal Indian Tribal governments. When a project is requested, the state Environmental Programs Manager must ensure this EO is covered when executing the proper level of NEPA analysis for the project.

1.5.10 Other Laws and Regulations

Additional Federal and State regulations which may apply to the Proposed Action and alternatives are listed below:

- American Indian Religious Freedom Act of 1978
- Arizona Native Plant Law
- Arizona Air Quality Standards
- Bald Eagle Protection Act (Public Law 90-535)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Public Law 96-510), as amended by the Superfund Amendments and Reauthorization Act (SARA) (Public Law 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
- Migratory Bird Treaty Act
- Resource Conservation and Recovery Act (RCRA) (Public Law 94-580), 1976
- Safe Drinking Water Act (SDWA), 1974
- Solid Waste Disposal Act, 1980
- Toxic Substances Control Act (TSCA) (Public Law 94-469)
- Watershed Protection and Flood Prevention Act, 16 USC 1101, et seq.
- Wetlands Conservation Act (Public Law 101-23)

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action and alternatives, including the No-Action Alternative. The Proposed Action would involve construction of a crossing at Whitewater Draw along the U.S.-Mexico border, southwest of Douglas, Arizona. Under the No-Action Alternative, the area would remain as it currently exists and USBP efforts to curtail illegal entry of aliens and drug trafficking would remain unchanged. Other than the alternatives identified in this section, no other reasonable alternatives meeting INS or USBP requirements were identified.

2.1 PROPOSED ACTION

USBP agents patrol thousands of miles of border roads each day. The majority of these roads are dirt roads originally constructed to be approximately 24 feet wide. Over the years, these roads have experienced severe wind and water erosion that has resulted in long, impassable stretches. The current condition of some of these roads does not allow efficient use by the USBP. Their condition thereby prohibits adequate enforcement actions within some areas. Bridges, culverts, low water crossings, gabions, water bars, and other drainage or erosion control structures are designed and constructed to reduce erosion and road maintenance activities.

The Proposed Action consists of construction of a year-round crossing over Whitewater Draw located southwest of the town of Douglas, Arizona in Cochise County. Selection criteria for this project involved a crossing, set within the 60-foot government-owned ROW from the International Border, with a 15-foot clear gap between the downstream end of the culvert and a proposed primary fence. The 60-foot ROW was acquired by the Government in May 1907 when President Roosevelt determined that it was necessary for the public welfare that a strip of land lying along the boundary line between the U.S. and Mexico be reserved from the operation of the public land laws and kept free from obstruction as a protection against the smuggling of goods between the two countries (IBWC 1936).

This project will be constructed in conjunction with road repair and maintenance activities east and west of Whitewater Draw so that the crossing will connect the existing roads being improved in this area. If the Proposed Action is implemented on the basis of this EA, the proposed project may begin in late 2001 or 2002. The project would take approximately eight to twelve weeks to complete. This project may also be accomplished in a phase approach by several separate personnel deployments. Personnel involved in the Proposed Action would be expected to work between 7:00 a.m. and 7:00 p.m., six days per week during the construction period.

Equipment to be used for the proposed action activities may include integrated tool carriers, backhoes with augers or an auger truck, backhoes with breakers, flat bed trucks, graders, water trucks, cranes, and forklifts. Equipment and construction materials would be stored at a prefabrication yard located at the City of Douglas International Airport on the east side of Douglas. Heavy equipment to be utilized during construction activities will be stored in the secured yard of the City of Douglas Wastewater Treatment Plant, located approximately 0.5 miles east of the Whitewater Draw project area. Existing roads, such as Old Smelter Road and Brooks Road, would be utilized for primary transport of equipment and personnel to the proposed project area. Existing turnouts or previously disturbed areas would also be used by equipment during construction to minimize unnecessary impacts to resources outside of the Proposed Action area. Through an

environmental briefing, all personnel would be informed about the limits of the construction area and actions permitted within and outside of that area. Additionally, construction limits would be flagged to ensure that the proposed activities stay within the construction area boundaries.

As previously mentioned, the purpose of this project is to construct a crossing at Whitewater Draw. This crossing will be provide access to the border road at Whitewater Draw and will be designed so that water will overtop the structure during a large storm, such as a 100-year storm. Given the high intensity, short duration storms typically occurring in this area, it is likely that the road will only be impassable during extreme monsoon events, which would quickly pass.

Additionally, the USBP has indicated that a fence structure of some type (i.e. bollard, landing mat, decorative, or Sandia) is desirable to enhance enforcement ability in this area and that the crossing should be planned to support inclusion of a fence structure as a future activity. Two different designs were developed that could satisfy the USBP's prupose and need: an earthen embankment with either culverts or with a modular bridge. Both designs would require that the border road be raised on an earthen embankment that would be about 1,000 feet long. The road would be paved with concrete to add stability to the infrastructure and reduce long-term maintenance requirements. Other designs that were considered and then eliminated will be discussed later. The two viable alternative designs are discussed in the following sections.

2.1.1 Low Water Crossing Using Concrete Culverts within the 60-foot ROW

This alternative addresses the construction of a low water crossing using concrete box culverts at Whitewater Draw. Figure 2.0 shows the preliminary engineering design for this alternative. A low water crossing will allow vehicles full access to the road except for a few times a year when larger storms occur. The low water crossing and box culvert system will be placed within the existing roadway, which falls within the 60-foot ROW. The concrete box culverts will pass flows that are generated from a 1-year storm or "low flows." Flows that are larger, such as a 100-year flood, will overtop the road and continue to flow in the existing drainage path. The size of the culvert structure and associated roadway located within the boundaries of Whitewater Draw are estimated to be approximately 4,250 square feet or 0.1 acre. Combined with a construction zone of 10 feet on either side of the culvert system, the total area of disturbance within the boundaries of Whitewater Draw is estimated to be 6,850 square feet or 0.16 acres. Assuming that construction activities are performed by JTF-6 troops or Army National Guard units, the approximate cost for construction materials for this system is approximately $160,000.00.

Approximately 1000 feet of roadway will be paved with concrete to allow the flow to overtop the road and to prevent the road from washing out. As the flow subsides, the road will then be able to be used immediately. The side slopes of the road will be protected from erosion by grouted riprap. The grouted riprap will be 6-inch diameter rock grouted with concrete. The concrete box culverts will be three to four barrels measuring 4-feet high by 12 feet wide. The concrete box culverts will have concrete headwalls on both the inlet and outlet. Grates will be attached to the headwalls to prevent access through the culverts.

The current roadway width in this area is approximately 20 feet. The new concrete roadway will be approximately 24 feet wide and the road embankment sides will be sloped at 3 horizontal to 1 vertical. The actual roadway footprint will be approximately 0.9 acres. Approximately 1,200 cubic

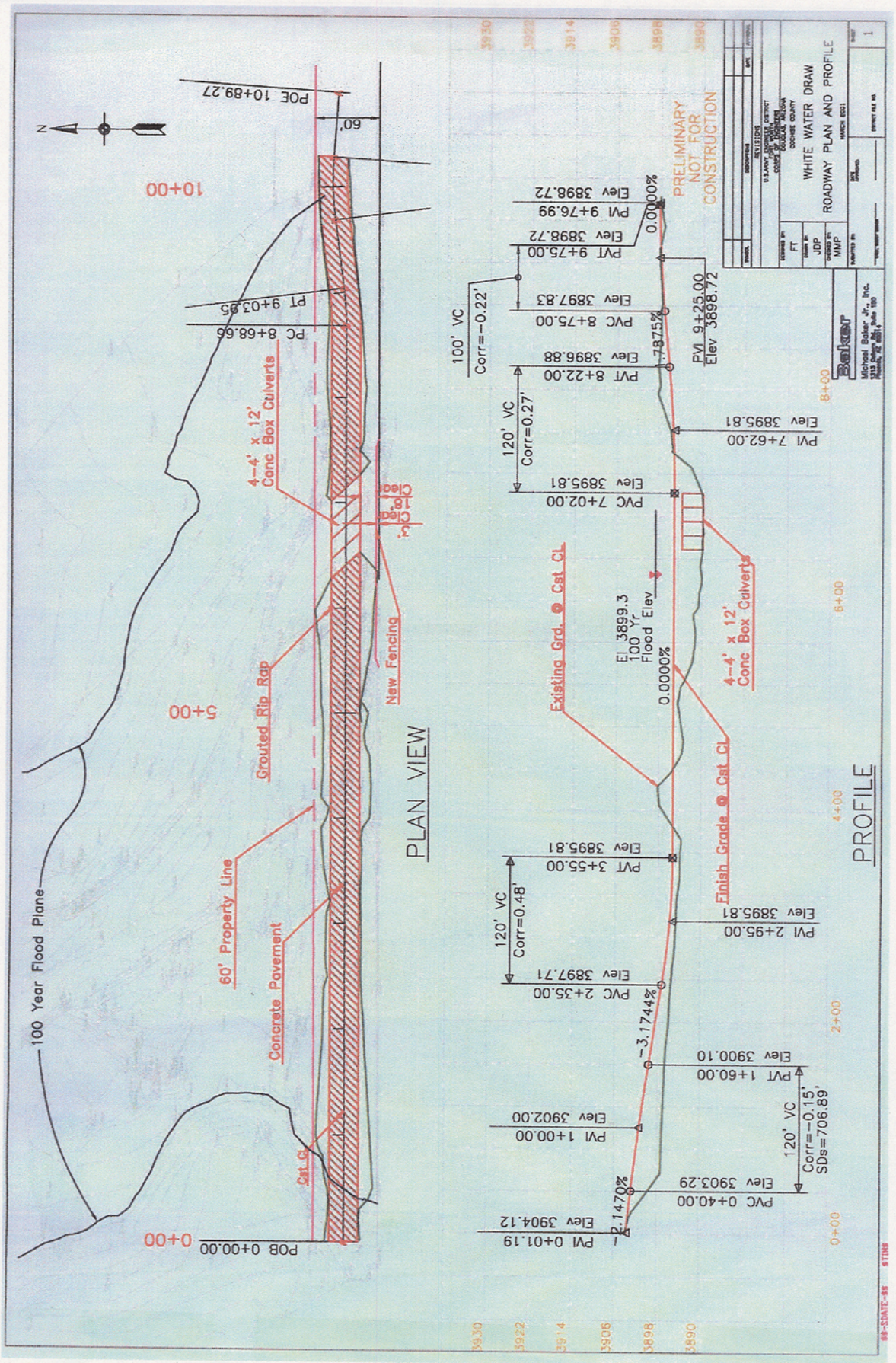

Figure 2.0 Preliminary Engineering Design for Low Water Crossing Using Culverts

yards of fill will be used to construct the roadway. Approximately 40 percent of the fill material will be borrow fill brought in from off site, while the remaining 60 percent will be taken from cut areas along the new roadway. The total area of disturbance for the roadway work, outside of the culvert construction, is estimated to be approximately 33,350 square feet or 0.76 acres. Allowing for a 10-foot construction zone on either side of the road brings the total area of disturbance to 51,950 square feet or 1.2 acres outside of the wetland boundaries of Whitewater Draw.

Approximately 230 linear feet of new primary fence will be installed where the wash crosses the border. Currently there is no fence at this location. The new fence will be a bollard type fence to pass flows and will be set three feet north of the border to allow for fence maintenance. The bollards will be placed in a staggered triangular pattern that maximizes the hydraulic opening, but still does not allow a clear space large enough for an individual to pass through. The foundations of this fence will be designed for scour and debris build-up. This area has been previously disturbed due to heavy water flow in the area; therefore, no new ground or vegetation disturbance is anticipated from the installation of the fence structure.

This alternative is the preferred alternative for this project, as it will assist the USBP in deterring illegal entry and drug trafficking in the Whitewater Draw area, have a lower economic cost, and have a lesser environmental impact than other alternatives considered for this project. Therefore, this alternative is carried through the EA for analysis.

2.1.2 Modular Panel Bridge within the 60-foot ROW

One alternative considered for this project involved the design of a modular panel bridge across Whitewater Draw. This design included a bridge with a 100-foot span designed to carry one lane of traffic with a 14-foot minimum clear deck width. Figure 3.0 shows the preliminary engineering design for this alternative. The bridge would be designed for HS-20 loading, which is the design vehicle for legal highway loads. The abutments would be designed to carry the modular bridge and would accommodate local geological and scour conditions. Roadway embankment fill would be placed within the floodplain to carry the road to the bridge opening. The total cost of construction materials for this type of system is approximately $268,950.00 (Baker 2001).

Because a bridge structure is typically more complex to build than a low water crossing using box culverts, the total area of disturbance for this type of structure is estimated to be approximately 10 percent more than for a culvert system. The area of disturbance for the bridge and road structure within the jurisdictional boundaries of Whitewater Draw is estimated to be approximately 0.18 acres. Because of the increased structure size, this alternative would require the clearing of more vegetation in the Whitewater Draw area then the Preferred Alternative.

Additionally, according to USBP personnel, any type of water crossing structure can be difficult to patrol. Because a bridge structure provides a greater potential for hiding places and cover for illegal activities than a culvert system, this structure presents an increased safety risk for USBP agents. Additionally, bridges do not perform well underwater due to buoyant forces and a bridge structure could also be at risk to damage from heavy debris flow.

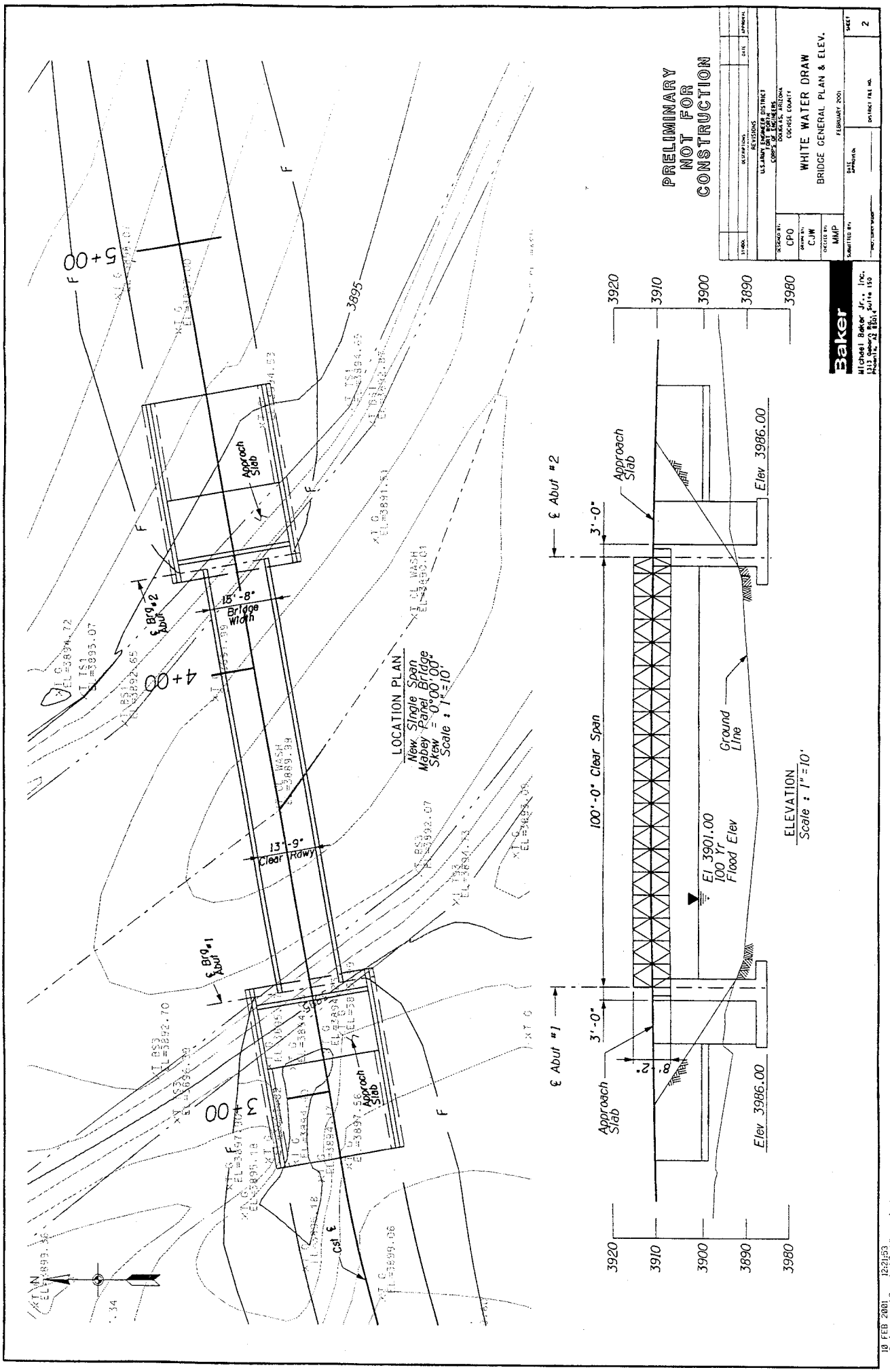

Figure 3.0 Preliminary Engineering Design for Bridge Structure at Whitewater Draw

Although this alternative was determined by the USBP to be less feasible both economically and environmentally, and less desirable due to the difficulties in patroling this type of structure, this alternative will be carried through the document for analysis as a comparison to the preferred alternative.

2.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, no improvement activities would be conducted and the border road would remain impassable during periods of inclement weather. The area would remain as it currently exists and USBP efforts to curtail illegal drug trafficking would remain unchanged. Locations that are severely eroded would remain so, and would continue to degrade, which could lead to possible environmental impacts. Although it is unlikely that significant adverse impacts would occur, the No-Action Alternative would not support the USBP's efforts to effectively reduce drug smuggling and trafficking near Douglas, Arizona. The associated violent crime would continue along the project area. Therefore, the No-Action Alternative may reduce the USBP's ability to fulfill its mission as described in Chapter 1.0.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.3.1 Low Water Crossing within the 60-foot ROW

This alternative would involve the construction of only a low water crossing over Whitewater Draw within the 60-foot right-of-way (ROW) of the International Border. The low water crossing would involve pavement of the existing border access road with concrete extending 1,000 feet from the east side of Whitewater Draw to the west side. There would be no culverts or drainage structures installed with this alternative; instead, water would be allowed to flow over the road during any flood event. During floodwaters, the road would most likely remain impassable until floodwaters receded to an acceptable level that would allow for safe passage. Additionally, possible floodwaters could wash away a fence structure that may be constructed at a later date. This alternative would not accomplish any change in access from the current conditions and would not allow for access to this portion of the road during even minor flood periods, thereby inhibiting the USBP in fulfilling its mission. Due to these constraints, this alternative was eliminated from further consideration and was not carried forward through the analysis.

2.3.2 Alternate Distance from the International Border

Another alternative considered for this project is the construction of the water crossing structure outside of the 60-foot ROW zone, at a distance of approximately 120 feet north of the International Border. Whether this structure is a low-water crossing, with or without culverts, a bridge, or a combination of any of these structures, the 120-foot distance would involve a greater disturbance to vegetation. Since it is imperative that the USBP agents have a clear line of sight to the International Border, this alternative would require the clearing of all vegetation between the water-crossing structure and the International Border. This would result in clearing approximately 0.36 total acres of vegetation for that section of the project located within the 40-meter boundary of Whitewater Draw itself (130 feet wide x 120 feet long equals 15,600 square feet, which divided by 43,560 ft^2/acre equals 0.36 acres). The loss of vegetation would thereby result in the loss of wildlife habitat and an increase erosion hazard in the area.

Concerns outside of the vegetation disturbance include land acquisition of new areas, disturbance of surrounding vegetation for construction activities, right-of-entry for construction activities, and additional costs to construct new roads and to connect those new roads to the existing border roads. The construction of connecting or new roads, rather than use of existing roads, would require land and/or ROW clearance, as well as additional engineering planning and construction. New access roads may require construction through the adjacent copper smelting slag piles owned by the Phelps Dodge Corporation just east of Whitewater Draw.

Additionally, USBP agents at the Douglas Station indicate that a sole water crossing structure at the 120-foot distance would in effect cede the geography between that structure and the International Border to illicit cross-border activity. The USBP's enforcement strategy is predicated upon deterrence at the immediate border. Locating the water crossing structure at the 120-foot distance not only removes the USBP from a tactically preferred position, but also creates cover for aliens and drug smugglers to hide after having breached the International Border, well inside the U.S. The sight of a potential hiding place just 120-feet from the International Border is a known attractant to illegal activity.

This alternative would require additional time, be very costly, and would have the potential for increased environmental impacts. Due to these constraints, this alternative was eliminated from further consideration and was not carried forward through the analysis.

3.0 AFFECTED ENVIRONMENT

The affected environment is the baseline against which potential impacts caused by the Proposed Action and alternatives are assessed. This chapter focuses on those resources specific to the proposed project area that have the potential to be affected by activities connected with construction of a crossing at Whitewater Draw, road repairs and improvement activities, and changes in USBP activities resulting from these activities.

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 Air Quality

The State of Arizona has adopted the National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) as the state's air quality criteria (Appendix B). Primary standards are established to protect public health, while secondary standards provide protection for the public's welfare, including wildlife, climate, recreation, transportation, and economic values. States are required to adopt ambient air quality standards that are at least as stringent as the Federal NAAQS; however, the State standards may be more stringent.

A number of man-made sources of air contaminants affect the air quality of the border region. In Douglas, old tailings piles, quarries, material handling and storage, and haul roads are major sources of particulate matter (ADEQ 1990). Transport of pollutants, especially fine particulates, from maquiladoras located in Mexico (manufacturing plants) into the study area also contributes periodically to air quality degradation.

According to EPA's Region 9 (which includes Cochise County) 1996 publication, Breathing Easier, has shown a substantial improvement in air quality over the last 10 years in Cochise County. Despite an increase in automobile 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 air pollutant levels exceeded national air quality standards and a reduction in the actual air pollutant concentration levels for six criteria pollutants (Carbon Monoxide, Nitrogen Dioxide, Ozone, Lead, Particulates, and Sulfur Dioxide).

Air quality in the proposed project area is typically very good. Prevailing meteorological conditions are not conducive to the concentration of pollutant emissions. Daily winds tend to disperse harmful air emissions. The major source of gaseous criteria pollutants is from urban activities in Douglas, while particulate matter (PM_{10}) is produced by a combination of windblown dust and uncontrolled burning and heavy industry conducted in Mexico near the U.S.-Mexico border (USACE 1998).

The ADEQ, Monitoring Section is responsible for monitoring air quality in the area and currently has one PM_{10} station and two MET (meteorological) stations located in Douglas, Arizona. The closest air monitoring station monitoring for the remaining priority pollutants is located in Tucson, Arizona (USACE 1997b). Cochise County is currently in attainment with established national and

state air quality standards for all pollutants with the exception of PM_{10} in Douglas (USACE 1998) (Appendix B) (EPA 1996). Because Douglas is located on the U.S.-Mexico international border, the ADEQ has determined that influences from Mexico are responsible for the nonattainment status of the area (USACE 1998). Therefore, Douglas is classified in the 1993 Final State Implementation Plan (SIP) as a border area exception for PM_{10}.

3.2 LAND USE

The proposed project area consists mainly of undeveloped land (open space and rangeland) and border access roads and is controlled by private ownership. The proposed project area is located adjacent to the U.S.-Mexico border, near residential areas located by the POE and near the city limits for Douglas, Arizona. Large scale mining operations and copper smelting slag piles are evident northeast and east of the proposed project area at Whitewater Draw.

Access to those areas located adjacent to the city limits of Douglas is provided by public roads. The proposed project areas are utilized primarily by the USBP agents, City of Douglas personnel, and local landowners.

3.3 GEOLOGICAL RESOURCES

Geological resources include physical surface and subsurface features of the earth such as topography, geology, soils, and the prime farmlands 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 Mexican Highlands sub-province USACE 1995). The Douglas Basin valley slopes southward, with elevations ranging from 4,350 feet above mean sea level in the hills that form the basin's northern boundary to 3,900 feet above mean sea level along the International Boundary. The adjacent mountains have elevations ranging from 6,390 feet in the Perilla Mountains to 7,185 feet in the Swisshelm Mountains.

3.3.2 Soils

According to the Natural Resource Conservation Service (NRCS), the main soil association of Whitewater Draw is from the White House-Tubac-Forrest Association (Appendix C, NRCS 1974). Information on these soils obtained from the NRCS in Higley, Arizona, indicates White House-Tubac-Forrest soils are very deep soils that formed in fan alluvium from mixed sources. White House soils occur on fan terraces and have slopes of 0 to 35 percent. These soils are well-drained with slow or medium runoff and exhibit slow or very slow permeability. White House soils are used for rangeland and wildlife habitat. A few areas are used for homesites and other urban uses. Tubac soils are found on fan terraces and basin floors and have slopes of 0 to 8 percent. These soils are well drained, exhibit medium runoff and slow permeability. Tubac soils are used for rangeland

and irrigated cropland. Forrest soils are found on basin floors, fan terraces, and fan piedmonts and have slopes of 0 to 15 percent. These soils are well drained and have slow or medium runoff and slow permeability. Forrest soils are used for rangeland and wildlife habitat.

3.3.3 Prime Farmland

According to 16 USC 590a-f (7 CFR 2.62 Pub. L. 95-87; 42 USC 4321 et seq.), prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

There are no unique farmlands located with the study area of Whitewater Draw. The closest prime farmlands are classified as Category 1 soils that occur mainly with the San Pedro River Valley, more than 20 miles west of Whitewater Draw (INS 2000).

3.4 WATER RESOURCES

The following sections describe surface water 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

According to information obtained from the Arizona Department of Water Resources (ADWR), the proposed project area is located in the Douglas Basin. The basin covers approximately 750 square miles and its alluvial valley is about 15 miles wide and 35 miles long. The basin is drained by Whitewater Draw, which heads in the Chiricahua Mountains in the adjacent Wilcox basin. Whitewater Draw is ephemeral over nearly its entire reach in the U.S. and only flows in response to local rainfall.

Groundwater in the Douglas Basin is found in both the basin-fill and in the mountain bedrock. The main aquifer in the basin is the basin-fill sediments, which supply water to large-capacity irrigation wells. The mountain bedrock provides relatively minor amounts of water from localized sources, usually enough for low-use stock and domestic wells. Groundwater in the basin-fill is found mostly in unconfined (water-table) conditions. Unlike many groundwater basins in southeastern Arizona, the Douglas Basin has no well-defined confined aquifer because there is no single, regional confining layer in the basin-fill; however, interbedded clay and silt layers in the basin-fill do result in both localized, confined conditions and perched water tables.

Water levels in the basin-fill measured in 1990 ranged from 50 feet below land surface to 296 feet below land surface (ADWR 2001). Water-level declines have occurred since the late 1940's; prior to then, groundwater pumpage was less than recharge and had little impact on basin-wide water levels. Precipitation in the mountains is the main source of groundwater recharge in the Douglas Basin. A small amount of groundwater may enter as underflow through the course of Whitewater Draw and several other ephemeral streams that flow into the basin along its northern boundary. Total recharge into the basin is estimated to be 22,000 acre-feet per year (ADWR 2001).

Most groundwater pumped in the Douglas Basin is used for irrigation. Stock and domestic pumpage is minor except near Douglas where pumpage by the City of Douglas for domestic use is significant. The basin has no surface water supplies and is totally dependent on groundwater for its water needs.

3.4.2 Surface Water

The proposed project area receives surface runoff from precipitation and snow melt in the local mountains. The only surface water resource associated with this project is Whitewater Draw. The Whitewater Draw Basin is part of the greater Yaqui River system. Immediately south of the international border, Whitewater Draw becomes the Agua Prieta River and continues south into Mexico as the Bavispe and Yaqui rivers. Within the Sulphur Springs Valley, the amount of surface water available is primarily determined by the magnitude of precipitation in the surrounding uplands. Due to the flash flood tendency of the washes, sediment loads are high during the monsoon season.

The U.S. Army reported Whitewater Draw as having a slight flow of water approximately 6 inches deep during two separate visits (USACE 1998). Water was present in recent site visits made to the proposed project area in September 2000, January 2001, and March 2001; however, water may be impounding where Whitewater Draw crosses the border due to recent flow restrictions in Mexico. Surface water quality in the area is generally good, with almost all water coming from wells; however, specific instances of water quality violations within the proposed project area have occurred in the past (USACE 1993). Two portions of Whitewater Draw northwest and north of Douglas have shown problems with dissolved oxygen, lead, manganese, zinc, arsenic, beryllium, copper, and turbidity. Mining operations and grazing have attributed to these concerns (INS 2000).

3.4.3 Water Quality

The ADEQ recognizes the geologic and hydrologic diversity of the state by delineating major river basins and reservoirs/lakes as classified segments. The ADEQ is also responsible for adopting or removing the "designated uses" of each classified segment by formal ruling.

The ADEQ has determined that the quality of groundwater in the Douglas Basin is suitable to marginal for most uses. High concentrations of fluorides occur locally, making some water marginal for domestic uses. Fluoride concentrations in the samples collected ranged from 0.3 to 8.5 mg/l and averaged 1.1 mg/l (ADWR 2001). The maximum contaminant level for fluoride in drinking water is 4.0 mg/l. Total dissolved solids concentrations for samples collected from the main aquifer between 1987 and 1990 ranged from 229 to 630 milligrams per liter (mg/l) and

averaged 390 mg/l. The recommended secondary maximum contaminant level for total dissolved solids in drinking water is 500 mg/l.

Information obtained from the EPA Watershed Health Information website notes that Whitewater Draw scored a 3 on overall water quality which indicates it has less serious water quality problems and has a low vulnerability to stressors such as pollutant loadings (EPA 2001). Further information indicates that two portions of Whitewater Draw located north and northwest of Douglas have shown problems of dissolved oxygen, lead, manganese, zinc, beryllium, copper, and turbidity (INS 2000).

3.4.4 Jurisdictional Waters of the United States

Section 404 of the CWA of 1977 authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into water of the U.S., including wetlands. Waters of the U.S. (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters including interstate wetlands. Waters of the U.S. are further defined as all other waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas. Wetlands are those areas inundated or saturated by surface waters or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987). Jurisdictional boundaries for these water resources are defined in the field as the ordinary high water mark (OHWM), which is that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Whitewater Draw is most likely considered a wetland area under Section 404 due to the presence of hydric vegetation, soils, and indicators. Activities that result in the dredging and/or filling of jurisdictional waters of the U.S. will be coordinated through the U.S. Army Corps of Engineers under an individual permit prior to implementation of the proposed project.

3.4.5 Floodplains

Under Federal regulations, all Federal agencies are directed to avoid, if possible, development and other activities in the 100-year base floodplain. Where the base floodplain cannot be avoided, special considerations and studies for new facilities and structures are needed. Federal agencies are required to 1) reduce the risk of flood loss; 2) minimize the impact of floods on human safety, health, and welfare; and 3) restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility. Whitewater Draw falls within the boundaries of the 100-year floodplain as noted in Appendix C.

3.5 BIOLOGICAL RESOURCES

Biological resources include native plants and animals in the region around the proposed project site. The proposed project area supports a plant community defined as semidesert grassland, a perennial grass-scrub community that is usually located between desert scrub and higher elevation

plant communities (Brown 1982). This habitat type is found in southeastern Arizona, southwestern New Mexico, and northern Mexico between elevations of 4,000 and 8,000 feet and receives an annual rainfall between 11 and 17 inches per year.

3.5.1 Vegetation

Although the extreme lower and upper elevations are classified as Sonoran and Madrean, respectively, the majority of Cochise County is representative of the Chihuahuan Desertscrub Biogeographic Province (Brown and Lowe 1980). This is generally characterized by arid highland plains and basins bounded by extensive uplands. Individual biotic settings are somewhat mosaic in nature and include elements of the Sonoran Desertscrub. The basin zone is dominated by creosote (*Larrea tridentata)* and desert sumac *(Rhus microphylla);* white agave, Chihuahuan white-thorn *(Acacia constrictor vernicosa*), honey mesquite *(Prosopis juliflora)*, and ocotillo *(Fourquieria splendens)* are found within the bajada setting. Dispersed though out the drainage systems of all three zones are elements of the Sonoran Riparian community.

Vegetation observed during the September 2000 site visit was predominantly desert thorn scrub with a canopy cover ranging from 40 to 75 percent, excluding roads and cleared areas. The proposed project area was disturbed by commercial ventures (mining, stockyards), had large areas of cleared vegetation, and was subject to growth of invasive weedy species (Johnsongrass, ragweed) in much of the area. The dominant shrubs noted in the Whitewater Draw area included whitethorn acacia (*Acacia constricta*), mesquite (*Prosopis glandulosa*), and tamarisk (*Tamarix* spp.). Additional shrubs included snakeweed *(Gutierrezia* spp.), tarbush (*Flourensia cernua*), desert broom (*Baccharis sarothroides*), and creosote. Scattered grasses included cat tail (T*ypha latifolia*), Johnson grass (*Sorghum halepense*), alkali sacaton (*Sporobolus airoides*), tobosa grass (*Hilaria mutica*), and grama grasses (*Bouteloua spp*).

3.5.2 Wildlife

Common reptiles that could be found within the general project area include the Couch's Spadefoot (*Scaphiopus couchi*), western green toad (*Bufo debilis insidior*), mud turtle (*Kinosternon subrubrum*), desert box turtle (*Terrapene ornate luteola*), Tucson banded gecko *(Coleonyx bogerti*), zebra-tailed lizard (*Callisaurus draconoides*), southwestern greater earless lizard *(Cophosaurus texanus*), leopard lizard (*Gambelia wislizenii*), regal horned lizard (*Phrynosoma solare*), desert spiny lizard (*Sceloporus magister*), common tree lizard (*Urosaurus ornatus*), western whiptail (*Cnemidophorus tigris*), desert-grassland whiptail (*C. uniparens*), glossy snake (*Arizona elegans noctivaga*), western hook-nosed snake (*Gyalopion canum*), night snake (*Hypsiglena torquata*), common kingsnake (*Lampropeltis getulus*), coachwhip (*Masticophis flagellum*), long-nosed snake (*Rhinocheilus lecontei*), Mexican hognose snake (*Heterodon nasicus bennerlyi*), ground snake (*Sonora semiannulata*), Mexican black-headed snake (*Tantilla antriceps*), Mexican garter snake (*Thamnophis eques*), Arizona coral snake (*Micruroides euryxanthus*), western diamondback rattlesnake (*Crotalus atrox*), banded rock rattlesnake (*C. lepidus*), and the black-tailed rattlesnake (*C. molossus*) (Bebler and King, 1979).

Common mammals found in the general project area include the white-tailed deer *(Odocoileus virginianus*), mule deer (*O. hemionus*), coyote (*Canis latrans*), javelina (*Tayassu tajacu*), striped skunk (*Mephitis mephitis*), hooded skunk (*Mephitis macroura*), mountain lion (*F. concolor*), bobcat

(*Lynx rufus*), desert shrew (*Notiosorex crawfordi*), Mexican long-tongued bat (*Choeronycteris mexicana*), desert cottontail (*Sylvilagus audubonii*), black-tailed jack rabbit (*Lepus californicus*), white-sided jackrabbit (*L. callotis*), spotted ground squirrel (*Spermophilus spilosoma*), rock squirrel (*S. variegatus*), Arizona gray squirrel (*Sciurus arizonensis*), desert pocket mouse (*Chaetodipus penicillatus*), western harvest mouse (*Reithrodontomys megalotis*), cactus mouse (*P. eremicus*), brush mouse (*P. boylii*), southern grasshopper mouse (*Onychomys torridus*), and the white-throated woodrat (*Neotoma albigula*) (Whitaker, 1980).

Common birds species in the general project area include the turkey vulture (*Caithartes aura*), red-tailed hawk (*Buteo jamaicensis*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), kestrel (*Falco sparverius*), red-winged blackbird (*Agelaius phoeniceus*), mourning dove (*Zenaida macroura*), white-winged dove (*Z. asiatica*), common ground dove (*Callipepla passerina*), scaled quail (*C. squamata*), Gambel's quail (*C. gambelii*), greater roadrunner (*Geococcyx californianus*), common poorwill (*Phalaenoptilus nuttallii*), ash-throated flycatcher (*Myiarchus cinerascens*), brown-crested flycatcher (*M. tyrannulus*), cactus wren (*Campylorhynchus brunneicapillus*), rock wren (*Salpinctes obsoletus*), varied bunting (*Passerina versicolor*), white-crowned sparrow (*Zonotrichia leucophrys*), Cassin's kingbird (*Tyrannus vociferans*), western kingbird (*T. verticalis*), and the blue grosbeak (*Guiraca caerulea*) (Bull and Farrand, 1996).

Wildlife species observed during the September, 2000 and March, 2001 site visits were feral dogs, black-tailed jack rabbit, red-tailed hawk, common raven, kestrel, turkey vulture, mourning dove, and great roadrunner.

3.5.3 Aquatic Species

Aquatic habitat is limited to Whitewater Draw as described in Section 3.4.2. No fish species were noted during the September, 2000 or the March, 2001 site visits. A few amphibians, such as tadpoles, were observed during the March, 2001 site visit. Additionally, adult toad or frog croaking was heard in the vegetation at Whitewater Draw; however, no species were sighted to allow identification.

3.5.4 Threatened and Endangered Species

The Endangered Species Act (ESA) [16 USC 1531 et. Seq.] of 1973, as amended, was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All Federal agencies are required to implement protection programs for designated species and to use their authorities to further the purposes of the Act. Responsibility for the identification of a threatened or endangered species and development of any potential recovery plan lies with the Secretary of the Interior and the Secretary of Commerce. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are the primary agencies responsible for implementing the ESA. The USFWS is responsible for birds and terrestrial and freshwater species, while the NMFS is responsible for non-bird marine species.

An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been

formally submitted to Congress for official listing as threatened or endangered. In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate (C) designation includes those species for which the USFWS has sufficient information on hand to support proposals to list as endangered or threatened under the ESA. However, proposed rules for this listing have not yet been issued because such actions are precluded at present by other listing activity.

The ESA also calls for the conservation of critical habitat, which is defined as the areas of land, water, and air space that an endangered species needs for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. One of the primary threats to many species is the destruction or modification of essential habitat by uncontrolled land and water development.

Many Federally- and State-listed threatened and endangered species of plants, fish, and wildlife could occur in Cochise County. A list of these species as provided by the ANHP and the USFWS can be found in Table 3-1.

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

COMMON NAME	SCIENTIFIC NAME	ESA	Critical Habitat	USFWS	WSCA	NPL	NESL
Mexican Gray Wolf	*Canis lupis baileyi*	LE					
Ocelot	*Felis pardalis*	LE					
Jaguar	*Panthera Onca*	LE					
Jaguarundi	*Felis yagouaroundi*	LE					
Chiricahua Leopard Frog	*Rana chiricahuensis*	C		S	WC		
Lowland Leopard Frog	*R. Yavapaiensis*	SC		S	WC		
Baird's Sparrow	*Ammodramus bairdii*	SC		S	WC		
Ferruginous Hawk	*Buteo regalis*	C		S			Y
American Peregrine Falcon	*Falco peregrinus anatum*	LE	Y	S	WC		Y
Northern Aplomado Falcon	*F. femoralis septentrionalis*	LE					
Bald Eagle	*Haliaeetus leucocephalus*	LE					
Whooping Crane	*Grus Americana*	LE		S	WC		
Mexican Spotted Owl	*Strix occidentalis lucida*	LE					
Black-Tailed Prairie Dog	*Cynomys ludovicianus*	C		C			
Gila Chub	*Gila intermedia*	C					
Mountain Plover	*Charadruis montanus*	C		S	WC		
Southwestern Willow Flycatcher	*Empidonax trailliextimus*	LE					
Yaqui Chub	*Gila purpurea*	LE			WC		
Beautiful Shiner	*Cyprinella formosa*	LT		S	WC		
Yaqui Topminnow	*Poeciliopsis occidentalis sonoriensis*	LE		S	WC		
Yaqui Catfish	*Ictaluius pricei*	LT					
Lesser Long-Nosed Bat	*Leptonycteris curasoae yerbabuenae*	LE		S	WC		
Lemmon Fleabane	*Erigeron lemmoni*	C					

New Mexican Ridge-Nosed Rattlesnake	*Crotalus willardi obscurus*	LT					
Huachuca Springsnail	*Pyrgulopsis thompsoni*	C					
Arizona Shrew	*Sorex arizonae*	SC		S	WC		
Cochise Pincushion Cactus	*Coryphantha Robbinsorum*	LT		S		HS	
Huachuca Water Umbel	*Lilaeopsis scaffneriana var recurva*	LE		S		HS	
Canelo Hills Ladies'-Tresses	*Spiranthes delitescens*	LE		S		HS	
Sonoran Desert Tortoise	*Gopherus agassizii*	SC		S	WC		
Massasauga	*Sistrurus catenatus*	LT		S	WC		
Sonoran Tiger Salamander	*Ambystoma tigerinum stebbinsi*	LE		S			
Mexican Garter Snake	*Thamnophis eques megalops*	SC		S	WC		

TABLE KEY:

C	Species of Concern
ESA	Endangered Species Act (1973 as amended).
LE	Listed Endangered: imminent jeopardy of extinction
LT	Listed Threatened
NESL	Navajo Endangered Species List (1997).
NPL	Arizona Native Plant Law, Arizona Department of Agriculture. HS – Highly safeguarded, no collection allowed. SR – Salvage restricted, collection only with permit.
S	Sensitive: those taxa occurring on National Forests in Arizona which are considered sensitive by the Regional Forester.
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 USFWS, but neither term has official status.
USFWS	U.S. Fish and Wildlife Service
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.

No evidence of the Federally- or State-listed species threatened or endangered species was observed during the September 2000 or the March 2001 site visit. Additional information on these species can be found in Appendix D.

Several Federally-listed fauna species were reported as having the potential to occur in Cochise County. The following information briefly describes the preferred habitat of these species.

The Southwestern Willow Flycatcher prefers dense willow, cottonwood, and tamarisk thickets and woodland along rivers and streams at low elevations. These dense patches are often interspersed with small openings, open water, or shorter/sparser vegetation, creating a mosaic that is not uniformly dense. Critical habitat for this species exists on portions of the 100-year floodplain on the 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 (Federal Register 1997).

The Mexican Gray Wolf prefers a chaparral, woodland, or forested habitat, but has been known to cross desert areas. Unconfirmed reports of individual wolves in the southern part of the State continue to be received; however, the majority of the wolves are believed to reside in Mexico.

The Ocelot prefers a habitat of humid tropical and sub-tropical forests, savannahs, and semi-arid thornscrub. Unconfirmed reports of individual ocelots in the southern part of the State of have been received.

The Jaguar prefers evergreen-woodland, shrub-invaded semi-desert grassland and along rivers. The most recent records of a Jaguar in the U.S. are from the New Mexico/Arizona border area and in southcentral Arizona.

The Sonoran Tiger Salamander's habitat varies from arid sagebrush plains to mountain forests, where the ground is easily burrowed. They are seen mostly at night following heavy rains and they

live beneath debris near water or in mammal burrows. Known habitat for this species occurs in stock tanks and impounded cienegas in San Rafael Valley and the Huachuca Mountains.

The Bald Eagle prefers large trees or cliffs near water with abundant prey, which are not present in the proposed project area.

The Mexican Spotted Owl nests in older forests of mixed conifer or ponderosa pine-gambel oak type, in canyons. Sites with cool microclimates appear to be of importance or are preferred.

The Northern Aplomado Falcon formerly nested in the southwestern U.S. and occurs only as an accidental. Good habitat for this species contains low ground cover and mesquite or yucca for nesting platforms. There have been no recent confirmed reports of this species in Arizona.

The American Peregrine Falcon prefers open country, especially along rivers. It also lives near lakes, along coasts, and in cities.

The Whooping Crane prefers freshwater bogs and winters on coastal prairies.

The Yaqui Topminnow is found in small streams, springs, and cienegas vegetated shallows and has historically existed in the Santa Cruz River near Tucson.

The Yaqui Chub is found in perennial and intermittent small to moderate streams with boulders and cliffs.

The Lesser Long-Nosed Bat prefers the habitat offered by caves and mines where the mountains rise from the desert. This species roosts in caves and abandoned tunnels during the day and forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti.

There are three Federally-listed plant species that occur in Cochise County. The Cochise Pincusion cactus grows on gray limestone hills in semi-desert grassland communities with small shrubs, agave, other cacti, and grama grass. The Huachuca water umbel is typically located in cienegas, perennial low gradient streams or wetlands. This species can also be found adjacent to Sonora,

Mexico. The Canelo Hills ladies-tresses are found in finely grained, highly organic, saturated soils of cienegas. Potential habitat for this species may occur in Sonora, Mexico, but no populations have been found.

There are 17 Federally-listed fauna species of concern for Cochise County. Most of these species, with the exception of the mountain plover, prefer floodplain terraces, pools, springs or streams, rivers or stock tanks. No permanent surface water resources exist within or adjacent to the proposed project location. The mountain plover typically prefers a sandy soil habitat and has historically been sighted in this area as a migratory species.

3.6 NOISE

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures etc.) or subjective judgments (community annoyance). Measurement and perception of sound involves two basic physical characteristics: amplitude and frequency. Amplitude is a measure of the strength of the sound and is directly measured in terms of the pressure of a sound wave. Because sound pressure varies in time, various types of pressure averages are usually used. Frequency, commonly perceived as pitch, is the number of times per second the sound causes air molecules to oscillate. Frequency is measured in units of cycles per second, or Hertz (Hz). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as a sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB (INS 2000).

The proposed project area is located away from noise sensitive sites such as schools, churches, hospitals, etc. The ambient noise environment within the general area is typical of rural areas with projected noise levels ranging from about 35 to 55 average-weighted decibels (dBA) day/night noise level (Ldn). These levels may be substantially higher when the wind blows USACE 1995). Current noise in this area is generated by USBP vehicles patrolling the border and vehicles passing through the POE.

3.7 CULTURAL RESOURCES

Historic and archaeological resources are nonrenewable resources whose values may be easily 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. The cultural history of the project area is long and varied. The following chronology summarizes the human habitation of southeastern Arizona.

The following chronology has seven temporal subdivisions: the Paleo-Indian (11,000-9,000 B.C.), Archaic (8,000-300 B.C.), early Formative (300 B.C.-A.D. 800), late Formative/Preclassic (A.D.800-1150), Classic (A.D. 1150-1450), Protohistoric (A.D. 1450-1853), and Historic (A.D. 1853-1950) periods. It partially incorporates the chronological scheme initially proposed by Sayles (1945), with several major revisions. These are based on cross-dated ceramics that are temporally distinct and have been placed within the chronology using dendrochronology and radiocarbon dates. These ceramic types have stylistic correlates with locally made pottery and are often found in direct stratigraphic associations. Since temporal reference within the current study area is generally poor,

radiocarbon, archaeomagnetic, and dendrochronological data in association with the stylistic correlates from outside southeastern Arizona are used.

The Paleo-Indian Period

The Paleo-Indian period is well documented in southeastern Arizona. Representing the earliest known occupation of the American continent, the Paleo-Indian period in southeastern Arizona is generally considered to cover the span of time from 11,000 to 8,000 B.C. Although the specifics that shaped cultural development are poorly understood, general patterns and processes are apparent. The archaeological record suggests that Paleo-Indian populations were small and dependent on the exploitation of megafauna and wild plants. The high degree of technological conformity and continental distribution of sites and isolated points indicate that this cultural complex was specialized, widespread, and highly mobile.

The Archaic Period

The Paleo-Indian complex gave way to numerous regional expressions assigned to the Archaic period (8,000 to 300 B.C.). Environmentally, the early and middle Archaic witnessed warmer temperatures, decreased precipitation, and the extinction of the megafauna. Adaptations to these changes initially corresponded to the use of a broader spectrum of fauna and floral resources. These generalized adaptations thus represent hunter-gatherer traditions with a high degree of residential mobility.

An expansion of the chipped stone assemblage is evidenced by refined biface production, diverse formal tool production, and the use of high-quality raw materials. A greater variety of ground stone implements and the use of basketry are apparent. The increased use of ground stone also marks the slow transition from the mobile hunter-gatherer to the slightly more sedentary horticultural traditions. In southeastern Arizona this shift occurred earlier than in western and northern portions of the state.

The Early Formative Period

The Early Formative Period is characterized by the formation of a rather uniform cultural expression in southeast and central Arizona, as well as in southern New Mexico and northwestern Mexico, including the introduction of ceramics. Revisions of the phases are outlined by Sayles (1945). These include the Peñasco (300 B.C. to A.D. 600), Dos Cabezas (A.D. 600 to 700), and Pinaleño (A.D. 700 to 800) phases.

The Late Formative/Preclassic Period

The Late Formative/Preclassic period, which includes the Galiuro Phase (A.D. 800-950), the Early Encinas Phase (A.D. 950/1000 to 1050/1100), and the Late Encinas Phase (A.D. 1050/1100 to 1150), is defined by increased cultural differentiation throughout southeastern Arizona. It is also distinguished by the adoption of irrigation systems and changes in ceramic production and exchange, as well as in settlement patterns. This period culminates in the abandonment of large portions of the San Simeon and Sulphur Springs Valleys around A.D. 1150.

The Classic Period

Regionalism, agricultural intensification, and exchange/alliance networks define the Classic Period. The Classic Period includes the Ringo Phase (A.D. 1150-1300, and the Tularosa Horizon) and the Webb and Kuykendall Phases (A.D. 1300 to 1450, and the Gila Horizon). These processes are

distinguished by specific and rapid changes in ceramic production and exchange, as well as repeated reorganization of settlement patterns, the integration of upland dry-farming systems, and the adaptation of upland irrigation. This period culminates in the abandonment of most of southeastern Arizona around A.D. 1450. Critical to the temporal reconstruction of the Classic period presented below is the relationship between southeastern Arizona and the emergent regional systems in northwestern Chihuahua and northeastern Sonora.

The Protohistoric Period

The Protohistoric period can be subdivided into early (A.D. 1450 to 1535), middle (A.D. 1535 to 1700), and late (A.D. 1700 to 1853) phases. The early phase represents the aftermath of widespread regional prehistoric abandonment and population movement. The rise and decline of the Jano, Jocome, Manso, Suma, and Opata delineate the middle phase. The late Protohistoric phase is characterized by usurpation and dominance by the Athabascans.

The Historic Period

Historic occupation of Sulphur Springs Valley began slightly later than in the Tucson Basin, which had a heavy Spanish colonial component in the 1690s with the arrival of the Jesuit missionary Eusebio Francisco Kino (Doelle 1984). The beginning of the historical period in the Tucson Basin corresponds to the latter Protohistoric period in Sulphur Springs Valley. This region was not as deeply affected by Spanish missionary activities like its western Tucson-region neighbors, instead, the late 1600s brought the introduction of nomadic Chihuahuan groups into the region, fleeing the results of Spanish contact in Mexico (Sheridan 1995).

In the 1700s, Sulphur Springs Valley was affected by Apache raiding, which was carried out by the native inhabitants of the region in response to the Spanish occupation in Southern Arizona, particularly in the more heavily Spanish portion of the Tucson Basin. The raids affected ranching, agriculture, small boomtowns, and railroad construction. The Apache were able to dominate the region until the late 1800s, when the dissolution of the Chircahua reservation occurred (Sheridan 1995).

Several groups formed in the developing boomtowns to serve as protection from Apache raiding and general criminal activity. The discovery of metals and minerals in the Dragoon and Mule mountains drew a wide variety of people. People interested in working in the mines and towns arrived, as well as "cowboys" - a term which became synonymous with criminals such as robbers, outlaws, and rustlers (Bailey 1999). Members of the protective groups, known as "rangers" or "guards," acted as paramilitary against "frontier lawlessness" (Bailey 1999).

The purchase of southern Arizona from Mexico in 1853 by the United States brought the arrival of a large number of Anglo settlers into the region. At this time, to protect the recent settlements and transportation networks, United States military stations were set up in order to prevent further Apache raiding. The socioeconomic system of the Apaches was further disrupted when they were barred from their traditional hunting-gathering and agricultural areas. The Chiricahua homeland was recognized in 1872, and two years after the death of Chief Cochise in 1874 the Chiricahua Apaches were moved to reservations in the San Carlos area by the United States military. This act also brought an end to the Apache raiding of the Sulphur Springs Valley area.

The main line of the Southern Pacific railroad was built through the Willcox Basin in 1880. Soon mining camps were established at Gleeson, Pearce, Bisbee, and Courtland. By the early 1900s, a smelter was built at Douglas to process the ore supplied by the nearby mines. This was followed by the construction of a series of railroad spurs by the Mexico and Colorado (M&C), an incorporation of the El Paso and Southwestern Railroad Company (EP&SW) and the Arizona and Colorado (A&C) part of the Southern Pacific Railroad Company (SP). These transportation systems were built in stages between 1902 and 1909. The stage line between the Kelton Station and Black Knob was never made operational and construction on the Naco stage was halted. A large, complex joint-use railroad station was built at Kelton to integrate these systems. With the incorporation of the EP&SW in 1924 these system were absorbed into the SP railroad network. The influence of the railroad rapidly declined between 1924 and the 1940s as several spurs were deactivated and stations closed. The last of the rail, ties, and other operational equipment of all but one of these spurs was removed by 1933 (Myrick 1975).

On September 13 and 15, 2000, archaeologists from SWCA, Inc. completed a supplemental archaeological survey of approximately 12 miles of border road to the west of Douglas, and an eastern portion that included approximately seven miles extending east from the POE at Douglas. In addition to this survey, previously recorded sites in these areas were relocated and marked as part of this project as well.

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 characteristics of the general project area is mostly of open space and low rolling hills covered by native grasses and vegetation. Both side of the international border are well populated in the areas close to the POE. Outlying areas consist of a few isolated dwellings on either side of the international border. Most of the aesthetic resources in the general area have been degraded due to existing development, presence of copper smelting slag piles, border fencing, and large amounts of trash and debris scattered along both sides of the border. Background vistas outside of the city consist of distant views of the surrounding mountains.

3.9 SOLID AND HAZARDOUS WASTE

Phelps Dodge owns and utilizes a portion of the land located west of the POE in Douglas, AZ for disposal of mine tailings. In December 1999, Phelps Dodge acquired Cyprus Amax Minerals' operations in Arizona, making Phelps Dodge the second largest copper company in the world. Phelps Dodge Corporation, headquartered in Phoenix, is the world's largest producer of SX-EW cathode copper. Its mining division, post merger will produce about one-half of the U.S.'s mined copper from its properties in Arizona and southwestern New Mexico. The proposed activities would be located adjacent to this land; however, project activities are not expected to disturb the land owned and operated by Phelps Dodge.

Outside of the Phelps Dodge land, the Douglas USBP representatives report there is no known or suspected toxic and/or hazardous material contamination within the proposed project area. Additionally, the USBP indicated there are no other known historic land uses within the project area (such as industrial uses) that might have resulted in toxic or hazardous material contamination of the

underlying soil and/or groundwater resources. However, due to the evidence of illegal and uncontrolled dumping of trash in the immediate vicinity, it is possible that potentially hazardous wastes may have been dumped.

3.10 SOCIOECONOMIC DATA

3.10.1 Population

The Region of Influence (ROI) for the proposed action includes Cochise County in southeastern Arizona. According to the Arizona Department of Economic Security and the U.S. Census Bureau, 1998 statistics indicated that the population of Cochise County, Arizona was 112,564. Approximately 90 percent were listed as Caucasian, 5 percent as African-American, and the remaining 5 percent of different ethnic backgrounds. Persons of Hispanic origin, who can be of any race, make up 34 percent of the ROI population (INS 2000).

The 1992 Economic Census for Cochise County lists approximately 5,173 firms in Cochise County. Of these firms, approximately 1,008 are listed as minority-owned firms and 1,991 are listed as women-owned firms.

The town of Douglas, Arizona is located on the International Border separating the U.S. and Mexico. In 1999, approximately 13,743 people reside in the City of Douglas, which represents an annual growth rate of 1.7 percent over the 1990 population of 12,822.

3.10.2 Employment and Income

Total employment for the ROI in 1994 was 42,849, which represents an annual growth rate of 1.2 percent over total employment in 1990. Employment in the ROI is concentrated in the government, service, and retail trade sectors, combined these represented 77.5 percent of total employment in 1994. The largest employment sector is the government, which accounts for 38.7 percent of the total. Compared to national figures, the government sector in the ROI is significantly larger than the national share of 15.0 percent, while the percentage of persons in the service industry in the ROI is less than the national average. The ROI unemployment rate in 1995 was 9.2 percent, significantly higher than the state and national averages (Arizona Department of Economic Security [ADES] Research Administration 1994).

In 1994, the civilian labor force for Cochise County totaled 41,770, and the county unemployment rate was 9.8 percent. Within the county, the leading employment sectors include agriculture, cattle, manufacturing, retail trade, government, and services. Approximately 48 percent of the total land in Cochise County is dedicated to farming (U.S. Census Bureau, 1996). The estimated annual median bracket household income for Cochise County is listed as ranging from $24,181 to $28,500.

Total personal income for the ROI in 1994 was $1.6 billion. Per capita personal income was $14,764 in 1994, which was significantly lower than the national average of $21,696 (ADES 1994). The leading sectors for income are the same as those of employment. Government, services, and retail trade produce 79.2 percent of the income in the region. The wholesale trade industry is the fastest growth income and employment sector with annual growth rates of 13.9 percent for income and 8.2 percent for employment from 1990 to 1994. The trade industry is expected to continue to

grow rapidly in the ROI as the effects of the North American Free Trade Agreement are fully realized. Both the U.S. and Mexico benefit from sharing occupational/economic activities in the proposed project area.

3.10.3 Housing

The total number of housing units in the ROI was 40,238 in 1990. This represents two percent of the total housing units reported for the state of Arizona. Of the housing units within Cochise County, 34,546 (86%) are occupied and the remaining 5,692 (14%) are vacant. Approximately 64% (21,983) of the occupied housing units are owner occupied, while 36% (12,563) are renter occupied (U.S. Census Bureau 1991). The number of households within Cochise County grew from 34,546 in 1990 to an estimated 42,309 in 1998. This represents an annual growth rate of 2.6% for the County (Arizona Housing Commission 1999).

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

Based on observations made during site visit, discussions with USBP personnel, Federal and State agencies, and local authorities, as well as comparisons with similar USBP 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 permanent or long-lasting (long-term) or of short duration (short-term). Impacts can vary in degree from a slightly noticeable change to a total change in the environment.

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

Significant impact 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) are 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:

- 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 further 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 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 and Alternatives carried through for analysis, including 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		Preferred Alternative Culvert System (1.36 acres of disturbance)	Bridge Alternative (1.38 acres of disturbance)	No Action
Air Resources	ST:	Insignificant	Insignificant	No Impact
	LT:	No Impact	No Impact	No Impact
Land Use	ST:	Insignificant	Insignificant	Insignificant
	LT:	Beneficial	Beneficial	Insignificant
Geological Resources	ST:	Insignificant	Insignificant	No Impact
	LT:	Insignificant	Insignificant	No Impact
Water Resources	ST:	Insignificant	Insignificant	Insignificant
	LT:	Beneficial	Beneficial	Insignificant
Cultural Resources	ST:	No Impact	No Impact	No Impact
	LT:	No Impact	No Impact	No Impact
Biological Resources	ST:	Insignificant	Insignificant	Insignificant
	LT:	No Impact	No Impact	Insignificant
Noise Resources	ST:	Insignificant	Insignificant	No Impact
	LT:	No Impact	No Impact	No Impact
Aesthetic Resources	ST:	Insignificant	Insignificant	No Impact
	LT:	No Impact	No Impact	No Impact
Solid/Hazardous Waste	ST:	Insignificant	Insignificant	No Impact
	LT:	No Impact	No Impact	No Impact
Socioeconomic	ST:	Beneficial	Beneficial	Insignificant
	LT:	Beneficial	Beneficial	Insignificant

ST = Short-term Impact.
LT = Long-term Impact.
Beneficial = Impact would be favorable, producing an overall benefit.
Insignificant = Perceptible, but not significant impacts.
Significant = Potential impact which requires concern.

4.1 AIR RESOURCES

4.1.1 Preferred Alternative - Low Water Crossing Using Culverts

Under the Preferred Alternative, there would be a short-term impact to air quality caused from exhaust pollutants created from on-site heavy equipment used for construction activities and vehicles bringing workers and building materials to the site. Equipment which could be used at the project site includes: a portable generator for welding activities; a crane for culvert placement; a compressor for hand-operated tools; high-reach trucks; forklifts for moving materials; ready-mix trucks for hauling and pouring concrete; and trucks to deliver construction materials. It is assumed that as many as four pieces of heavy equipment could be used simultaneously during the construction phase. These pieces are typically moved on-site and remain for the duration of construction. Equipment and vehicles to be used for all proposed actions would be configured and maintained to conform with state and local air quality requirements.

Emissions and fugitive dusts associated with construction activities were quantified using equipment specific emissions factors provided by EPA (EPA 1985). These estimations provided the determination that the proposed action was exempt from air conformity analysis under 40 CFR 51.853 and Section 176 of the CAA. Based on the proposed operation of the construction equipment (eight hours/day, six days/week), total emissions from fuel combustion during construction were estimated for Carbon Monoxide (CO), Exhaust Hydrocarbons (HC), Nitrogen Oxides (NO_x), Aldehydes (HCHO), Sulfur Oxides (SO_x), and Particulates (PM_{10}). These values are represented in Table 4-2. The proposed construction area is considered a nonattainment area for PM_{10}. Border exemption for this pollutant eliminates the requirement of further pollutant-specific analysis; however, the estimate for this pollutant is well below the levels acceptable in a nonattainment area (USACE 1997b).

Although quantitative analysis of fugitive dust levels as not performed, such increases or impacts on ambient air quality during the construction/installation phase would be expected to be short-term and insignificant, and can be reduced further through the use of standard dust control techniques, including roadway watering and use of chemical dust suppressants. Although some fugitive dust will be associated with road use, it would not be significantly greater than amounts currently produced. There would be no emissions associated with operation of the all-weather crossing, and no long-term impacts would be expected to occur.

The Preferred Alternative 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, or cause an exceedance in the allowable Prevention of Significant Deterioration (PSD) increment for the region. Additionally, any emissions created by the Proposed Action would conform with the SIP.

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 (EPA 1985).

** Based on a six week period for road construction, six week period for fence construction, and includes additional four week and 12 week period for culvert construction and project completion.

4.1.2 Bridge Alternative

Long-term impacts on air quality for this Alternative would be the same as for the Preferred Alternative (construction of culvert system). Once either system is in place, there should be no long-term impacts to air quality. However, because it is estimated that a modular panel bridge would take longer to construct than a low water crossing with culverts, the short-term impacts of this Alternative would occur for a longer period of time than would those of the Preferred Alternative.

4.1.3 No-Action Alternative

Under this alternative, baseline conditions would not change. The area would continue to be used for the illegal entry of people, drugs, and vehicles. The associated criminal and violent activity from illegal entry would continue with no change to current air quality impacts experienced in the area. Additionally, if the road remains unpaved, levels of fugitive dust emissions from road maintenance activities would continue at current levels.

4.2 LAND USE

4.2.1 Preferred Alternative – Low Water Crossing Using Culverts

Short-term impacts on land use will be insignificant and last the duration of the construction activities. Once construction has been completed, areas disturbed by construction activities would return to their original state over time. Therefore, no negative long-term impacts on land use are expected from implementation of the Preferred Alternative. A beneficial long-term impact could be realized from implementation of this project due to the increased surveillance by the USBP in this

area. This increase would be recognized as a beneficial effect based on an expected decrease in illegal entry of people, drugs, and associated criminal activities directly in the Whitewater Draw area and the surrounding area of Douglas.

Under the Proposed Action, the overall land use within the general project area would not change. The proposed activities will not interfere with the IBWC's ability to access, maintain, and ensure line-of-sight visibility between the boundary monuments located along with international border within the proposed project area.

4.2.2 Bridge Alternative

Long-term impacts on land use for this Alternative would be the same as for the Preferred Alternative. Once either system is in place, there should be no long-term impacts to land use. However, short-term impacts of this Alternative would occur for a longer period of time due to the complexity of constructing a bridge structure versus a low-water crossing/culvert system.

4.2.3 No-Action Alternative

Under the No-Action Alternative, baseline conditions would not change. No repairs or improvements to the road and/or to Whitewater Draw would be conducted. The areas would continue to be breached at current levels and used for the illegal entry of people, drugs, and vehicles, and associated criminal and violent activity, thereby causing an insignificant impact to overall land use.

4.3 GEOLOGICAL RESOURCES

4.3.1 Preferred Alternative – Low Water Crossing Using Culverts

It is not likely that geologic hazards such as seismic events, landslides, subsidence, or increased flooding would result from implementation of the Preferred Alternative. Conversely, the construction or implementation of a culvert system at Whitewater Draw is not likely to be impacted by any geologic hazard in the general project area.

The probability of any soil contamination from on-site fuel systems could result from any spills as a result of construction activities would be reduced with the use of secondary containment. Additionally, no permanent sanitary facilities are planned for the project site, and any waste material generated during construction will be disposed of at an approved waste disposal site. Therefore, both short- and long-term impacts to geologic resources are expected to be insignificant.

4.3.2 Bridge Alternative

A more complex foundation is typically required for a bridge structure versus a culvert system. Although these impacts would be expected to be greater than those of the Preferred Alternative, it is still expected they would be insignificant. No long-term impacts would be expected to geologic resources from the construction of a bridge system over Whitewater Draw.

4.3.3 No-Action Alternative

No impacts to topography or physiography would be expected from the No-Action Alternative. It is not likely that geologic hazards such as seismic events, landslides, subsidence, or increased flooding over current conditions would be impacted from the continued use of the existing road at Whitewater Draw. If the road remains unpaved, it is likely that erosion will continue in this area which may cause an increase in flooding if the culverts on the Mexican side of the International Border become stopped up from sedimentation.

4.4 WATER RESOURCES

4.4.1 Preferred Alternative – Low Water Crossing Using Culverts

Short-term impacts from this action include increased turbidity and sedimentation and some vegetation removal during construction activities. The roadway, which is currently underwater, would be permanently altered by concrete paving and culvert installation. Once in place, this structure is not expected to impair or impede the normal flow of water through Whitewater Draw. Therefore, no long-term impacts to surface water resources are expected from construction and implementation of the Preferred Alternative.

Long-term impacts to the groundwater quality or quantity, surface water quality, or natural drainage patterns is expected to be beneficial, as water would now flow through the man-made channels decreasing the amount of erosion and sedimentation flowing into the water resources of the area.

No water usage would be expected for the operation of the Preferred Alternative, and only minimal water usage would be expected during the construction phase of the proposed project. Because the total area disturbed for this project is less than 5 acres, a Stormwater Pollution Prevention Plan is not required for this project.

4.4.1.1 Wetlands and Floodplains

Whitewater Draw is the only wetland or floodplain that would be directly impacted by the Proposed Action. The portion of Whitewater Draw that is expected to be impacted by the construction of the culvert system is approximately 6,850 square feet or 0.16 acres (based on a width of 40 meters for Whitewater Draw). Based on this area of disturbance, under the USACE regulations for 404 Permit, this action should fall under the Nationwide Permit (NWP) No. 14, Linear Transportation Crossings (NWP Final Notice, 61 FR 12888, para. 14). The NWP No. 14 states that for public linear transportation projects in non-tidal waters, the action cannot result in a loss of greater than ½ acre of waters of the United States. Coordination with the Los Angeles District USACE will be performed to confirm this regulation.

Since Whitewater Draw is located within the 100-year floodplain, if heavy rains occurred during the proposed construction, erosion of soils leading to sediment loading of Whitewater Draw could occur. This impact can be minimized by scheduling major construction activities to take place during the drier months of the year. The soils in this area are very sandy and highly erosive, with severe erosion already taking place during the summer monsoons. By repairing and improving the

roadways (stabilizing the surfaces), the proposed construction could have an indirect, long-term beneficial impact to Whitewater Draw.

4.4.2 Bridge Alternative

A more complex foundation is typically required for a bridge structure versus a culvert system. Because of the longer construction period for this type of structure, the short-term impacts would be longer in duration than the Preferred Alternative. Although these impacts would be expected to be greater than those of the Preferred Alternative, it is still expected that they would be insignificant. The same long-term impacts as the Preferred Alternative would be expected from the Bridge Alternative to surface or groundwater resources from the construction of a bridge system over Whitewater Draw. There would be a higher impact to the wetland area from this alternative as it would require the clearing of a greater amount of vegetation than the Preferred Alternative.

4.4.3 No-Action Alternative

No change in baseline conditions would be expected from the No-Action Alternative. No repairs or improvements to the road and/or to Whitewater Draw would be conducted. The areas would continue to be breached at current levels and used for the illegal entry of people, drugs, and vehicles, and associated criminal and violent activity, thereby causing an insignificant impact to overall water resources.

4.5 BIOLOGICAL RESOURCES

Site visits were conducted in September, 2000, January, 2001, and March, 2001 to the proposed project site by a Biologist from Ecological Communications Corporation and the Project Manager from the USACE, who were accompanied by a Douglas Station USBP Agent. A 100-percent survey was conducted for a distance of 60 meters north of the International Boundary in the Whitewater Draw area and a 20 meter ROW for the 1000-foot roadway project area. This survey was conducted in an effort to inventory biological resources at the proposed project areas and evaluate the potential effects of the Proposed Action on these resources. Prior to the site reconnaissance, all available project-related literature was reviewed and information from the Arizona Natural Heritage Program (ANHP) and the USFWS was obtained regarding Federally and State-listed threatened and endangered species or special species of concern.

4.5.1 Preferred Alternative – Low Water Crossing Using Culverts

4.5.1.1 Vegetation

The majority of the Preferred Alternative would be constructed in the existing road alignment, minimizing disturbance to vegetation. Approximately 33,350 sq feet or 0.76 acres of vegetation would be removed during construction of the low water crossing. As noted in Section 2.1.3, the total area of disturbance for the roadway work outside of the culvert construction is estimated to be approximately 33,350 square feet or 0.76 acres. Allowing for a 10-foot construction zone on either side of the road for these activities, the total area of disturbance is estimated to be 51,950 square feet or 1.2 acres. The majority of this area has been previously disturbed during either original road

construction, road maintenance activities, or flood events. The total loss of vegetation for this alternative along the roadway is expected to be minimal.

For the construction of the culvert system within the boundaries of Whitewater Draw, the total area of disturbance is expected to be approximately 0.16 acres. Again, most of this area has been previously disturbed from either road construction or maintenance activities or flood events. Actual disturbance to vegetation, other than native grass species, is expected to be minimal.

Existing turnouts, borrow areas, and staging areas will be located in previously disturbed areas, if possible, in order to avoid or minimize any further impacts to vegetation. Insignificant impacts to native plant species protected by the Arizona Native Plant Law may occur during the proposed construction. Protected species near the construction area would be flagged for avoidance prior to the start of construction. For those individuals that cannot be avoided, coordination with the Arizona Department of Agriculture (ADA) would be conducted to facilitate salvage and relocation of the specimens. All ADA requirements would be met prior to the inception of project activities.

Due to the high degree of previous disturbance of the proposed project area and the regional abundance of the Arizona native plant species, the impact from the Proposed Action would be insignificant.

4.5.1.2 Fish and Wildlife

Impacts to Whitewater Draw could adversely affect aquatic species; however, these would be short-term in nature and current conditions would resume following the end of construction activities. An insignificant beneficial impact to aquatic species in Whitewater Draw could result from the reduction of erosion in the immediate area. However, this benefit would be imperceptible due to the high amount of erosion in the general project area.

The only wildlife species that could be impacted from the Proposed Action would be small mammal, reptile, amphibian, and bird species. Impacts to habitat for such resources, such as foraging grass and ground nesting habitat, would be insignificant and short-term due to the low amount of actual area disturbed by the Preferred Alternative. If the proposed project is planned during a season where migratory birds may use the project area for flight patterns or nesting, then special coordination and surveys required under the Migratory Bird Treaty Act would be conducted.

No long-term impacts to either small mammal, reptile, and bird populations would be expected. Larger terrestrial wildlife movements in the proposed construction areas should not be affected due to the short duration of time anticipated to complete the proposed project. Additionally, construction activities would be conducted only during daylight hours, and not during the early morning hours or night-time hours when wildlife species are most active. Therefore, short-term impacts on wildlife species are expected to be insignificant.

4.5.1.3 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 would not be likely to jeopardize the

continued existence of any threatened or endangered species. A copy of the consultation letters with the USFWS and Arizona Fish and Game Department is presented in Appendix E. Additionally, Mike Coffeen, a wildlife biologist with the USFWS Tucson Office visited the Whitewater Draw area with a representative from the JTF-6 organization on November 8, 2000 and indicated that he did not believe Whitewater Draw offered preferable habitat for any currently listed threatened, endangered, or protected species. A copy of this correspondence is located in Appendix F, Agency Response and Coordination Letters.

No Federally-listed threatened, endangered or proposed species were observed during either the September 2000, January 2001, or March 2001 pedestrian surveys of the proposed project area. Additionally, no protected species were observed during surveys conducted for EAs prepared for previous projects in the area (USACE 1996, USACE 1997b, and USACE 1998); therefore, it is not expected there would be any direct or indirect impacts to Federally-listed threatened or endangered species. Specific habitat requirements for the majority of the listed species are not met in the immediate area of the proposed project site. No designated critical habitat for Federally-listed species occurs within the area of the proposed project site.

As indicated in Section 3.5.4, the Southwestern Willow Flycatcher prefers dense willow, cottonwood, and tamarisk thickets and woodland along rivers and streams. Although willow and tamarisk were noted within the Whitewater Draw area, this area was not dense and did not offer the preferred habitat known for this species. The closest known critical habitat for this species exists on portions of the 100-year floodplain on the 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. It is therefore not likely that the Southwestern Willow Flycatcher utilizes the vegetation communities surrounding Whitewater Draw.

Based on the information provided in Section 3.5.4 for both flora and fauna species, their preferred habitats, and lack of evidence that these species occur within the project area, it would be unlikely that any Federally-listed threatened or endangered species would be found within the proposed project area, except on a transient basis. Additionally, impacts to all sensitive vegetation would be avoided or minimized. Therefore, the Preferred Alternative would have only an insignificant indirect short-term impact on Federally-listed threatened and endangered species.

4.5.2 Bridge Alternative

A more complex foundation is typically required for a bridge structure versus a culvert system. Because of the longer construction period for this type of structure, the short-term impacts would be longer in duration than those of the Preferred Alternative. Although these impacts are expected to be greater than those of the Preferred Alternative, it is still expected they would be insignificant. No long-term impacts to biological resources would be expected from the construction of a bridge system over Whitewater Draw.

4.5.3 No-Action Alternative

No change in baseline conditions would be expected from the No-Action Alternative. No repairs or improvements to the road and/or to Whitewater Draw would be conducted. The areas would

continue to be breached at current levels and used for the illegal entry of people, drugs, and vehicles, and associated criminal and violent activity, thereby causing an insignificant impact to overall biological resources.

4.6 NOISE

Noise naturally dissipates by atmospheric attenuation as it travels through the air. Some other factors that can affect 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 6 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).

4.6.1 Preferred Alternative – Low Water Crossing Using Culverts

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 tend to occur in discrete phases dominated initially by large earthmoving equipment and later by hand-operated tools. 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 (USACE 1995).

Over most of the proposed project area, receptors are located well beyond these distances. Only insignificant noise impacts are expected from the construction phase of the proposed project and no noise impacts are expected during the operation phase of the project. Additionally, given the heavy traffic noise resulting from the urban road and highway system in and around Douglas, the noise expected from the proposed construction activities would be short in duration (less than 60 days), and would be expected to be insignificant compared to existing noise levels.

4.6.2 Bridge Alternative

A more complex foundation is typically required for a bridge structure versus a culvert system. Because of the longer construction period for this type of structure, the short-term noise impacts would be longer in duration than the Preferred Alternative. Although these impacts are expected to be greater than those of the Preferred Alternative, it is still expected they would be insignificant. No long-term impacts would be expected to noise resources from the construction of a bridge system over Whitewater Draw.

4.6.3 No-Action Alternative

No change in baseline conditions would be expected under the No-Action Alternative. The No-Action alternative would have neither a short- nor long-term impact on the baseline noise condition within the proposed project area.

4.7 CULTURAL RESOURCES

4.7.1 Preferred Alternative – Low Water Crossing Using Culverts

A thorough file search was conducted by SWCA, Inc. (SWCA) at the Arizona State Museum prior to the current field work in order to determine the scope of recorded archaeological remains and the extent of previous fieldwork completed in the area (SWCA 2001). In 1994, 1997, and 1998, Geo-Marine, Inc. conducted archaeological surveys along the U.S.-Mexico Border in response to U.S. Border Patrol-Joint Task Force 6 needs for road improvement along the border road (Martynec et al. 1994, Browning 1997, 1998). Portions of this survey included the current project area. The 1994 project resulted in the recording or re-recording of 41 archaeological sites, of which 33 were recommended as eligible for the National Register of Historic Places (Martynec et al. 1994:iii). These sites were marked with flagging tape and monitored during the course of the 1994 project as well. In 1997, Geo-Marine, Inc. conducted an additional survey along the international boundary for continuing road repair, related construction activities, and installation of permanent lighting structures (Browning 1997). No new archaeological sites were recorded during the course of that survey, which also covered portions of the current project area.

Improvements to Whitewater Draw may affect parts of NRHP-eligible cultural resource site AZ:FF:10:22 ("Mine Ridge Site"). Although this site is more than 100 meters from the border road, it is adjacent to the north/south road that may be utilized for construction equipment and machinery access. These activities may disturb potentially intact cultural deposits, including numerous thermal rock features of unknown content and significance. Additional activities for road and hydrological repair activities as addressed in the JTF-6 EA for activities in the Douglas area (USACE 2001) indicate that this area may be impacted by proposed repair activities. To mitigate any potential adverse impacts, a program of archeological data recovery will be undertaken at site AZ:FF:10:22. This mitigation effort is currently being coordinated through the AZ SHPO. Completion of the data recovery plan will result in mitigation of adverse impacts to the site.

4.7.2 Bridge Alternative

Because the Preferred Alternative assumes a worst-case scenario and data recovery of the Mine Ridge Site, it is not expected that the short- or long-term impacts for this alternative would differ from those of the Preferred Alternative.

4.7.3 No-Action Alternative

No change in baseline conditions would be expected from the No-Action Alternative. No repairs or improvements to the road and/or to Whitewater Draw would be conducted. The areas would continue to be breached at current levels and used for the illegal entry of people, drugs, and vehicles, and associated criminal and violent activity, thereby causing an insignificant impact to overall cultural resources.

4.8 AESTHETIC RESOURCES

4.8.1 Preferred Alternative – Low Water Crossing Using Culverts

As noted in Section 3.7, the current visual characteristics of the general project area are mostly open space and low rolling hills covered by native grasses and low vegetation. Under the Preferred Alternative, aesthetic resources would be insignificantly impacted be the construction activities. However, construction activities are short-term and would not have a permanent impact on the subject areas. There would be no long-term impacts to aesthetic resources under this alternative.

4.8.2 Bridge Alternative

Because of the longer construction period for this type of structure, the short-term impacts to aesthetic resources would be longer in duration than the Preferred Alternative. Although these impacts are expected to be greater than those of the Preferred Alternative, it is still expected they would be insignificant. No long-term impacts would be expected to aesthetic resources of the area from the construction of a bridge system over Whitewater Draw.

4.8.3 No-Action Alternative

Under the No-Action Alternative, baseline conditions would not change. Aesthetic resources in the general area would continue to be breached at current levels and used for the illegal entry of people, drugs, and vehicles, and associated criminal and violent activity.

4.9 SOLID AND HAZARDOUS WASTES

4.9.1 Preferred Alternative – Low Water Crossing Using Culverts

Because of the random nature of illegal dumping along the border areas, it is difficult to determine the location and quantity of hazardous waste that may be present within the general project area. If hazardous materials or wastes are 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 project, it is assumed that worker-safety risks will be reduced through the implementation of standard safe 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.

During construction and installation activities, fuels, oils, lubricants, and other hazardous materials will be used. An accidental release or spill of any of these substances could occur. A spill could result in potentially adverse impacts to on-site soils and threaten the health of the local population, as well as wildlife and vegetation. However, the amounts of fuel and other lubricants and oils would be limited, and the equipment to quickly limit any contamination would be located on site. Additionally, a Spill Prevention, Control and Countermeasures Plan (SPCCP) will be in-place prior to construction, and all personnel will be briefed on the implementation and responsibilities of the plan. As a result, only short-term insignificant impacts would be expected to result from

construction activities. No long-term impacts are expected from the implementation of the Preferred Alternative.

4.9.2 Bridge Alternative

Because of the longer construction period for this type of structure, the chance of short-term impacts caused from an accidental release or spill a result of fuels, oils, lubricants, and other hazardous or regulated materials would be longer in duration than the Preferred Alternative. Although these impacts might be greater than those of the Preferred Alternative, it is still expected they would be insignificant. No long-term impacts would be expected to occur from the construction of a bridge system over Whitewater Draw.

4.9.3 No-Action Alternative

Under the No-Action Alternative, baseline conditions would not change. The general area would continue to be breached at current levels and used for the illegal entry of people, drugs, and vehicles, and associated criminal and violent activity.

4.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.10.1 Socioeconomics of Preferred Alternative – Low Water Crossing Using Culverts

This alternative would provide direct and indirect economic benefits to area companies and employees as a result of construction activities, and through economic multiplier effects. The impacts on the socioeconomic resources in the ROI such as population, employment, income, and business sales would be beneficial. Construction activities would most likely be performed by military personnel deployed to the area for this project and would not impact hiring within the local area. Therefore, it is anticipated that these activities would not induce permanent in- or out-migration to the ROI. As a result, the overall area population would not be significantly impacted.

Direct expenditures associated with the proposed project 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 are expected to occur within the ROI. Short-term increases in local revenues for commercial establishments, trade centers, and retail sales will 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 impacts of this alternative are expected to be beneficial due to the expected increase in alien apprehension and a decrease in drug trafficking and smuggling, Additionally, the increased patrols would contribute to the reduction of socioeconomic impacts and burdens that currently exist on local law enforcement and the medical communities in the surrounding areas.

4.10.2 Environmental Justice of the Preferred Alternative

EO 12898 of 11 February 1994, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," required that each U.S. Federal agency 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 an area with similar characteristics of the broader ROI. Although some housing is located near the POE, no housing is located within 0.5 mile of the Whitewater Draw area. Additionally, the improved condition of the roadway would maximize USBP operations along the border, positively impacting violent crime associated with drug trafficking in the Douglas area.

Additionally, installation or operation of the low water crossing or fence structure would not restrict the flow of legal visitation, trade, or immigration. Therefore, there would be no expected disproportionately high or adverse impacts on minority or low-income populations. Under the definition of EO 12898, there would be no adverse short or long-term environmental justice impacts.

4.10.3 Bridge Alternative

Impacts from the construction and implementation of this alternative are expected to be similar to the Preferred Alternative. The socioeconomic impacts of this alternative are expected to be beneficial due to the expected increase in alien apprehension and a decrease in drug trafficking and smuggling, Additionally, the increased patrols would contribute to the reduction of socioeconomic impacts and burdens that currently exist on local law enforcement and the medical communities in the surrounding areas.

As indicated with the Preferred Alternative, the installation or operation of a bridge crossing would not restrict the flow of legal visitation, trade, or immigration. Therefore, there would be no expected disproportionately high or adverse impacts on minority or low-income populations under this alternative.

4.10.4 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 alien entry, drug trafficking, smuggling, and associated crime. This impact on environmental justice or the socioeconomic resources in the ROI would continue under the No-Action Alternative.

4.11 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable commitments of resources would include a minimal amount of soil lost through wind and water erosion, a minor loss of small animal habitat due to construction activities, loss of cultural resources mitigated through a treatment plan, and loss of materials, energy and manpower expended during construction of the project.

4.12 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 past, present, and future actions with individually minor but collectively

significant effects. Cumulative impacts can be concisely defined as the total effect of multiple land uses and developments, including their interrelationships, on the environment (Bain *et al.* 1986).

4.12.1 Past Projects

In order to evaluate cumulative effects, EAs from previous and proposed operations in the Douglas area were evaluated (USACE 1996, USACE 1997b, USACE, 1998, USACE 1999, USACE 2000, INS 2000).

According to the Final EA prepared by INS for the infrastructure within the Naco-Douglas corridor (INS 2000), past INS and USBP projects for the Douglas area included:

- 25 miles of border road improvements, east and west of the POE,
- 2 miles of a new north/south access road, west of the POE,
- 0.5 miles of new border roads, west of the POE,
- 1.0 mile of landing mat fence on the west side of the POE,
- permanent lighting poles both east and west of the POE,
- 5.0 miles of stadium style lights, east and west of the POE,
- 1.3 miles of decorative fence, east of the POE,
- 2.7 miles of landing mat fence, east of the POE,
- 7.0 miles of portable lights, east of the POE,
- portable generator lights along a 25-mile corridor and
- five remote video surveillance (RVS) stations.

An analysis of each component of the affected environment was completed from the existing EAs in order to identify which actions would have cumulative impacts as a result of the past and proposed operations. Additional information was considered, including real estate ownership, Census Bureau growth rates, and any known projects planned for the reasonably foreseeable future. No long-term significant impacts occurred from past analysis of these projects.

Positive cumulative benefits have resulted from past INS activities. Additional knowledge regarding cultural resources, threatened or endangered species' locations, distribution, and life requisites has been obtained through surveys and monitoring efforts associated with INS construction projects. Erosion has been alleviated along some roads, and fences have precluded illegal foot and vehicular traffic through environmentally sensitive areas. Additionally, the increase in infrastructure has allowed the USBP to enhance their ability to enforce the border areas. Without the past infrastructure improvements, illegal entrants would quickly identify areas that were either limited or void of adequate infrastructure and relocate their operations to these areas. The USBP would either have to increase their enforcement footprint farther to the north, thereby decreasing the chance for apprehension, or increase the risk to the agents' health and safety by requiring that they enter high traffic areas without sufficient roads, barriers, or other infrastructure components.

4.12.2 Current and Future Projects

Existing and known projects in the reasonably foreseeable future include projects to be undertaken or constructed by JTF-6, INS, ARNG, or the USBP. Current or proposed INS and USBP projects in the Douglas area include:

- 25 miles of road upgrades west of the POE,
- 4 miles of landing mat fence west of the POE,
- 3.5 of landing mat fence east of the POE,
- 4 miles of stadium style lights on either side of the POE, and
- construction of a new USBP station.

In order to facilitate proposed projects in Arizona and New Mexico, the USBP has entered into a Memorandum of Understanding (MOU) with the BLM, National Park Service, USFWS, Bureau of Indian Affairs (BIA), BIA Office of Law Enforcement Services, U.S. Forest Service, NRCS, and the U.S. EPA. The purpose of this MOU is to: 1) provide general procedures for the USBP's use of public land to conduct its routine operations of search and rescue, training, and apprehension of undocumented aliens (UDAs), while protecting the public's right to use public land without undue disruption, 2) develop and implement a plan to mitigate environmental degradation caused by UDAs crossing federal lands in Arizona and New Mexico, and 3) provide and encourage opportunities for all Parties to operate more effectively and achieve their missions. A copy of this MOU is included in Appendix F, Agency Response and Coordination Letters.

Current or proposed JTF-6 projects in the Douglas area (previously addressed in the USACE March 2001 EA) include:

- hydrological improvements along the border road, west of Whitewater Draw,
- road maintenance and improvements as necessary along the border road, and
- extension of the landing mat fence east of the POE

Additional projects within the area include installation of a 16-inch natural gas pipeline by the El Paso Natural Gas Company. According to a representative with El Paso Natural Gas Company, this project originates at the El Paso Natural Gas substation in Wilcox and extends approximately 58 miles south into Mexico. The project involves the installation of a 16-inch pipeline buried approximately 8 feet below ground level. The pipeline route will cross Whitewater Draw approximately 300 yards north of the International Border and then cross into Mexico just east of the Whitewater Draw area. Construction for this project begin in January, 2001 and is expected to be completed by May, 2001. According to the company representative, future projects involving this pipeline route will be conducted over the next year. However, details on these project were not available.

In Arizona, in addition to the Morenci Mine in Greenlee County, the Phelps Dodge Corporation operates the Cooper Queen in Bisbee, and controls significant undeveloped copper resources throughout the state, including several deposits near Safford and the New Cornelia mine at Ajo, Arizona. The Phelps Dodge Mining Company indicates significant new production will come from their Arizona developments that rely on modern technology to produce low-cost, high-quality copper (Arizona Mining Association 2001).

4.12.3 Preferred Alternative – Low Water Crossing Using Culverts

The analysis of the Preferred Alternative revealed that insignificant cumulative impacts to land use, air quality, and threatened and endangered species would occur as a result of past and proposed actions due to the temporary nature of construction activities. Water and biological resources (i.e., vegetation and wildlife habitat) would also be insignificantly affected cumulatively from past and proposed border construction actions.

Soils that are denuded during construction activities would be vulnerable to erosion. However, the vast majority of the USBP road projects are planned to alleviate soil erosion; thus, the cumulative effect to soils would be beneficial. A reduction in erosional rates would have consequent beneficial results to area surface water quality by reducing turbidity and biochemical oxygen demands (USACE 2000a).

The primary cumulative effect of the past and proposed action is the permanent loss of vegetation and associated wildlife habitat. The construction and implementation of a low water crossing with culverts would result in the disturbance of approximately 1.36 total acres of vegetation. As identified in the JTF-6 1994 Programmatic Environmental Impact Statement (PEIS), the overall loss of vegetation falls below the projected level for the five-year period, and accounts for less than 0.01 percent of the total land area along the entire U.S. – Mexico international border. Construction in the proposed project area may result in only an insignificant loss of vegetation and wildlife habitat since the total area of disturbance is relatively small and the area will re-vegetate following project implementation.

A positive cumulative impact will be realized by the additional cultural resource baseline data that has been gathered during the production of the various environmental documents and the data recovery activities, such as those noted in this environmental assessment. Cultural resources occur at relatively high site densities in southeastern Arizona giving them a high potential for impact (USACE 2000a). Both INS and JTF-6 has, in the past, and will continue, to survey prior to each deployment, and coordinate fully with the Arizona State Historic Preservation Officer, as required by Section 106 of the National Historic Preservation Act. Future INS actions would follow the same strategy of avoidance (if possible) to cultural resources as it has used on all past missions.

Direct cumulative impacts on economics from infrastructure improvements would be expected to be beneficial but insignificant, depending upon the amount of local expenditures and economic multipliers in the region (USACE 2000a). However, the cumulative impact to the quality of life in Douglas could be significant and beneficial if the USBP is successful at curbing illegal entry and drug trafficking.

When combined with past, present, and known future projects in the Douglas area, it is hard to determine the exact indirect impacts. However, Douglas occupies a relatively small area; its growth rate is low (approximately 1.7 percent annually). Much of the growth, in recent years, can be attributed to an increase in USBP activities brought on by the large influx of illegal traffic through the area. Activities associated with increase in USBP activities would have been (and will continue to be) subject to analysis under the existing laws protecting the environment. The greatest cumulative impacts (both direct and indirect) resulting from the growth of the population in Douglas would be to soils, water supply, air quality, land use, and socioeconomics. Responsible growth by

the city would have insignificant cumulative impacts on biological and cultural resources. A search of the current real estate records shows that most of the land adjacent to the proposed project area is either already developed, or is held by individual or family interests. This would indicate a very low probability of industrial expansion and growth for the area. Other than ongoing and planned activities of the USBP (USACE 2000), no large-scale development projects are known to be planned for the reasonably foreseeable future in the Douglas vicinity. The cumulative direct and indirect impacts resulting from past and future development in and around the City of Douglas (excluding mining interests) would most likely be insignificant in nature.

By far, the most important contributors to long-term cumulative impacts (direct and indirect) in the area are mining interests. These have, however, been in operation for many years; prior to the passing of the laws protecting natural and cultural resources. The resources directly impacted by these operations are unknown; exact information regarding these losses will never be gained, and cannot be effectively evaluated with regard to cultural resources or endangered species. Direct and indirect impacts to water supply and air quality from the mines would have improved with the implementation of today's environmental laws. It would be expected that the mines (still in operation) are in compliance with applicable laws and regulations, and will continue to be so in the future.

4.12. 4 Bridge Alternative

The overall cumulative impacts for this alternative would be very similar to the Preferred Alternative. The construction of a bridge would result in the disturbance of approximately 1.37 total acres of vegetation. In either case and as shown in the past, soil losses can be minimized through the implementation of erosion control measures including waterbars, gabions, reseeding, compaction, and slope control.

4.12.5 No Action Alternative

The No Action Alternative would result in no additional direct effects to the area's resources. The border roads would continue to deteriorate and illegal activities such as alien entry and drug trafficking would continue along the proposed project area. Additionally, the current rate of growth for the area would most likely continue, thereby causing a possible increase in illegal alien entries and drug activities.

5.0 MITIGATION MEASURES

This chapter describes environmental design measures that would be implemented as part of the proposed project to reduce or eliminate impacts from construction activities. Due to the short-term nature of the proposed construction activities, impacts are expected to be insignificant; therefore, mitigation measures are only described for those resources with potential for impacts.

5.1 WATER RESOURCES

Standard construction procedures would be implemented to minimize the potential for erosion and sedimentation during construction activities. All work would cease during heavy rains and would not resume until conditions are suitable for the movement of equipment and material. Storage or staging sites would be located at least 0.50 miles from wildlife or livestock tanks or other permanent surface water bodies to reduce potential effects of accidental spills. Conservation measures would be implemented to preclude unnecessary waste of water supplies. Discharges of grey water and other wastes to drainages or other water courses/bodies will be prohibited. Portable latrines, provided and maintained by licensed contractors, would be used to the extent practicable during construction and operational support activities.

5.2 AIR QUALITY

Mitigation measures would include dust suppression methods to minimize airborne particulate matter that would be created during construction activities. Additionally, all construction equipment and vehicles will 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 project. Coordination with EPA Region 9 will be performed to provide specific notification of proposed actions and obtain necessary permits for operators of equipment and vehicles in accordance with air quality regulations.

5.3 BIOLOGICAL RESOURCES

Impacts to existing vegetation during construction activities will be minimized through avoidance. Disturbed sites would be utilized to the maximum extent practicable for construction and operational support activities. Additionally, attempts to minimize loss of vegetation may include: (1) trimming vegetation along roadsides rather than removing the entire plant; (2) requiring heavy equipment to utilize road pullouts or other such disturbed areas; and (3) considering the possibility of revegetative efforts. Native seeds or plants which are compatible with the enhancement of protected species will be used to the extent feasible, as required under Section 7(a)(1) of the Endangered Species Act.

Additional mitigation measures will include best management practices during construction to minimize or prevent erosion and soil loss. Vehicular traffic associated with engineering and operational support activities will remain on established roads to the maximum extent practicable. Areas with highly erodible soils will be given special consideration when designing the proposed project activities to ensure incorporation of various compaction techniques, aggregate materials, wetting compounds, and revegetation to ameliorate the subsequent soil erosion. Borrow materials, if required, will be obtained from established borrow pits or from approved on-site sources.

5.4 NOISE

During the construction phase, noise impacts are anticipated at local human receptors. As required by Occupational Safety and Health Administration (OSHA), earplugs will be worn by employees working in environments with continuous noise levels of 8 hours per day above 90 dBA. Because of the increased noise sensitivity during quiet hours, time limits on on-site construction activities are warranted for grading and the use of heavy equipment. On-site activities will be restricted to daylight hours on Monday through Saturday, except in emergency situations, and only maintenance of equipment permitted on Sundays. Additionally, all construction equipment will possess properly working mufflers and be kept in a proper state of tune to reduce backfires. Implementation of these measures will reduce noise impacts to an insignificant level.

5.5 CULTURAL RESOURCES

In compliance with 36 CFR Part 800, the Advisory Council on Historic Preservation will be notified and a Memorandum of Agreement (MOA) on how the adverse effects of the proposed project at Whitewater Draw will be resolved has been submitted to the Arizona State Historic Preservation Officer (SHPO). To mitigate these potential adverse impacts, a program of archaeology data recovery will be conducted at site AZ FF:10:22. This program will be guided by a scientific research design to be approved by the Arizona SHPO. Under this program, the site will be mapped, intensively surface collected, and exposed rock features will be manually excavated. Following this manual excavation, up to 150 square meters of surface will be manually exposed by shovel scraping. If the scraping exposes additional buried features, then these features will be manually excavated. As appropriate, rock and soil samples will be recovered from feature contexts to allow for dating and other interpretive assays. Following excavation, analyses of the recovered artifact assemblage, of the diversity and spatial patterning of feature types, and of the content and dating of the features should permit substantive conclusions about the key research questions of chronology, prehistoric settlement patterns and land use, and prehistoric resource exploitation, subsistence and diet.

All construction activities will be at least two feet away from the international boundary to avoid impacts to historical boundary monuments and other demarcations. Near each permanent boundary monument, strict construction precautions will be implemented to avoid potential damage to these items. Additionally, no construction materials would be placed adjacent to these monuments. In the unlikely event human remains are encountered, compliance with the Native American Graves Protection and Repatriation Act will be carried out accordingly and the appropriate federally-recognized tribes will be contacted immediately.

Potential adverse impacts to other cultural resource sites will be mitigated through site avoidance. Should any new cultural resources be noted during construction activities, all work will cease immediately in the area and the Arizona SHPO will be notified immediately.

5.6 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 will 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.

The refueling of machinery will be completed following accepted guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips. Although it would be unlikely for a major spill to occur, any spill of five gallons or more will be contained immediately within an earthen dike, and the application an absorbent (e.g., granular, pillow, sock, etc) will be used to absorb and contain the spill. Any major spill of a hazardous or regulated substance will be reported immediately to on-site environmental personnel who would notify appropriate Federal and State agencies.

Additionally, all personnel will be briefed on the correct procedures for prevention of and response to a spill. A Spill Prevention Plan will be in place prior to the start of construction, and all personnel will be briefed on the implementation and responsibilities of this plan. Adoption and full implementation of the construction measures described above will reduce adverse hazardous/regulated substances impacts to insignificant levels.

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

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6.0 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:

- Immigration and Naturalization Service (INS);
- U.S. Border Patrol (USBP);
- U. S. Army Corps of Engineers (Fort Worth District);
- U.S. Army Corps of Engineers (Los Angeles District)
- Joint Task Force Six (JTF-6);
- State Historic Preservation Office (SHPO);
- U.S. Fish and Wildlife Service (USFWS);
- Arizona Department of Agriculture (ADA),
- Arizona Game and Fish Department (AGFD)
- International Boundary and Water Commission (IBWC)*;
- Bureau of Land Management (BLM);
- U.S. Environmental Protection Agency (EPA)
- Gila River Indian Community Council;
- Ak Chin Indian Community Council;
- Hopi Tribal Council;
- Salt River Pima-Maricopa Indian Community Council;
- San Carlos Tribal Council;
- Tohono O'odham Nation; and
- White Mountain Apache Tribal Council.

The Draft EA was made available for public review and letters of coordination can be found in Appendix E. Appendix F contains agency coordination and response letters and Appendix G contains a copy of the Public Notice.

*Ongoing coordination with IBWC regarding comments received on engineering design details. Original IBWC coordination letter is contained in Appendix F.

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7.0 LIST OF PREPARERS

Project Manager/ Ecologist	Jill Madden Ecological Communications Corporation B.S. in Wildlife and Fisheries Sciences Years of Experience: 17
Technical Editor/ Water Resources Specialist	Victor Palma Ecological Communications Corporation B.S. in Biology M.S. in Aquatic Biology Years of Experience: 18
Archaeologist	W. Nicholas Trierweiler Ecological Communications Corporation B.A. in Anthropology M.A. in Anthropology Ph.D. in Anthropology Years of Experience: 24
Hazardous and Solid Waste Specialist	Bradley R. Hamer Ecological Communications Corporation B.A. in Environmental Science Years of Experience: 10
Air Quality Specialist	Rex G. McDonnell, III, P.E. McDonnell Engineering, Inc. B.S. in Chemical Engineering Years of Experience: 17
USACE Environmental Point of Contact	Glenn Bixler Fort Worth District B. S. in Biology M.S. in Biology Years of Experience: 3
USACE Cultural Resources Point of Contact	Patience E. Patterson Fort Worth District B.A. in Anthropology M.A. in Anthropology M. Phil in Archaeology Years of Experience: 25

INS A-E Resource Center Point of Contact	Eric Verwers Program Manager and EA Review and Coordination B.S. in Biology
INS Point of Contact	Charles Parsons Administrative Center Laguna Niguel, CA
USBP Point of Contact	Monty E. Garland Special Operations Supervisor Douglas Station
JTF-6 Point of Contact	Milton Blankenship Fort Bliss B.S. in Geology/Biology

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9.0 LIST OF ACRONYMS AND ABBREVIATIONS

ADA	Arizona Department of Agriculture
ADES	Arizona Department of Economic Security
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
AGM	Arizona Groundwater Management
AMA	Active Management Area
ANHP	Arizona Natural Heritage Program
AR	Army Regulation
ARNG	Army National Guard
ASM	Arizona State Museum
AZ	Arizona
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
C	Candidate
CA	California
CAA	Clean Air Act
CERL	Construction Engineering Research Laboratory
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMP	Corrugated Metal Pipe
CO	Carbon Monoxide
CWA	Clean Water Act
Cx	Categorical Exclusion
dB	Decibel
dBA	A-weighted decibels
DoD	Department of Defense
DOJ	Department of Justice
EA	Environmental Assessment
e.g.	for example
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCAA	Federal Clean Air Act
FIFRA	Federal Insecticides, Fungicide and Rodenticide Act
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GAO	General Accounting Office
GPS	Global Positioning System
HC	Exhaust Hydrocarbons
HCHO	Aldehydes
HMTA	Hazardous Materials Transportation Act
Hz	Hertz

LIST OF ACRONYMS AND ABBREVIATIONS (CONT.)

IBWC	International Boundary and Water Commission
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
INA	Immigration and Nationality Act
INS	Immigration and Naturalization Service
IRT	Innovative Readiness Training
JTF-6	Joint Task Force Six
Ldn	Day/Night Noise Level
LE	Listed Endangered
LEA	Law Enforcement Agencies
LT	Long-term
MET	Meteorological
METL	Mission Essential Training List
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NDCS	National Drug Control Strategy
NEPA	National Environmental Policy Act
NESL	Navajo Endangered Species List
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPL	Native Plant Law
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
PEIS	Programmatic Environmental Impact Statement
PL	Public Law
PM_{10}	Particulates
POE	Port of Entry
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
REC	Record of Decision
ROI	Region of Influence
ROW	Right of Way
RVS	Remote Video Surveillance
S	Sensitive
SARA	Superfund Amendments and Reauthorization Act
SC	Species of Concern
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_x	Sulfur Oxides

LIST OF ACRONYMS AND ABBREVIATIONS (CONT.)

SPCCP	Spill Prevention, Control, and Countermeasures Plan
ST	Short-term
TSCA	Toxic Substances Control Act
TX	Texas
UDA	Undocumented Alien
U.S.	United States of America
USACE	United States Army Corps of Engineers
USBP	United States Border Patrol
USC	United States Code
USFWS	United States Fish and Wildlife Service
WSCA	Wildlife Species of Concern in Arizona

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APPENDICES

APPENDIX A

Site Photographs

Photo 1: Whitewater Draw, facing west. Note international fence on left side of photo.

Photo 2: View of concrete culvert on Mexico side of border, facing south.

Photo 3: View of the eastern bank of Whitewater Draw, facing north.

Photo 4: View of western bank of Whitewater Draw, facing north.

Photo 5: View of typical vegetation at 60-foot ROW, facing east.

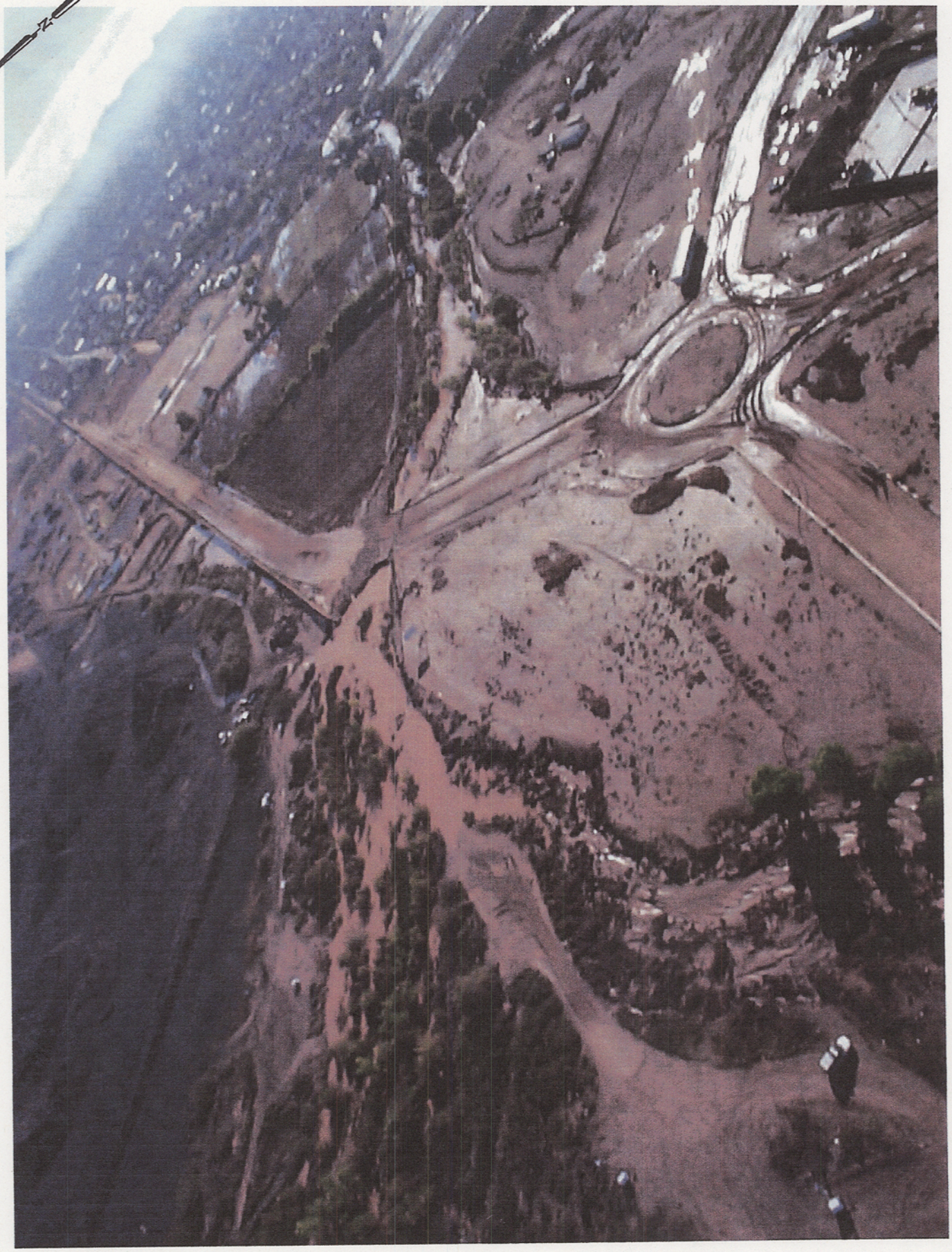
Photo 6: View of typical vegetation at approximately 120-feet north of the border, facing south.

Photo 7: Border road at Whitewater Draw, facing east. Note fence on right side of photo.

Photo 8: Vegetation growing on north side of border road, facing north.

Following Aerial Photographs
Obtained from JTF-6

N



APPENDIX B

Federal and State 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	1-hr	---	---
(TSP)	3-hr	---	---
Hydrogen Sulfide (H_2S)	30-min	---	---
Sulfuric Acid (H_2SO_4)	1-hr	---	---
	24-hr	---	---
Inorganic Fluoride Compounds (as	3-hr	---	---
HF)	12-hr	---	---
	24-hr	---	---
	7-day	---	---
	30-day	---	---
Beryllium	24-hr	---	---
Other Hazardous and Odorous	30-min	---	---
Pollutants	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.

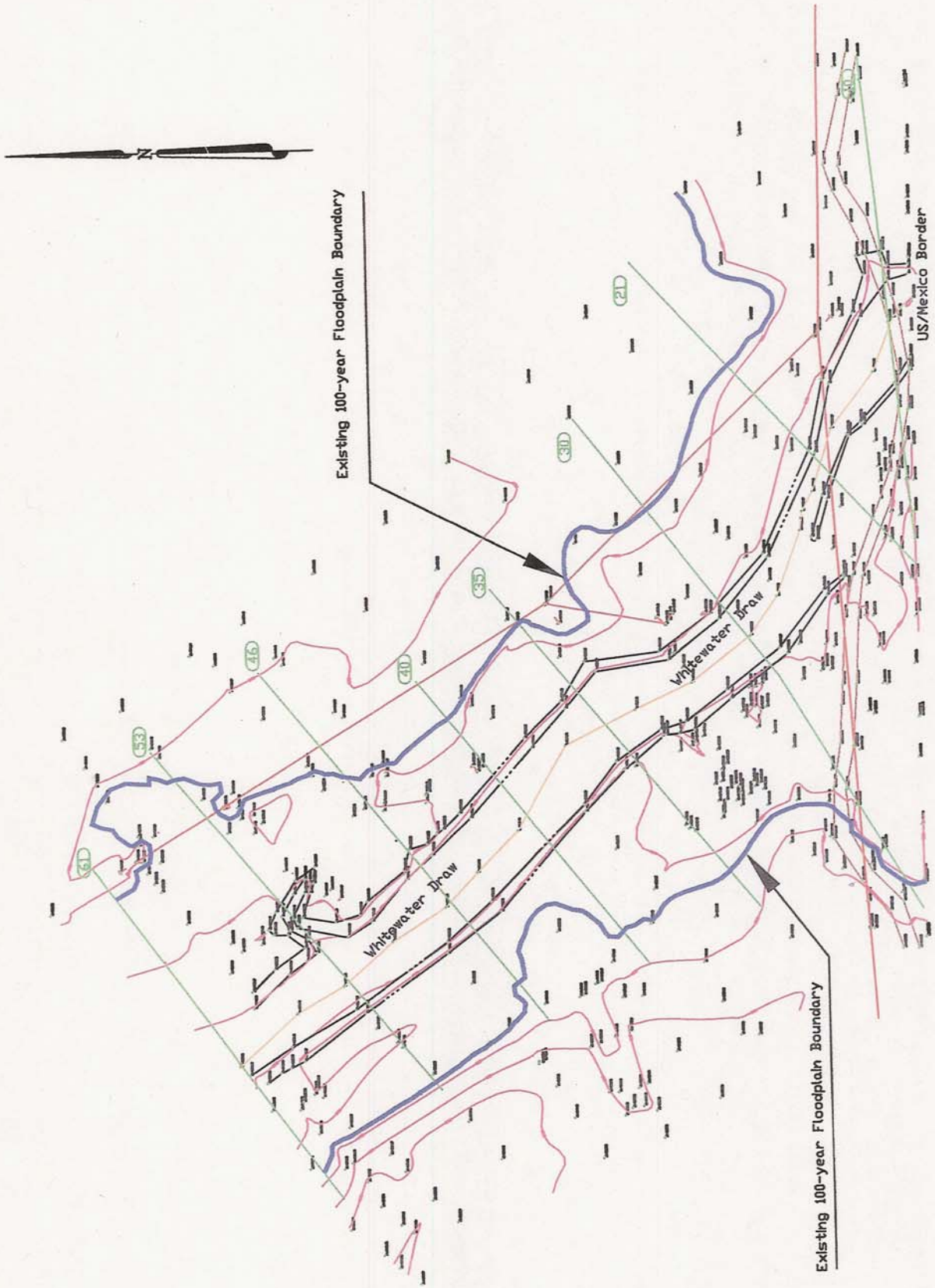
4 If it affects a residential area, business, or commercial property.

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

* Adapted from 40 CFR 50.

APPENDIX C

Soils and Floodplain Information



Existing 100-Year Floodplain at Whitewater Draw.

LEGEND

SOILS OF THE VALLEY FLOOR

A1 Gothard-Crot-Stewart Association - Shallow and deep, moderately well and somewhat poorly drained, nearly level, saline-alkali soils.

A2 Elfrida Association - Deep, well drained, dark colored, nearly level, calcareous soils.

A3 Karro Association - Deep, well drained, light colored, nearly level to strongly sloping, calcareous soils.

A4 McAllister Association - Deep, well drained, brown, nearly level, calcareous soils.

A5 Mohave Association - Deep, well drained, reddish brown, nearly level, moderately fine textured soils.

A6 Dry Lake Association - Moderately deep, moderately well drained, nearly level to gently sloping, loamy sands over limy saline-alkali material.

A7 Playa Association - Level or nearly level intermittent lake beds that are saline-alkali.

SOILS OF THE RIVER BOTTOMS AND ALLUVIAL FANS

B1 Comoro-Anthony-Grabe Association - Deep, well drained, nearly level, medium and moderately coarse textured soils.

B2 Vinton Association - Deep, well drained, nearly level to moderately sloping, coarse textured soils.

B3 Guest Association - Deep, well drained, nearly level, fine textured soils.

B4 Vinton-Gila Association - Deep, well drained, nearly level, medium and coarse textured soils.

SOILS OF THE VALLEY SLOPES

C1 Sonoita Association - Deep, well drained, nearly level to moderately sloping, moderately coarse textured soils.

C2 White House-Tubac-Forrest Association - Deep, well drained, nearly level to hilly, fine textured soils.

C3 Eba Association - Deep, well drained, nearly level to gently sloping, gravelly and very gravelly fine textured soils.

C4 Martinez Association - Deep, well drained, nearly level to gently sloping, very fine textured soils.

C5 Casto Association - Deep, well drained, strongly sloping to steep, very gravelly, moderately fine textured soils.

C6 Cruces Association - Shallow, well drained, nearly level to strongly sloping, moderately fine textured soils over a lime-cemented hardpan.

C7 Bonita-Sontag Association - Deep, well drained, nearly level to hilly, cobbly and gravelly clay soils.

SOILS OF THE FOOTHILLS

D1 Kimbrough-Cave Association - Shallow, well drained, nearly level to moderately steep, medium textured soils over a lime-cemented hardpan.

D2 Hathaway-Nickel Association - Deep, well drained, nearly level to hilly, gravelly and very gravelly loamy soils.

D3 Rilloso*-Latene Association - Deep, well drained, moderately sloping to steep, gravelly calcareous loam and sandy loam soils.

D4 Graham-Lampshire Association - Shallow and very shallow, dark colored, moderately steep to steep, cobbly and gravelly soils over andesitic and rhyolitic bedrock.

D5 Lampshire-Ustollic Haplargids Association - Shallow and very shallow, dark colored, moderately sloping to hilly, cobbly and gravelly soils over granite.

D6 Mabray Association - Shallow and very shallow, dark colored, moderately steep to hilly, very cobbly and gravelly loams over limestone.

D7 Krentz* Association - Shallow and very shallow, dark colored, moderately sloping to hilly, cobbly and gravelly loams over cinders.

D8 Rough Broken Land-Gullied Land Association - Steep and very steep, deeply dissected land with many deep gullies.

D9 Granite Rock Land Association - Very shallow and shallow, strongly sloping to steep, cobbly, stony and very stony soils over granite bedrock with 50 to 60 percent of the surface being rock outcrop.

SOILS OF THE MOUNTAINS

E1 Luzena-Faraway Association - Shallow and very shallow, dark colored, steep to very steep, cobbly and gravelly soils over andesite and rhyolite.

E2 Barkerville-Gaddes Association - Very shallow to moderately deep, steep to very steep, cobbly and gravelly, medium to moderately fine textured soils over granite.

E3 Tortugas Association - Shallow and very shallow, dark colored, steep to very steep, cobbly and stony loams over limestone.

Small areas of Rock land

Small areas of Sand dunes

Cinder cones

*Tentative series name subject to change in correlation .

GENERAL SOIL MAP

COCHISE COUNTY

ARIZONA

OCTOBER 1971

10 0 10 20 MILES

SCALE 1:500,000

ARIZONA STATE PLANE COORDINATE SYSTEM, EAST ZONE 100,000 FT. GRID

U. S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION

G R A H A M C O U N T Y

GREENLEE COUNTY

R.19E. R.20E. R.21E. R.22E. R.23E. R.24E. R.25E. R.26E. R.27E. R.28E. R.29E. R.30E R.31E. R32E.

109°30'

500,000 Ft.

800,000 Ft.

32°00'

CORONADO NATIONAL FOREST

CORONADO NATIONAL MEMORIAL

CHIRICAHUA NATL. MON.

CORONADO NATL. FOR.

SIERRA VISTA

BISBEE

WILCOX

BENSON

DOUGLAS

FORT HUACHUCA

Huachuca City

Tombstone

Pirtleville

Naco

Willcox Playa

Dos Cabezas

Bowie

San Simon

Portal

Chiricahua Pk.

Huachuca Pk.

Miller Peak

Dragoon Mts.

Cochise Head

Wood Mtn.

Hay Mtn.

Adam Pk.

Pomerene

St. David

Fairbank

Charleston

Hereford

Nicksville

Kansas Settlement

Sunsites

Courtland

Leeson

Elfrida

McNeal

Paul Spur

Apache Pk.

Raker

Turkey Cr.

Willow Wash

Hot Spring Can.

Babocomari

Tanner Can.

Dragoon Wash

Walnut Gulch

Whetstone Mts.

Black River

Silver Creek

Gold Gulch

San Simon

Maverick Mtn.

To Safford

To Tucson

To Sonoita

To Lordsburg

MEXICO

COCHISE COUNTY

This map is intended for general planning. Each delineation may contain soils different from those shown on the map. Use detailed soil maps for oper-

APPENDIX D

Threatened and Endangered Species Information

COMMON NAME	SCIENTIFIC	STATUS	COUNTY	ELEVATION RANGE	CFR
THREE FORKS SPRINGSNAIL	PYRGULOPSIS TRIVIALIS	CANDIDATE	APACHE	8000-8500	
ZUNI FLEABANE	ERIGERON RHIZOMATUS	THREATENED	APACHE	7,300 TO 8,000 FT	50 FR 18682; 4/28/85
MEXICAN GRAY WOLF	CANIS LUPUS BAILEYI	ENDANGERED	APACHE, COCHISE, GREENLEE, PIMA, SANTA	4,000-12,000	32 FR 4001, 03-11-
APACHE (ARIZONA) TROUT	ONCORHYNCHUS APACHE	THREATENED	APACHE, GREENLEE, GILA, GRAHAM, NAVAJO	>5000	40 FR 29864, 07-19-
BEAUTIFUL SHINER	CYPRINELLA FORMOSA	THREATENED	COCHISE	<4500	49 FR 34490, 8-31-
LEMMON FLEABANE	ERIGERON LEMMONII	CANDIDATE	COCHISE	1500-6000	
NEW MEXICAN RIDGE-NOSED RATTLESNAKE	CROTALUS WILLARDI OBSCURUS	THREATENED	COCHISE	5000-6000	43 FR 34479, 04-04-
WHOOPING CRANE	GRUS AMERICANA	ENDANGERED	COCHISE	4500	32 FR 4001, 03-11-
YAQUI CATFISH	ICTALURUS PRICEI	THREATENED	COCHISE	4000-5000	49 FR 34490, 08-31-
YAQUI TOPMINNOW	POECILIOPSIS OCCIDENTALIS SONORIENSIS	ENDANGERED	COCHISE	<4500	32 FR 4001, 03-11-
YAQUI CHUB	GILA PURPUREA	ENDANGERED	COCHISE (AZ), MEXICO	4000-8000	49 FR 34490, 08-31-
COCHISE PINCUSHION CACTUS	CORYPHANTHA ROBBINSORUM	THREATENED	COCHISE AND SONORA, MEXICO	>4200	51 FR 952, 1-9-1986
BLACK-TAILED PRAIRIE DOG	CYNOMYS LUDOVICIANUS	CANDIDATE	COCHISE, GRAHAM, AND GREENLEE	APPROX. 5,000 FT	
LESSER LONG-NOSED BAT	LEPTONYCTERIS CURASOAE YERBABUENAE	ENDANGERED	COCHISE, PIMA, SANTA CRUZ, GRAHAM, PINAL,	<8000	53 FR 38456, 09-30-
CANELO HILLS LADIES' TRESSES	SPIRANTHES DELITESCENS	ENDANGERED	COCHISE, SANTA CRUZ	about 5000	62 FR 665, 01-06-97
HUACHUCA SPRINGSNAIL	PYRGULOPSIS THOMPSONI	CANDIDATE	COCHISE, SANTA CRUZ	4500-6000	
NORTHERN APLOMADO FALCON	FALCO FEMORALIS SEPTENTRIONALIS	ENDANGERED	COCHISE, SANTA CRUZ	3500-9000	51 FR 6686, 01-25-86
BRADY PINCUSHION CACTUS	PEDIOCACTUS BRADYI	ENDANGERED	COCONINO	3850-4500	44 FR 61784, 10-26-
KANAB AMBERSNAIL	OXYLOMA HAYDENI KANABENSIS	ENDANGERED	COCONINO	2,900	57 FR 13657, 04-17-
SAN FRANCISCO PEAKS GROUNDSEL	SENECIO FRANCISCANUS	THREATENED	COCONINO	10900 +	48 FR 52743, 11-22-
SENTRY MILK-VETCH	ASTRAGALUS CREMNOPHYLAX VAR CREMNOPHYLAX	ENDANGERED	COCONINO	> 4000	55 FR 50184, 12-5-
WELSHS MILKWEED	ASCLEPIAS WELSHII	THREATENED	COCONINO	VARIES	52 FR 41435, 10-28-
BLACK-FOOTED FERRET	MUSTELA NIGRIPES	ENDANGERED	COCONINO, APACHE, NAVAJO	<10,500	32 FR 4001, 03-11-67
LITTLE COLORADO SPINEDACE	LEPIDOMEDA VITTATA	THREATENED	COCONINO, APACHE, NAVAJO	4000-8000	62 FR 38054
FICKEISEN PINCUSHION CACTUS	PEDIOCACTUS PEEBLESIANUS FICKEISENIAE	CANDIDATE	COCONINO, MOHAVE	4000-5000	
HUMPBACK CHUB	GILA CYPHA	ENDANGERED	COCONINO, MOHAVE	<4000	32 FR 4001, 03-11-
NAVAJO SEDGE	CAREX SPECUICOLA	THREATENED	COCONINO, NAVAJO, APACHE	6700-8000	50 CFR 19373, 6-8-85
GILA TROUT	ONCORHYNCHUS GILAE	ENDANGERED	GILA	6000-10000	32 FR 4001, 03-11-
GILA TOPMINNOW	POECILIOPSIS OCCIDENTALIS OCCIDENTALIS	ENDANGERED	GILA, PINAL, GRAHAM, YAVAPAI, SANTA CRUZ,	<4500	32 FR 4001, 03-11-
COLORADO PIKEMINNOW	PTYCHOCHEILUS LUCIUS	ENDANGERED	GILA, YAVAPAI	<4000	32 FR 4001, 03-11-
ARIZONA AGAVE	AGAVE ARIZONICA	ENDANGERED	GILA, YAVAPAI, MARICOPA	3000-8000	49 FR 21055, 05-18-
MOUNT GRAHAM RED SQUIRREL	TAMIASCIURUS HUDSONICUS GRAHAMENSIS	ENDANGERED	GRAHAM	>8000	52 FR 20994, 08-03-
ARIZONA CLIFFROSE	PURSHIA SUBINTEGRA	ENDANGERED	GRAHAM YAVAPAI MARICOPA MOHAVE	<4000	49 FR 22326 6-28-84
SPIKEDACE	MEDA FULGIDA	THREATENED	GRAHAM, PINAL, GREENLEE, YAVAPAI, APACHE'	<8000	51 FR 23769,07-01-
RAZORBACK SUCKER	XYRAUCHEN TEXANUS	ENDANGERED	GREENLEE, MOHAVE, PINAL, YAVAPAI, YUMA, LA	<8000	55 FR 21154, 05-22-
BROWN PELICAN	PELECANUS OCCIDENTALIS	ENDANGERED	LA PAZ YUMA	VARIES	35 FR 16047, 10-13-
DESERT PUPFISH	CYPRINODON MACULARIUS	ENDANGERED	LA PAZ, PIMA, GRAHAM, MARICOPA, PINAL,	<6000	51 FR 10842, 03-31-
ARIZONA HEDGEHOG CACTUS	ECHINOCEREUS TRIGLOCHIDIATUS ARIZONICUS	ENDANGERED	MARICOPA, GILA, PINAL	3700-5200	44 FR 61568,10-15-
CACTUS FERRUGINOUS PYGMY-OWL	GLAUCIDIUM BRASILIANUM CACTORUM	ENDANGERED	MARICOPA, YUMA, SANTA CRUZ, GRAHAM,	<4000	62 FR 10730, 3-10-97
DESERT TORTOISE, MOHAVE POPULATION	GOPHERUS AGASSIZII (XEROBATES)	THREATENED	MOHAVE	500-5100	55 FR 12178, 04-02-
HOLMGREN MILK-VETCH	ASTRAGALUS HOLMGRENIORUM	PROPOSED ENDANGERED	MOHAVE	2700-2800	65 FR 19728
HUALAPAI MEXICAN VOLE	MICROTUS MEXICANUS HUALPAIENSIS	ENDANGERED	MOHAVE	3500-7000	52 FR 36776, 10-01-
JONES' CYCLADENIA	CYCLADENIA HUMILIS VAR JONESII	THREATENED	MOHAVE	4390-8000	51 FR 18530
VIRGIN RIVER CHUB	GILA SEMINUDA	ENDANGERED	MOHAVE (AZ), WASHINGTON (UT), AND CLARK	< 4,500 ft	54 FR 35305, 08-24-
WOUNDFIN	PLAGOPTERUS ARGENTISSIMUS	ENDANGERED	MOHAVE (AZ), WASHINGTON (UT), AND CLARK	<4500	35 FR 16047, 10-13-
SILER PINCUSHION CACTUS	PEDIOCACTUS SILERI	THREATENED	MOHAVE COCONINO	2800-5400	44 FR 61788, 11-28-
MEXICAN SPOTTED OWL	STRIX OCCIDENTALIS LUCIDA	THREATENED	MOHAVE, COCONINO, NAVAJO, APACHE,	4100-9000	56 FR 14678, 04-11-
BONYTAIL CHUB	GILA ELEGANS	ENDANGERED	MOHAVE, LA PAZ	<4000	45 FR 27710, 04-23-
PEEBLES NAVAJO CACTUS	PEDIOCACTUS PEEBLESIANUS VAR PEEBLESIANUS	ENDANGERED	NAVAJO	5400-5600	44 FR 61922, 10-28-
KEARNEY'S BLUE STAR	AMSONIA KEARNEYANA	ENDANGERED	PIMA	3600-3800	54 FR 2131, 01-19-
MASKED BOBWHITE	COLINUS VIRGINIANUS RIDGEWAYI	ENDANGERED	PIMA	1000-4000	35 FR 4001, 03-11-
SONOYTA MUD TURTLE	KINOSTERNON SONORIENSE LONGIFEMORALE	CANDIDATE	PIMA	1,100 FEET	
PIMA PINEAPPLE CACTUS	CORYPHANTHA SCHEERI ROBUSTISPINA	ENDANGERED	PIMA, SANTA CRUZ	2300-5000	57 FR 14374, 04-20-
HUACHUCA WATER UMBEL	LILAEOPSIS SCHAFFNERIANA ssp RECURVA	ENDANGERED	PIMA, SANTA CRUZ, COCHISE	3500-6500	62 FR 665, 01-06-97
SONORAN PRONGHORN	ANTILOCAPRA AMERICANA SONORIENSIS	ENDANGERED	PIMA, YUMA, MARICOPA	2000-4000	32 FR 4001, 03-11-67
LOACH MINNOW	TIAROGA COBITIS	THREATENED	PINAL, GRAHAM, GREENLEE, GILA, APACHE,	<8000	51 FR 39468, 10-28-
ACUNA CACTUS	ECHINOMASTUS ERECTOCENTRUS ACUNENSIS	CANDIDATE	PINAL, PIMA	1300-2000	
NICHOL'S TURK'S HEAD CACTUS	ECHINOCACTUS HORIZONTHALONIUS VAR NICHOLII	ENDANGERED	PINAL, PIMA	2400-4100	44 FR 61927, 10-28-
SONORA CHUB	GILA DITAENIA	THREATENED	SANTA CRUZ	3900	51 FR 18042, 04-30-
CHIRICAHUA LEOPARD FROG	RANA CHIRICAHUENSIS	PROPOSED	SANTA CRUZ, APACHE, GILA, PIMA, COCHISE,	3300-8900	65 FR 37343, 6-14-
SONORA TIGER SALAMANDER	AMBYSTOMA TIGRINUM STEBBINSI	ENDANGERED	SANTA CRUZ, COCHISE	4000-6300	62 FR 665, 01-06-97
GILA CHUB	GILA INTERMEDIA	CANDIDATE	SANTA CRUZ, GILA, GREENLEE, PIMA, COCHISE,	2000 - 3500	
OCELOT	LEOPARDUS (=FELIS) PARDALIS	ENDANGERED	SANTA CRUZ, PIMA, COCHISE	<8000	47 FR 31670; 07-21-
PAGE SPRINGSNAIL	PYRGULOPSIS MORRISONI	CANDIDATE	YAVAPAI	3300-3800	
SOUTHWESTERN WILLOW FLYCATCHER	EMPIDONAX TRAILLII EXTIMUS	ENDANGERED	YAVAPAI, GILA, MARICOPA, MOHAVE,	<8500	60 FR 10894, 02-27-
MOUNTAIN PLOVER	CHARADRIUS MONTANUS	PROPOSED THREATENED	YUMA, PIMA, COCHISE, PINAL, APACHE	VARIABLE	64 FR 7587; 02-18-
YUMA CLAPPER RAIL	RALLUS LONGIROSTRIS YUMANENSIS	ENDANGERED	YUMA, LA PAZ, MARICOPA, PINAL, MOHAVE	<4500	32 FR 4001, 03-11-
BALD EAGLE	HALIAEETUS LEUCOCEPHALUS	THREATENED	YUMA, LA PAZ, MOHAVE, YAVAPAI, MARICOPA,	VARIES	60 FR 35999, 07-12-

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

1/14/99

1)LISTED TOTAL= 21

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 (ORCHICACEAE). FLOWER: STALK 50 CM TALL. MAY CONTAIN 40 WHITE FLOWERS SPIRALLY ARRANGED ON THE FLOWERING STALK.

ELEVATION RANGE: about 5000 FT.

COUNTIES: COCHISE, SANTA CRUZ

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

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

NAME: COCHISE PINCUSHION CACTUS *CORYPHANTHA ROBBINSORUM*

STATUS: THREATENED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 51 FR 952, 1-9-1986

DESCRIPTION: A SMALL UNBRANCHED CACTUS WITH NO CENTRAL SPINES AND 11-17 WHITE RADIAL SPINES. THE BELL-SHAPED FLOWERS ARE BORNE ON THE ENDS OF TUBERCULES (Protrusions). FLOWERS: BELL SHAPED. PALE YELLOW-GREEN. FRUITS, ORANGE-RED TO RED

ELEVATION RANGE: >4200 FT.

COUNTIES: COCHISE AND SONORA, MEXICO

HABITAT: SEMIDESERT GRASSLAND WITH SMALL SHRUBS, AGAVE, OTHER CACTI, AND GRAMA GRASS.

GROWS ON GRAY LIMESTONE HILLS.

NAME: HUACHUCA WATER UMBEL *LILAEOPSIS SCHAFFNERIANA ssp RECURVA*

STATUS: ENDANGERED CRITICAL HAB Yes 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.

ELEVATION RANGE: 3500-6500 FT.

COUNTIES: PIMA, SANTA CRUZ, COCHISE

HABITAT: CIENEGAS, PERENNIAL LOW GRADIENT STREAMS, WETLANDS

AND IN ADJACENT SONORA, MEXICO. WEST OF THE CONTINENTAL DIVIDE. POPULATIONS ALSO ON FORT HUACHUCA MILITARY RESERVATION. PROPOSED CRITICAL HABITAT IN COCHISE AND SANTA CRUZ COUNTIES (63 FR 71838)

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

1/14/99

NAME: NEW MEXICAN RIDGE-NOSED RATTLESNAKE *CROTALUS WILLARDI OBSCURUS*

STATUS: THREATENED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 43 FR 34479, 08-04-1978

DESCRIPTION: SMALL 12-24 INCHES, SECRETIVE GRAYISH-BROWN WITH DISTINCT RIDGE ON THE END OF THE SNOUT. THE DORSAL SURFACE HAS OBSCURE, IRREGULARLY SPACED WHITE CROSSBARS EDGED WITH BROWN (NOT A BOLD PATTERN).

ELEVATION RANGE 5600-9000 FT.

COUNTIES: COCHISE

HABITAT: PRESUMABLY CANYON BOTTOMS IN PINE-OAK & PINE-FIR COMMUNITIES WITH ALDER, MAPLE, OAK, & BOX ELDER

THE SUBSPECIES HAS NOT BEEN DOCUMENTED IN ARIZONA. HOWEVER, IT HAS BEEN OBSERVED NEAR THE ARIZONA BORDER IN THE PELONCILLO MOUNTAINS AND LIKELY OCCURS IN THE ARIZONA PORTION OF THAT RANGE AS WELL. ANOTHER SUBSPECIES, (CROTALUS WILLARDI WILLARDI), IS AN ARIZONA STATE CANDIDATE.

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

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. THIS SPECIES HAS A SIGNED CONSERVATION AGREEMENT IN PLACE, BUT THE DEVELOPMENT OF THE AGREEMENT WAS NOT SUFFICIENT TO REMOVE THE NEED TO LIST THIS SPECIES

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.

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

1/14/99

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

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 53 FR 38455, 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: <5000 FT.

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

HABITAT: DESERT SCRUB HABITAT WITH AGAVE AND COLUMNAR 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: 4,000-12,000FT.

COUNTIES: APACHE, COCHISE, GREENLEE, 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 (COCHISE, PIMA, SANTA CRUZ) CONTINUE TO BE RECEIVED. INDIVIDUALS MAY STILL PERSIST IN MEXICO. EXPERIMENTAL NONESSENTIAL POPULATION INTRODUCED IN THE BLUE PRIMITIVE AREA OF GREENLEE AND APACHE COUNTIES.

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.

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

1/14/99

NAME: BEAUTIFUL SHINER *CYPRINELLA FORMOSA*

STATUS: THREATENED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 49 FR 34490, 8-31-1984

DESCRIPTION: SMALL (2.5 INCHES) SHINY MINNOW AND VERY SIMILAR TO RED SHINER. MALES COLORFUL DURING BREEDING (YELLOW-ORANGE OR ORANGE ON CAUDAL AND LOWER FINS AND BLUISH BODY.

ELEVATION RANGE: <4500 FT.

COUNTIES: COCHISE

HABITAT: SMALL TO MEDIUM SIZED STREAMS AND PONDS WITH SAND, GRAVEL, AND ROCK BOTTOMS.

VIRTUALLY EXTIRPATED IN THE UNITED STATES, WITH THE EXCEPTION OF A FEW ISOLATED POPULATIONS ON NATIONAL WILDLIFE REFUGES AND IN MEXICO. SAME CRITICAL HABITAT AS YAQUI CHUB AND CATFISH (SEE 49 FR 34490, 08-31-1984).

NAME: YAQUI CATFISH *ICTALURUS PRICEI*

STATUS: THREATENED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 49 FR 34490, 08-31-1984

DESCRIPTION: SIMILAR TO CHANNEL CATFISH (*Ictalurus punctatus*) EXCEPT ANAL FIN BASE IS SHORTER AND THE DISTAL MARGIN OF THE ANAL FIN IS BROADLY ROUNDED WITH 23-25 SOFT RAYS. BODY USUALLY PROFUSELY SPECKLED.

ELEVATION RANGE 4000-5000 FT.

COUNTIES: COCHISE

HABITAT: MODERATE TO LARGE STREAMS WITH SLOW CURRENT OVER SAND AND ROCK BOTTOMS

CRITICAL HABITAT ALL AQUATIC HABITATS IN THE MAIN PORTION OF SAN BERNADINO NATIONAL WILDLIFE REFUGE

NAME: YAQUI CHUB *GILA PURPUREA*

STATUS: ENDANGERED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 49 FR 34490, 08-31-1984

DESCRIPTION: MEDIUM SIZED MINNOW (<8 INCHES) DARK COLORED, LIGHTER BELOW. DARK TRIANGULAR CAUDAL SPOT

ELEVATION RANGE 4000-6000 FT.

COUNTIES: COCHISE (AZ), MEXICO

HABITAT: DEEP POOLS OF SMALL STREAMS, POOLS, OR PONDS NEAR UNDERCUT BANKS.

CRITICAL HABITAT INCLUDES ALL AQUATIC HABITATS OF THE MAIN PORTION SAN BERNADINO NATIONAL WILDLIFE REFUGE

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

1/14/99

NAME: YAQUI TOPMINNOW *POECILIOPSIS OCCIDENTALIS SONORIENSIS*

STATUS: ENDANGERED CRITICAL HAB No RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-1967

DESCRIPTION: SMALL (2 INCHES) TOPMINNOW GUPPY-LIKE, LIVE BEARING, LACKING DARK SPOTS. BREEDING MALES JET BLACK WITH YELLOW FINS.

ELEVATION RANGE: <4500 FT.

COUNTIES: COCHISE

HABITAT: SMALL TO MODERATE SIZED STREAMS, SPRINGS, & CIENEGAS GENERALLY IN SHALLOWS

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, 05-02-70

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. SPECIES HAS BEEN PROPOSED FOR DELISTING (63 FR 45446) BUT STILL RECEIVES FULL PROTECTION UNDER ESA

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, COCHISE

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.

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

1/14/99

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

STATUS: ENDANGERED CRITICAL HAB Yes 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, COCHISE

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. PROPOSED CRITICAL HABITAT IN PIMA, COCHISE, PINAL AND MARICOPA COUNTIES (64 FR 71821).

NAME: MEXICAN SPOTTED OWL *STRIX OCCIDENTALIS LUCIDA*

STATUS: THREATENED CRITICAL HAB No 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.

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

1/14/99

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 50 CFR:62 FR 39129, 7/22/97.

NAME: WHOOPING CRANE *GRUS AMERICANA*

STATUS: ENDANGERED CRITICAL HAB Yes RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-1967; 43 FR 20938, 05-15-73

DESCRIPTION: TALLEST AMERICAN BIRD (UP TO 5 FEET) SNOWY WHITE, LONG NECK AND LEGS, BLACK WING TIPS, RED CROWN, AND BLACK WEDGE SHAPED PATCH OF FETHERS BEHIND ITS EYE.

ELEVATION RANGE: 4500 FT

COUNTIES: COCHISE

HABITAT: MARSHES, PRAIRIES, RIVER BOTTOMS

BIRDS IN THE ROCKY MOUNTAIN POPULATION ARE OCCASIONAL VISITORS IN ARIZONA DURING MIGRATION USUALLY NEAR WILCOX PLAYA.

NAME: SONORA TIGER SALAMANDER *AMBYSTOMA TIGRINUM STEBBINSI*

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

DESCRIPTION: 2.8 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: 4000-8300 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.

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

1/14/99

2) PROPOSED TOTAL= 1

NAME: BLUMER'S DOCK (CHIRICAHUA) *RUMEX ORTHONEURUS*

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

DESCRIPTION: LARGE LONG-LIVED PERENNIAL PLANT IN THE BUCKWHEAT FAMILY THAT CAN REACH 1.2-2.0 METERS. LARGE BROAD, OVAL SEMI-SUCCULENT LEAVES ARE BRIGHT GREEN. CONSPICOUS SECONDARY VEINS AT RIGHT ANGLES TO THE MIDVEIN ELEVATION RANGE: 6500-9000 FT

COUNTIES: APACHE, COCHISE, GILA, GRAHAM, NAVAJO

HABITAT: MID TO HIGH ELEVATION SPRINGS, STREAMS, & WETLANDS WITH MOIST ORGANIC SOILS OR SHADED CANYONS

SPECIES FOUND IN CHIRICAHUA, PINALENO, HUACHUCA, SIERRA ANCHA, AND WHITE MOUNTAINS. SPECIES FOUND ON CORONADO, A-S, TONTO, SOME ON AND COCONINO. SPECIES ALSO FOUND IN WESTERN AND NORTHERN NEW MEXICO (GILA, SANTA FE, AND CARSON NF).

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

1/14/99

3) CANDIDATE TOTAL=5

NAME: LEMMON FLEABANE *ERIGERON LEMMONII*

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

DESCRIPTION: A PROSTRATE PERENNIAL IN THE SUNFLOWER FAMILY. STEMS AND LEAVES ARE DENSELY HAIRY. FLOWERS LOOK LIKE SMALL DELICATE DAISIES WITH WHITE TO LIGHT PURPLE OUTER PETALS AND YELLOW INNER PETALS.

ELEVATION RANGE: 1500-6000 FT.

COUNTIES: COCHISE

HABITAT: GROWS IN DENSE CLUMPS IN CREVICES, LEDGES, AND BOULDERS IN CANYON BOTTOMS IN PINE-OAK WOODLAND

ONE SITE ON FORT HUACHUCA MILITARY RESERVATION

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) OTHER POPULATIONS FOUND ON FORT HUACHUCA MILITARY PROPERTY

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

1/14/99

NAME: MOUNTAIN PLOVER *CHARADRIUS MONTANUS*

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

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

COUNTIES: YUMA, SANTA CRUZ, PIMA, COCHISE, PINAL, APACHE

HABITAT: OPEN ARID PLAINS, SHORT-GRASS PRAIRIES, AND SCATTERED CACTUS.

AZ PROVIDES WINTERING HABITAT ONLY. SPECIES PRIMARILY FOUND IN ROCKY MOUNTAIN STATES FROM CANADA TO MEXICO

NAME: CHIRICAHUA LEOPARD FROG *RANA CHIRICAHUENSIS*

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

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. SPECIES ALSO FOUND ON FORT HUACHUCA

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

1/14/99

CONSERVATION AGREEMENT TOTAL= 1

NAME: RAMSEY CANYON LEOPARD FROG *RANA SUBAQUAVOCALIS*

STATUS: NONE CRITICAL HAB No RECOVERY PLAN. No CFR:

DESCRIPTION: BROWN OR GREEN FROG, 2.5 TO 4 INCHES LONG; SPOTS ROUNDED WITH LIGHT BORDERS; DORSOLATERAL FOLDS ARE INTERRUPTED POSTERIORLY AND DEFLECTED MEDIALLY; YELLOWISH PIGMENTATION ON THE GROIN WHICH MAY EXTEND INTO THE POSTERIOR VENTER ELEVATION RANGE: 5,000 FT FT.

COUNTIES: COCHISE

HABITAT: STTREAM AND PONDED AQUATIC HABITATS

CONSERVATION AGREEMENT BETWEEN THE SERVICE, ARIZONA GAME AND FISH DEPARTMENT, THE NATURE CONSERVANCY, BUREAU OF LAND MANAGEMENT, CORONADO NATIONAL FOREST, THE US ARMY INTELLIGENCE CENTER AND FORT HUACHUCA, AND A PRIVATE LANDOWNER WAS FINALIZED JULY 1998

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The following list includes those species of native plants and parts of plants, including the seeds and fruit, whose prospects for survival in Arizona are in jeopardy or which are in danger of extinction.

AGAVACEAE Agave Family (including Nolinaceae)
- *Agave arizonica* Gentry & Weber–Arizona agave
- *Agave delamateri* Hodgson & Slauson
- *Agave murpheyi* Gibson–Hohokam agave
- *Agave parviflora* Torr.–Santa Cruz striped agave, Small-flowered agave
- *Agave schottii* Engelm. var. *treleasei* (Toumey) Kearney & Peebles

APIACEAE Parsley Family. [= Umbelliferae]
- *Lilaeopsis schaffneriana* (Schlecht.) Coult. & Rose ssp. *recurva* (A. W. Hill) Affolter-Cienega false rush, Huachuca water umbel.
- Syn.: *Lilaeopsis recurva* A. W. Hill

APOCYNACEAE Dogbane Family
- *Amsonia kearneyana* Woods.–Kearney's bluestar
- *Cycladenia humilis* Benth. var. *jonesii* (Eastw.) Welsh & Atwood–Jones'cycladenia

ASCLEPIADACEAE Milkweed Family
- *Asclepias welshii* N. & P. Holmgren–Welsh's milkweed

ASTERACEAE Sunflower Family [= Compositae]
- *Erigeron lemmonii* Gray–Lemmon fleabane
- *Senecio franciscanus* Greene–San Francisco Peaks groundsel
- *Senecio huachucanus* Gray–Huachuca groundsel

BURSERACEAE Torch Wood Family
- *Bursera fagaroides* (H.B.K.) Engler–Fragrant bursera

CACTACEAE Cactus Family

- *Carnegiea gigantea* (Engelm.) Britt. & Rose–Saguaro: 'Crested' or 'Fan-top' form only
- Syn.: *Cereus giganteus* Engelm.
- *Coryphantha recurvata* (Engelm.) Britt. & Rose–Golden-chested beehive cactus
- Syn.: *Mammillaria recurvata* Engelm.
- *Coryphantha robbinsorum* (W. H. Earle) A. Zimmerman–Cochise pincushion cactus Robbin's cory cactus.
- Syn.: *Cochiseia robbinsorum* W.H. Earle
- *Coryphantha scheeri* (Kuntze) L. Benson var. *robustispina* (Schott) L. Benson–Scheer's strong-spined cory cactus.
- Syn.: *Mammillaria robustispina* Schott
- *Echinocactus horizonthalonius* Lemaire var. *nicholii* L. Benson–Nichol's Turk's heac cactus
- *Echinocereus triglochidiatus* Engelm. var. *arizonicus* (Rose ex Orcutt) L. Benson–Arizona hedgehog cactus
- *Echinomastus erectocentrus* (Coult.) Britt. & Rose var. *acunensis* (W.T.Marshall) L.Benson–Acuna cactus
- Syn.: *Neolloydia erectocentra* (Coult.) L. Benson var. *acunensis* (W. T. Marshall) L. Benson
- *Pediocactus bradyi* L. Benson–Brady's pincushion cactus
- *Pediocactus paradinei* B. W. Benson–Paradine plains cactus
- *Pediocactus peeblesianus* (Croizat) L. Benson var. *fickeiseniae* L. Benson
- *Pediocactus peeblesianus* (Croizat) L. Benson var. *peeblesianus* Peebles' Navajo cactus, Navajo plains cactus
- Syn.: *Navajoa peeblesiana* Croizat
- *Pediocactus sileri* (Engelm.) L. Benson–Siler pincushion cactus
- Syn.: *Utahia sileri* (Engelm.) Britt. & Rose

COCHLOSPERMACEAE Cochlospermum Family
- *Amoreuxia gonzalezii* Sprague & Riley

CYPERACEAE Sedge Family
- *Carex specuicola* J. T. Howell–Navajo sedge

FABACEAE Pea Family [=Leguminosae]
- *Astragalus cremnophylax Barneby var. cremnophylax Sentry milk vetch*
- *Astragalus holmgreniorum* Barneby–Holmgren milk-vetch
- *Dalea tentaculoides* Gentry–Gentry indigo bush

LENNOACEAE Lennoa Family
- *Pholisma arenarium* Nutt.–Scaly-stemmed sand plant
- *Pholisma sonorae* (Torr. ex Gray) Yatskievych–Sandfood, sandroot
- Syn.: *Ammobroma sonorae* Torr. ex Gray

LILIACEAE Lily Family
- *Allium gooddingii* Ownbey–Goodding's onion

ORCHIDACEAE Orchid Family

- *Cypripedium calceolus* L. var. *pubescens* (Willd.) Correll–Yellow lady's slipper
- *Hexalectris warnockii* Ames & Correll–Texas purple spike
- *Spiranthes delitescens* C. Sheviak

POACEAE Grass Family [=Gramineae]
- *Puccinellia parishii A.S. Hitchc.–Parish alkali grass*

POLYGONACEAE Buckwheat Family
- *Rumex orthoneurus* Rech. f.

PSILOTACEAE Psilotum Family
- *Psilotum nudum* (L.) Beauv. Bush Moss, Whisk Fern

RANUNCULACEAE Buttercup Family
- *Cimicifuga arizonica* Wats.–Arizona bugbane
- *Clematis hirsutissima* Pursh var. *arizonica* (Heller) Erickson–Arizona leatherflower.

ROSACEAE Rose Family
- *Purshia subintegra* (Kearney) J. Hendrickson–Arizona cliffrose, Burro Creek cliffrose
- Syn.: *Cowania subintegra* Kearney

SALICACEAE Willow Family
- *Salix arizonica* Dorn–Arizona willow

SCROPHULARIACEAE Figwort Family
- *Penstemon discolor* Keck–Variegated beardtongue

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The following list includes those species of native plants that are not included in the highly safeguarded category but are subject to damage by theft or vandalism. In addition to the plants listed under Agavaceae, Cactaceae, Liliaceae, and Orchidaceae all other species in these families are salvage restricted protected native plants.

AGAVACEAE Agave Family (including Nolinaceae)

- *Agave chrysantha* Peebles
- *Agave deserti* Engelm. ssp. *simplex* Gentry–Desert agave
- *Agave mckelveyana* Gentry
- *Agave palmeri* Engelm.
- *Agave parryi* Engelm. var. *couseii* (Engelm. ex Trel.) Kearney & Peebles
- *Agave parryi* Engelm. var. *huachucensis* (Baker) Little ex L. Benson
  Syn.: *Agave huachucensis* Baker
- *Agave parryi* Engelm. var. *parryi*
- *Agave schottii Engelm. var. schottii – Shindigger*
- *Agave toumeyana* Trel. ssp. *bella* (Breitung) Gentry
- *Agave toumeyana* Trel. ssp. *toumeyana*
- *Agave utahensis* Engelm. spp. *kaibabensis* (McKelvey) Gentry
- Syn.: *Agave kaibabensis* McKelvey
- *Agave utahensis* Engelm. var. *utahensis*
- *Dasylirion wheeleri* Wats.–Sotol, desert spoon
- *Nolina bigelovii* (Torr.)Wats.–Bigelow's nolina
- *Nolina microcarpa* Wats.–Beargrass, sacahuista
- *Nolina parryi* Wats.–Parry's nolina
- *Nolina texana* Wats. var. *compacta* (Trel.) Johnst.–Bunchgrass
- *Yucca angustissima* Engelm. var. *angustissima*
- *Yucca angustissima* Engelm. var. *kanabensis* (McKelvey) Reveal
- Syn.: *Yucca kanabensis* McKelvey
- *Yucca arizonica* McKelvey
- *Yucca baccata* Torr. var. *baccata*–Banana yucca
- *Yucca baccata* Torr. var. *vespertina* McKelvey
- *Yucca baileyi* Woot. & Standl. var. *intermedia* (McKelvey) Reveal
- Syn.: *Yucca navajoa* Webber
- *Yucca brevifolia* Engelm. var. *brevifolia*–Joshua tree
- *Yucca brevifolia* Engelm. var. *jaegeriana* McKelvey
- *Yucca elata* Engelm. var. *elata*–Soaptree yucca, palmilla
- *Yucca elata* Engelm var. *utahensis* (McKelvey) Reveal

- Syn.: *Yucca utahensis* McKelvey
- *Yucca elata* Engelm. var. *verdiensis* (McKelvey) Reveal
- Syn.: *Yucca verdiensis* McKelvey
- *Yucca harrimaniae* Trel.
- *Yucca schidigera* Roezl.–Mohave yucca, Spanish dagger
- *Yucca schottii* Engelm.–Hairy yucca
- *Yucca thornberi* McKelvey
- *Yucca whipplei* Torr. var. *whipplei*–Our Lord's candle
- Syn.: *Yucca newberryi* McKelvey

AMARYLLIDACEAE Amaryllis Family
- *Zephyranthes longifolia* Hemsl.–Plains Rain Lily

ANACARDIACEAE Sumac Family
- *Rhus kearneyi* Barkley–Kearney Sumac

ARECACEAE Palm Family [=Palmae]
- *Washingtonia filifera* (Linden ex Andre) H. Wendl–California fan palm

ASTERACEAE Sunflower Family [=Compositae]
- *Cirsium parryi* (Gray) Petrak ssp. *mogollonicum* Schaak
- *Cirsium virginensis* Welsh–Virgin thistle
- *Erigeron kuschei* Eastw.–Chiricahua fleabane
- *Erigeron piscaticus* Nesom–Fish Creek fleabane
- *Flaveria macdougalii* Theroux, Pinkava & Keil
- *Perityle ajoensis* Todson–Ajo rock daisy
- *Perityle cochisensis* (Niles) Powell–Chiricahua rock daisy
- *Senecio quaerens* Greene–Gila groundsel

BURSERACEAE Torch-Wood Family
- *Bursera microphylla* Gray–Elephant tree, torote

CACTACEAE Cactus Family
- *Carnegiea gigantea* (Engelm.) Britt. & Rose–Saguaro
- Syn.: *Cereus giganteus* Engelm.
- *Coryphantha missouriensis* (Sweet) Britt. & Rose
- *Coryphantha missouriensis* (Sweet) Britt. & Rose var. *marstonii* (Clover) L. Benson
- *Coryphantha scheeri* (Kuntze) L. Benson var. *valida* (Engelm.) L. Benson
- *Coryphantha strobiliformis* (Poselger) var. *orcuttii* (Rose) L. Benson
- *Coryphantha strobiliformis* (Poselger) var. *strobiliformis*
- *Coryphantha vivipara* (Nutt.) Britt. & Rose var. *alversonii* (Coult.) L. Benson
- *Coryphantha vivipara* (Nutt.) Britt. & Rose var. *arizonica* (Engelm.) W. T. Marshall
- Syn.: *Mammillaria arizonica* Engelm.
- *Coryphantha vivipara* (Nutt.) Britt. & Rose var. *bisbeeana* (Orcutt) L. Benson
- *Coryphantha vivipara* (Nutt.) Britt. & Rose var. *deserti* (Engelm.) W. T. Marshall
  Syn.: *Mammillaria chlorantha* Engelm.
- *Coryphantha vivipara* (Nutt.) Britt. & Rose var. *rosea* (Clokey) L. Benson
- *Echinocactus polycephalus* Engelm. & Bigel. var. *polycephalus*
- *Echinocactus polycephalus* Engelm. & Bigel. var. *xeranthemoides* Engelm. ex Coult
  Syn.: *Echinocactus xeranthemoides* Engelm. ex Coult.

- *Echinocereus engelmannii* (Parry ex Engelm.) Lemaire var. *aciculans* L. Benson
- *Echinocereus engelmannii* (Parry ex Engelm.) Lemaire var. *armatus* L. Benson
- *Echinocereus engelmannii* (Parry ex Engelm.) Lemaire var. *chrysocentrus* L. Benson
- *Echinocereus engelmannii* (Parry ex. Engelm.) Lemaire var. *engelmannii*
- *Echinocereus engelmannii* (Parry) Lemaire var. *variegatus* (Engelm.) Engelm. ex Rümpler
- *Echinocereus fasciculatus* (Engelm. ex B. D. Jackson) L. Benson var. fasciculatus
  Syn.: *Echinocereus fendleri* (Engelm.) Rümpler var. *fasciculatus* (Engelm. ex B. D. Jackson) N. P. Taylor, *Echinocereus fendleri* (Engelm.) Rümpler var. *robusta* L. Benson; *Mammillaria fasciculata* Engelm.
- *Echinocereus fasciculatus* (Engelm. ex B. D. Jackson) L. Benson var. *bonkerae* (Thornber & Bonker) L. Benson.
  Syn.: *Echinocereus boyce-thompsonii* Orcutt var. *bonkerae* Peebles; *Echinocereus fendleri* (Engelm.) Rümpler var. *bonkerae* (Thornber & Bonker) L. Benson
- *Echinocereus fasciculatus* (Engelm. ex B. D. Jackson) L. Benson var. *boyce-thompsonii* (Orcutt) L. Benson
  Syn.: *Echinocereus boyce-thompsonii* Orcutt
- *Echinocereus fendleri* (Engelm.) Rümpler var. *boyce-thompsonii* (Orcutt) L. Benson
- *Echinocereus fendleri* (Engelm.) Rümpler var. *fendleri*
- *Echinocereus fendleri* (Engelm.) Rümpler var. *rectispinus* (Peebles) L. Benson
- *Echinocereus ledingii* Peebles
- *Echinocereus nicholii* (L. Benson) Parfitt.
  Syn.: *Echinocereus engelmannii* (Parry ex Engelm.) Lemaire var. *nicholii* L. Benson
- *Echinocereus pectinatus* (Scheidw.) Engelm. var. *dasyacanthus* (Engelm.) N. P. Taylor
  Syn.: *Echinocereus pectinatus* (Scheidw.) Engelm. var. *neomexicanus* (Coult.) L. Benson
- *Echinocereus polyacanthus* Engelm. (1848) var. *polyacanthus*
- *Echinocereus pseudopectinatus* (N. P. Taylor) N. P. Taylor
  Syn.: *Echinocereus bristolii* W. T. Marshall var. *pseudopectinatus* N. P. Taylor, *Echinocereus pectinatus* (Scheidw.) Engelm. var. *pectinatus sensu* Kearney and Peebles, Arizona Flora, and L. Benson, The Cacti of Arizona and The Cacti of the United States and Canada.
- *Echinocereus rigidissimus* (Engelm.) Hort. F. A. Haage.
  Syn.: *Echinocereus pectinatus* (Scheidw.) Engelm. var. *rigidissimus* (Engelm.) Engelm. ex Rümpler–Rainbow cactus
- *Echinocereus triglochidiatus* Engelm. var. *gonacanthus* (Engelm. & Bigel.) Boiss.
- *Echinocereus triglochidiatus* Engelm. var. *melanacanthus* (Engelm.) L. Benson
  Syn.: *Mammillaria aggregata* Engelm.
- *Echinocereus triglochidiatus* Engelm. var. *mojavensis* (Engelm.) L. Benson
- *Echinocereus triglochidiatus* Engelm. var. *neomexicanus* (Standl.) Standl. ex W. T. Marshall.
  Syn.: *Echinocereus triglochidiatus* Engelm. var. *polyacanthus* (Engelm. 1859 non 1848) L. Benson
- *Echinocereus triglochidiatus* Engelm. var. *triglochidiatus*
- *Echinomastus erectocentrus* (Coult.) Britt. & Rose var. *erectocentrus*
  Syn.: *Neolloydia erectocentra* (Coult.) L. Benson var. *erectocentra*
- *Echinomastus intertextus* (Engelm.) Britt. & Rose
  Syn.: *Neolloydia intertexta* (Engelg.) L. Benson
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Syn.: *Neolloydia johnsonii* (Parry) L. Benson
- *Epithelantha micromeris* (Engelm.) Weber ex Britt. & Rose
- *Ferocactus cylindraceus* (Engelm.) Orcutt var. *cylindraceus*–Barrel cactus
  Syn.: *Ferocactus acanthodes* (Lemaire) Britt. & Rose var. *acanthodes*
- *Ferocactus cylindraceus* (Engelm.) Orcutt var. *eastwoodiae* (Engelm.) N. P. Taylor
  Syn.: *Ferocactus acanthodes* (Lemaire) Britt. & Rose var. *eastwoodiae* L. Benson; Ferocactus eastwoodiae (L. Benson) L. Benson
- *Ferocactus cylindraceus* (Engelm.) Orcutt. var. *lecontei* (Engelm.) H. Bravo
  Syn.: *Ferocactus acanthodes* (Lemaire) Britt. & Rose var. *leconti* (Engelm.) Lindsay
  Ferocactus lecontei (Engelm.) Britt. & Rose
- *Ferocactus emoryi* (Engelm.) Orcutt–Barrel cactus
  Syn.: *Ferocactus covillei* Britt. & Rose
- *Ferocactus wislizenii* (Engelm.) Britt. & Rose–Barrel cactus
- *Lophocereus schottii* (Engelm.) Britt. & Rose–Senita
- *Mammillaria grahamii* Engelm. var. *grahamii*
- *Mammillaria grahamii* Engelm. var. *oliviae* (Orcutt) L. Benson
  Syn.: *Mammillaria oliviae* Orcutt
- *Mammillaria heyderi* Mühlenpf. var. *heyderi*
  Syn.: *Mammillaria gummifera* Engelm. var. *applanata* (Engelm.) L. Benson
- *Mammillaria heyderi* Mühlenpf. var. *macdougalii* (Rose) L. Benson
  Syn.: *Mammillaria gummifera* Engelm. var. *macdougalii* (Rose) L. Benson; *Mammillaria macdougalii* Rose
- *Mammillaria heyderi* Mühlenpf. var. *meiacantha* (Engelm.) L. Benson
  Syn.: *Mammillaria gummifera* Engelm. var. *meiacantha* (Engelm.) L. Benson
- *Mammillaria lasiacantha* Engelm.
- *Mammillaria mainiae* K. Brand.
- *Mammillaria microcarpa* Engelm.
- *Mammillaria tetrancistra* Engelm.
- *Mammillaria thornberi* Orcutt
- *Mammillaria viridiflora* (Britt. & Rose) Bödeker.
  Syn.: *Mammillaria orestra* L. Benson
- *Mammillaria wrightii* Engelm. var. *wilcoxii* (Toumey ex K. Schumann) W. T. Marshali
  Syn.: *Mammillaria wilcoxii* Toumey
- *Mammillaria wrightii* Engelm. var. *wrightii*
- *Opuntia acanthocarpa* Engelm. & Bigel. var. *acanthocarpa*–Buckhorn cholla
- *Opuntia acanthocarpa* Engelm. & Bigel. var. *coloradensis* L. Benson
- *Opuntia acanthocarpa* Engelm. & Bigel. var. *major* L. Benson
  Syn.: *Opuntia acanthocarpa* Engelm. & Bigel var. *ramosa* Peebles
- *Opuntia acanthocarpa* Engelm. & Bigel. var. *thornberi* (Thornber & Bonker) L. Benson
  Syn.: *Opuntia thornberi* Thornber & Bonker
- *Opuntia arbuscula* Engelm.–Pencil cholla
- *Opuntia basilaris* Engelm. & Bigel. var. *aurea* (Baxter) W. T. Marshall–Yellow beavertail
  Syn.: *Opuntia aurea* Baxter
- *Opuntia basilaris* Engelm. & Bigel. var. *basilaris*–Beavertail cactus
- *Opuntia basilaris* Engelm. & Bigel. var. *longiareolata* (Clover & Jotter) L. Benson
- *Opuntia basilaris* Engelm. & Bigel. var. *treleasei* (Coult.) Toumey
- *Opuntia bigelovii* Engelm.–Teddy-bear cholla
- *Opuntia campii* ined.

- *Opuntia canada* Griffiths (*O. phaeacantha* Engelm. var. *laevis* X *major* and *O. gilvescens* Griffiths).
- *Opuntia chlorotica* Engelm. & Bigel.–Pancake prickly-pear
- *Opuntia clavata* Engelm.–Club cholla
- *Opuntia curvospina* Griffiths
- *Opuntia echinocarpa* Engelm. & Bigel–Silver cholla
- *Opuntia emoryi* Engelm.–Devil cholla
  Syn.: *Opuntia stanlyi* Engelm. ex B. D. Jackson var. *stanlyi*
- *Opuntia engelmannii* Salm-Dyck ex Engelm. var. *engelmannii*–Engelmann's prickly-pear
  Syn.: *Opuntia phaeacantha* Engelm. var. *discata* (Griffiths) Benson & Walkington
- *Opuntia engelmannii* Salm-Dyck ex Engelm. var. *flavospina* (L.Benson) Parfitt & Pinkava
  Syn.: *Opuntia phaeacantha* Engelm. var. *flavispina* L. Benson
- *Opuntia erinacea* Engelm. & Bigel. var. *erinacea*–Mohave prickly-pear
- *Opuntia erinacea* Engelm. & Bigel. var. *hystricina* (Engelm. & Bigel.) L. Benson
  Syn.: *Opuntia hystricina* Engelm. & Bigel.
- *Opuntia erinacea* Engelm. & Bigel. var. *ursina* (Weber) Parish–Grizzly bear prickly-pear
  Syn.: *Opuntia ursina* Weber
- *Opuntia erinacea* Engelm. & Bigel. var. *utahensis* (Engelm.) L. Benson
  Syn.: *Opuntia rhodantha* Schum.
- *Opuntia fragilis* Nutt. var. *brachyarthra* (Engelm. & Bigel.) Coult.
- *Opuntia fragilis* Nutt. var. *fragilis*–Little prickly-pear
- *Opuntia fulgida* Engelm. var. *fulgida*–Jumping chain-fruit cholla
- *Opuntia fulgida* Engelm. var. *mammillata* (Schott) Coult.
- *Opuntia imbricata* (Haw.) DC.–Tree cholla
- *Opuntia X kelvinensis* V. & K. Grant pro sp.
  Syn.: *Opuntia kelvinensis* V. & K. Grant
- *Opuntia kleiniae* DC. var. *tetracantha* (Toumey) W. T. Marshall
  Syn.: *Opuntia tetrancistra* Toumey
- *Opuntia kunzei* Rose.
  Syn.: *Opuntia stanlyi* Engelm. ex B. D. Jackson var. *kunzei* (Rose) L. Benson; *Opuntia kunzei* Rose var. *wrightiana* (E. M. Baxter) Peebles; *Opuntia wrightiana* E. M. Baxter
- *Opuntia leptocaulis* DC.–Desert Christmas cactus, Pencil cholla
- *Opuntia littoralis* (Engelm.) Cockl. var. *vaseyi* (Coult.) Benson & Walkington
- *Opuntia macrocentra* Engelm.–Purple prickly-pear
  Syn.: *Opuntia violacea* Engelm. ex B. D. Jackson var. *macrocentra* (Engelm.) L. Benson; *Opuntiaviolacea* Engelm. ex B. D. Jackson var. *violacea*
- *Opuntia macrorhiza* Engelm. var. *macrorhiza*–Plains prickly-pear
  Syn.: *Opuntia plumbea* Rose
- *Opuntia macrorhiza* Engelm. var. *pottsii* (Salm-Dyck) L. Benson
- *Opuntia martiniana* (L. Benson) Parfitt
  Syn.: *Opuntia littoralis* (Engelm.) Cockerell var. *martiniana* (L. Benson) L. Benson; *Opuntia macrocentra* Engelm. var. *martiniana L. Benson*
- *Opuntia nicholii* L. Benson–Navajo Bridge prickly-pear
- *Opuntia parishii* Orcutt.
  Syn.: *Opuntia stanlyi* Engelm. ex B. D. Jackson var. *parishii* (Orcutt) L. Benson
- *Opuntia phaeacantha* Engelm. var. *laevis* (Coult.) L. Benson

- *Opuntia phaeacantha* Engelm. var. *major* Engelm.
- *Opuntia phaeacantha* Engelm. var. *phaeacantha*
- *Opuntia phaeacantha* Engelm. var. *superbospina* (Griffiths) L. Benson
- *Opuntia polyacantha* Haw. var. *juniperina* (Engelm.) L. Benson
- *Opuntia polyacantha* Haw. var. *rufispina* (Engelm.) L. Benson
- *Opuntia polyacantha* Haw. var. *trichophora* (Engelm. & Bigel.) L. Benson
- *Opuntia pulchella* Engelm.–Sand cholla
- *Opuntia ramosissima* Engelm.–Diamond cholla
- *Opuntia santa-rita* (Griffiths & Hare) Rose–Santa Rita prickly-pear
  Syn.: *Opuntia violacea* Engelm. ex B. D. Jackson var. *santa-rita* (Griffiths & Hare) L. Benson
- *Opuntia spinosior* (Engelm.) Toumey–Cane cholla
- *Opuntia versicolor* Engelm.–Staghorn cholla
- *Opuntia vivipara* Engelm
- *Opuntia whipplei Engelm. & Bigel. var. multigeniculata (Clokey) L. Benson*
- *Opuntia whipplei Engelm. & Bigel. var. whipplei–Whipple cholla*
- *Opuntia wigginsii L. Benson*
- *Pediocactus papyracanthus (Engelm.) L. Benson Grama grass cactus*
  Syn.: Toumeya papyracanthus (Engelm.) Britt. & Rose
- Pediocactus simpsonii (Engelm.) Britt & Rose var. simpsonii
- Peniocereus greggii (Engelm.) Britt. & Rose var. greggii–Night-blooming cereus
  Syn.: Cereus greggii Engelm
- Peniocereus greggii (Engelm.) Britt & Rose var. transmontanus–Queen-of-the-Nigh
- Peniocereus striatus (Brandegee) Buxbaum.
  Syn.: Neoevansia striata (Brandegee) Sanchez-Mejorada; Cereus striatus Brandegee; Wilcoxia diguetii (Webber) Peebles
- Sclerocactus parviflorus Clover & Jotter var. intermedius (Peebles) Woodruff & L. Benson
  Syn.: Sclerocactus intermedius Peebles
- Sclerocactus parviflorus Clover & Jotter var. parviflorus
  Syn.: Sclerocactus whipplei (Engelm. & Bigel.) Britt. & Rose var. roseus (Clover) L. Benson
- Sclerocactus pubispinus (Engelm.) L. Peebles
- Sclerocactus spinosior (Engelm.) Woodruff & L. Benson
  Syn.: Sclerocactus pubispinus (Engelm.) L. Benson var. sileri L. Benson
- Sclerocactus whipplei (Engelm. & Bigel.) Britt. & Rose
- Stenocereus thurberi (Engelm.) F. Buxbaum–Organ pipe cactus
  Syn.: Cereus thurberi Engelm.; Lemairocereus thurberi (Engelm.) Britt. & Rose

CAMPANULACEAE Bellflower Family
- *Lobelia cardinalis* L. ssp. *graminea* (Lam.) McVaugh–Cardinal flower
- *Lobelia fenestralis* Cav.–Leafy lobelia
- *Lobelia laxiflora* H. B. K. var. *angustifolia* A. DC.

CAPPARACEAE Cappar Family [=Capparidaceae]
- *Cleome multicaulis* DC.–Playa spiderflower

CHENOPODIACEAE Goosefoot Family
- *Atriplex hymenelytra* (Torr.) Wats.

CRASSULACEAE Stonecrop Family
- *Dudleya arizonica* (Nutt.) Britt. & Rose
- Syn.: *Echeveria pulverulenta* Nutt. ssp. *arizonica* (Rose) Clokey
- *Dudleya saxosa* (M.E. Jones) Britt. & Rose ssp. *collomiae* (Rose) Moran
- Syn.: *Echeveria collomiae* (Rose) Kearney & Peebles
- *Graptopetalum bartramii* Rose
- Syn.: *Echevaria bartramii* (Rose) K. & P.
- *Graptopetalum bartramii* Rose–Bartram's stonecrop, Bartram's live-forever
- Syn.: *Echeveria bartramii* (Rose) Kearney & Peebles
- *Graptopetalum rusbyi* (Greene) Rose
- Syn.: *Echeveria rusbyi* (Greene) Nels. & Macbr.
- *Sedum cockerellii* Britt.
- *Sedum griffithsii* Rose
- *Sedum lanceolatum* Torr.
- Syn.: *Sedum stenopetalum* Pursh
- *Sedum rhodanthum* Gray
- *Sedum stelliforme* Wats.

CROSSOSOMATACEAE Crossosoma Family
- *Apacheria chiricahuensis* C. T. Mason–Chiricahua rock flower

CUCURBITACEAE Gourd Family
- *Tumamoca macdougalii* Rose–Tumamoc globeberry

EUPHORBIACEAE Spurge Family
- *Euphorbia plummerae* Wats.–Woodland spurge
- *Sapium biloculare* (Wats.) Pax–Mexican jumping-bean

FABACEAE Pea Family [=Leguminosae]
- *Astragalus corbrensis* Gray var. *maguirei* Kearney
- *Astragalus cremnophylax* Barneby var. *myriorraphis* Barneby–Cliff milk-vetch
- *Astragalus hypoxylus* Wats.–Huachuca milk-vetch
- *Astragalus nutriosensis* Sanderson–Nutrioso milk-vetch
- *Astragalus xiphoides* (Barneby) Barneby–Gladiator milk-vetch
- *Cercis occidentalis* Torr.–California redbud
- *Errazurizia rotundata* (Woot.) Barneby
- Syn.: *Parryella rotundata* Woot.
- *Lysiloma microphylla* Benth. var. *thomberi* (Britt. & Rose) Isely–Feather bush
- Syn.: *Lysiloma thomberi* Britt. & Rose
- *Phaseolus supinus* Wiggins & Rollins

FOUQUIERIACEAE Ocotillo Family
- *Fouquieria splendens* Engelm.–Ocotillo, coach-whip, monkey-tail

GENTIANACEAE Gentian Family
- *Gentianella wislizenii* (Engelm.) J. Gillett
- Syn.: *Gentiana wislizenii* Engelm.

LAMIACEAE Mint Family
- *Hedeoma diffusum* Green–Flagstaff pennyroyal
- *Salvia dorrii* ssp. *mearnsii*
- *Trichostema micranthum* Gray

LILIACEAE Lily Family
- *Allium acuminatum* Hook.
- *Allium bigelovii* Wats.
- *Allium biseptrum* Wats. var. *palmeri* (Wats.) Cronq.
- Syn.: *Allium palmeri* Wats.
- *Allium cemuum* Roth. var. *neomexicanum* (Rydb.) Macbr.–Nodding onion
- *Allium cernuum* Roth. var. *obtusum* Ckll.
- *Allium geyeri* Wats. var. *geyeri*
- *Allium geyeri* Wats. var. *tenerum* Jones
- *Allium kunthii* Don
- *Allium macropetalum* Rydb.
- *Allium nevadense* Wats. var. *cristatum* (Wats.) Ownbey
- *Allium nevadense* Wats. var. *nevadense*
- *Allium parishii* Wats.
- *Allium plummerae* Wats.
- *Allium rhizomatum* Woot. & Standl. Incl.: *Allium glandulosum* Link & Otto *sensu* Kearney & Peebles
- *Androstephium breviflorum* Wats.–Funnel-lily
- *Calochortus ambiguus* (Jones) Ownbey
- *Calochortus aureus* Wats.
- Syn.: *Calochortus nuttallii* Torr. & Gray var. *aureus* (Wats.) Ownbey
- *Calochortus flexuosus* Wats.–Straggling mariposa
- *Calochortus gunnisonii* Wats.
- *Calochortus kennedyi* Porter var. *kennedyi*–Desert mariposa
- *Calochortus kennedyi* Porter var. *munzii* Jeps.
- *Dichelostemma pulchellum* (Salisbi) Heller var. *pauciflorum* (Torr.) Hoover
- *Disporum trachycarpum* (Wats.) Benth. & Hook. var. *subglabrum* Kelso
- *Disporum trachycarpum* (Wats.) Benth. & Hook. var. *trachycarpum*
- *Echeandia flavescens* (Schultes & Schultes) Cruden
- Syn.: *Anthericum torreyi* Baker
- *Eremocrinum albomarginatum* Jones
- *Fritillaria atropurpurea* Nutt.
- *Hesperocallis undulata* Gray–Ajo lily
- *Lilium parryi* Wats.–Lemon lily
- *Lilium umbellatum* Pursh
- *Maianthemum racemosum* (L.) Link. ssp. *amplexicaule* (Nutt.) LaFrankie
- Syn.: *Smilacina racemosa* (L.) Desf. var. *amplexicaulis* (Nutt.) Wats.
- *Maianthemum racemosum* (L.) Link ssp. *racemosum*–False Solomon's seal
- Syn.: *Smilacina racemosa* (L.) Desf. var. *racemosa*; *Smilacina racemosa* (L.) Desf. var. *cylindrata* Fern.
- *Maianthemum stellatum* (L.) Link
- Syn.: *Smilacina stellata* (L.) Desf.–Starflower
- *Milla biflora* Cav.–Mexican star
- *Nothoscordum texanum* Jones

- *Polygonatum cobrense* (Woot. & Standl.) Gates
- *Streptopus amplexifolius* (L.) DC.–Twisted stalk
- *Triteleia lemmonae* (Wats.) Greene
- *Triteleiopsis palmeri* (Wats.) Hoover
- *Veratrum californicum* Durand.–False hellebore
- *Zephyranthes longifolia* Hemsl.–Plains rain lily
- *Zigadenus elegans* Pursh–White camas, alkali-grass
- *Zigadenus paniculatus* (Nutt.) Wats.–Sand-corn
- *Zigadenus virescens* (H. B. K.) Macbr.

MALVACEAE Mallow Family
- *Abutilon parishii* Wats.–Tucson Indian mallow
- *Abutilon thurberi* Gray–Baboquivari Indian mallow

ONAGRACEAE Evening Primrose Family
- *Camissonia exilis* (Raven) Raven

ORCHIDACEAE Orchid Family
- *Calypso bulbosa* (L.) Oakes var. *americana* (R. Br.) Luer
- *Coeloglossum viride* (L.) Hartmann var. *virescens* (Muhl.) Luer
- Syn.: *Habenaria viridis* (L.) R. Br. var. *bracteata* (Muhl.) Gray
- *Corallorhiza maculata* Raf.–Spotted coral root
- *Corallorhiza striata* Lindl.–Striped coral root
- *Corallorhiza wisteriana* Conrad–Spring coral root
- *Epipactis gigantea* Douglas ex Hook.–Giant helleborine
- *Goodyera oblongifolia* Raf.
- *Goodyera repens* (L.) R. Br.
- *Hexalectris spicata* (Walt.) Barnhart–Crested coral root
- *Listera convallarioides* (Swartz) Nutt.–Broad-leaved twayblade
- *Malaxis corymbosa* (S. Wats.) Kuntze
- *Malaxis ehrenbergii* (Reichb. f.) Kuntze
- *Malaxis macrostachya* (Lexarza) Kuntze–Mountain malaxia
- Syn.: *Malaxis soulei* L. O. Williams
- *Malaxis tenuis* (S. Wats.) Ames
- *Platanthera hyperborea* (L.) Lindley var. *gracilis* (Lindley) Luer
- Syn.: *Habenaria sparsiflora* Wats. var. *laxiflora* (Rydb.) Correll
- *Platanthera hyperborea* (L.) Lindley var. *hyperborea*–Northern green orchid
- Syn.: *Habenaria hyperborea* (L.) R. Br.
- *Platanthera limosa* Lindl.–Thurber's bog orchid
- Syn.: *Habenaria limosa* (Lindley) Hemsley
- *Platanthera sparsiflora* (Wats.) Schlechter var. *ensifolia* (Rydb.) Luer
- *Platanthera sparsiflora* (Wats.) var. *laxiflora* (Rydb.) Correll
- *Platanthera sparsiflora* (Wats.) Schlechter var. *sparsiflora*–Sparsely-flowered bog orchid
- Syn.: *Habenaria sparsiflora* Wats.
- *Platanthera stricta* Lindl.–Slender bog orchid
- Syn.: *Habenaria saccata* Greene; *Platanthera saccata* (Greene) Hulten
- *Platanthera viridis* (L.) R. Br. var. *bracteata* (Muhl.) Gray–Long-bracted habenaria
- *Spiranthes michaucana* (La Llave & Lex.) Hemsl.
- *Spiranthes parasitica* A. Rich. & Gal.

◆ *Spiranthes romanzoffiana* Cham.–Hooded ladies tresses

PAPAVERACEAE Poppy Family
◆ *Arctomecon californica* Torr. & Frém.–Golden-bear poppy, Yellow-flowered desert poppy

PINACEAE Pine Family
◆ *Pinus aristata* Engelm.–Bristlecone pine

POLYGONACEAE Buckwheat Family
◆ *Eriogonum apachense* Reveal
◆ *Eriogonum capillare* Small
◆ *Eriogonum mortonianum* Reveal–Morton's buckwheat
◆ *Eriogonum ripleyi* J. T. Howell–Ripley's wild buckwheat, Frazier's Well buckwheat
◆ *Eriogonum thompsonae* Wats. var. *atwoodii* Reveal–Atwood's buckwheat

PORTULACEAE Purslane Family
◆ *Talinum humile* Greene–Pinos Altos flame flower
◆ *Talinum marginatum* Greene
◆ *Talinum validulum* Greene–Tusayan flame flower

PRIMULACEAE Primrose Family
◆ *Dodecatheon alpinum* (Gray) Greene ssp. *majus* H. J. Thompson
◆ *Dodecatheon dentatum* Hook. ssp. *ellisiae* (Standl.) H. J. Thompson
◆ *Dodecatheon pulchellum* (Raf.) Merrill
◆ *Primula hunnewellii* Fern.
◆ *Primula rusbyi* Greene
◆ *Primula specuicola* Rydb.

RANUNCULACEAE Buttercup Family
◆ *Aquilegia caerulea* James ssp. *pinetorum* (Tidest.) Payson–Rocky Mountain Columbine
◆ *Aquilegia chrysantha* Gray
◆ *Aquilegia desertorum* (Jones) Ckll.–Desert columbine, Mogollon columbine
◆ *Aquilegia elegantula* Greene
◆ *Aquilegia longissima* Gray–Long Spur Columbine
◆ *Aquilegia micrantha* Eastw.
◆ *Aquilegia triternata* Payson

ROSACEAE Rose Family
◆ *Rosa stellata* Woot.–ssp. *abyssa* A. Phillips Grand Canyon rose
◆ *Vauquelinia californica* (Torr.) Sarg. ssp. *pauciflora* (Standl.) Hess & Henrickson–Few-flowered Arizona rosewood

SCROPHULARIACEAE Figwort Family

- *Castilleja mogollonica* Pennell
- *Penstemon albomarginatus* Jones
- *Penstemon bicolor* (Brandeg.) Clokey & Keck ssp. *roseus* Clokey & Keck
- *Penstemon clutei* A. Nels.
- *Penstemon distans* N. Holmgren–Mt. Trumbull beardtongue
- *Penstemon linarioides* spp. maguirei

SIMAROUBACEAE Simarouba Family
- *Castela emoryi* (Gray) Moran & Felger–Crucifixion thorn
- Syn.: *Holacantha emoryi* Gray

STERCULIACEAE Cacao Family
- *Fremontodendron californicum* (Torr.) Coville–Flannel bush

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DEPARTMENT OF AGRICULTURE

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C. Salvage Assessed Protected Native Plants

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The following list includes those species of native plants that are not included in either the highly safeguarded or salvage restricted category but have a sufficient value if salvaged to support the cost of salvage.

BIGNONIACEAE Bignonia Family
- *Chilopsis linearis* (Cav.) Sweet var. *arcuata* Fosberg–Desert-willow
- *Chilopsis linearis* (Cav.) Sweet var. *glutinosa* (Engelm.) Fosberg

FABACEAE Pea Family [=Leguminosae]
- *Cercidium floridum* Benth.–Blue palo verde
- *Cercidium microphyllum* (Torr.) Rose & Johnst.–Foothill palo verde
- *Olneya tesota* Gray–Desert ironwood
- *Prosopis glandulosa* Torr. var. *glandulosa*–Honey mesquite
- Syn.: *Prosopis juliflora* (Swartz) DC. var. *glandulosa* (Torr.) Ckll.
- *Prosopis glandulosa* Torr. var. *torreyana* (Benson) M. C. Johnst.–Western honey mesquite
- Syn.: *Prosopis juliflora* (Swartz) DC. var. *torreyana* Benson
- *Prosopis pubescens* Benth.–Screwbean mesquite
- *Prosopis velutina* Woot.–Velvet mesquite
- Syn.: *Prosopis juliflora* (Swartz) DC. var. *velutina* (Woot.) Sarg.
- *Psorothamnus spinosus* (Gray) Barneby–Smoke tree.
- Syn.: *Dalea spinosa* Gray

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D. Harvest Restricted Protected Native Plants

The following list includes those species of native plants that are not included in the highly safeguarded category but are subject to excessive harvesting or overcutting because of their intrinsic value.

AGAVACEAE Agave Family (including Nolinaceae)

- *Nolina bigelovii* (Torr.) Wats.–Bigelow's nolina
- *Nolina microcarpa* Wats.–Beargrass, sacahuista
- *Nolina parryi* Wats.–Parry's nolina
- *Nolina texana* Wats. var. *compacta* (Trel.) Johnst.–Bunchgrass
- *Yucca baccata* Torr. var. *baccata*–Banana yucca
- *Yucca schidigera* Roezl.–Mohave yucca, Spanish dagger

FABACEAE Pea Family [=Leguminosae]

- *Olneya tesota* Gray–Desert ironwood
- *Prosopis glandulosa* Torr. var. *glandulosa*–Honey mesquite
- Syn.: *Prosopis juliflora* (Swartz) DC. var. *glandulosa* (Torr.) Ckll.
- *Prosopis glandulosa* Torr. var. *torreyana* (Benson) M. C. Johnst.–Western honey mesquite
- Syn.: *Prosopis juliflora* (Swartz) DC. var. *torreyana* Benson
- *Prosopis pubescens* Benth.–Screwbean mesquite
- *Prosopis velutina* Woot.–Velvet mesquite
- Syn.: *Prosopis juliflora* (Swartz) DC. var. *velutina* (Woot.) Sarg.

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APPENDIX E

Consultation Letters

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Honorable Donald R. Antone, Governor
Gila River Indian Community Council
P.O. Box 97
Sacaton, AZ 85247

Dear Governor Antone:

This letter is being sent to you because we wish to continue our consultation with the tribes we have identified previously concerning this project. We initiated our consultation with you in a letter dated September 18, 2000, and signed by Colonel Gordon Wells, regarding the proposed overall construction activities by Joint Task Force Six (JTF-6) near Douglas, Arizona. This project is now under the auspices of the Immigration and Naturalization Service (INS). On April 9, 2001 you were sent a draft of the Supplemental Environmental Assessment for the Whitewater Draw portion of the on-going project for your review and comment.

The Undertaking is the proposed improvement to the border access road located at Whitewater Draw, west of the Port of Entry (POE) in Douglas, Cochise County, Arizona. For the purposes of the Environmental Assessment, the project area is defined as a 0.5-mile area of potential effect centered on the access road at Whitewater Draw. The project will be constructed in conjunction with road repair and maintenance activities east and west of Whitewater Draw so that the crossing will connect the existing roads being improved in this area. Existing roads, such as Old Smelter Road and Brooks Road, would be utilized for primary transport of equipment and personnel to the proposed project area. Existing turnouts or previously disturbed areas would also be used by equipment during construction to minimize unnecessary impacts to resources outside the Proposed Action area.

In accordance with the National Historic Preservation Act (NHPA) and its implementing regulations, an archaeological reconnaissance of the project area already has been accomplished and we forwarded the report of that recent work for your information back on November 28, 2000.

At this time, we have enclosed one document, "Archaeological Research Design and Data recovery Plan for Mine Ridge Site, AZ FF:10:22 (ASM) Cochise county, Arizona", which will assist you in preparing your comments regarding the proposed project and the proposed mitigation of adverse effects of the project on archaeological site AZ FF:10:22 (the Mine Ridge Site). AZ FF:10:22 (ASM) had been previously recorded and had been recommended as eligible for the National Register of Historic Places. In accordance with 36 CFR Part 800.5(1) and .5(d)(2), we have applied the criteria of adverse effect and have found that site AZ FF 11:82 might be affected by the proposed project improvements. Further, in accordance with the regulations, we have prepared a Treatment Plan for site AZ FF:10:22. Also, in accordance with the regulations, we wish to continue our consultation with the tribes we have identified previously concerning this project. The data recovery plan is enclosed for your information and review.

At this time we are developing an agreement (Memorandum of Agreement) with the Arizona State Historic Preservation Office (SHPO) regarding the resolution of adverse effects to site AZ FF:10:22 by the proposed project. We look forward to receiving your comments in our continuing consultation on this proposed undertaking.

In the unlikely event that buried human remains are encountered during our work, we will act in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR Part 10) and notify you if you have an interest in this area and the site.

If you wish to contact us, you may contact Ms. Patience Patterson of the Cultural Resources Section at (817) 978-6390. We will be happy to supply as much information as possible. We look forward to hearing from you.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Honorable Delia Carlyle, Chairperson
Ak Chin Indian Community Council
42507 W. Peters & Nall Road
Maricopa, AZ 85239

Dear Chairperson Carlyle:

This letter is being sent to you because we wish to continue our consultation with the tribes we have identified previously concerning this project. We initiated our consultation with you in a letter dated September 18, 2000, and signed by Colonel Gordon Wells, regarding the proposed overall construction activities by Joint Task Force Six (JTF-6) near Douglas, Arizona. This project is now under the auspices of the Immigration and Naturalization Service (INS). On April 9, 2001 you were sent a draft of the Supplemental Environmental Assessment for the Whitewater Draw portion of the on-going project for your review and comment.

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At this time we are developing an agreement (Memorandum of Agreement) with the Arizona State Historic Preservation Office (SHPO) regarding the resolution of adverse effects to site AZ FF:10:22 by the proposed project. We look forward to receiving your comments in our continuing consultation on this proposed undertaking.

In the unlikely event that buried human remains are encountered during our work, we will act in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR Part 10) and notify you if you have an interest in this area and the site.

If you wish to contact us, you may contact Ms. Patience Patterson of the Cultural Resources Section at (817) 978-6390. We will be happy to supply as much information as possible. We look forward to hearing from you.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

Subject: Adverse Effect Determination on Site AZ FF:10:22 (ASM) and the disposition of that historic property in regard to the US Border Patrol Whitewater Draw and Fence, Lighting and Road Improvement Project

Mr. Don L. Klima, Director
Advisory Council on Historic Preservation
Western Office of Project Review
ATTN: Carol Gleichman
12136 West Bayaud Avenue, Suite 330
Lakewood, CO 80226

Dear Mr. Klima:

The Fort Worth District, U.S. Army Corps of Engineers (COE) is acting on behalf of Immigration and Naturalization Service (INS) in regard to the above-mentioned project. During consultation with the Arizona State Historic Preservation Officer (SHPO), we reached agreement that archaeological site AZ FF:10:22 (ASM) is eligible for inclusion in the National Register of Historic Places. In accordance with 36 CFR § 800.5(a), the COE has applied the criteria of adverse effect (36 CFR § 800.5(a)(1) and found that the proposed undertaking will have an adverse effect on that historic property. Further, in accordance with § 800.6(a)(1), we enclose the documentation noted in § 800.11(e) and notify you of our intent to execute a Memorandum of Agreement with the Arizona SHPO, as we have reached an agreement on how the adverse effects will be resolved.

As noted in § 800.6(1)(iii), we await your decision to participate. If we have not received notification of your intent to participate within 15 days of receipt of this letter, we will proceed with our efforts along with the Arizona SHPO.

Should you require further information on these matters, please contact Patience Patterson of the Fort Worth District Corps of Engineers at (817) 978-6390.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
And Regulatory Division

Enclosures

Copy furnished w/o enclosures

Mr. James Garrison, State Historic Preservation Officer
ATTN: Ms. Joanne Miller
Arizona State Parks
1300 West Washington
Phoenix, Arizona 85007

Mr. Eric Verwers, Assistant Director
INS/AERC
U.S. Army Corps of Engineers
Forth Worth District
819 Taylor St.
Fort Worth, Texas 76102-0300

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Honorable Dallas Massey, Sr., Chairman
White Mountain Apache Tribal Council
P.O. Box 700
Whiteriver, AZ 85941

Dear Chairman Massey:

This letter is being sent to you because we wish to continue our consultation with the tribes we have identified previously concerning this project. We initiated our consultation with you in a letter dated September 18, 2000, and signed by Colonel Gordon Wells, regarding the proposed overall construction activities by Joint Task Force Six (JTF-6) near Douglas, Arizona. This project is now under the auspices of the Immigration and Naturalization Service (INS). On April 9, 2001 you were sent a draft of the Supplemental Environmental Assessment for the Whitewater Draw portion of the on-going project for your review and comment.

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In accordance with the National Historic Preservation Act (NHPA) and its implementing regulations, an archaeological reconnaissance of the project area already has been accomplished and we forwarded the report of that recent work for your information back on November 28, 2000.

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At this time we are developing an agreement (Memorandum of Agreement) with the Arizona State Historic Preservation Office (SHPO) regarding the resolution of adverse effects to site AZ FF:10:22 by the proposed project. We look forward to receiving your comments in our continuing consultation on this proposed undertaking.

In the unlikely event that buried human remains are encountered during our work, we will act in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR Part 10) and notify you if you have an interest in this area and the site.

If you wish to contact us, you may contact Ms. Patience Patterson of the Cultural Resources Section at (817) 978-6390. We will be happy to supply as much information as possible. We look forward to hearing from you.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Honorable Edward Manuel, Chairman
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

Dear Chairman Manuel:

This letter is being sent to you because we wish to continue our consultation with the tribes we have identified previously concerning this project. We initiated our consultation with you in a letter dated September 18, 2000, and signed by Colonel Gordon Wells, regarding the proposed overall construction activities by Joint Task Force Six (JTF-6) near Douglas, Arizona. This project is now under the auspices of the Immigration and Naturalization Service (INS). On April 9, 2001 you were sent a draft of the Supplemental Environmental Assessment for the Whitewater Draw portion of the on-going project for your review and comment.

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Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Honorable Raymond Stanley, Jr., Chairman
San Carlos Tribal Council
P.O. Box 0
San Carlos, AZ 85550

Dear Chairman Stanley:

This letter is being sent to you because we wish to continue our consultation with the tribes we have identified previously concerning this project. We initiated our consultation with you in a letter dated September 18, 2000, and signed by Colonel Gordon Wells, regarding the proposed overall construction activities by Joint Task Force Six (JTF-6) near Douglas, Arizona. This project is now under the auspices of the Immigration and Naturalization Service (INS). On April 9, 2001 you were sent a draft of the Supplemental Environmental Assessment for the Whitewater Draw portion of the on-going project for your review and comment.

The Undertaking is the proposed improvement to the border access road located at Whitewater Draw, west of the Port of Entry (POE) in Douglas, Cochise County, Arizona. For the purposes of the Environmental Assessment, the project area is defined as a 0.5-mile area of potential effect centered on the access road at Whitewater Draw. The project will be constructed in conjunction with road repair and maintenance activities east and west of Whitewater Draw so that the crossing will connect the existing roads being improved in this area. Existing roads, such as Old Smelter Road and Brooks Road, would be utilized for primary transport of equipment and personnel to the proposed project area. Existing turnouts or previously disturbed areas would also be used by equipment during construction to minimize unnecessary impacts to resources outside the Proposed Action area.

In accordance with the National Historic Preservation Act (NHPA) and its implementing regulations, an archaeological reconnaissance of the project area already has been accomplished and we forwarded the report of that recent work for your information back on November 28, 2000.

At this time, we have enclosed one document, "Archaeological Research Design and Data recovery Plan for Mine Ridge Site, AZ FF:10:22 (ASM) Cochise county, Arizona", which will assist you in preparing your comments regarding the proposed project and the proposed mitigation of adverse effects of the project on archaeological site AZ FF:10:22 (the Mine Ridge Site). AZ FF:10:22 (ASM) had been previously recorded and had been recommended as eligible for the National Register of Historic Places. In accordance with 36 CFR Part 800.5(1) and .5(d)(2), we have applied the criteria of adverse effect and have found that site AZ FF 11:82 might be affected by the proposed project improvements. Further, in accordance with the regulations, we have prepared a Treatment Plan for site AZ FF:10:22. Also, in accordance with the regulations, we wish to continue our consultation with the tribes we have identified previously concerning this project. The data recovery plan is enclosed for your information and review.

At this time we are developing an agreement (Memorandum of Agreement) with the Arizona State Historic Preservation Office (SHPO) regarding the resolution of adverse effects to site AZ FF:10:22 by the proposed project. We look forward to receiving your comments in our continuing consultation on this proposed undertaking.

In the unlikely event that buried human remains are encountered during our work, we will act in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR Part 10) and notify you if you have an interest in this area and the site.

If you wish to contact us, you may contact Ms. Patience Patterson of the Cultural Resources Section at (817) 978-6390. We will be happy to supply as much information as possible. We look forward to hearing from you.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Honorable Ivan Makil, President
Salt River Pima-Maricopa Indian Community Council
10005 E. Osborn
Scottsdale, AZ 85256

Dear President Makil:

This letter is being sent to you because we wish to continue our consultation with the tribes we have identified previously concerning this project. We initiated our consultation with you in a letter dated September 18, 2000, and signed by Colonel Gordon Wells, regarding the proposed overall construction activities by Joint Task Force Six (JTF-6) near Douglas, Arizona. This project is now under the auspices of the Immigration and Naturalization Service (INS). On April 9, 2001 you were sent a draft of the Supplemental Environmental Assessment for the Whitewater Draw portion of the on-going project for your review and comment.

The Undertaking is the proposed improvement to the border access road located at Whitewater Draw, west of the Port of Entry (POE) in Douglas, Cochise County, Arizona. For the purposes of the Environmental Assessment, the project area is defined as a 0.5-mile area of potential effect centered on the access road at Whitewater Draw. The project will be constructed in conjunction with road repair and maintenance activities east and west of Whitewater Draw so that the crossing will connect the existing roads being improved in this area. Existing roads, such as Old Smelter Road and Brooks Road, would be utilized for primary transport of equipment and personnel to the proposed project area. Existing turnouts or previously disturbed areas would also be used by equipment during construction to minimize unnecessary impacts to resources outside the Proposed Action area.

In accordance with the National Historic Preservation Act (NHPA) and its implementing regulations, an archaeological reconnaissance of the project area already has been accomplished and we forwarded the report of that recent work for your information back on November 28, 2000.

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At this time we are developing an agreement (Memorandum of Agreement) with the Arizona State Historic Preservation Office (SHPO) regarding the resolution of adverse effects to site AZ FF:10:22 by the proposed project. We look forward to receiving your comments in our continuing consultation on this proposed undertaking.

In the unlikely event that buried human remains are encountered during our work, we will act in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR Part 10) and notify you if you have an interest in this area and the site.

If you wish to contact us, you may contact Ms. Patience Patterson of the Cultural Resources Section at (817) 978-6390. We will be happy to supply as much information as possible. We look forward to hearing from you.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Honorable Wayne Taylor, Jr., Chairman
Hopi Tribal Council
P.O. Box 123
Kykotsmovi, AZ 86039

Dear Chairman Taylor:

This letter is being sent to you because we wish to continue our consultation with the tribes we have identified previously concerning this project. We initiated our consultation with you in a letter dated September 18, 2000, and signed by Colonel Gordon Wells, regarding the proposed overall construction activities by Joint Task Force Six (JTF-6) near Douglas, Arizona. This project is now under the auspices of the Immigration and Naturalization Service (INS). On April 9, 2001 you were sent a draft of the Supplemental Environmental Assessment for the Whitewater Draw portion of the on-going project for your review and comment.

The Undertaking is the proposed improvement to the border access road located at Whitewater Draw, west of the Port of Entry (POE) in Douglas, Cochise County, Arizona. For the purposes of the Environmental Assessment, the project area is defined as a 0.5-mile area of potential effect centered on the access road at Whitewater Draw. The project will be constructed in conjunction with road repair and maintenance activities east and west of Whitewater Draw so that the crossing will connect the existing roads being improved in this area. Existing roads, such as Old Smelter Road and Brooks Road, would be utilized for primary transport of equipment and personnel to the proposed project area. Existing turnouts or previously disturbed areas would also be used by equipment during construction to minimize unnecessary impacts to resources outside the Proposed Action area.

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If you wish to contact us, you may contact Ms. Patience Patterson of the Cultural Resources Section at (817) 978-6390. We will be happy to supply as much information as possible. We look forward to hearing from you.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 9, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Proposed JTF-6 Activities Near Douglas, Arizona

Honorable Delia Carlyle, Chairperson
Ak Chin Indian Community Council
42507 W. Peters & Nall Road
Maricopa, AZ 85239

Dear Chairperson Carlyle:

Enclosed please find a copy of the Draft Supplemental Environmental Assessment (Draft EA) for an Immigration and Naturalization Service Proposed Action near Douglas, Cochise County, Arizona for your review and comment. The proposed project would consist of road improvements and the construction of a crossing at Whitewater Draw. This project is part of an on-going effort to upgrade roads and facilities for the Tucson Sector and the Douglas Border Patrol area of responsibility.

The document will be available for a 16-day public review/comment period beginning Monday, April 9, 2001 and ending April 25, 2001. It is available for public review in the Douglas Public Library located at 560 10th Street in Douglas, Arizona. All questions and comments regarding the Draft EA should be directed, in writing, to the following:

Mr. Glenn Bixler
U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE, Room 3A14
819 Taylor Street
Fort Worth, Texas 76102

Should you need additional information or have any questions, please feel free to contact Ms. Patience Patterson at (817) 978-6390 or Mr. Bixler at (817) 978-3815.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 9, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Proposed JTF-6 Activities Near Douglas, Arizona

Honorable Donald R. Antone, Governor
Gila River Indian Community Council
P.O. Box 97
Sacaton, AZ 85247

Dear Governor Antone:

Enclosed please find a copy of the Draft Supplemental Environmental Assessment (Draft EA) for an Immigration and Naturalization Service Proposed Action near Douglas, Cochise County, Arizona for your review and comment. The proposed project would consist of road improvements and the construction of a crossing at Whitewater Draw. This project is part of an on-going effort to upgrade roads and facilities for the Tucson Sector and the Douglas Border Patrol area of responsibility.

The document will be available for a 16-day public review/comment period beginning Monday, April 9, 2001 and ending April 25, 2001. It is available for public review in the Douglas Public Library located at 560 10th Street in Douglas, Arizona. All questions and comments regarding the Draft EA should be directed, in writing, to the following:

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U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE, Room 3A14
819 Taylor Street
Fort Worth, Texas 76102

Should you need additional information or have any questions, please feel free to contact Ms. Patience Patterson at (817) 978-6390 or Mr. Bixler at (817) 978-3815.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 9, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Proposed JTF-6 Activities Near Douglas, Arizona

Honorable Wayne Taylor, Jr., Chairman
Hopi Tribal Council
P.O. Box 123
Kykotsmovi, AZ 86039

Dear Chairman Taylor:

Enclosed please find a copy of the Draft Supplemental Environmental Assessment (Draft EA) for an Immigration and Naturalization Service Proposed Action near Douglas, Cochise County, Arizona for your review and comment. The proposed project would consist of road improvements and the construction of a crossing at Whitewater Draw. This project is part of an on-going effort to upgrade roads and facilities for the Tucson Sector and the Douglas Border Patrol area of responsibility.

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Fort Worth, Texas 76102

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Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 9, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Proposed JTF-6 Activities Near Douglas, Arizona

Honorable Ivan Makil, President
Salt River Pima-Maricopa Indian Community Council
10005 E. Osborn
Scottsdale, AZ 85256

Dear President Makil:

Enclosed please find a copy of the Draft Supplemental Environmental Assessment (Draft EA) for an Immigration and Naturalization Service Proposed Action near Douglas, Cochise County, Arizona for your review and comment. The proposed project would consist of road improvements and the construction of a crossing at Whitewater Draw. This project is part of an on-going effort to upgrade roads and facilities for the Tucson Sector and the Douglas Border Patrol area of responsibility.

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Fort Worth, Texas 76102

Should you need additional information or have any questions, please feel free to contact Ms. Patience Patterson at (817) 978-6390 or Mr. Bixler at (817) 978-3815.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 9, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Proposed JTF-6 Activities Near Douglas, Arizona

Honorable Raymond Stanley, Jr., Chairman
San Carlos Tribal Council
P.O. Box 0
San Carlos, AZ 85550

Dear Chairman Stanley:

Enclosed please find a copy of the Draft Supplemental Environmental Assessment (Draft EA) for an Immigration and Naturalization Service Proposed Action near Douglas, Cochise County, Arizona for your review and comment. The proposed project would consist of road improvements and the construction of a crossing at Whitewater Draw. This project is part of an on-going effort to upgrade roads and facilities for the Tucson Sector and the Douglas Border Patrol area of responsibility.

The document will be available for a 16-day public review/comment period beginning Monday, April 9, 2001 and ending April 25, 2001. It is available for public review in the Douglas Public Library located at 560 10th Street in Douglas, Arizona. All questions and comments regarding the Draft EA should be directed, in writing, to the following:

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U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE, Room 3A14
819 Taylor Street
Fort Worth, Texas 76102

Should you need additional information or have any questions, please feel free to contact Ms. Patience Patterson at (817) 978-6390 or Mr. Bixler at (817) 978-3815.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 9, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Proposed JTF-6 Activities Near Douglas, Arizona

Honorable Edward Manuel, Chairman
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

Dear Chairman Manuel:

Enclosed please find a copy of the Draft Supplemental Environmental Assessment (Draft EA) for an Immigration and Naturalization Service Proposed Action near Douglas, Cochise County, Arizona for your review and comment. The proposed project would consist of road improvements and the construction of a crossing at Whitewater Draw. This project is part of an on-going effort to upgrade roads and facilities for the Tucson Sector and the Douglas Border Patrol area of responsibility.

The document will be available for a 16-day public review/comment period beginning Monday, April 9, 2001 and ending April 25, 2001. It is available for public review in the Douglas Public Library located at 560 10th Street in Douglas, Arizona. All questions and comments regarding the Draft EA should be directed, in writing, to the following:

Mr. Glenn Bixler
U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE, Room 3A14
819 Taylor Street
Fort Worth, Texas 76102

Should you need additional information or have any questions, please feel free to contact Ms. Patience Patterson at (817) 978-6390 or Mr. Bixler at (817) 978-3815.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 9, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Proposed JTF-6 Activities Near Douglas, Arizona

Honorable Dallas Massey, Sr., Chairman
White Mountain Apache Tribal Council
P.O. Box 700
Whiteriver, AZ 85941

Dear Chairman Massey:

Enclosed please find a copy of the Draft Supplemental Environmental Assessment (Draft EA) for an Immigration and Naturalization Service Proposed Action near Douglas, Cochise County, Arizona for your review and comment. The proposed project would consist of road improvements and the construction of a crossing at Whitewater Draw. This project is part of an on-going effort to upgrade roads and facilities for the Tucson Sector and the Douglas Border Patrol area of responsibility.

The document will be available for a 16-day public review/comment period beginning Monday, April 9, 2001 and ending April 25, 2001. It is available for public review in the Douglas Public Library located at 560 10th Street in Douglas, Arizona. All questions and comments regarding the Draft EA should be directed, in writing, to the following:

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U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE, Room 3A14
819 Taylor Street
Fort Worth, Texas 76102

Should you need additional information or have any questions, please feel free to contact Ms. Patience Patterson at (817) 978-6390 or Mr. Bixler at (817) 978-3815.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

APPENDIX F

Agency Response and Coordination Letters

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

REPLY TO
ATTENTION OF:

6 Apr 01

CESWF-PER-EE

MEMORANDUM FOR CDR USACE (CESPL-CO-R, Dummer),
3636 N. Central, Phoenix, AZ 85102

SUBJECT: INS Water Crossing Structure and Fence Installation along the Border Road in Douglas, Arizona

1. The Immigration and Naturalization Service has tasked CESWF to prepare an Environmental Assessment for the subject crossing and fence. We are requesting a review of this action in accordance with Section 404 requirements. Construction of this water crossing and fence would begin late in 2001 or in 2002.

2. The proposed project involves constructing a water crossing and 230 linear feet of bollard-type fence along the border road at Whitewater Draw. The preferred alternative is to construct a low water crossing using concrete culverts within the 60-foot right-of-way. The border road runs through Whitewater Draw just north of the U.S.-Mexico border. During non-flooding flows, Whitewater Draw is a body of water of approximately 5 feet in width with a depth of less than one foot. The project area portion of the road is severely flooded after substantial rain events (see enclosed aerial photos). The flooding of the area is compounded by culverts on the Mexican side of the border which cause water to back up into the road area. The preferred alternative would be placed within the existing roadway. The concrete box culverts would pass flows that are generated from a 1-year storm or "low flows". Approximately 1000 feet of roadway would be paved with concrete to allow larger flows to overtop the road and to prevent the road from washing out. The side slopes of the road would be protected from erosion by grouted riprap. The concrete box culverts would be three to four barrels measuring four-feet high by twelve-feet wide (see enclosed construction design). Grates would be attached to the headwalls to prevent access through the culverts.

3. The current roadway width in the project area is approximately 20 feet. The new concrete roadway would be approximately 24 feet wide and the road embankment sides would be sloped at 3 horizontal to 1 vertical. Approximately 1,200 cubic yards of fill would be needed to construct this roadway. Approximately 40 percent of the fill would be borrow fill brought in from off site, while the remaining 60 percent would be taken from cut areas along the new roadway. Cultural and environmental assessments of the off site borrow area would be performed upon designation of the site. The proposed material to be used as fill is the soil and

like soils of the project area. The main soils in the project area are the White House-Tubac-Forest Association. These soils are well drained, have slow or medium runoff and slow permeability. It is estimated that 1.2 acres of land will be disturbed as a result of construction.

4. The proposed alternative would raise the elevation of the border road at Whitewater Draw. This raise is necessary for the road to be operational during and after rain events. By elevating and paving the road and installing culverts, the Border Patrol will be able to utilize the road immediately as flows diminish. Currently, flooding events cause the Border Patrol to use alternative roads that are 1-2 miles away in order to access areas further west of the Whitewater Draw area. Depending on the size of the rain event, the road within the project area may remain impassable for a 3-4 week period. The inability to cross at Whitewater Draw hampers the deterrence of illegal entry and drug trafficking.

5. The project's likely temporary impacts on the aquatic environment should be minimal. Insignificant amounts of aquatic habitat will be affected, given the large amounts of similar aquatic habitat which exists in the Draw due north. A small permanent loss in vegetation is anticipated. There should be beneficial permanent impacts as the culvert structures should reduce the water backing up into the area from south of the border.

6. The Fort Worth District has initiated coordination with the U.S. Fish and Wildlife Service (USFWS) in regards to Threatened and Endangered Species and critical habitat. A representative from USFWS accompanied Corps personnel on a November 2000 site visit and voiced no concerns regarding the immediate project area. A copy of the list of Federal Listed and Endangered Species has been enclosed. Also, Section 106 consultation has also been initiated with the Arizona State Historical Preservation Office (SHPO).

7. Discussion with Fort Worth District Regulatory personnel indicates this action may fall under Nationwide 14 guidelines. We would appreciate your review of the enclosed documents and a determination of whether this proposed action would meet the criteria of the Nationwide permit. If you require any additional information at this time please contact Mr. Glenn Bixler of my staff at 817/978-8315.

FOR THE COMMANDER:

William Fickel, Jr.
Chief, Planning, Environmental and
Regulatory Division

Enclosures:

Location Map
3 Aerial Photographs
Preliminary Engineering Design

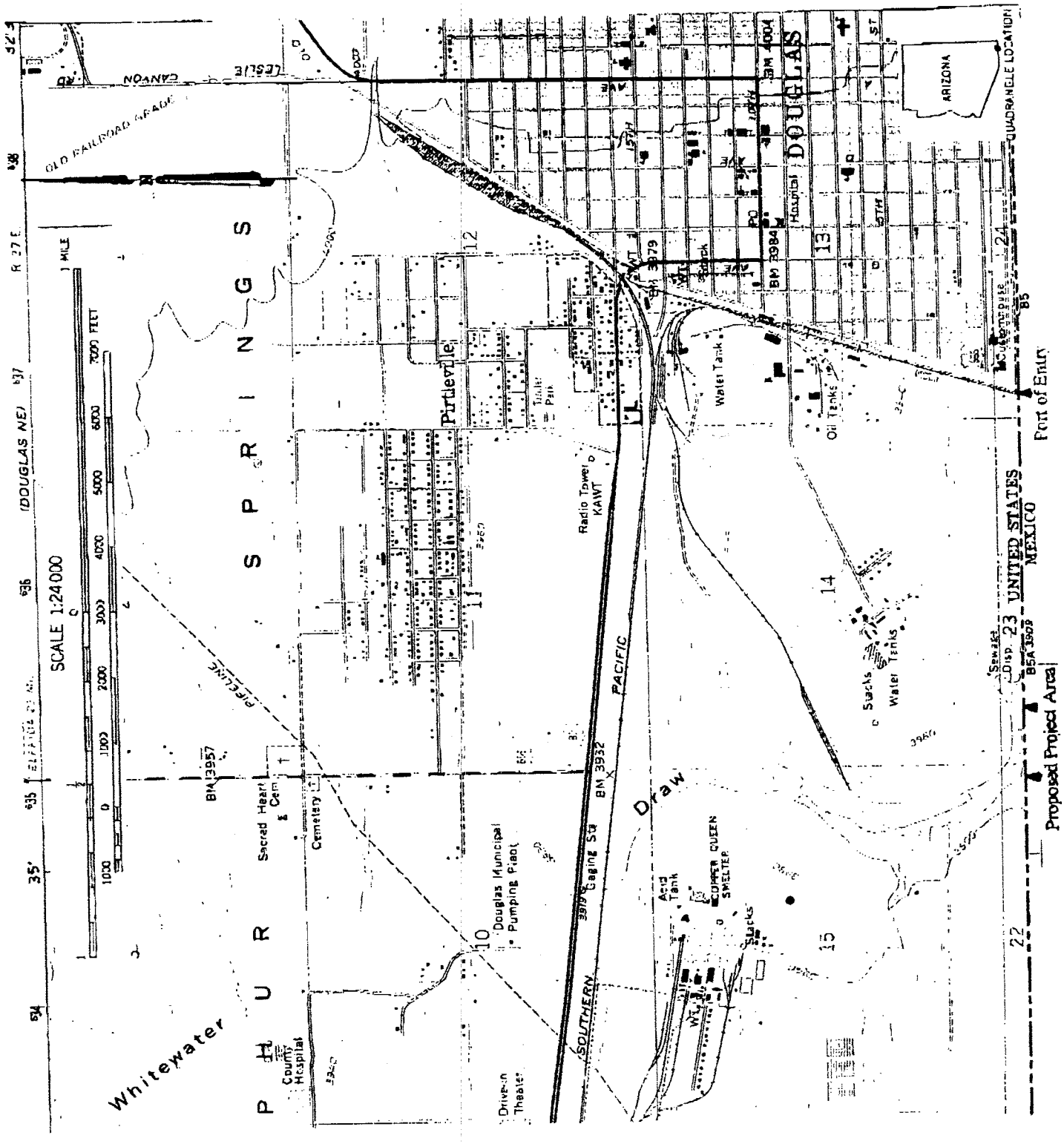

Figure 1.0 Location of Proposed Project Area at Whitewater Draw Cochise County, Douglas, Arizona

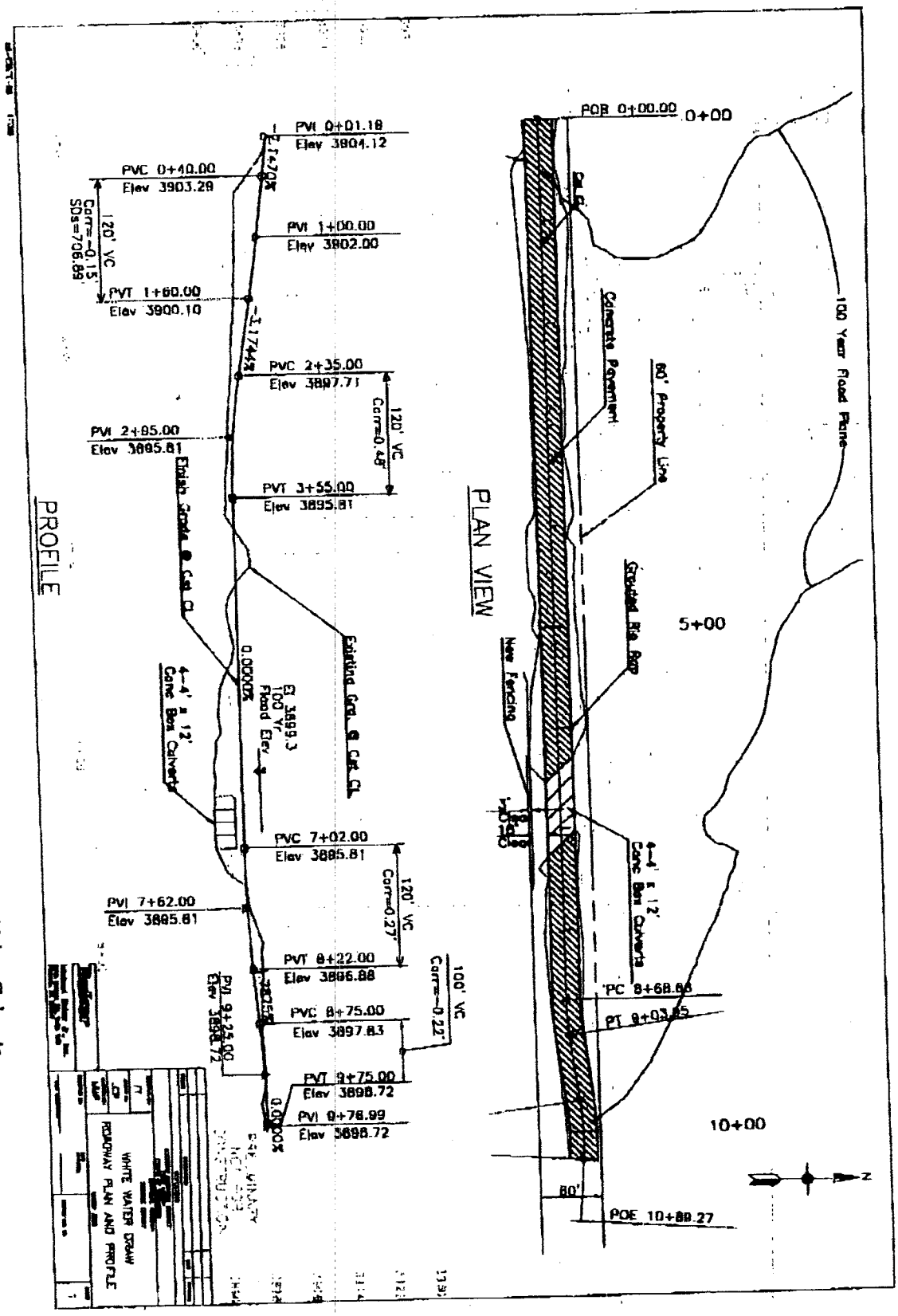

Figure 2.0 Preliminary Engineering Design for Low Water Crossing Using Culverts

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

REPLY TO
ATTENTION OF:

April 3, 2001

Planning, Environmental and Regulatory Division

Bureau of Land Management
Mr. Bill Childress, Assistant Field Manager
Tucson Field Office
1763 Paseo San Luis
Sierra Vista, Arizona 85635

Dear Mr. Childress:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed construction activities for the Immigration & Naturalization Service (INS) near Douglas, Arizona. The EA will be tiered from the Final EA for Infrastructure within the U.S. Border Patrol Naco-Douglas Corridor (INS 2000). The EA will address impacts specifically associated with activities of construction to take place late in 2001or in 2002.

The proposed project would consist of construction of a low water crossing using a culvert system at the Whitewater Draw area. This would include 4 box culverts and concrete pavement supported by grouted riprap. The proposed action would occur adjacent to the U.S.-Mexico international border as shown in the enclosure.

We would appreciate a review of the enclosed document. We are expediting our documentation in order to accommodate requests for this action by federal, state and local officials and, therefore, request that you respond in writing to this request for information within 10 calendar days. If you require any additional information at this time please contact Mr. Glenn Bixler of my staff at 817/978-8315.

Sincerely,

William Fickel, Jr.

William Fickel, Jr.
Chief, Planning, Environmental and
Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 3, 2001

Planning, Environmental and Regulatory Division

Mr. Robert Lawrence
Office of Planning and Coordination
U.S. Environmental Protection Agency
Region 6, Main Office
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

Dear Mr. Lawrence:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed construction activities for the Immigration & Naturalization Service (INS) near Douglas, Arizona. The EA will be tiered from the Final EA for Infrastructure within the U.S. Border Patrol Naco-Douglas Corridor (INS 2000). The EA will address impacts specifically associated construction to take place late in 2001 or in 2002.

The proposed project would consist of construction of a low water crossing using a culvert system at the Whitewater Draw area. This would include 4 box culverts and concrete pavement supported by grouted riprap. The proposed action would occur adjacent to the U.S.-Mexico international border as shown in the enclosure.

We would appreciate a review of the enclosed document. We are expediting our documentation in order to accommodate requests for this action by federal, state and local officials and, therefore, request that you respond in writing to this request for information within

10 calendar days. If you require any additional information at this time, please contact Mr. Glenn Bixler of my staff at 817/978-8315.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental and
Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

April 3, 2001

Planning, Environmental and Regulatory Division

U.S. Fish and Wildlife Service
Ecological Services
ATTN: Mr. David L. Harlow, Field Supervisor
2321 West Royal Palm, Suite 103
Phoenix, Arizona 85021-4951

Dear Mr. Harlow

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed construction activities for the Immigration & Naturalization Service (INS) near Douglas, Arizona. The EA will be tiered from the Final EA for Infrastructure within the U.S. Border Patrol Naco-Douglas Corridor (INS 2000). The EA will address impacts specifically associated with activities of construction to take place late in 2001 or in 2002.

The proposed project would consist of construction of a low water crossing using a culvert system at the Whitewater Draw area. This would include 4 box culverts and concrete pavement supported by grouted riprap. The proposed action would occur adjacent to the U.S.-Mexico international border as shown in the enclosure.

We appreciate Mr. Mike Coffeen, of your office, accompanying JTF-6 and USACE representatives to look at the Whitewater area. We would like to continue this informal consultation and would appreciate a review of the enclosed document. We are expediting our documentation in order to accommodate requests for this action by federal, state and local officials and, therefore, request that you respond in writing to this request for information within

10 calendar days. If you require any additional information at this time, please contact Mr. Glenn Bixler of my staff at 817/978-8315.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental and
Regulatory Division

Enclosure

Copy Furnished:

U.S. Fish and Wildlife Service
Michael Coffeen
2321 West Royal Palm, Suite 103
Phoenix, AZ 85021-4951

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

REPLY TO
ATTENTION OF:

April 3, 2001

Planning, Environmental and Regulatory Division

Arizona Department of Agriculture
Plant Services Division (Mr. James McGinnis)
1688 West Adams
Phoenix, Arizona 85007

Dear Mr. McGinnis:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed construction activities for the Immigration & Naturalization Service (INS) near Douglas, Arizona. The EA will be tiered from the Final EA for Infrastructure within the U.S. Border Patrol Naco-Douglas Corridor (INS 2000). The EA will address impacts specifically associated with activities of construction to take place late in 2001 or in 2002.

The proposed project would consist of construction of a low water crossing using a culvert system at the Whitewater Draw area. This would include 4 box culverts and concrete pavement supported by grouted riprap. The proposed action would occur adjacent to the U.S.-Mexico international border as shown in the enclosure.

We are contacting your office to solicit your assistance in determining if any special requirements or permits may be necessary under the Arizona Native Plant Law to complete the proposed action. A copy of the draft EA will be forwarded to your office upon completion. We are expediting our documentation in order to accommodate requests for this action by federal, state and local officials and, therefore, request that you respond in writing to this request for

information within 10 calendar days. If you require any additional information at this time, please contact Mr. Glenn Bixler of my staff at 817/978-8315.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental and
Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF

April 3, 2001

Planning, Environmental and Regulatory Division

Mr. Duane L. Shroufe
Arizona Game and Fish Department
Arizona Natural Heritage Program
2221 West Greenway Road
Phoenix, Arizona 85023-4399

Dear Mr. Shroufe:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Environmental Assessment (EA) for proposed construction activities for the Immigration & Naturalization Service (INS) near Douglas, Arizona. The EA will be tiered from the Final EA for Infrastructure within the U.S. Border Patrol Naco-Douglas Corridor (INS 2000). The EA will address impacts specifically associated with activities of construction to take place late in 2001 or 2002.

The proposed project would consist of construction of a low water crossing using a culvert system at the Whitewater Draw area. This would include 4 box culverts and concrete pavement supported by grouted riprap. The proposed action would occur adjacent to the U.S.-Mexico international border as shown in the enclosure.

We are contacting your office to solicit your assistance in determining if any state listed threatened, endangered, or other species of concern near the proposed project site which could be impacted by the proposed action. A copy of the draft EA will be forwarded to your office upon completion. We are expediting our documentation in order to accommodate requests for this action by federal, state and local officials and, therefore, request that you respond in writing to

this request for information within 10 calendar days. If you require any additional information at this time, please contact Mr. Glenn Bixler of my staff at 817/978-8315.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental and
Regulatory Division

Enclosure

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

REPLY TO
ATTENTION OF:

February 16, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Archaeological Survey, Site Relocation and Concurrence Determinations for sites located west of the Douglas Port of Entry (POE) along the proposed JTF-6 Road Improvements (Phase II) near Douglas, Arizona

Mr. James Garrison, State Historic Preservation Officer
ATTN: Ms. Joanne Miller
Arizona State Parks
1300 West Washington
Phoenix, Arizona 85007

Dear Mr. Garrison:

The U.S. Army Corps of Engineers, Fort Worth District, is preparing a Draft Supplemental Environmental Assessment (DSEA) for proposed construction activities west of the Douglas POE by Joint Task Force Six (JTF-6) near Douglas, Arizona (Douglas Phase II).

As we indicated in previous letters, an archaeological reconnaissance of the project area has been accomplished, as well as mitigation of Site AZ FF:11:82 (ASM) during Douglas Phase I. During the period of Phase I we did relocate nine (9) of the ten sites located west of the Douglas POE as inventoried by Geo-Marine, Inc. in 1992 by Martynec and others (see Attachment 1). Again, in September of 2000, these sites were relocated by SWCA, Inc. and GPS coordinates were obtained. SWCA did not offer a new or independent assessment of the sites' research potential, but repeated the assessment made in 1994. On January 30 and 31, 2001, these sites were revisited by archaeologists Patience Patterson (USACE, Fort Worth District) and Dr. Nicholas Trierweiler (Ecological Communications Corp.). Based on these new observations (see Attachment 1) and in accordance with 36 CFR Part 800.4(c) we ask for your concurrence of non-eligibility for the following sites: AZ FF:9:16; AZ FF:10:28; AZ FF:10:29; AZ FF:10:32; AZ FF:10:31; AZ FF:10:30 and AZ FF:10:21.

Again, in accordance with 36 CFR Part 800.4(c) we have applied the criteria of eligibility and find that site AZ FF:10:22 (the Mine Ridge Site) and site AZ FF:9:10 (Christianson Border Village Site) are eligible for the National Register and ask for your concurrence with that determination. The Christianson Border Village Site will not be impacted by the present project under Phase II. Also, in accordance with 36 CFR Part 800.5(1) and .5(d)(2), we have applied the criteria of adverse effect and have found that site AZ FF 10:22 possibly will be affected by

the proposed project improvements. Further, in accordance with 36 CFR Part 800.6(a), we have prepared a Treatment Plan for site AZ FF:10:22. The plan is enclosed for your review.

The temporal frame of this highly political project is still an issue. We would appreciate your immediate attention to our requests for concurrence with our determinations and we look forward to your comments on the Treatment Plan for AZ FF:10:22 and our efforts toward mitigation of this National Register-eligible property.

Upon your review and comment on the Treatment Plan, we will inform the Advisory Council on Historic Preservation in accordance with 36 CFR Part 800.6(a)(1) of an invitation to participate. We assume we will be proceeding in accordance with Part 800.6(b)(iv) and therefore have enclosed a draft Memorandum of Agreement for this undertaking. We look forward to your comments.

If you require any additional information at this time please contact Ms. Patience Patterson of my staff at (817) 978-6390.

Sincerely,

William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Enclosure

Copy Furnished w/ enclosures:

Mr. Milton Blankenship
Joint Task Force-Six
Building 11603, Biggs Army Air Field
Fort Bliss, Texas 79918-0058

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

REPLY TO
ATTENTION OF

May 17, 2001

Planning, Environmental and Regulatory Division

SUBJECT: Continued Consultation on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona

Mr. Peter L. Steere
Manager, Cultural Affairs
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

Dear Mr. Steere:

This letter is in response to your April 12, 2001 letter commenting on the Draft Environmental Assessment on Whitewater Draw and the May 1, 2001 letter commenting on the Data Recovery Plan for the Mine Ridge Site (AZ FF:10:22 (ASM)) regarding the above-mentioned undertaking.

We will address your comments by noting the letter date and the comment number.

April 12, 2001 letter:
#1 Comment noted.
#2 A copy of this report was sent on November 28, 2000
#3 Some of these reports are no longer available and they will have to be copied and sent to you at another time.
#4 You were forwarded this document on April 16, 2001
#5 Comment noted; however, avoidance is not an option in this case.
#6 Flagging will not be sufficient and is not an option.
#7 Monitoring is not an option.
#8 Comment noted.
#9 The data recovery plan was forwarded to you on April 16, 2001
#10 A burial agreement will not be necessary in this particular instance.
#11 The Tohono O'odham is a concurring party signatory on the MOA. You should have received the initial draft MOA on May 7, 2001, via email.
#12 The draft MOA has been sent to your office for review, on May 7, 2001.

May 1, 2001 letter:

#1 The Apache and the Hopi tribes, as well as others have been consulted.

#2 A Threatened and Endangered Species survey was done, the results of that appears in the EA. You were sent a copy of the Draft EA on April 9, 2001.

#3 Publication "(A)" will have to be copied and sent at a later date, it is out of print. Publication "(B)" was sent to you on November 28, 2000. Publication "(C)" is not out in draft or final form as of yet. You will receive a copy of that publication when it becomes available.

#4 Avoidance and preservation of this site (AZ FF:10:22) is not possible.

#5 Comment noted, thank you.

#6 Comment noted.

#7 A burial agreement will not be necessary considering the area and circumstances of this site. Any discovery of human remains will be dealt with under NAGPRA provisions.

#8 The integration of the data (limited as it is) from the original survey and collection will be undertaken in the mitigation work to come.

#9 An MOA has been drafted and you should have a copy of that draft, it was sent to your office on May 7, 2001.

#10 Conclusion of the mitigation of project impacts on this site will complete the Section 106 process and no further work will be undertaken once the stipulations of the MOA have been met and accepted by the SHPO and the Advisory Council on Historic Preservation.

#11 The recommendation for a site visit will be taken under advisement, comment noted.

#12 Correspondence concerning this project will be reviewed before transmittal to your office. As noted previously, the reports you requested will be sent at a later date, as they must be copied.

You were been sent a copy of the draft Memorandum of Agreement for your review and comment on May 7, 2001. We look forward to receiving those comments very soon. If you have any questions, please contact Ms. Patience Patterson of the Cultural Resources Section at (817) 978-6390. We look forward to hearing from you.

Sincerely,

Paul M Hatton

for William Fickel, Jr.
Chief, Planning, Environmental
and Regulatory Division

Copy furnished:

Mr. Eric Verwers
INS Architect/Engineer Resource
819 Taylor St. Room 3A28
Fort Worth, TX 76102-0300

TOHONO O'ODHAM NATION
CULTURAL AFFAIRS DEPARTMENT
P.O. BOX 837 - SELLS, AZ 85634
Telephone (520) 383-3622

May 1, 2001

Patience Patterson
Cultural Resource Section
Department of the Army
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102-0300

Dear Ms. Patterson:

Thank you, for the opportunity to comment on the proposed INS project at Whitewater Draw near Douglas, Cochise County, Arizona.

After reviewing the Archaeological Data Research Design and Data Recovery Plan for the Mine Ridge Site (AZ FF: 10:22(ASM)), the Cultural Affairs Office of the Tohono O'odham Nation has the following comments.

1) Have the Apache and Hopi Tribes been consulted on this project?

2) Has a Threatened and Endangered Species biological survey been done? If so please send the Cultural Affairs Office a copy.

3) Please send the Cultural Affairs Office copies of the following reports for review

A) Martynec, Rick etal
1994 "Cultural Resources survey and monitoring of the Douglas-Naco, Arizona Sector of the U.S.-Mexico Border." Geo-Marine Misc-Report of Investigations, No. 36 Geo-Marine, Inc. Plan Texas

B) Yoder, T.D.
2000 "Archaeological Survey and site Relocation for the JTF-6 Road Improvements at Douglas, Arizona Sector of the U.S.-Mexico Border." SWCA Cultural Resource Report.
No.00-351, SWCA,Inc. Tucson

C) Hesse, S.I.

2000 "A Cultural Resource Data Recovery Plan for AZ FF: 11:82 (ASM) within the JTF-6 Road Improvement Right-of-Way East of Douglas, Arizona, Cochise County, Arizona." SWCA Cultural Resource Report. No.00-353, SWCA, Inc. Tucson.

4) Is there any way to avoid, preserve and protect this site? Are the road repairs and hydrological improvements really necessary? Can they be designed to minimize the impacts on the archaeological site?
5) The research questions to be addressed concerning chronology, settlement patterns and systems, subsistence and diet and non-food resource exploitation in the event of a data recovery mitigation excavation seems well thought out and reasonable.

6) The plan of work, which includes detailed surface collection and mapping, feature excavation, and surface scraping seem reasonable for this type of site.

7) A burial agreement signed by the Corps of Engineers, the archaeological contractor and all interested tribes needs to be drafted reviewed and finalized by the tribes before any fieldwork starts.

8) How does the archaeological contractor proposed to integrate the limited data recovery work and collection made then by Martynee etal (1994) with this proposed new plan.

9) A MOA between the Corps of Engineers, SHPO and all interested tribes that describe the data recovery plan needs to be drafted, reviewed and signed before any field work starts the interested tribes would be signatories on this MOA.

10) Since there has been previously inadvertent damage to archaeological sites along the border by INS-JTF-6 activities, it is strongly recommended that archaeological monitors from the archaeological contractor hired to do this work and from the Tohono O'odham Nation and other tribes be present at this project site throughout the construction phase-even after data recovery has been completed.

11) It is also recommended that a site visit with staff from the archaeological contractor, the Army Corps of Engineers and all interested tribes take place soon, while the MOA and burial agreement are being drafted and reviewed.

12) Copies of all correspondence, memos and reports should be sent to the Cultural Affairs Office.

Sincerely,

Peter L. Steere
Manager, Cultural Affairs

Cc:
William Fickel, Jr.
Chief, Planning
Environmental and Regulatory Division

WS

Rec-E

Advisory Council On Historic Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

Reply to: 12136 West Bayaud Avenue, #330
Lakewood, Colorado 80226

May 1, 2001

William Fickel, Jr.
Chief, Planning, Environmental
And Regulatory Division
Fort Worth District Corps of Engineers
P.O. Box 17300
Fort Worth, TX 76102-0300

RE: Adverse Effects Notification regarding the US Border Patrol's Whitewater Draw and Fence Lighting and Road Improvement Project.

Dear Mr. Fickel:

On April 19, 2001, we received your notification and supporting documentation regarding the adverse effect of the referenced project on archaeological site AZ FF:10:22, a property eligible for inclusion in the National Register of Historic Places. Based upon the information you provided and the criteria included in Appendix A of our regulations, "Protection of Historic Properties" (36 CFR Part 800), we do not believe that our participation in the consultation to resolve adverse effects is needed. However, should circumstances change, please notify us so that we can re-evaluate if our participation is required.

Pursuant to 36 CFR 800.6(b)(iv), the Immigration and Naturalization Service (INS) will need to file the final, fully-signed Memorandum of Agreement (MOA), developed in consultation among the INS, US Border Patrol, Tohono O'Odham Nation, and the Arizona State Historic Preservation Officer (SHPO), and related documentation at the conclusion of the consultation process. The filing of this MOA with the Council is required in order for the INS to complete its compliance responsibilities under Section 106 of the National Historic Preservation Act.

Thank you for providing us with your notification of adverse effect. If you have any questions, please contact Carol Gleichman at 303-969-5110 or via eMail at cgleichman@achp.gov.

Sincerely,

Lee Keatinge

Lee Keatinge
Program Analyst
Western Office of Planning and Review

PER-EE

SHELDON R. JONES
Director

JANE DEE HULL
Governor

Arizona Department of Agriculture

1688 W. Adams Street, Phoenix, Arizona 85007
(602) 542-4373 FAX (602) 542-5420

April 24, 2001

William Fickel, Jr., Chief
Environmental, Planning and Regulatory Division
Department of the Army
Fort Worth District, Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102-0300

Re: Immigration and Naturalization Service
Whitewater Draw Project
Douglas, Arizona

Dear Mr. Fickel:

The protection and salvage of protected native plants is encouraged to the greatest extent feasible. You may want to consider having the project site surveyed for protected native plants. I recommend the use of local native plant species in land overseeding, restoration and revegetation projects. I recommend the leaving in place and protection of as much of the native vegetation as is possible.

Arizona State Law requires that the Arizona Department of Agriculture be notified in writing, with confirmation, prior to the anticipated destruction of any protected native plants during land clearing activity. On privately owned land the notification period ranges from 20 days to 60 days. The notification period on state lands is 60 days.

Plant transportation permitting and tagging are required prior to the removal of protected native plants from a property. Transportation permitting is not required when the plants are being relocated on the same property.

Native plant permit application and notification forms, and *Appendix A*, the listings of protected native plants by category; as well as, general information on the Arizona Native Plant Law, Seed Law and Noxious Weed Regulations can be obtained at: http://agriculture.state.az.us

You can correspond with me at the address listed below. You may also contact me by telephone at: 520-628-6310, by FAX at 520-628-6961, or by email at: bill.kendall@agric.state.az.us

Sincerely Yours,

Bill

William T. Kendall, Special Investigator #187
Office of Review and Investigations

Arizona Department of Agriculture
400 West Congress Street, Suite #124, Box #4
Tucson, Arizona 85701-1311

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

APR 2 4 2001

Mr. Glenn Bixler
U.S. Army Corps of Engineers
Fort Worth District
Attn: CESWF-EV-EE
Room 3A14
819 Taylor Street
Fort Worth, Texas 76102-0300

Dear Mr. Bixler:

Staff members of the United States Section, International Boundary and Water Commission (USIBWC) have reviewed the draft Supplemental Environmental Assessment (SEA) for Whitewater Draw, Douglas, Cochise County, Arizona, prepared for the Immigration and Naturalization Service (INS), and offer the following comments.

The proposed action calls for improvements to the border access road and the construction of a water crossing structure for Whitewater Draw, located southeast of Douglas, Arizona. Whitewater Draw, located within the 100-year floodplain, flows south into Mexico becoming the Agua Prieta River. We understand that the Preferred Alternative, Lower Water Crossing Using Culverts, consists of a low water crossing within the 60 foot-wide government-owned strip along the international border. The crossing will incorporate 3 or 4 barrels of 4 foot high by 12 foot wide concrete box culverts. The culverts will be sized to pass the one year storm, with larger floods passing over the concrete road deck of the low water crossing. The culverts will have grated headwalls on both the upstream and downstream ends, and trash racks will be incorporated into the upstream headwall. The downstream end of the culvert will be offset 15 feet from the border. The roadway will be widened from 20 to 24 feet wide, and paved with concrete. The slopes of the crossing will be at a slope of 3:1 (H:V), and will be paved with grouted 6-inch diameter riprap. The road deck will be approximately 5 feet above the natural bed of Whitewater Draw.

The project includes provisions for the future construction of a bollard fence across the Draw on the downstream side of the low water crossing. The bollard fence will be set 3 feet north of the border, and will be arranged in a triangular pattern in order to increase the area available for flow. Additional characteristics of this fence were not provided in this draft SEA. Due to the close proximity of the proposed work to International Monument No. 85A, we request that care be taken to ensure that constructed works will not interfere with the line-of-site between the international monuments.

The flood period for the Whitewater Draw extends from June through November, with the most flows arriving in August. Flood frequency information for the Draw is not available from the USIBWC, although Mean Daily Flows are available on the Internet for the USIBWC gage located on the Highway 80 Bridge over the Draw and 1.5 miles upstream from the border. The Flood Insurance Study for Cochise County, Arizona, Unincorporated Areas (April 17, 1989), lists the following flood frequency data for the Whitewater Draw. Palm Grove Arroyo joins the Draw downstream from the gage, and carries storm runoff from the City of Douglas; Stream I joins the Draw a short distance upstream from the gage.

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Whitewater Draw Above Confluence with Stream I	26.91(sic)	3,620	5,080	5,690	7,080
Palm Grove Wash Above Confluence With Whitewater Draw	33.50	7,620	14,370	17,000	22,620

The USIBWC disagrees with your finding that no long-term impacts to surface water resources are expected from construction and implementation of the Preferred Alternative. Based on our review, this project has the potential to modify the characteristics of storm runoff which crosses the international border. In general, works constructed within a basin located in the United States and which drains across the international border into Mexico should be designed, operated and maintained in a manner that prevents storm runoff from negatively impacting property or lands within either country. The USIBWC will collect details of the design, operation, and maintenance of these type of proposed projects, review them for clarity and completeness, and transmit them to the Mexican Section for their review. In this case, upon receipt of comments from the Mexican Section on the project, the USIBWC will send a summary of their comments to the INS and to Cochise County. Final approval of the project rests with Cochise County officials.

As you may know, within the bed of the Draw and approximately 100 feet downstream from the border, Mexico has constructed a road crossing which incorporates a double barrel arch pipe. The arch pipe measures 6'-5" rise by 9'-6" span, and provides a flow area of 49 square feet per barrel. The top of the headwall of this crossing structure is approximately 10 feet above the natural bed of the Draw. Citing the likelihood of backwater effects in the United States, the USIBWC has entered into discussions with the Mexican Section regarding the hydraulic calculations for this structure.

The USIBWC asks that the INS provide analysis of the project in a hydrology report, stamped by a registered professional engineer in the State of Arizona. The report should verify, through accepted engineering procedures, that the proposed and future project (low water crossing and bollard fence) will not negatively impact property or lands in Mexico. This verification should be provided for both frequent events confined to the culverts, and infrequent flow events which flow over the top of the road deck. The USIBWC asks that all hydraulic analysis be performed on the assumption that the existing crossing in Mexico produces no backwater into the United States, as the USIBWC is currently working to resolve this backwater issue with the Mexican Section. The USIBWC also suggests that the hydrology report address the following:

1. The USIBWC is concerned about the placement of the proposed bollard fence within the bed of the Draw, and questions whether this fence will not obstruct flows, especially when clogged by debris during a high flow event. The USIBWC anticipates that Mexico will view such a fence as a hazard due to the possibility that the debris-obstructed fence would impound waters and either divert flows onto the floodplain in Mexico, or fail due to differential hydrostatic pressure across the fence, sending a flood wave down the Draw. The USIBWC therefore suggests that the safety and stability of this fence be analyzed, and if found to be unsafe, that at a minimum it be relocated to the roadway on top of the low water crossing, and that the maximum number of culvert barrels be incorporated into the crossing to minimize the occurrence of over-topping flows. In addition, we suggest that the design and maintenance of the trash racks/grates for the culvert barrels anticipate the need to clear debris during a flood event, as opposed to cleaning it after the event.

2. The USIBWC is also concerned that a flow event of a magnitude larger than that which would pass unimpeded through the proposed culverts, would flow over the top of the crossing and then gain velocity as it drops the 5 feet back down to the bed of the Draw. This higher velocity flow would have a tendency to erode

the bed of the Draw, undermining the crossing's foundation, eroding banks in Mexico, and sending additional silt into Mexico. The USIBWC suggests that this situation might be mitigated by using larger, ungrouted riprap to line the slopes, thus providing a higher hydraulic flow resistance along the downstream slope of the crossing.

The USIBWC has no authority to require that particular features be incorporated into the project; rather, it must rely on Cochise County to ensure the design meets local U.S. standards. If, upon review of the project, Mexico anticipates negative impacts in Mexico due to a particular lack of features which are not required locally in the U.S., the USIBWC is the conduit through which these concerns are conveyed to the project proponent (INS) and the local approving authority (Cochise County).

Thank you for giving us the opportunity to review the draft SEA and for taking our comments into consideration. Based on information which you provided, we understand that this draft SEA will be concluded with a new Finding of No Significant Impact (FONSI). If you have any questions regarding this information, please call me at (915) 832-4740 or Mr. Jim Robinson, Design Division Engineer, at (915) 832-4152.

Sincerely,

for Sylvia A. Waggoner
Division Engineer
Environmental Management Division

THE HOPI TRIBE

Wayne Taylor, Jr.
CHAIRMAN

Phillip R. Quochytewa, Sr.
VICE-CHAIRMAN

April 23, 2001

William Fickel, Jr., Chief, Environmental Division
Department of the Army, Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102-0300

Dear Mr. Fickel,

This letter is in response to your correspondences to Chairman Taylor dated April 9 and 16, 2001, enclosing a *Draft Supplemental Environmental Assessment, Whitewater Draw, Douglas, Cochise County, Arizona*, and *Archaeological Research Design and Data Recovery Plan for Mine Ridge Site, AZ FF:10:22(ASM), Cochise County, Arizona*. The Hopi Tribe claims cultural affiliation to the prehistoric cultural groups in southern Arizona, and therefore we appreciate your continuing solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office has reviewed the *Draft Supplemental Environmental Assessment, Whitewater Draw*, and *Archaeological Research Design and Data Recovery Plan for Mine Ridge Site, AZ FF:10:22(ASM)*, by Ecological Communications Corporation. Site AZ FF:10:22 (ASM), Mine Ridge Site, is described as a fairly large, low density scatter of chipped stone with at least nine known features of thermally altered rock. We concur with your application of the criteria of adverse effect and find the research design and data recovery plan to be adequate.

We note that a letter dated September 18, 2000, from the Fort Worth District, Corps of Engineers regarding the Joint Task Force 6 proposal stated, "The proposed action would be located almost entirely within previously cleared or disturbed areas." In a letter dated March 7, 2001, we requested that you provide us with a copy for review and comment of the preliminary data recovery report on site AZ FF:11:82 (ASM). Please also provide us with a copy of for review and comment of the preliminary data recovery report on site AZ FF:10:22 (ASM).

If you have any questions or need additional information, please contact Terry Morgart at the Cultural Preservation Office at 520-734-3767. Thank you again for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Cultural Preservation Office

xc: Office of the Chairman,
Glenn Baxter, Corps of Engineers, Fort Worth District, Attn: CESWF-EV-EE, Room 3A14, 819 Taylor Street, Fort Worth, Texas 76102
Arizona State Historic Preservation Office

TOHONO O'ODHAM NATION
CULTURAL AFFAIRS DEPARTMENT
P.O. BOX 837 - SELLS, AZ 85634
Telephone (520) 383-3622

April 12, 2001

Patience Patterson
Environmental Specialist
U.S. Army Corps of Engineer
Fort Worth District
Atten: CESWF-PER-EC, Room 3A14
819 Taylor Street
Fort Worth, Texas 76102

Dear Ms. Patterson:

Thank you, for the opportunity to comment on the "DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT, WHITEWATER DRAW, DOUGLAS, COCHISE COUNTY, ARIZONA," prepared for the Immigration and Naturalization Service.

The Cultural Affairs office of the Tohono O'odham Nation has the following comments:

1) Please allow 30 days for responses and comments on this EIS documents. Sixteen days is not sufficient-time.

2) On page 29, you indicated that SWCA did an archaeological survey on September 13 & 15, 2000. Please send the Cultural Affairs Office a copy of their report for review.

3) Please send copies of other relevant archaeological reports mentioned on page 41 to the Cultural Affairs Office for review.

Martynee, Richard et al

1994- Cultural Resources Survey and Monitoring of the Douglas-NACO Arizona Sector of the U.S.-Mexico Border. Geo Marine Misc. Report of Investigation No.36

Browning, Cody Bill

1997- Archaeological survey and Monitoring of the Douglas-Naco Arizona Sector of the U.S.-Mexico Border Geo-Marine Report of Investigations No. 118 EP.

1998- Archaeological Survey for the JTF-6 Road Improvements along the Douglas, Arizona Sector of the U.S.-Mexico Border. Geo-Marine Report of Investigations No.135 EP

4) On page 41, the draft report mentioned that AZ FF: 10:22 (Mine Ridge Site) is located approximately 100 meters from the border road and is adjacent to the North/South road that may be utilized for construction equipment and machinery access.

   Your report also indicated that possible additional activities for road and hydrological repair activities as addressed in the JTF-6 EA for activities in the Douglas area might occur.

   Your report also indicated that to mitigate any potential adverse impacts, a program of archaeological data recovery is being considered for AZ FF: 10:22. The mitigation effort is being coordinated through the Arizona SHPO.

   The Cultural Affairs Office requests that all copies of data recovery proposals and correspondence to Arizona SHPO regarding this project be sent to the Cultural Affairs Office for review.

5). Consideration should be given to avoiding site AZ FF: 10:22 completely and preserving the site in place.

6) Site AZ FF: 10:22 can be flagged so it can be avoided during construction.

7) Archaeological monitors should be on site to monitor the site during construction activities, so it can be avoided and protected.

8) A plan for site avoidance, preservation and protection needs to be prepared and reviewed by the Cultural Affairs Office of the Tohono O'odham Nation.

9) If data recovery becomes inevitable-then the data recovery plan needs to be reviewed by the Cultural Affairs Office.

10) If data recovery becomes inevitable, a burial agreement needs to be drafted.

11) The Tohono O'odham Nation should be a signatory on any MOA regarding this project or others in the future.

12) The draft MOA needs to be sent to the Cultural Affairs Office for review.

Sincerely,

Peter L. Steere
Manager, Cultural Affairs

ECOLOGICAL COMMUNICATIONS CORPORATION
DOCUMENTATION OF CONTACT

Person contacted: Mike Coffeen

Affiliation: U.S. Fish and Wildlife Service, Phoenix, New Mexico

Telephone number: (602) 242-0210 Date: Feburary 22, 2001 Time:3:00 p.m.

Purpose: To solicit comments regarding the JTF-6 Draft Environmental Assessment for the construction of landing mat fence, installation of permanent lighting fixtures, road and hydrological improvements, and road maintenance located near Douglas, Cochise County, Arizona.

Agency Comment from U.S. Fish and Wildlife Service:
Concerning the Draft Supplemental EA for the JTF-6 Proposed Fence, Lighting, Road Repair and Improvement Project for Douglas, Cochise County, AZ, I am in agreement that the impacts from this project will be insignificant for any listed species at the immediate project area of Douglas.

I do remain concerned that the increased interdiction efforts at Douglas and Naco, Arizona, will indirectly affect the traffic of illegals thru the riparian areas along the San Pedro River which contain a number of listed species and their habitats. I hope that in the near future we can start discussions with the land management agencies and the Border Patrol to address the situation on the San Pedro River.

Michael P. Coffeen
Wildlife Biologist, AESFO
602-242-0210(x251), fax-2513
mike_coffeen@fws.gov

Response from JTF-6: JTF-6 appreciates input and concurrence to this document from the U.S. Fish and Wildlife Service and appreciates their efforts in joint field visits (8 Nov 2000) and the review process. The intent of this project is not to indirectly affect any threatened or endangered species or their habitats and we always strive to protect the San Pedro River Valley during any project activities. JTF-6 recognizes the importance of the San Pedro River Basin and the concern for the concentration of listed species and their habitats in the area. We at JTF-6 are encouraged and interested in coordinating with the Bureau of Land Management (BLM), the U.S. Fish Wildlife Service (USFWL), and the U.S. Border Patrol (USBP) to address this situation along the San Pedro River.

Milton Blankenship
Environmental Specialist
Joint Task Force Six
(915) 568-8253
Milton.Blankenship@JTF6.bliss.army.mil

Jill S. Madden, Vice President
Ecological Communications Corporation
(printed name)

JSMadden
(Signature)

Patterson, Patience E SWF

From: Joanne Miller [jmiller@pr.state.az.us]
Sent: Wednesday, March 21, 2001 8:17 PM
To: Patience Patterson
Subject: JTF-6 consultating

Hi Paddie:
Well, it's nearly 7 pm and I'm still not done and haven't got our response out on letterhead re: your 2/16/20001 consultation (received at SHPO Feb. 20, 2001) regarding the JTF-6 undertaking west of Douglas AZ Port of Entry (SHPO-2000-2317). Hence this e-mail, which I assume you will accept. Formal letter on letterhead will follow next week.

We concur with your determinations of eligibility for archaeological sites as listed in your letter and with your finding of adverse effect for site AZ FF:10:22 (ASM).

As you know, we are very concerned about the recent unanticipated adverse effects of road and perhaps land-mat fence construction-related activities at AZ FF:11:82 (ASM). We repeat our previous recommendations regarding the absolute need for a Programmatic Agreement for the continuing road and fence improvement and maintenance activities along the international border in Arizona that will be required over the long term. We strongly urge you to begin to develop that agreement as soon as possible.

We have expressed our reluctance to enter into yet another site specific Memorandum of Agreement; however, we understand that time is critical for the mitigation needed at AZ FF:10:22 (ASM). Reluctantly, we will agree to this site-specific memorandum of agreement in this instance and only for this site. The Immigration and Naturalization Service and the Border Patrol must be consulting parties to this MOA so that the agencies understand their obligations for compliance with Section 106 of the National Historic Preservation Act.

We need to consult further regarding the development of the Programmatic Agreement and appropriate treatment for the remaining archaeological sites that might be affected by activities along the border.

Sincerely,

Jo Anne Miller
AZ SHPO

MEMORANDUM OF UNDERSTANDING
between the
U.S. BORDER PATROL
and the
BUREAU OF LAND MANAGEMENT, NATIONAL PARK SERVICE, U.S. FISH AND WILDLIFE SERVICE, BUREAU OF INDIAN AFFAIRS, BUREAU OF INDIAN AFFAIRS OFFICE OF LAW ENFORCEMENT SERVICES, U.S. FOREST SERVICE, NATURAL RESOURCES CONSERVATION SERVICE, AND U.S. ENVIRONMENTAL PROTECTION AGENCY

I. INTRODUCTION

This Memorandum of Understanding (MOU) is made and entered into by the U.S. Border Patrol (USBP) and the Bureau of Land Management (BLM), National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), Bureau of Indian Affairs (BIA), Bureau of Indian Affairs Office of Law Enforcement Services (OLES), U.S. Forest Service (USFS), Natural Resources Conservation Service (NRCS), and U.S. Environmental Protection Agency (EPA).

II. BACKGROUND

The geographic scope of this MOU is public land in the states of Arizona and New Mexico.

Title 8 United States Code Section 1357(a)(3) entitles the United States Border Patrol to board and search conveyances within a reasonable distance of the border and to arrest smugglers and undocumented aliens (UDAs) illegally present in the United States.

BLM administers more than 27 million acres in Arizona and New Mexico, of which more than 4 million acres (2.4 million acres in Arizona and 1.8 million acres in New Mexico) are within 100 km (62 miles) of the United States-Mexico border. These border lands are administered by the Yuma, Phoenix, Tucson and Safford, Arizona Field Offices; and Las Cruces, New Mexico Field Office.

NPS administers 35 units in Arizona and New Mexico. Organ Pipe Cactus National Monument and Coronado National Memorial are adjacent to the international border. Tumácacori National Historic Park, Chiricahua National Monument and Ft. Bowie National Historic Site are within 100 km of the international border. These five units total more than 348,000 acres.

USFWS administers 15 wildlife refuges in Arizona and New Mexico. Cabeza Prieta, Buenos Aires and San Bernardino National Wildlife Refuges are adjacent to the international border and Imperial, Leslie Canyon, and San Andres National Wildlife Refuges are within 100 km of the international border.

BIA is responsible for carrying out the federal trust responsibility for lands reserved for four Indian tribes in Arizona and New Mexico whose lands fall within 100 km of the United States-Mexico border. The four tribes are the Cocopah, Quechan, Tohono O'odham, and Pascua Yaqui Tribes.

USFS administers six national forests in Arizona and five national forests and a national grassland in New Mexico. The 1.8 million acre Coronado National Forest shares 60 miles of its border with Mexico and also has a significant portion of its non-contiguous units within 100 km of the international border.

NRCS provides technical assistance to land users who are cooperators of Natural Resource or Soil and Water Conservation Districts (NRCDs or SWCDs) along the United States-Mexico border region of Arizona and New Mexico. The NRCS also provides technical assistance and in-kind services to other land users to facilitate compliance with Farm Bill participation in US Department of Agriculture programs for which the individuals or groups are eligible.

EPA's Regional Offices along with delegated state, local, and tribal agencies execute the Agency's programs within selected states, considering regional needs and the implementation of federal environmental laws. Programs to protect human health and to safeguard the natural environment in Arizona and New Mexico are overseen by EPA's Region IX and Region VI Offices, respectively. Through the Border XXI program, EPA aims to achieve a clean environment, protect public health and natural resources, and encourage sustainable development in the area 100 km north and south of the US-Mexico border.

All Parties are committed to preventing degradation of the physical environment while ensuring their respective missions are met.

III. PURPOSE

The purpose of this MOU is to 1) provide general procedures for the USBP's use of public land to conduct its routine operations of search and rescue, training, and apprehension of UDAs, while protecting the public's right to use public land without undue disruption, 2) develop and implement a plan to mitigate environmental degradation caused by UDAs crossing federal lands in Arizona and New Mexico, and 3) provide and encourage opportunities for all Parties to operate more effectively and achieve their missions.

IV. AUTHORITY

This MOU is entered into under the joint interdepartmental policies as well as under the individual department authorities of the U.S. Department of Agriculture, the U.S. Department of the Interior, the U.S. Department of Justice, and the U.S. Environmental Protection Agency. The federal agencies have general authority to cooperate and reach interagency understanding on matters within the scope of this document.

Appropriations Acts for FY2001:

House Report 106-646, dated June 1, 2000, at page 88 states "The Committee encourages the Forest Service and the Secretary of the Interior to work more closely with the Immigration and Naturalization Service and the EPA in southeastern Arizona to develop a plan to coordinate activities addressing illegal immigration crossing through Federal lands, and additionally, to

provide the Committee by October 1, 2001, a plan coordinated with the EPA to mitigate environmental damage caused by illegal immigrant crossings through these Federal lands."

House Report 106-674, dated June 12, 2000, at page 54 states "The Committee encourages the Administrator of the Environmental Protection Agency to work more closely with the Immigration and Naturalization Service, the Department of the Interior, and the Forest Service to develop a plan to mitigate environment degradation caused by illegal immigrants crossing into southeastern Arizona. This mitigation plan must be provided to the Committee by October 1, 2001."

V. DEFINITIONS

For purposes of this MOU:

A. "Public land" is land administered by the Bureau of Land Management, US Fish and Wildlife Service, US Forest Service and National Park Service in the states of Arizona and New Mexico.

B. "Public use" is defined as use by visitors, employees or residents of public land.

VI. AGREEMENT

A. BLM, NPS, FWS, BIA, OLES, USFS, NRCS, and EPA AGREE TO:

1. Contribute information and suggestions to USBP in its preparation of the necessary environmental documentation and clearances for USBP projects requiring new surface disturbing activities in a timely manner.

2. Assist USBP in identifying preferred locations for training and special operations as well as legally restricted areas, including but not limited to designated wilderness areas and endangered species critical habitat, in order to minimize impacts.

3. Observe, take part in, and instruct at, as desired or requested, USBP training.

4. Work with USBP on an individual basis when USBP operations may potentially cause degradation of natural resources and/or air quality to seek solutions that both mitigate the potential damage and allow for the attainment of mission goals.

5. Take responsibility for the removal, storage and disposal of all abandoned vehicles located on lands under their respective administration not seized by USBP as part of an enforcement action under it's jurisdiction for a violation involving a motor vehicle.

6. Work with USBP, as practicable, in the development and production of maps, brochures, and booklets for use as reference by USBP agents. These documents

may range from speciality full-size land-use maps to individual site-specific or resource specific pocket size field reference sheets.

7. Assist USBP, as practicable and as allowed by agency policy, in search and rescue operations of UDAs within lands under their agency's administration, and as requested by the USBP in search and rescue operations adjacent to such lands.

B. THE US BORDER PATROL AGREES TO:

1. Provide the respective Parties with an inventory of vehicle routes needed by their staff to conduct operations. USBP will strive to prevent resource damage by limiting off-road vehicle traffic to those existing routes unless immediate enforcement actions or emergency response activities are required.

2. Coordinate with the respective Parties on a monthly basis to discuss the overall status of projects and any other items pertinent to the execution of this MOU.

3. Cooperate with the law enforcement branches of Parties to this MOU by reporting observed violators of laws and regulations to respective Parties in a timely manner.

4. Request assistance in identifying preferred locations for training and special operations as well as legally restricted areas, including but not limited to designated wilderness areas and endangered species critical habitat, in order to minimize impacts.

5. Observe, take part in, and instruct at, as desired or requested, training by other Parties to this MOU.

6. Assist, when requested, any Party to this MOU in search and rescue operations within lands administered by that Party involving public visitors and/or employees.

7. Work with other Parties to this MOU on an individual basis when USBP operations may potentially cause degradation of natural resources and/or air quality to seek solutions that both mitigate the potential damage and allow for the attainment of mission goals.

8. Either seize or store motor vehicles found on public land involved in a violation being enforced by the USBP, depending on the elements of each individual case.

9. Pick up UDAs detained by BLM, NPS, FWS, BIA or USFS law enforcement officers to transport them off public land.

C. ALL PARTIES MUTUALLY AGREE TO:

1. Create a work committee consisting of two members each from USBP, BLM, EPA, USFWS, NPS and USFS whose responsibility is to coordinate and develop a coordinated plan to mitigate environmental damage caused by UDA crossings through federal lands in southeastern Arizona, as encouraged in House Reports 106-646 and 106-674 for Fiscal Year 2001 Appropriations Act. The committee members will present a plan, as required by Congress, to their own agencies by July 31, 2001, for transmittal to the House Appropriations Committee by October 1, 2001.

2. Actively work under this MOU within the budgetary constraints of the Parties.

3. Make staff available to conduct periodic "ride-alongs" to promote better coordination between agency personnel at the staff level.

4. Conduct quarterly coordination meetings at the sector chief/field office manager level to jointly develop projects and schedule tasks.

5. Work together to identify or develop staging areas for joint operations, USBP operations and joint training.

6. Cooperate and participate in training and use of agency equipment such as heavy earth-moving equipment, ATVs, horses, mountain bikes, four-wheel drive vehicles, and technical equipment such as geographical information systems and global positioning systems.

7. Render backup and assistance to each other Party to this MOU in law enforcement operations, provided that such assistance is within its capabilities and jurisdiction; and that such action will not impair such Parties from fulfilling their own objectives; and all requests for assistance made by the Parties will be reasonable and will not compromise the integrity and mission of any of the involved Parties.

8. Strive to resolve issues at the appropriate individual USBP Sector Chief and Field Office level if conflicts develop between USBP operations and public use of public land.

9. Cooperate in the development and dissemination of public education and information materials.

D. ADMINISTRATIVE PROVISIONS:

1. Other federal, tribal, state and local government agencies may become a Party to this MOU.

2. This MOU shall become effective to each Party upon the date of their signature and shall have an indefinite duration.

3. Any Party that wants to terminate this MOU shall notify the other Parties by giving 30 days written notice.

4. This MOU shall be interpreted in accordance with federal law.

5. No representations or promises are binding on the Parties, except those representations and promises contained in this MOU or in some future written representations or promises signed by the Parties.

6. This MOU shall not be construed to obligate the federal government to expend any money in the completion of any work under this MOU.

7. Nothing in this MOU will be construed as affecting the authority of the parties in carrying out their responsibilities under the provisions of applicable law.

8. Disagreements concerning administration of the MOU or its terms will be resolved by the signatories identified below.

9. Amendments or modifications to this MOU shall be in writing and shall be signed by the Parties. Modifications shall become effective to each Party on the date of their signature.

10. Parties shall retain all applicable legal responsibility for their respective employees working pursuant to this MOU with respect to pay, personnel benefits, injuries, accidents, losses, damages, civil liability, etc. This MOU is not intended to change in any way the individual employee status, or the liability or responsibility of each Party under applicable federal law.

11. Liability of the United States resulting from the negligence of its employees shall be governed by the Federal Tort Claims Act (28 U.S.C. 2671, et seq.) and applicable federal laws.

12. Nothing in this MOU shall affect the rights and duties derived from other agreements that already exist between the Parties, including, but not limited to:

    a. Interagency Agreement Between NPS, Organ Pipe Cactus National Monument and Immigration and Naturalization Service, U.S. Border Patrol, Tucson Sector, Arizona; and

    b. Interagency Agreement Between USFWS, Cabeza Prieta NWR and Immigration and Naturalization Service, U.S. Border Patrol, Tucson and Yuma Sectors, Arizona.

13. Supplemental agreements or MOUs may be entered into by two or more Parties to this MOU by mutual agreement at any time.

Signature _____ Date _____
US Border Patrol, Chief Patrol Agent, Tucson Sector, David V. Aguilar

Signature _____ Date _____
US Border Patrol, Chief Patrol Agent, El Paso Sector, Luis E. Barker

Signature _____ Date _____
US Border Patrol, Acting Chief Patrol Agent, Yuma Sector, Maurice Moore

Signature _____ Date _____
US Border Patrol, Headquarters, Washington, D.C.

Signature _____ Date _____
US Forest Service, Southwestern Regional Forester, Ellie Towns

Signature _____ Date _____
US Fish and Wildlife Service, Southwest Regional Director, Nancy Kaufman

Signature _____ Date _____
Bureau of Land Management, Arizona State Director, Denise P. Meridith

Signature _____ Date _____
Bureau of Land Management, New Mexico State Director, Michelle Chávez

Signature _____ Date _____
National Park Service, Intermountain Regional Director, Karen Wade

Signature _____ Date _____
Bureau of Indian Affairs, Western Regional Director, Wayne Nordwall

Signature _____ Date _____
Bureau of Indian Affairs Office of Law Enforcement Services

Signature _____ Date _____
Bureau of Indian Affairs, Southwestern Regional Director, Rob Baracker

Signature _____ Date _____
Natural Resources Conservation Service, Arizona State Conservationist, Mike Somerville

Signature _____ Date _____
Natural Resources Conservation Service, New Mexico State Conservationist, Rosendo Trevino III

Signature _____ Date _____
US Environmental Protection Agency, Region 9 Administrator, Felicia Marcus

Signature _____ Date _____
US Environmental Protection Agency, Region 6 Administrator, Gregg Cooke

BPSWSMOU.NON 3/13/01

APPENDIX G

Notice of Availability

The Daily Dispatch

530 11th Street, Douglas, AZ 85607 • (520) 364-3424

Marissa Rivera, being first duly sworn deposes and says that she is an agent of The Daily Dispatch, a daily newspaper, published in the City of Douglas, County of Cochise, State of Arizona;

That the Notice, a copy of which is hereto attached, described as follows:

Ecological Communications

was published daily in the entire and regular issue of said THE DAILY DISPATCH, for 3 consecutive weeks, the FIRST publication of said notice being in the issue dated April 8, 2001, and the LAST publication being in the issue dated April 11, 2001.

The deponent further says that the Notice was published in the newspaper proper, and not in a supplement thereof.

(SIGNED) Marissa Rivera

Sworn and Subscribed to me this 9 day of May, 2001

Notary Public

OFFICIAL SEAL
LAWRENCE L. BLASKEY
NOTARY PUBLIC - ARIZONA
COCHISE COUNTY
My Comm. Expires June 2, 2003

My commission expires: June 2, 2003

PUBLIC NOTICE

Public Notice/Notice of Availability

Interested parties are hereby notified that the Immigration and Naturalization Service has prepared an Environmental Assessment for the proposed mission near Douglas, Cochise 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 a crossing, perform 1000 feet of road improvements, and construct a bollard fence at Whitewater Draw, west of the city of Douglas, adjacent to the U.S.-Mexico International Border.

The EA is available for public inspection beginning Monday, April 9, 2001 and ending April 25, 2001. Comments will be accepted for the same 16-day period. The document is available for public viewing at the Douglas Public Library located at 560 10th Street in Douglas, Arizona. Library hours are: 10:00 a.m. to 7:00 p.m. Monday, Tuesday and Thursday; 10:00 a.m. to 9:00 p.m. Wednesday; 10:00 a.m. to 5:00 p.m. Friday, 10:00 a.m. to 2:00 p.m. Saturday and 1:00 p.m. to 5:00 p.m. Sunday.

All questions and comments regarding the Environmental Assessment should be directed, in writing, to the following: Mr. Glenn Bixler, U.S. Army Corps of Engineers, Fort Worth District, Attn: CESWF-EV-EE, Room 3A14, 819 Taylor Street, Fort Worth, Texas, 76102-0300

For further information, contact the Fort Worth District, Corps of Engineers, Technical Manager, Mr. Bixler at (817) 978-3815.

Published: 4/8, 4/10, 4/11/01