



**ENVIRONMENTAL STEWARDSHIP PLAN
FOR CONSTRUCTION, OPERATION, AND MAINTENANCE
OF VEHICLE FENCE AND RELATED TACTICAL INFRASTRUCTURE
U.S. Border Patrol, Tucson Sector, Arizona
Sonoita Station, Arizona**

**U.S. Department of Homeland Security
U.S. Customs and Border Protection
U.S. Border Patrol**



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ACRONYMS AND ABBREVIATIONS

AO	Areas of Operation
BMP	Best Management Practices
BRP	Biological Resources Plan
CAA	Clean Air Act
CBP	U.S. Customs and Border Protection
CM&R	Construction Maintenance and Restoration
CPNWR	Cabeza Prieta National Wildlife Refuge
CWA	Clean Water Act
DHS	U.S. Department of Homeland Security
DOI	Department of the Interior
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESP	Environmental Stewardship Plan
FONSI	Finding of No Significant Impact
FR	Federal Register
FY	Fiscal Year
IA	illegal alien
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
LWC	low water crossing
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PAC	primary activity center
PM-10	Particulate <10 micrometers
PL	Public Law
POE	Port of Entry
POL	petroleum, oil, and lubricants
ROI	region of influence
SBI	Secure Border Initiative
SHPO	State Historic Preservation Office
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan
TI	Tactical Infrastructure
THPO	Tribal Historic Preservation Officer
TVB	temporary vehicle barrier
U.S.	United States
USACE	United States Army Corps of Engineers
USBP	United States Border Patrol
USDA	United States Department of Agriculture
USFS	United States Forest Service

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COVER SHEET

ENVIRONMENTAL STEWARDSHIP PLAN FOR CONSTRUCTION, OPERATION, AND MAINTENANCE OF VEHICLE FENCE AND RELATED TACTICAL INFRASTRUCTURE U.S. BORDER PATROL TUCSON SECTOR, ARIZONA SONOITA STATION, ARIZONA

Responsible Agencies: U.S. Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP), U.S. Border Patrol (USBP).

Coordinating Agencies: U.S. Army Corps of Engineers (USACE)-Los Angeles District; U.S. Forest Service (USFS); U.S. Fish and Wildlife Service (USFWS), U.S. National Park Service (USNPS), and the U.S. Section, International Boundary and Water Commission (USIBWC).

Affected Location: U.S./Mexico international border, east and west of the former Lochiel Port of Entry (POE), Santa Cruz and Cochise County, Arizona.

Project Description: The Project includes the construction, operation, and maintenance of tactical infrastructure (TI) to include: the retrofit or replacement of 21.6 miles of temporary vehicle fence to permanent vehicle fence and the construction of approximately 2.8 miles of permanent vehicle fence and construction road. The Project will be implemented in two western sections and two eastern sections. The two western sections include a 2.3 mile section of new TI within the EV-1B alignment and a 3.8 mile section of TI improvements within the EV-1A alignment. The two eastern sections include a 0.4 mile section of new TI within the EV-1B alignment and a 17.7 mile section of TI improvements within the EV-1A alignment. Two staging areas totaling approximately 3.5 acres in size and three previously used storage areas, all of which occur on USFS lands, will be utilized for the duration of the construction period and revegetated at the end of the Project. Vehicle gates will be constructed within this alignment to allow USFS firefighters access to Mexico.

Report Designation: Environmental Stewardship Plan (ESP).

Abstract: CBP plans to construct, operate, and maintain 24.3 miles of TI, including four discrete sections of permanent vehicle fence and construction and access roads along the U.S./Mexico international border in the USBP Tucson Sector, Arizona. Construction of new permanent vehicle fence and replacement of temporary vehicle fence with a permanent vehicle fence will extend the existing TI crossing the San Rafael Valley from its western terminus to the slope of Mount Washington and from its eastern terminus to the slope of the Huachuca Mountains south of Coronado Peak. Due to the rugged terrain, the new construction road for EV-1B could require ground disturbance up to 120 feet north of the U.S./Mexico border. This ESP analyzes and documents environmental consequences associated with the Project.

EXECUTIVE SUMMARY

INTRODUCTION

United States Customs and Border Protection (CBP) and U.S. Border Patrol (USBP) will construct, operate, and maintain 24.3 miles of vehicle fence and related tactical infrastructure (TI) along the U.S./Mexico border in Cochise and Santa Cruz Counties, Arizona. TI is a term used by USBP to describe physical structures that facilitate enforcement activities; these items typically include, but are not limited to, roads, fences, lights, gates, boat ramps, and barriers.

In Section 102(b) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), Congress mandated the United States Department of Homeland Security (DHS) to install fencing, barriers, roads, lighting, cameras, and sensors on not less than 700 miles of the southwestern border. This total includes 370 miles of primary pedestrian fencing to be completed in 2008, in areas most practical and effective in deterring smugglers and aliens attempting to gain illegal entry into the U.S. As of October 1, 2008, 205 miles of primary pedestrian fence and 154 miles of vehicle fence have been constructed.

On April 1, 2008, the Secretary of the DHS, pursuant to his authority under Section 102(c) of IIRIRA, exercised his authority to waive certain environmental and other laws in order to ensure the expeditious construction of TI along the U.S./Mexico Border. The TI described in this Environmental Stewardship Plan (ESP) is covered by the Secretary's April 1, 2008, waiver (73 Federal Register [FR] 65, pp. 18293-24, Appendix A). Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the laws that are included in the waiver, the Secretary committed DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP strongly supports this objective and remains committed to being a good steward of the environment. CBP will continue to work in a collaborative manner with local government, state and Federal land managers, Native American tribes, and the interested public to identify environmentally sensitive resources and develop appropriate Best Management Practices (BMPs) to avoid or minimize adverse impacts resulting from the installation of TI.

CBP is performing an environmental review of the fencing projects and will publish the results of this analysis in separate ESPs, which include mitigation and BMPs developed to minimize adverse effects to the environment. These ESPs will be developed for each USBP Sector scheduled for TI improvements and will address each segment of pedestrian and vehicle fence covered by the waiver.

GOALS AND OBJECTIVES OF THE PROJECT

The goal of the Project is to increase border security within the USBP Tucson Sector with the ultimate objective of achieving effective control of our Nation's borders. The Project further meets the objectives of the Congressional direction in the Fiscal Year

(FY) 2007 DHS Appropriations Act (Public Law [P.L.] 109-295), Border Security Fencing, Infrastructure, and Technology appropriation to install fencing, infrastructure, and technology along the border.

The Project will provide USBP agents with the tools necessary to strengthen their control of the U.S. border between Ports of Entry (POEs) in the USBP Tucson Sector. The Project will help to deter illegal entries within the USBP Tucson Sector by improving enforcement efficiency, thus preventing terrorists and terrorist weapons, illegal aliens (IAs), drugs, and other cross border violators and contraband from entering the U.S., while providing a safer work environment for USBP agents. The USBP Tucson Sector has identified discrete areas along the border that experience high levels of illegal cross-border violations. This activity typically occurs in areas that are remote and not easily accessed by USBP agents, near POEs where concentrated populations might live on either side of the border, or in locations that have quick access to U.S. transportation routes.

PUBLIC OUTREACH AND COORDINATION

Although the Secretary of DHS issued the waiver, and thus, CBP has no responsibility under the National Environmental Policy Act for this Project, DHS and CBP remain committed to building TI in an environmentally responsible manner. CBP held agency meetings and posted Project descriptions on www.BorderFencePlanning.com to elicit information on sensitive resources that may be present and/or potentially affected in the Project area. Information obtained has been included in the analysis of effects and presented in this ESP.

In addition to the past public involvement and outreach program, CBP will continue to coordinate with various Federal and state agencies during the development of this ESP. These agencies are described in the following paragraphs.

U.S. Section, International Boundary and Water Commission (USIBWC) - CBP has coordinated with USIBWC to ensure that any construction along the international border does not adversely affect International Boundary Monuments or substantially impede floodwater conveyance within international drainages.

U.S. Army Corps of Engineers (USACE), Los Angeles District - CBP has coordinated construction related activities with USACE to identify potential jurisdictional Waters of the U.S. (WUS), including wetlands, and to develop measures to avoid, minimize or compensate for losses to these resources.

U.S. Department of the Interior (DOI) - CBP has coordinated extensively with U.S. Fish and Wildlife Service (USFWS) and the U.S. National Park Service (USNPS) within DOI throughout the development of this ESP. The USFWS has assisted in identifying listed species that have the potential to occur in the Project area as well as preparation of a Biological Resources Plan (BRP) for proposed TI in the Tucson Sector. The BRP presents the analysis of potential effects to listed species and the BMPs proposed to

reduce or off-set any adverse impacts. The USNPS has provided documentation of Mexican spotted owl (*Strix occidentalis*) primary activity centers (PACs) on the Coronado National Memorial.

U.S. Department of Agriculture (USDA) - CBP has also continued to coordinate with U.S. Forest Service (USFS) within the USDA, since segments of fence and road are planned for construction within or adjacent to USFS lands on the Coronado National Forest. The USFS has provided documentation of Mexican spotted owl PACs on the Coronado National Forest. The USFS has requested the construction of gates within the alignment to allow firefighter access to Mexico during fire emergencies.

DESCRIPTION OF PROJECT

CBP will construct, operate, and maintain approximately 24.3 miles of TI, which includes vehicle fence and associated construction and maintenance road along the U.S./Mexico border in Santa Cruz and Cochise County, Arizona. The Project will retrofit or replace 21.6 miles of existing temporary vehicle fence and extend approximately 2.8 miles of permanent vehicle fence on either side of the San Rafael Valley. The vehicle fence will be placed approximately 3 to 6 feet north of the U.S./Mexico International border, within the Roosevelt Reservation. CBP operations and TI construction within the 60-foot wide Roosevelt Reservation is consistent with the purpose of the Roosevelt Reservation (land specified for border actions), and any CBP activity within this area is outside the oversight or control of Federal land managers. The construction corridor could extend up to 60 feet north of the Roosevelt Reservation in areas of rugged terrain. Gates will be constructed within this alignment to allow USFS firefighter access to Mexico.

Upon completion of the TI, CBP will be responsible for repair and maintenance of the fence and associated roads. Such activities will include replacement or repair of fence segments that are vandalized, removal of debris that becomes entrapped along the fence or within any drainage structures, and grading of the road surface. These activities will occur on an as-needed basis; however, routine road maintenance will be expected to occur at least annually.

In order to facilitate operation of equipment, staging of materials, and construction access to the Project corridor, two temporary staging areas, totaling 3.5 acres will be used. Vegetation will be cleared and grading may occur where needed in the staging areas. Three previously used storage areas located on USFS lands will also be used for the duration of construction activities. Upon completion of the Project, the temporary staging and storage areas will be rehabilitated.

No access roads (*i.e.*, roads leading to the vehicle fence segments) will be constructed as part of this new Project because all access to the Project corridor will occur along existing access roads. A patrol road occurs along the entire 21.6 miles of EV-1A and will be used for construction of this segment. A new construction road will be built within approximately 2.8 miles of the Roosevelt Reservation to facilitate construction and

maintenance of the EV-1B segment. This new construction road could extend up to 60 feet north of the Roosevelt Reservation due to rugged terrain.

SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION, AND BMPS

Table ES-1 provides an overview of potential environmental impacts by specific resource areas. Chapters 3 through 5 of this ESP address these impacts in more detail. CBP followed specially developed design criteria to reduce adverse environmental impacts and will implement BMPs and mitigation measures to further reduce or offset adverse environmental impacts. Design criteria to reduce adverse environmental impacts include selecting a route that will minimize impacts, consulting with Federal and state agencies, Native American tribes, and other stakeholders to avoid or minimize adverse environmental impacts, and developing appropriate BMPs to protect natural and cultural resources. Potential adverse effects, including physical disturbance and construction of solid barriers on wetlands, riparian areas, streambeds, and floodplains, will be avoided or mitigated whenever possible. BMPs will include implementation of a Storm Water Pollution Prevention Plan (SWPPP), Construction Mitigation and Restoration (CM&R) Plan, Spill Prevention Control and Countermeasures Plan (SPCCP), Dust Control Plan, Fire Prevention and Suppression Plan.

Table ES-1. Summary of Anticipated Environmental Impacts

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Air Quality	Minor and temporary impact on air quality will occur during construction; air emissions will remain below <i>de minimis</i> levels.	Dust Control Plan. Fire Prevention and Suppression Plan. Maintain equipment according to specifications.
Land Use, Recreation, and Aesthetics	Minor impacts to private and USFS lands outside the Roosevelt Reservation. There will be a minor permanent impact on visual resources and the character of USFS land, as the fence will be conspicuous from adjacent hilltops. Beneficial effects, such as reduced vandalism, habitat degradation, debris left by IAs, and wildfires will be expected.	CM&R Plan
Soils	Due to the slope of the terrain within the Project corridor, the potential for soil loss to occur will be moderate to high.	Dust Control Plan, SWPPP, SPCCP, and CM&R Plan.

Table ES-1, continued

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Water Resources	A temporary and one-time water usage will require up to 12 acre-feet of water. There will be a negligible to minor impact on the availability of water in the region. Grading and contouring could result in short-term minor adverse impacts to local hydrology. Potential impacts to surface and ground water quality, such as increased sediment loads or the introduction of pollutants, will be avoided through implementation of BMPs. Water use required for construction will not substantially affect water supply in the region. Fourteen potentially jurisdictional WUS will be affected by construction.	SWPPP, SPCCP, and CM&R Plan.
Biological Resources	<p>Negligible to minor impact on vegetation communities. Most activity will occur within previously disturbed areas, where no impacts to vegetation will occur. Loss and degradation of vegetation in up to 43.5 acres of non-disturbed areas will occur within the alignment of new construction roads and staging areas.</p> <p>Fragmentation of wildlife habitat will occur along EV-1B, although the effect is expected to be minimal as most wildlife will not perceive the new vehicle fence as a barrier. Beneficial impact on wildlife populations is anticipated as a result of protecting habitat north of the corridor from IA traffic. Noise impacts to wildlife will be minimal.</p> <p>Loss or degradation of vegetation communities could result in long-term effects to the Mexican spotted owl (<i>Strix occidentalis lucida</i>). Construction activities could temporarily affect the Chiricahua leopard frog (<i>Rana chiricahuensis</i>).</p>	<p>CM&R Plan and Fire Suppression and Prevention Plan.</p> <p>The construction period will avoid impacts to migratory bird nests. Use of post-on-rail style fence will minimize fragmentation effects to most wildlife. SWPPP and SPCCP will avoid impacts to aquatic habitats associated with the Santa Cruz River.</p> <p>Construction period will avoid impacts to owl during nesting season. Use of biological monitors will avoid impacts to Chiricahua leopard frogs potentially found in roads.</p>
Cultural Resources	Border monuments, survey markers, and other sites eligible for inclusion on the National Register of Historic Places are adjacent to the Project corridor, but will be avoided. A total of 44 isolated occurrences, primarily rock cairns, will be lost or degraded.	All construction will be restricted to previously surveyed areas. If any cultural material is discovered during construction, all activities within the vicinity of the discovery will be halted until cleared by a qualified archeologist.

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SECTION 1.0
INTRODUCTION



1.0 INTRODUCTION

1.1 BACKGROUND

United States Customs and Border Protection (CBP) and U.S. Border Patrol (USBP) will construct, operate, and maintain 24.3 miles of vehicle fence and related tactical infrastructure (TI) along the U.S./Mexico border in Cochise and Santa Cruz Counties, Arizona. TI is a term used by USBP to describe physical structures that facilitate enforcement activities; these items typically include, but are not limited to, roads, fences, lights, gates, boat ramps, and barriers.

In Section 102(b) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), Congress mandated that the United States (U.S.) Department of Homeland Security (DHS) install fencing, barriers, roads, lighting, cameras, and sensors on not less than 700 miles of the southwestern border. This total includes certain priority miles of fencing in areas most practical and effective in deterring illegal entry and smuggling into the U.S. Congress has mandated that these priority miles be completed by December 2008. To that end, DHS plans to complete 370 miles of pedestrian fencing and 300 miles of vehicle fencing along the southwestern border by the end of 2008. As of October 1, 2008, 205 miles of primary pedestrian fence and 154 miles of vehicle fence have been constructed, in partial fulfillment of the December 2008 deadline. These efforts support the U.S. CBP mission to prevent terrorists and terrorist weapons from entering the U.S., while also facilitating the flow of legitimate trade and travel.

On April 1, 2008, the Secretary of the DHS, pursuant to his authority under Section 102(c) of IIRIRA, exercised his authority to waive certain environmental and other laws in order to ensure the expeditious construction of TI along the U.S./Mexico Border. The TI described in this Environmental Stewardship Plan (ESP) is covered by the Secretary's April 1, 2008, waiver (*73 Federal Register* [FR] 65, pp. 18293-24, Appendix A). Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the laws that are included in the waiver, the Secretary committed DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP strongly supports this objective and remains committed to being a good steward of the environment. CBP will continue to work in a collaborative manner with local government, state and Federal land managers, Native American tribes, and the interested public to identify environmentally sensitive resources and develop appropriate Best Management Practices (BMPs) to avoid or minimize adverse impacts resulting from the installation of TI.

To that end, CBP has prepared the following ESP, which analyzes the potential environmental impacts associated with construction of TI in the USBP's Tucson Sector. The ESP also discusses CBP plans to mitigate potential environmental impacts. The ESP further details the BMPs associated with the TI that CBP will implement during, and after construction.

In 2004, CBP released the *Environmental Assessment (EA) for Temporary Vehicle Barriers (TVB), Tucson Sector; Pima, Santa Cruz and Cochise Counties, Arizona*. This EA and Finding of No Significant Impacts (FONSI) are herein referred to as the 2004 TVB EA (CBP 2004). The purpose of the 2004 TVB EA was to address the potential effects, of placing TVBs at up to 21 locations along 37 miles of the U.S./ Mexico border, which included those TVBs to be replaced by the Project presented in this ESP.

In 2005, the CBP released the *EA for Proposed Border and Access Road Improvements, Sonoita Station Area of Operation (AO), Cochise and Santa Cruz Counties, Arizona*. This EA and FONSI are herein referred to as the 2005 Road EA (CBP 2005). The 2005 Road EA addressed the potential effects of reconditioning, improving, and constructing patrol roads along 39 miles of the U.S./Mexico border, which included the patrol/border road to be used for completion of the Project presented in this ESP.

1.2 GOALS AND OBJECTIVES OF THE PROJECT

The Project will provide USBP agents with the tools necessary to strengthen their control of the U.S. border between Ports of Entry (POEs) in the USBP Tucson Sector. The Project will help to deter illegal entries within the USBP Tucson Sector by improving enforcement efficiency, thus preventing terrorists and terrorist weapons, illegal aliens (IAs), drugs, and other cross border violators and contraband from entering the U.S., while providing a safer work environment for USBP agents. The USBP Tucson Sector has identified discrete areas along the border that experience high levels of illegal cross-border violations. This activity typically occurs in areas that are remote and not easily accessed by USBP agents, near POEs where concentrated populations might live on either side of the border, or in locations that have quick access to U.S. transportation routes.

The Project is being carried out pursuant to Section 102 of IIRIRA, 8 U.S.C. § 1103 note. In Section 102(b) of IIRIRA, Congress called for the installation of fencing, barriers, roads, lighting, cameras, and sensors on not less than 700 miles of the southwestern border. This total includes certain priority miles of fencing that are to be completed by December of 2008. Section 102(b) further specifies that these priority miles are to be constructed in areas where it will be practical and effective in deterring smugglers and aliens attempting to gain illegal entry into the U.S. Congress appropriated funds for this Project in CBP's fiscal year (FY) 2007 and 2008 Border Security Fencing, Infrastructure, and Technology Appropriations (Public Law [P.L.] 109-295; P.L. 110-161).

1.3 INTRODUCTION TO THE ENVIRONMENTAL STEWARDSHIP PLAN

This ESP is divided into six chapters plus appendices. The first chapter presents a detailed overview. Chapter 2 presents a detailed description of the Project. Subsequent chapters present information on the resources present, and evaluate the direct, indirect, and cumulative effects of the Project. The ESP also describes measures CBP has

identified—in consultation with Federal, state and local agencies and Native American tribes—to avoid, minimize, or mitigate impacts to the environment, whenever possible. The following resource areas are presented in this ESP: air quality; noise; land use and visual resources; geological resources and soils; water use and quality; and biological resources (*i.e.*, vegetation, wildlife and aquatic species, special status species). Some environmental resources were not included in this ESP because they were not relevant to the analysis. These potential resource areas include utilities and infrastructure (omitted because the Project will not impact any utilities or similar infrastructure); public roadways and traffic (omitted because the Project will not be accessible from public roadways); sustainability (omitted because the Project will use minimal amounts of resources during construction and maintenance); human health and safety (omitted because construction workers will be subject to Occupational Safety and Health Administration [OSHA] standards and the Project will not introduce new or unusual safety risks); socioeconomics (omitted because the Project will not effect job availability, housing demand, or the local economy); and hazardous materials and wastes (omitted because the Project will not generate hazardous waste or require construction that could potentially affect hazardous waste sites).

CBP will follow specially developed design criteria to reduce adverse environmental impacts and will implement mitigation measures to further reduce or offset adverse environmental impacts to the extent possible. Design criteria to reduce adverse environmental impacts include avoiding physical disturbance and construction of solid barriers in wetlands/riparian areas and streambeds. Consultation with Federal and state agencies, Native American tribes, and other stakeholders will augment efforts to avoid or minimize adverse environmental impacts, and developing appropriate BMPs to protect natural and cultural resources will be utilized to the extent possible. BMPs will include implementation of a Storm Water Pollution Prevention Plan (SWPPP), Construction Mitigation and Restoration (CM&R) Plan, standard noise suppression, Spill Prevention Control and Countermeasures Plan (SPCCP), Dust Control Plan, Fire Prevention and Suppression Plan.

1.4 PUBLIC OUTREACH AND AGENCY COORDINATION

On May 13, 2008, a public meeting was conducted in Sierra Vista to share information on the Project and consult with the community on impacts of the Project and ways to avoid, minimize, or mitigate adverse impacts. Also, on June 15, 2008, the Project description was posted on the Project Web site at www.BorderFencePlanning.com. The Project description was posted for 15 days seeking information from the public on any sensitive resources that needed to be considered in the development of this ESP. Comments received from the public meeting and Project Web site will be included in the Tucson Sector ESP. Additionally, comments received during public and agency coordination efforts were considered and have been incorporated into the ESP analysis, as appropriate.

In addition to the public outreach program, CBP has continued to coordinate with various Federal agencies during the development of this ESP (Appendix B). These agencies are described in the following paragraphs.

U.S. Section, International Boundary and Water Commission (USIBWC) - CBP has coordinated with USIBWC to ensure that any construction along the international border does not adversely affect International Boundary Monuments or substantially impede floodwater conveyance within international drainages.

U.S. Army Corps of Engineers (USACE), Los Angeles District - CBP has coordinated all activities with USACE to identify potential jurisdictional Waters of the U.S. (WUS), including wetlands, and to develop measures to avoid, minimize or compensate for losses to these resources.

U.S. Department of the Interior (DOI) - CBP has coordinated extensively with U.S. Fish and Wildlife Service (USFWS) and the U.S. National Park Service (USNPS) within DOI throughout the development of this ESP. The USFWS has assisted in identifying listed species that have the potential to occur in the Project area as well as preparation of a Biological Resources Plan (BRP) for proposed TI in the Tucson Sector. The BRP (Appendix G) presents the analysis of potential effects to listed species and the BMPs proposed to reduce or off-set any adverse impacts. The USNPS has provided documentation of Mexican spotted owl (*Strix occidentalis lucida*) primary activity centers (PAC) on the Coronado National Memorial.

U.S. Department of Agriculture (USDA) - CBP has also continued to coordinate with U.S. Forest Service (USFS) within the USDA, since segments of fence and road are planned for construction within or adjacent to USFS lands on the Coronado National Forest. The USFS has provided documentation of Mexican spotted owl PACs on the Coronado National Forest. The USFS has requested the construction of gates within the alignment to allow firefighter access to Mexico during fire emergencies.

1.5 SUMMARY OF ENVIRONMENTAL IMPACTS, BEST MANAGEMENT PRACTICES, AND MITIGATION

CBP applied various design criteria to reduce adverse environmental impacts associated with the Project, including selecting a route that will avoid or minimize effects on environmental and cultural resources. Nonetheless, CBP has determined that construction, operation, and maintenance of TI in USBP Tucson Sector will result in adverse environmental impacts. Table 1-1 presents the potential effects of the Project and associated BMPs and mitigation measures designed to avoid or minimize those impacts. Mitigation efforts vary and include activities such as restoration of habitat in other areas, and implementation of appropriate BMPs. CBP coordinates its mitigation measures with Federal and state resource agencies, as appropriate.

Table 1-1. Summary of Anticipated Environmental Impacts

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Air Quality	Minor and temporary impact on air quality will occur during construction; air emissions will remain below <i>de minimis</i> levels.	Dust Control Plan. Fire Prevention and Suppression Plan. Maintain equipment according to specifications.
Noise	Minor temporary increases to ambient noise during construction activities will occur. However, there are no sensitive receptors. Impacts to wildlife will be minimal.	Standard noise suppression, such as baffle boxes and proper maintenance of equipment.
Land Use, Recreation, and Aesthetics	Minor impacts to private and USFS lands outside the Roosevelt Reservation. There will be a minor permanent impact on visual resources and the character of USFS land, as the fence will be conspicuous from adjacent hilltops. Beneficial effects, such as reduced vandalism, habitat degradation, debris left by IAs, and wildfires will be expected.	CM&R Plan
Soils	Due to the slope of the terrain within the Project corridor, the potential for soil loss to occur will be moderate to high.	Dust Control Plan, SWPPP, SPCCP, and CM&R Plan.
Hydrology and Groundwater	A temporary and one-time water usage will require up to 12 acre-feet of water. There will be a negligible to minor impact on the availability of water in the region. Grading and contouring could result in short-term minor adverse impacts to local hydrology.	SWPPP, SPCCP, and CM&R Plan.
Water Resources	Potential impacts to surface and ground water quality, such as increased sediment loads or the introduction of pollutants, will be avoided through implementation of BMPs. Water use required for construction will not substantially affect water supply in the region. Fourteen potentially jurisdictional WUS will be affected by construction.	SWPPP, SPCCP, and CM&R Plan.
Vegetation Resources	Negligible to minor impact on vegetation communities. Most activity will occur within previously disturbed areas, where no impacts to vegetation will occur. Loss and degradation of vegetation in up to 43.5 acres of non-disturbed areas will occur within the alignment of new construction roads and staging areas.	CM&R Plan, and Fire Suppression and Prevention Plan.
Wildlife and Aquatic Resources	Fragmentation of wildlife habitat will occur along the EV-1B, although the effect is expected to be minimal as most wildlife will not perceive the new vehicle fence as a barrier. Beneficial impact on wildlife populations is anticipated as a result of protecting habitat north of the corridor from IA traffic.	The construction period will avoid impacts to migratory bird nests. Use of post-on-rail style fence will minimize fragmentation effects to most wildlife. SWPPP and SPCCP will avoid impacts to aquatic habitats associated with the Santa Cruz River.

Table 1-1, continued

Resource Area	Effects of the Project	Best Management Practices/Mitigation
Threatened and Endangered Species	Loss or modification of Madrean evergreen oak vegetation communities could adversely affect the Mexican spotted owl. Construction activities could result in temporary avoidance of this and other sensitive species.	Construction period will avoid impacts to owl. Biological monitors could be used to avoid impacts to individuals potentially found in roads.
Cultural Resources	Border monuments, survey markers, and other sites eligible for inclusion on the National Register of Historic Places (NRHP) will be avoided. A total of 44 isolated occurrences, primarily rock cairns, will be lost or degraded.	Avoidance through use of exclusion fencing and Project alignment.

SECTION 2.0
GENERAL PROJECT DESCRIPTION

2.0 GENERAL PROJECT DESCRIPTION

The Project consists of constructing or improving, operating, and maintaining 24.3 miles of TI within the San Rafael Valley (Figure 2-1), which consists of post-on-rail style permanent vehicle fence and new construction roads (Figure 2-2). Detailed project maps are provided in Appendix C. Section EV-1A will consist of retrofitting or replacing 21.6 of temporary vehicle fence with post-on-rail style permanent vehicle fence. Construction of the EV-1A section will use the existing border road and access roads and will not require additional ground disturbance. Section EV-1B will consist of a new construction road and construction of post-on-rail style permanent vehicle fence along approximately 2.8 miles of border. Due to the rugged terrain within the alignment of the EV-1B section, the construction footprint could extend up to 120 feet north of the U.S./Mexico border, or 60 feet north of the Roosevelt Reservation. Gates will also be installed within this alignment to allow USFS firefighters access to Mexico.

The vehicle fence will be a permanent structure designed to prevent illegal entry of vehicles across the U.S./Mexico border (Photograph 2-1). They are not designed to preclude pedestrian or wildlife movement. The post-on-rail style vehicle fence entails drilling holes in the ground at 4 foot centers using a small drill truck. Hollow, square, steel posts (approximately 6 to 8 inches wide) are placed into the holes. The steel posts and bore hole (footing) are filled with concrete. The posts are leveled and once the concrete has dried, a span of railroad rail is welded horizontally across the vertical posts. This design has been successfully installed on the Organ Pipe Cactus National Monument, Tohono O'odham Nation, Bureau of Reclamation lands in Arizona, as well as in the Deming Station's AO.



Photograph 2-1. Example of Post-on-Rail Style Permanent Vehicle Fence

Construction roads are needed to provide a safe driving surface along the border. These are typically 28 feet wide and include two drainage ditches (20-foot wide road and 4-foot wide ditches on either side of the road), but the construction footprint could be 120 feet wide in areas of rugged terrain. Aggregate and soil stabilizing or binding agent (e.g., PennzSuppress[®]) may be added to the surface of the road once the construction is completed to reduce erosion and maintenance activities. A top shot of the soil stabilizing agent will be added to the surface on an annual basis to ensure the road surface longevity. Water bars will be installed at various locations along the road to direct storm water into parallel ditches or down slope to reduce erosion of the road surface.

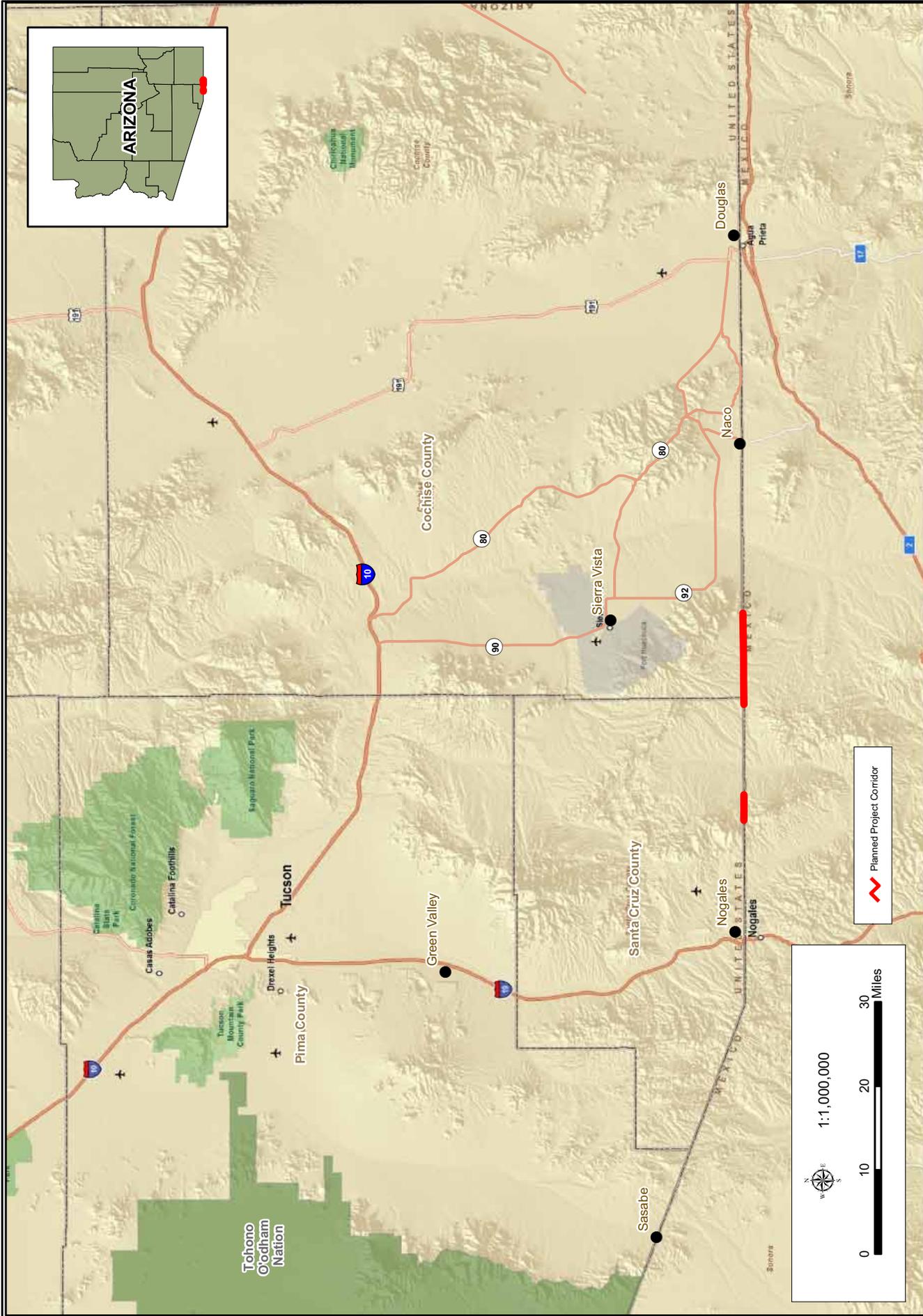


Figure 2-1: Vicinity Map

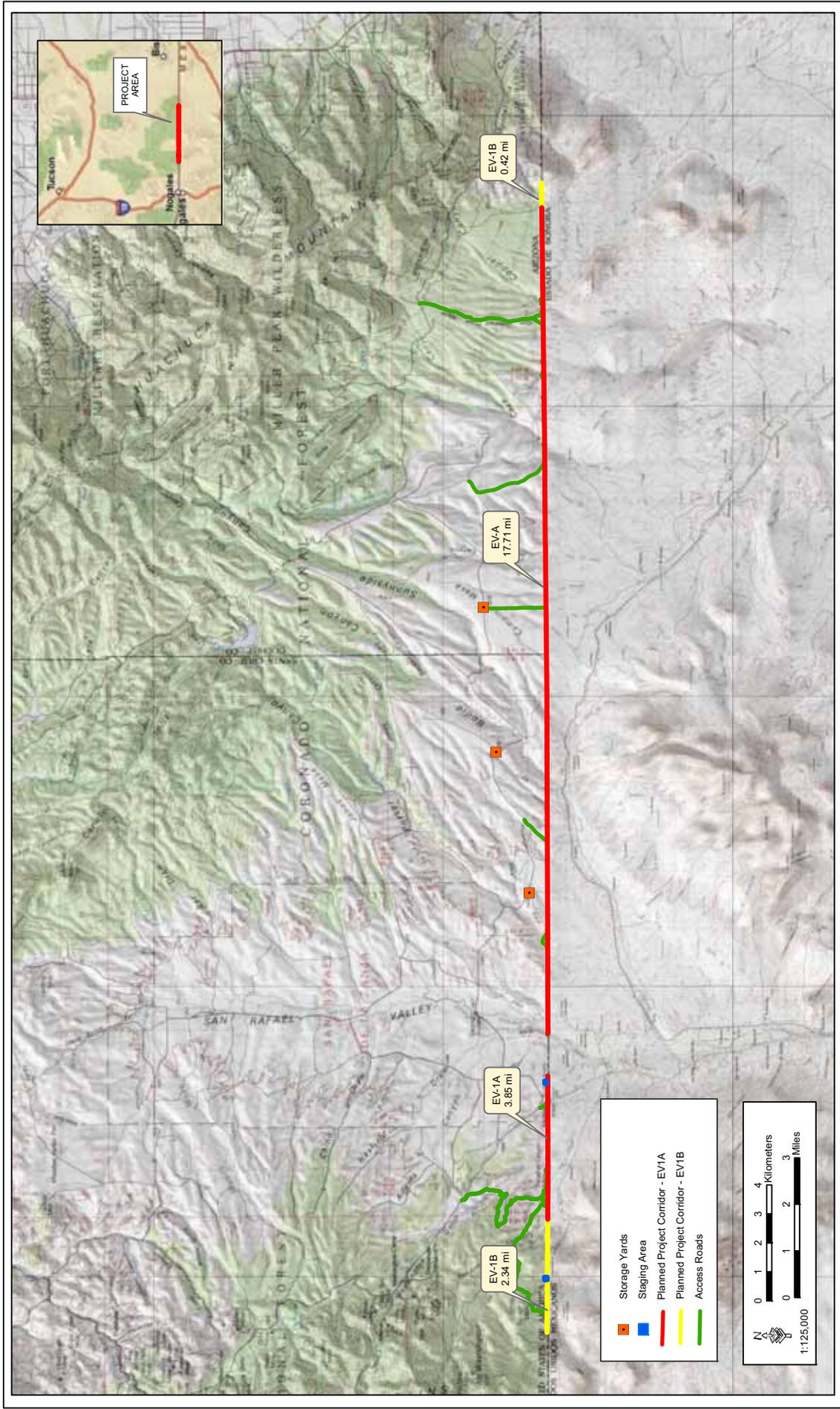


Figure 2-2: Project Location Map

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The construction of new roads will also include the construction of new drainage structures or low water crossings (LWCs). Drainage structures will consist of corrugated pipe or concrete box culverts, while LWCs will consist of concrete slabs designed with suitable approach angles. Culverts may also be incorporated into the design of LWCs, as appropriate. The size and number of culverts required will depend upon the width of the drainage and the expected flood flow volumes and velocities at each of the drainage crossings. Each drainage structure will be designed to ensure that flows are not impeded, thus avoiding creation of backwater areas. The designs will also ensure that water velocity is not significantly changed at the outfall. Stilling basins, rip rap, gabion baskets, and other designs will be used on both ends of the drainage structure to dissipate the water flow energy. Head, tail, and cut-off walls will be constructed, as appropriate, to reduce scouring and ensure the stability of the drainage structure.

In order to facilitate operation of equipment, staging of materials, and construction access to the Project corridor, two temporary staging areas, totaling 3.5 acres will be used. Vegetation will be cleared and grading may occur where needed in the staging areas. Three previously used storage areas located on USFS lands will also be used for the duration of construction activities. Upon completion of the Project, the temporary staging and storage areas will be rehabilitated.

To account for heat restrictions for adequate concrete drying and curing processes, concrete pours for LWCs, other drainage structures, and fencing may need to take place during the pre-dawn hours. Additionally, the possibility exists that work will have to occur on a 24-hour basis. A 24-hour schedule will be implemented only when additional efforts are needed in order to maintain the Federally mandated construction timeline. In order to facilitate construction activities during these work hours, portable lights will be used. It is estimated that no more than 12 lights will be in operation at any one time at each project site.

A 6-kilowatt self-contained diesel generator powers these lights (Photograph 2-2). Each unit typically has four 400- to 1,000-watt lamps. The portable light systems can be towed to the desired construction location as needed and removed upon completion of construction activities. If construction or maintenance activities continue at night, all lights will be shielded to direct light only onto the area required for worker safety and productivity. The minimum wattage needed will be used and the number of lights will be minimized.



Photograph 2-2. Portable lights

The construction footprint of the EV-1A section of the Project will be contained primarily within the 60-foot-wide Roosevelt Reservation, which was set aside in 1907 by President Roosevelt as a border enforcement zone. The construction footprint of the EV-1B sections and associated staging areas could extend up to 60 feet beyond the

Roosevelt Reservation. Impacts outside the Roosevelt Reservation will occur on USFS lands. Additionally, all materials and equipment that will be stored onsite will be done so within the designated storage and staging areas. The Project will be constructed by private contractors, though some military units could be used to assist in road construction. The anticipated completion date for the construction is December 2008.

Upon completion of the TI, CBP will be responsible for repair and maintenance of the fence and road. Such activities will include replacement or repair of fence segments that are vandalized, removal of debris that becomes entrapped along the fence or within any drainage structures, and grading of the road surface. These activities will occur on an as-needed basis; however, routine road maintenance will be expected to occur at least annually.

SECTION 3.0
ENVIRONMENTAL BASELINE AND EVALUATION



3.0 ENVIRONMENTAL BASELINE AND EVALUATION

3.1 INTRODUCTION

CBP has compiled extensive information about the environmental resources that will be affected by the construction, operation and maintenance of TI along the U.S/Mexico border. CBP used this information to establish the baseline against which it evaluated the impacts of the construction, maintenance and operation of the vehicle fence and supporting infrastructure. A biological resources survey of the project area was conducted by Gulf South Research Corporation biologists on May 4, 2008 (Appendix D). A cultural resources survey of the project area was conducted by a Northland archaeologist on May 22 and 23, 2008.

Data in this ESP have been incorporated by reference from the 2004 TVB EA and the 2005 Road EA, as appropriate, during the preparation of this ESP. Some resources within the Project's region of influence (ROI) are not addressed in this ESP because they are not relevant to the analyses. Resources that are not addressed, and the reasons for eliminating them, are:

- Utilities: The Project will not affect any public utilities.
- Communications: The Project will not affect communications systems in the area.
- Climate: The Project will not affect nor be affected by the climate.
- Wild and Scenic Rivers: The Project will not affect any designated Wild and Scenic Rivers because no rivers designated as such are located within or near the Project corridor.
- Floodplains: There are no floodplains in the Project corridor and none will be affected.
- Transportation: The Project corridor is located in a remote region of Arizona and no activities will take place on public roadways, other than normal transport of goods and personnel on an intermittent basis during construction activities. Therefore, impacts to roadways and traffic will not be discussed further.
- Prime farmlands: No impact will occur to soils protected by the Farmland Protection Policy Act since none are located within the Project corridor.
- Human Health and Safety: The OSHA and U.S. Environmental Protection Agency (EPA) issue standards that specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits with respect to workplace stressors. Contractors will be required to establish and maintain safety programs at the construction site, consistent with these

standards. The Project will not expose members of the general public to increased safety risks.

- Socioeconomics: The Project will not create any new jobs, increase housing demands, require displacement of families or commercial properties, or affect state or local tax bases. Some materials might be purchased from local sources, but the effect to the local economy will be negligible.
- Noise: Due to the remote location of the Project site, the type of construction planned, and the lack of sensitive noise receptors in the area, a noise impacts discussion related to humans is not warranted for this Project. However, noise impacts to wildlife will be discussed, as appropriate, in the biological resources section.
- Hazardous materials—The Project will not generate hazardous waste or require construction that could potentially affect hazardous waste sites. Surveys conducted by a qualified biologist did not identify any recognized environmental conditions and none are expected to occur within the Project corridor. Petroleum, oils, and lubricants (POL) will be stored properly and within designated containers, which will include primary and secondary containment measures. Clean-up materials (*e.g.*, oil mops), in accordance with the Project's SPCCP, will also be maintained at the site to allow immediate action in case an accidental spill occurs. Drip pans will be provided for the power generators and other stationary equipment to capture any POL that is accidentally spilled during maintenance activities or leaks from the equipment.

Sanitary facilities will be provided during construction activities, and waste products will be collected and disposed of by licensed contractors. No gray water will be discharged to the ground. Disposal contractors will use only established roads to transport equipment and supplies; all waste will be disposed of in strict compliance in accordance with the contractor's permits. Because the proper permits will be obtained by the licensed contractor tasked to handle any unregulated solid waste, and because all of the unregulated solid waste will be handled in the proper manner, no hazards to the public are expected through the transport, use, or disposal of unregulated solid waste.

3.2 AIR QUALITY

3.2.1 Environmental Setting

Air quality within the ROI was discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated here by reference. The Nogales Area within Santa Cruz County is classified as a moderate non-attainment area for PM-10 (EPA 2008). Sources of PM-10 are primarily from areas outside the U.S., and include wind-blown dust, emissions from combustion engines, and burning of domestic and agricultural wastes. The Paul Spur/Douglas Area within Cochise County is classified as

a moderate non-attainment area for PM-10 as well (EPA 2008). Sources of PM-10 are the same as those in Santa Cruz County.

3.2.2 Effects of the Project

Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the Clean Air Act (CAA), for the TI segments addressed in this ESP, the Secretary committed DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CAA as the basis for evaluating potential environmental impacts and appropriate mitigations.

A minimal increase in local air pollution will be expected from vehicle fence and road construction. Temporary increases in air pollution will result from the use of construction equipment, portable lights, and fugitive dust. Due to the short duration of the Project, any impacts on ambient air quality during construction activities are expected to be short-term, and can be reduced through the use of standard dust control techniques, including roadway watering and chemical dust suppressants, such as PennzSuppress[®] or an equivalent product. During construction, proper and routine maintenance of all vehicles and other construction equipment will ensure that emissions are within the equipment's design standards. Air emissions from the Project will be temporary and will result in negligible to moderate impacts on air quality in the region.

EPA's NONROAD 2005 Model was used, as recommended by EPA's *Procedures Document for National Emission Inventory, Criteria Air Pollutants, 1985-1999* (EPA 2001), to calculate emissions from construction equipment such as bulldozers, cranes, etc. Assumptions were made regarding the type of equipment, the total number of days each piece of equipment will be used, and the number of hours per day each type of equipment will be used.

Similarly, emissions from delivery trucks and commuters traveling to the job site, were calculated using the EPA MOBILE6.2 Model (EPA 2001). Construction workers will temporarily increase the combustible emissions in the airshed during their commute to and from the Project area. These emissions were calculated in the air emission analysis and included in the total emission estimates.

Furthermore, large amounts of dust (*i.e.*, fugitive dust) can arise from the mechanical disturbance of surface soils, including grading, driving, and road and fence construction. Fugitive dust emissions were calculated using the emission factor of 0.19 ton per acre per month (Midwest Research Institute [MRI] 1996), which is a more current standard than the 1985 PM -10 emission factor of 1.2 tons per acre-month presented in AP- 42 Section 13 Miscellaneous Sources 13.2.3.3 (EPA 2001). The total air quality emissions were calculated for the construction activities occurring in Cochise and Santa Cruz counties to compare to the General Conformity Rule. Results of these calculations are presented in Table 3-1 and 3-2, respectively. The calculations are included in Appendix E.

Table 3-1. Cochise County Total Air Emissions (tons/year) from Construction Activities vs. *de minimis* Levels

Pollutant	Total (tons/year)	<i>de minimis</i> Thresholds (tons/year)
Carbon Monoxide	21.89	Not applicable
Volatile Organic Compounds	4.46	Not applicable
Nitrogen Oxides	35.96	Not applicable
PM-10	27.66	100
Particulate <2.5 micrometers	7.92	Not applicable
Sulfur Dioxide	4.86	Not applicable

Source: 40 Code of Federal Regulations 51.853 and GSRC air emission model Projections.

Table 3-2. Santa Cruz County Total Air Emissions (tons/year) from Construction Activities vs. *de minimis* Levels

Pollutant	Total (tons/year)	<i>de minimis</i> Thresholds (tons/year)
Carbon Monoxide	20.24	Not applicable
Volatile Organic Compounds	2.88	Not applicable
Nitrogen Oxides	14.15	Not applicable
PM-10	47.93	100
Particulate <2.5 micrometers	10.41	Not applicable
Sulfur Dioxide	1.62	Not applicable

Source: 40 Code of Federal Regulations 51.853 and GSRC air emission model Projections.

As can be seen from Table 3-1 and 3-2, the construction activities will not exceed *de minimis* thresholds. There will be negligible impacts on air quality from the implementation of the Project.

Impacts from combustible air emissions from USBP traffic are expected to be the same before and after the construction activities. Construction workers will temporarily increase the combustible emissions in the air shed during their commute to and from the Project area.

Diesel generators will be used to power the portable lights, and these generators will cause low amounts of air emissions. Since amounts will be below the *de minimis* threshold (*i.e.*, 100 tons per year), emissions will not violate National or state standards. If a 24-hour work schedule is needed, then the portable lights will operate throughout the night; however, this will be temporary, and as construction activities are completed within a particular area the lights will be relocated to a new area. Furthermore, a 24-hour schedule will only occur due to unforeseen circumstances or if Federally mandated schedules dictate it to be necessary. Regardless, the impacts from the operation of the light generators will be temporary; thus, they will have negligible effects on air quality in the region.

Furthermore, construction and operation of TI will increase border security in the Project corridor and may result in a change to illegal traffic patterns. However, changes to IA

traffic patterns result from a myriad of factors and therefore are considered unpredictable and beyond the scope of this ESP. Beneficial indirect impacts are expected, as the vehicle fence will substantially reduce or eliminate IA vehicle traffic, consequently reducing the amount of air pollution north of the Project corridor.

3.3 LAND USE

3.3.1 Environmental Setting

3.3.1.1 Land Use

Land uses within the ROI were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. Land within the Project corridor is primarily within the Roosevelt Reservation. CBP operations and TI construction within the 60-foot Roosevelt Reservation is consistent with the law enforcement purpose of the Roosevelt Reservation, and any CBP activity within this reservation is outside the oversight or control of Federal land managers. Where rugged terrain dictates widening the construction corridor, USFS lands adjacent to the Project corridor could be affected. Additionally, staging areas are located within USFS lands. USFS lands are managed for multiple uses including recreation, timber, wilderness, minerals, water, grazing, fish, and wildlife. Access roads are located on both USFS lands and private lands. Additionally, one staging area is located on private lands. Private lands adjacent to the access roads and Project corridor are managed as ranchland.

3.3.1.2 Aesthetics

Aesthetic resources within the ROI were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. Aesthetic and visual resources within the EV-1B section include the characteristic features Madrean Evergreen Woodland and nearby Plains Grasslands landscapes. Other aesthetic resources within or near the Project area include the rugged topography of Patagonia and Huachuca Mountains.

3.3.2 Effects of the Project

3.3.2.1 Land Use

Implementation of the Project will have a minimal impact on land use within the EV-1A section. Land use within the Roosevelt Reservation will remain consistent with a Federal law enforcement zone. USFS land north of the Roosevelt Reservation is currently undeveloped. Approximately 40 acres of USFS lands will be permanently impacted by construction roads, and an additional 2 acres will be temporarily impacted by a staging area. These impacts could be greater where rugged terrain requires an increased width of the construction corridor. Permanent impacts will be minimized to the extent practicable, and temporarily impacted areas will be rehabilitated upon completion of construction activities. Approximately 1.5 acres of private lands used as ranchland will be temporarily impacted by a staging area. Negotiations are ongoing with private land owners, and they will be compensated at fair market value for any lands acquired or used by USBP for the Project. A reduction of IA activity will benefit land use on both USFS and ranchlands throughout the San Rafael Valley and surrounding

Coronado National Forest. Due to the limited area of effects and the potential for indirect benefits, impacts to land use will be minimal.

3.3.2.2 Aesthetics

Aesthetics within the EV-1A section will not be affected because fence and roads currently exist. The construction of vehicle fence and roads within the EV-1B section will have adverse impacts on the appearance of the Project corridor. However, the Project occurs in remote areas of rugged terrain which will only be accessible and visible from the construction road. Recreational appreciation of the aesthetic resource on the USFS will not be affected by members of the public viewing the area from public roads. The presence of construction equipment and use of portable lighting will have a minimal impact on appearance during construction. If construction or maintenance activities continue at night, all lights will be shielded to direct light only onto the area required for worker safety and productivity. The minimum wattage needed will be used and the number of lights will be minimized. The Project will not substantially degrade the existing visual character of the region; thus, impacts will be considered minimal.

Construction and operation of TI will increase border security in the Project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors and therefore are considered unpredictable and beyond the scope of this ESP. Beneficial indirect impacts are expected, as the vehicle fence will substantially reduce or eliminate IA traffic, consequently reducing associated trash and habitat degradation due to illegal roads, trails and fires north of the Project corridor.

3.4 SOILS

3.4.1 Environmental Setting

Soils in the EV-1A section of the Project corridor were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. The area of each soil type identified within the EV-1B alignment is provided in Table 3-3 and briefly described below.

Table 3-3. Soil types within the EV-1B Section of the Project

Segment	Soil Type	Maximum Impact Area (acres)
West	Barkerville-Gaddes Complex, 10 to 30 pt slope	21.8
West	Barkerville-Gaddes Association, steep	10.8
West	Comoro Sandy loam, 5 to 10 pt slope	0.6
West	Grabe-Comoro Complex, 0 to 5 pt slope	1.0
East	Casto very gravelly sandy loam, 10 to 40pt slope	5.1
East	rock outcrop-Lithic Haplustolls Association	1.1
TOTAL		40.4

In the West segment, Barkerville-Gaddes soil complex, 10 to 30 percent slope, Barkersville-Gaddes soil association, steep, Comoro sandy loam soils, 5 to 10 percent slope, and Grabe-Comoro soil complex, 0 to 5 percent slope are present (NRCS 2007).

The Barkerville-Gaddes soil complex and Barkersville-Gaddes soil association consist of moderately deep, well, or somewhat excessively well drained soils that formed in slope alluvium weathered from granite and closely related rocks. These soils are on hills, hillslopes, and mountain slopes. In southeastern and central Arizona, Barkerville-Gaddes soils are extensive.

Comoro sandy loam soils consists of very deep, well or somewhat excessively well drained soils formed in stratified alluvium. Comoro soils are on alluvial fans and flood plains at elevations of 2,200 to 5,200 feet. These soils formed in stratified alluvium from predominantly granite and rhyolite sources. In southern Arizona, Comoro soils are extensive.

The Grabe-Comoro soil complex consists of very deep, well drained soils that formed in stratified alluvium. Grabe soils are on flood plains and alluvial fans at elevations of 2,200 to 5,200 feet. These soils formed in stratified alluvium from predominantly granite and rhyolite sources. In southern Arizona, Grabe-Comoro soils are extensive.

In the East segment, Castro very gravelly sandy loam, 10 to 40 percent slope and rock outcrop-Lithic Haplustolls soil association are present (NRCS 2007). Castro very gravelly sand loam soils occur on nearly level basins and developed in fine textured alluvium derived dominantly from sedimentary formations at elevations less than 150 feet. In their natural state these soils are poorly drained, but pumping has generally lowered the water table to a depth of 6 feet or more below the surface. Runoff is very slow, and permeability is slow to very slow. The cemented horizon strongly restricts moisture movement and root penetration. In Arizona, Castro soils are inextensive.

The rock outcrop-Lithic Haplustolls soil association consists of shallow, very gravelly and cobbly, moderately coarse to moderately fine-textured, gently sloping to very steep soils and rock outcrops on hills and mountains at elevations from 300 to 4,900 feet. The soils formed in materials weathered residually from granitic rocks, gneiss, rhyolite, andesite, limestone, schists, volcanic tuffs and conglomerates, basalt and some shale and sandstone.

3.4.2 Effects of the Project

Soils within the EV-1A alignment will not be affected. The Project will permanently impact approximately 40 acres of soils within the EV-1B alignment. Some of the impacts within the EV-1B alignment will be temporary, although additional impacts could occur in areas of steep terrain. The potentially affected soil associations are common, both locally and regionally. None of these soil associations are considered prime farmland.

Short-term impacts on soils, such as increased erosion, can be expected from the construction of roads; however, these impacts will be alleviated once construction is finished. Long-term effects on soils will result from the compaction of the soils and loss of biological production within the alignment of construction road and widened access roads. Pre- and post-construction BMPs will be developed and implemented to reduce or eliminate erosion and potential downstream sedimentation. Compaction techniques and erosion control measures, such as waterbars, gabions, straw bales, and the use of rip-rap or sediment traps, will be some of the BMPs implemented.

The temporary operation of portable lights within the construction footprint will have no effect on soils. The potential exists for POLs to be spilled during refueling of the portable lights' generators, adversely impacting soils. As part of the SPCCP, drip pans will be provided for the power generators to capture any POLs accidentally spilled during maintenance activities or leaks from the equipment; thus, the operation of the portable lights will have negligible impacts.

3.5 WATER RESOURCES

3.5.1 Environmental Setting

3.5.1.1 Surface and Groundwater

Water resources within the ROI were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. The Project corridor is entirely within the San Rafael Basin as recognized by the Arizona Department of Water Resources (ADWR 2004). The San Rafael Basin occupies 172 square miles and is located in the Basin and Range physiographic province. The basin is bounded on the west by the Patagonia Mountains, on the north and east by the Huachuca Mountains, and on the south by the International Boundary with Mexico. The main drainage in the basin is the Santa Cruz River and its tributaries. The headwaters of the Santa Cruz River are in the northern portion of San Rafael Valley. The river flows south through the valley into Mexico for 35 miles and then flows north into the U.S. near Nogales.

In the San Rafael Basin, groundwater flows towards the Santa Cruz River then south into Mexico. Groundwater depth is shallowest near the major waterways. Groundwater is pumped for municipal use and for watering livestock. Ranching is the main activity in the Project area and most groundwater is used for watering livestock. Estimated groundwater use in the San Rafael Basin is less than 300 acre-feet per year and is limited to a few municipalities and scattered ranches in the valley (ADWR 2006). Natural recharge is estimated at 5,000 acre-feet per year (ADWR 2006). No long-term changes in water levels have been observed, suggesting that a balance exists in the basin between groundwater discharge and groundwater recharge.

Except for a few sites in the Patagonia Mountains, water quality of the groundwater system in the area is not currently impacted. Sites in the Patagonia Mountains have elevated uranium, sulfate, and metal concentrations that are the result of naturally occurring mineral or past mining activity. The Arizona Department of Environmental

Quality assessed the Santa Cruz River from its headwaters to the international border as “attaining all uses” (ADEQ 2006). The river is in attainment for aquatic and wildlife warmwater fishery, fish consumption, full body contact, agricultural irrigation, and agricultural livestock watering designated uses. Surface water in the San Rafael Basin has low total dissolved solids and fluoride concentrations (ADWR 2004).

3.5.1.2 Waters of the U.S. and Wetlands

WUS and wetlands within the San Rafael Basin near the Project corridor were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. Recent surveys within the EV-1B section of the Project corridor identified 14 drainages bisecting the Project corridor that will be potentially defined as WUS under Section 404 of the Clean Water Act (CWA). Due to the climate of the Project area, these surface drainage channels are dry much of the year and are considered ephemeral.

3.5.2 Effects of the Project

Although the Secretary’s waiver means that CBP no longer has any specific legal obligations under the CWA, for the TI segments addressed in this ESP, the Secretary committed the DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the CWA as the basis for evaluating potential environmental impacts and appropriate mitigations.

3.5.2.1 Surface and Groundwater

Surface waters could be temporarily affected by the Project. Short-term effects could include a temporary increase in erosion and sedimentation during periods of construction. Disturbed soils and hazardous substances (*i.e.*, anti-freeze, fuels, oils, and lubricants) could directly impact water quality during a rain event. These effects will be minimized through the use of BMPs. A SWPPP and a site-specific SPCCP will be in place prior to the start of construction. BMPs outlined in these plans will reduce potential migration of soils, oil and grease, and construction debris into local watersheds. Once the construction project is complete, the construction corridor will be re-vegetated with native vegetation, as outlined in the SWPPP, which will mitigate the potential of non-point source pollution to enter local surface waters. Thus, the Project will not impact the surface water quality in the region.

Water will be needed for road construction and grading. Workable soil moisture content must be obtained in order to properly compact soils for road construction and to reduce fugitive dust emissions. Water for road construction and maintenance will be hauled into the Project corridor from existing wells located either near the Project corridor or from municipal supplies in other towns in Santa Cruz or Cochise counties. It is assumed that for road grading and road construction approximately 0.25 and 0.5 acre-foot per mile, respectively, of water will be needed for dust suppression and compaction. Therefore, the total amount of water that will be required to facilitate construction of the Project will be approximately 12 acre-feet. Groundwater could be used from near the Project corridor as the area is adequately recharged via rains and irrigation return flow each year. The amount of water needed for the Project (*i.e.*, 12

acre-feet) will be negligible when compared to the recharge in the San Rafael Basin. If water for the Project is purchased commercially from sources outside the San Rafael Basin, it will still be a negligible volume of water use compared to typical municipal uses. Therefore, water usage will not cause a net deficit in aquifer volume or lower the groundwater table; thus, a minor, short-term impact is expected.

3.5.2.2 Waters of the U.S. and Surface Waters

The Project will not have a permanent impact on any perennial or intermittent streams, as none are present within the Project corridor. A total of 14 ephemeral WUS were identified during field surveys within the EV-1B section of the Project corridor. The WUS will be traversed using some type of drainage structure, which could include concrete LWCs, reinforced concrete pipes, or box culverts. The largest potential WUS identified was 45 feet in width, thus 0.06 acres will be the largest area of any WUS affected.

3.6 BIOLOGICAL RESOURCES

3.6.1 Environmental setting

3.6.1.1 Vegetation Communities

Vegetation communities in the project vicinity were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. Biological surveys of the EV-1B section were conducted in April of 2008 (Appendix D). The vegetation communities identified were Manzanita Scrub and Oak Woodland.

Topography in the Patagonia Mountains has high relief and substrates are dry rocky soils. Manzanita Scrub communities are abundant on ridge tops and slopes at higher elevations in this area and consists of monotypic stands of point-leaf manzanita (*Arctostaphylos patula*) at high densities. Grasses and forbs are sparse, although canyon grape (*Vitis arizonica*) is often found on slopes and disturbed areas.

At lower elevations in the Patagonia Mountain foothills a more open Oak Woodland community replaces Manzanita Scrub. This community is composed of large oaks forming an open canopy with a moderate cover of grasses, forbs, and cacti on the woodland floor. Mexican blue oak (*Quercus oblongifolia*) was the most common tree species throughout this community. Shrub live oak (*Q. turbinella*), squaw bush (*Rhus trilobata*), cholla (*Opuntia fulgida*), and alligator juniper (*Juniperus deppeana*) were also found at higher elevations. Honey mesquite (*Prosopis glandulosa*) was often found at lower elevations. The Oak Woodland community is also found in the foothills of the Huachuca Mountains. Here, the canopy is nearly closed and vegetation diversity is lower.

3.6.1.2 Wildlife and Aquatic Resources

Wildlife resources potentially found in the Project corridor were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. The dense, low structure of Manzanita Scrub, the nearly closed canopy, and the lack of forage or water in this community make it unsuitable for most wildlife of the region. However, small mammals, reptiles, and birds are found in low densities. The

Oak Woodlands make good habitat for large mammals such as mule deer (*Odocoileus hemionus*) and black bear (*Ursus americanus*) by providing both cover and forage. Mountain lions (*Felis concolor*) and bobcats (*Felis rufus*) also frequent these areas in search of prey. Bird activity within the Project corridor, like most areas in the temperate zones, is greatest between April and September which includes spring and fall migration as well as the breeding and nesting seasons. The retrofitting or replacement of temporary vehicle fence within the EV-1A alignment will occur within 0.5 miles of the Santa Cruz River. The Santa Cruz River is a perennial stream which provides aquatic habitat for a number of plants and wildlife, including several sensitive species.

3.6.1.3 Protected Species and Critical Habitat

Federally protected species and designated critical habitat were discussed in detail in the 2004 TVB EA and 2005 Road EA, and those discussions are incorporated herein by reference. USFWS currently lists 24 Federally endangered or threatened species within Santa Cruz and Cochise counties (USFWS 2008). Table 3-4 lists these species and describes their potential to occur within in the Project corridor.

Table 3-4. Federally Listed, Proposed, and Candidate Species Potentially Occurring within Cochise and Santa Cruz Counties, Arizona

Common/Scientific Name	Federal Status	Designated Critical Habitat	Habitat Requirements	Habitat in Project Area?
				Yes/No
AMPHIBIANS				
Chiricahua leopard frog <i>Rana chiricahuensis</i>	T	NA	Streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs	Y
Sonora tiger salamander <i>Ambystoma tigrinum stebbinsi</i>	E	NA	Stock tanks and impounded cienegas in San Rafael Valley, Huachuca Mountains	Y
BIRDS				
Mexican spotted owl <i>Strix occidentalis lucida</i>	T	Final 1 Feb 01	Nests in canyons and dense forests with multi-layered foliage structure	Y
Northern aplomado falcon <i>Falco femoralis spetentrionalis</i>	E	NA	Grasslands with adequate scrub for perching and hunting	N
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	E	Proposed 21 Jan 04	Cottonwood/willow and tamarisk vegetation communities along rivers and streams	N
Western Yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	C	NA	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries)	N
FISHES				
Beautiful shiner <i>Cyprinella formosa</i>	T	NA	Small to medium sized streams and ponds with sand, gravel, and rock bottoms	N
Desert pupfish <i>Cyprinodon macularius</i>	E	Final 31 Mar 86	Shallow springs, small streams, and marshes; tolerates saline and warm water	N
Gila chub <i>Gila intermedia</i>	E	Final 31 Mar 86	Pools, springs, cienegas, and streams	N
Gila topminnow <i>Poeciliopsis occidentalis occidentalis</i>	E	NA	Small streams, springs, and cienegas vegetated shallows	N

Table 3-4, continued

Common/Scientific Name	Federal Status	Designated Critical Habitat	Habitat Requirements	Habitat in Project Area?
				Yes/No
Loach minnow <i>Tiaroga cobitis</i>	T	Final 25 Apr 00	Benthic species of small to large perennial streams with swift shallow water over cobble and gravel; recurrent flooding and natural hydrograph important	N
Sonora chub <i>Gila ditaenia</i>	T	Final 30 Apr 86	Perennial and intermittent small to moderate streams with boulders and cliffs	N
Spikedace <i>Meda fulgida</i>	T	Final 21 Mar 2007	Small streams, springs, and cienegas vegetated shallows	N
Yaqui catfish <i>Ictalurus pricei</i>	T	NA	Moderate to large streams with slow current over sand and rock bottoms	Y
Yaqui chub <i>Gila purpurea</i>	E	NA	Deep pools of small streams, pools, or ponds near undercut banks	Y
Yaqui topminnow <i>Poeciliopsis occidentalis sonoriensis</i>	E	NA	Vegetated springs, brooks, and margins of backwaters. Found generally in the shallows	N
INVERTEBRATES				
Huachuca springsnail <i>Pyrgulopsis thompsoni</i>	C	NA	Aquatic areas, small springs with vegetation; slow to moderate flow	N
Stephan's riffle beetle <i>Heterelmis stephani</i>	C	NA	Free-flowing springs and seeps	N
MAMMALS				
Jaguar <i>Panthera onca</i>	E	NA	Found in Sonoran desertscrub up through subalpine conifer forest	Y
Lesser long-nosed bat <i>Leptonycteris curasoae yerbabuena</i>	E	NA	Desert scrub habitat with agave and columnar cacti present as food plants	N
Ocelot <i>Leopardus pardalis</i>	E	NA	Found in Sonoran desertscrub up through subalpine conifer forest	Y
PLANTS				
Canello Hill's ladies'-tresses <i>Spiranthes delitescens</i>	E	NA	Finely grained, highly organic, saturated soils of cienegas	N
Cochise pincushion <i>Coryphantha robbinsorum</i>	T	NA	Semidesert grassland with small shrubs, agave, other cacti, and grama grass	N
Huachuca water-umbel <i>Lilaeopsis schaffneriana var. recurva</i>	E	Final 12 Jul 99	Cienegas, perennial low gradient streams, wetlands	Y
Lemmon fleabane <i>Erigeron lemmonii</i>	C	NA	Crevices, ledges, and boulders in canyon bottoms in pine-oak woodlands	N
Pima pineapple cactus <i>Coryphantha scheeri var. robustispina</i>	E	NA	Sonoran desertscrub or semi-desert grassland communities	N
REPTILES				
New Mexico ridge-nose rattlesnake <i>Crotalus willardi obscurus</i>	T	NA	Canyon bottoms in pine-oak and pin-fir communities	N

Legend:

E = Endangered T = Threatened P = Proposed Threatened or Endangered C = Candidate
NA = NOT APPLICABLE

The Arizona Natural Heritage Program maintains lists of threatened and endangered species in Arizona. This list includes flora and fauna whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines. There are approximately 250 state listed species with the potential to occur in Santa Cruz or Cochise counties. The Arizona Department of Agriculture maintains a list of plant species protected under the 1999 Arizona Native Plant Law. None of the plants listed as highly safeguarded (*i.e.*, species whose prospects for survival in Arizona is in jeopardy or are in danger of extinction) were observed in the Project corridor. A complete list of these species and their status can be found in Appendix F.

3.6.2 Effects of the Project

3.6.2.1 Vegetation Communities

The Project will permanently alter approximately 40 acres of Manzanita Scrub and Oak Woodland vegetation communities, and additional impacts could occur in areas of rugged terrain. These plant communities are both locally and regionally common, and the permanent loss of 40 acres of vegetation will not adversely affect the population viability or fecundity of any floral species. Therefore, impacts are expected to be negligible.

The use of staging areas will temporarily impact an additional 2 acres of Oak Woodland and 1.5 acres of Plains Grassland for the duration of construction activities. Upon completion of the construction activities these temporary staging areas will be rehabilitated using methods discussed in Section 1.5; therefore, impacts will be negligible.

The Project will also have temporary indirect impacts on nearby vegetation. Fugitive dust emissions resulting from construction will affect photosynthesis and respiration of plants adjacent to the Project corridor. The magnitude of these effects will depend upon several biotic and abiotic factors, including the speed and type of vehicles, climatic conditions, success of wetting measures during construction, and the general health and density of nearby vegetation. Acute toxicity tests have been completed for PennzSuppress[®] to determine its effects on plant growth. Based upon these tests and the EPA's assessment of "low concern", PennzSuppress[®] is considered not to be harmful to plant growth (PennzSuppress[®] 2002).

The use of portable lighting could affect plant growth, but these effects will be temporary. As construction activities are completed within a particular area, the lights will be moved to the new construction area. It should be emphasized that a 24-hour work schedule will only occur only when additional efforts are needed in order to maintain the Federally mandated construction timeline. Also, all lights will be removed from the Project corridor upon completion of construction activities and all lights will be shielded to direct light only onto the area required for worker safety and productivity. The minimum wattage needed will be used and the number of lights will be minimized. Therefore, minor temporary impacts on vegetation from the use of portable lights are expected.

Construction and operation of TI will increase border security in the Project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors and, therefore, are considered unpredictable and beyond the scope of this ESP. Beneficial indirect impacts are expected, as the vehicle fence will substantially reduce or eliminate IA traffic, consequently reducing associated trash and habitat degradation due to illegal roads, trails and fires north of the Project corridor.

3.6.2.2 Wildlife and Aquatic Resources

The Project will permanently impact approximately 40 acres of wildlife habitat and additional impacts could occur in areas of rugged terrain. Approximately 3.5 acres of additional wildlife habitat will be temporarily impacted by staging areas. Wildlife habitats adjacent to access roads will also be impacted; however, these direct impacts will be negligible due to their proximity to existing disturbance. All impacts are considered negligible, as some of the Project components occur near and within previously disturbed areas (e.g., existing border road), TI will be constructed near existing infrastructure, and the wildlife habitat is locally and regionally common. The use of PennzSuppress[®] will not result in adverse impacts to wildlife (PennzSuppress[®] 2002).

The Project will not have direct impacts on fish or other aquatic species, because the construction activities will not take place in naturally flowing or standing water. BMPs will be implemented for construction in or near washes and streams, as stated in Section 1.5, to reduce potential indirect impacts to aquatic habitats, including the Santa Cruz River, from sedimentation or the introduction of other pollutants.

Mobile animals (e.g., birds) will escape to areas of similar habitat, while other slow or sedentary species of reptiles, amphibians, and small mammals could potentially be lost. As a result, direct minor adverse impacts on wildlife species in the vicinity of the Project corridor are expected. Although some animals may be lost, this Project will not result in any substantial reduction of the breeding opportunities for birds and other animals on a regional scale due to the suitable, similar habitat adjacent to the Project corridor. The construction schedule will avoid the nesting season of migratory birds, thus, their nests and reproduction will not be affected.

Increased noise during construction activities could have short-term impacts on wildlife species (e.g., mule deer, red-tailed hawk [*Buteo jamaicensis*], and desert cottontail [*Sylvilagus audubonii*]). Physiological responses from noise range from minor responses, such as an increase in heart rate, to more damaging effects on metabolism and hormone balance. Long-term exposure to noise can cause excessive stimulation to the nervous system and chronic stress that is harmful to the health of wildlife species and their reproductive fitness (Fletcher 1990). Behavioral responses vary among species of animals and even among individuals of a particular species. Variations in response may be due to temperament, sex, age, or prior experience. Minor responses include head-raising and body-shifting, and usually, more disturbed mammals will travel short distances. Panic and escape behavior results from more severe disturbances, causing the animal to leave the area (Busnel and Fletcher 1978). Since the highest period of movement for most wildlife species occurs during nighttime or low daylight

hours, and construction activities will be conducted during daylight hours to the maximum extent practicable, short-term impacts of noise on wildlife species are expected to be minimal to moderate.

The operation of portable lights could potentially affect wildlife. Some species, such as insectivorous bats, may benefit from the concentration of insects that will be attracted to the lights. However, the lights will be shielded to direct light only onto the area required for worker safety and productivity. The minimum wattage needed will be used and the number of lights will be minimized. The adverse and beneficial effects of lighting on reptiles and amphibians are currently unknown (Rich and Longcore 2006). However, the temporary exposure to light as a result of the Project will not significantly alter circadian rhythms in mammals and birds. This artificial lighting may cause activity levels of diurnal animals to increase; however, any increase will not create major impacts (Rich and Longcore 2006). It is anticipated that the temporary lights will not operate any longer than 4 weeks in one location and no more than 12 lights will be used at once at each Project location. The generators used for these lights produce noise levels as high as 75 A-weighted decibel (dBA) within 20 feet of the generators, but attenuate to acceptable levels of 65 dBA at 75 feet (California Department of Transportation 1998). Noise emissions from the generators will create minimal temporary impacts. Wildlife will not be exposed to construction lighting once the Project is complete. Therefore, impacts on wildlife are expected to be negligible and temporary a result of the operation of portable lights.

Construction and operation of TI will increase border security in the Project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors and therefore are considered unpredictable and beyond the scope of this ESP. Beneficial indirect impacts are expected, as the vehicle fence will substantially reduce or eliminate IA traffic, consequently reducing associated trash and habitat degradation due to illegal roads, trails and fires north of the Project corridor.

3.6.2.3 Protected Species and Critical Habitat

Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the Endangered Species Act (ESA), for the TI segments addressed in this ESP, the Secretary committed DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the ESA as the basis for evaluating potential environmental impacts and appropriate mitigations.

Several stock tanks are located within 0.1 miles of access roads planned to be used during construction and within 0.1 miles of the EV-1A segment. These stock tanks provide potential habitat for Chiricahua leopard frogs and Sonoran tiger salamander. Implementation of a SWPPP will prevent any sedimentation of potentially occupied habitats. Because construction activity will occur during the leaching season, when Chiricahua leopard frogs can wander up to 0.1 miles from aquatic habitats, there is some potential for individuals to be impacted on roadways. Exclusion fencing could be used to avoid these potential impacts. Disease prevention protocols should be

implemented in areas where chytridiomycosis could be transported into occupied habitats. Sonoran tiger salamanders are not known to wander as far and will not be directly affected. Use of a biological monitor for any construction activities on access roads or within the EV-1A segment will prevent harm to the Chiricahua leopard frog. Implementation of a SPCCP will prevent any contamination of aquatic habitats by POLs and hazardous materials or waste.

Suitable habitat for the Mexican spotted owl occurs within both segments of EV-1B. Approximately 1.9 miles of the western section of this segment and all of the eastern section are located within Critical Habitat for the Mexican spotted owl. Additionally, the 2 acre staging area associated with the western segment of EV-1B is within Critical Habitat. The nearest known Mexican spotted owl PACs are located 1.7 miles north of planned construction activity within the western section of the EV-1B segment (Figure 3-1), and will be affected by construction noise or lighting. Furthermore, the breeding season for the Mexican spotted owl lasts from March 1 to August 31. Construction is scheduled to begin on October 3, 2008, after the end of the Mexican spotted owl nesting season; thus, nesting activity will not be interrupted. Some primary constituent elements (PCE) of the Critical Habitat, such as the presence of large trees, will be affected. Any trees removed will be left within rehabilitated areas, and will improve other PCEs (*i.e.*, presence of large woody debris).

Construction, maintenance, and operational activities will result in permanent, but intermittent increases in noise levels and human presence within potential Mexican spotted owl habitat. However, the reduction of IA activity within affected areas and substantially larger areas of Mexican spotted owl habitat north of the border will offset these impacts by improving habitat conditions in these areas.

The jaguar, once thought to be extirpated from the U.S., has recently been sighted west of the Project area, in the mountains. Studies based on these sightings and historical occurrences suggest that the jaguar utilizes a wide variety of habitats throughout the border region. Although jaguars are not likely to be directly impacted due to their limited occurrence and their ability to pass through or around vehicle fence that will be installed within the Project corridor, the construction road and vehicle fence will decrease the suitability of the area as a migratory corridor for this species. However, it is believed that the majority of recent jaguar activity, which has been minimal, occurs west of the Project. Due to the minimal nature of the potential indirect impacts, the Project will have minimal effects on the jaguar.

Although the ocelot is listed as potentially occurring in Cochise County, sightings of the species have not recently been verified. The area with the greatest potential for ocelot to occur is the San Pedro River valley, which occurs east of the Project corridor. Impacts to the ocelot, although not likely to occur, will be similar to those described for the jaguar.

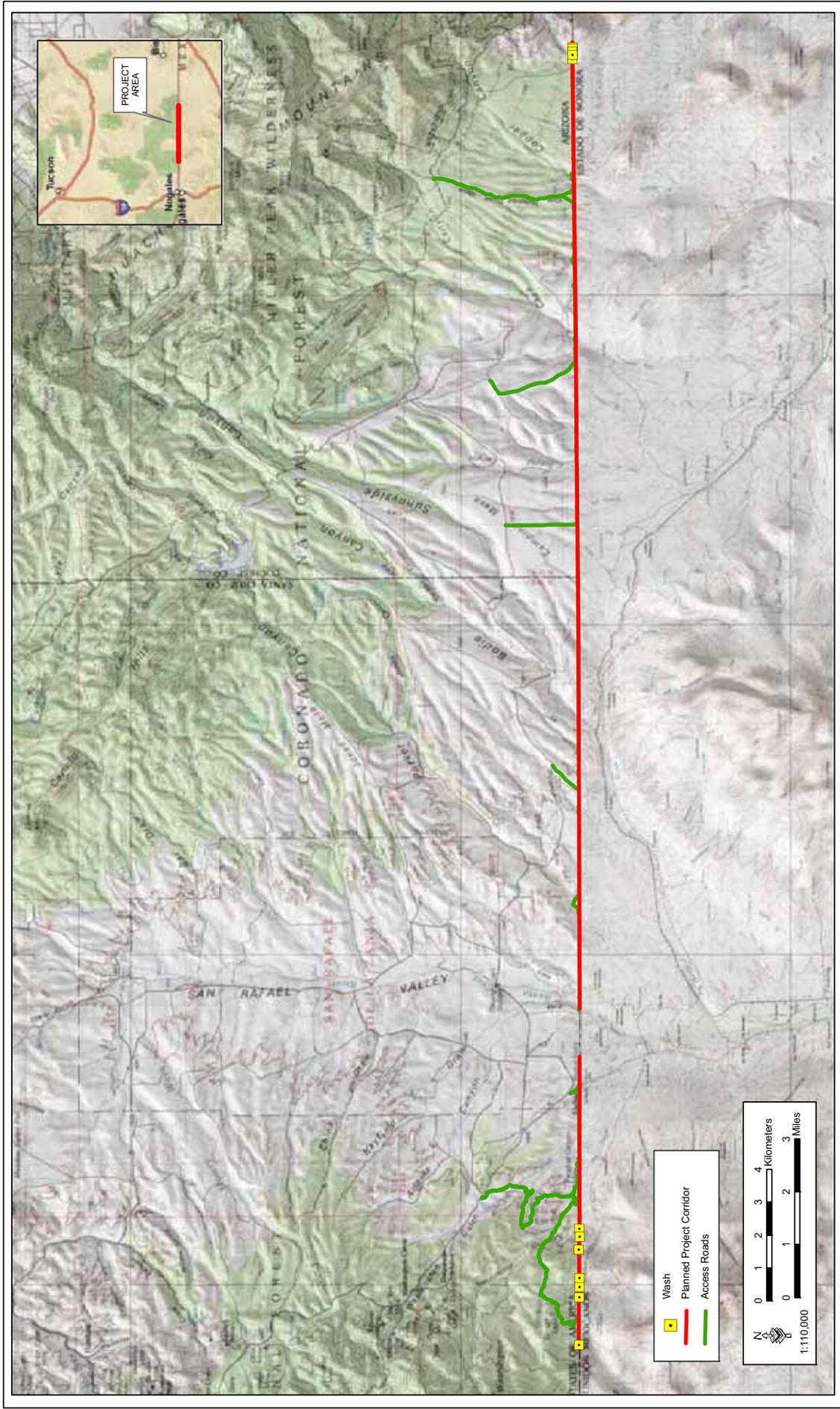


Figure 3-1: Wash Locations

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The Santa Cruz River is known to support populations of Huachuca water umbel and is within 0.5 miles of the EV-1A alignment. Implementation of a SWPPP and species specific BMPs provided in section 4.5 of this ESP will avoid all impacts to this species.

State listed animal species could also be impacted. Individuals could be harmed or lost during construction activities; however, the likelihood of the loss of any individuals is minimal because most of the species with the potential to occur are highly mobile species. The greatest impact will be the removal of habitat through the construction of the TI. However, an abundance of similar habitat both locally and regionally exists and the removal of 43.5 acres will be considered minimal. State listed, sensitive plant species could also occur within the Project corridor, although none were observed during biological surveys. The number of individuals impacted will be very minimal due to the limited distribution of these species. Rehabilitation of temporarily disturbed areas will further minimize impacts.

Construction and operation of TI will increase border security in the Project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors and, therefore, are considered unpredictable and beyond the scope of this ESP. Beneficial indirect impacts are expected, as the vehicle fence will substantially reduce or eliminate IA traffic, consequently reducing associated trash and habitat degradation due to illegal roads, trails and fires north of the Project corridor.

3.7 CULTURAL RESOURCES

3.7.1 Environmental Setting

A cultural resources overview of the project region was given in the 2004 TVB EA and 2005 Road EA; the descriptions are incorporated herein by reference. In summary, the cultural setting of the region is generally divided into four different periods: Paleo-Indian, Archaic, Formative, and Historic. These periods are commonly subdivided into smaller temporal phases based on particular characteristics of the artifact assemblages encountered.

A records search identified six previous surveys which have been conducted within 1 mile of the EV-1B segment on Coronado National Forest lands. One of these previous surveys was conducted for the 2005 Road EA. The records search identified nine border monuments, a lithic scatter and historic residence, a prehistoric settlement, several ineligible sites and numerous isolated occurrences in or adjacent to the EV-1A segment; and two cultural sites north of the EV-1A segment. Information regarding the type, age, and recorder of the sites in Yaqui Canyon were not available. The current survey of the EV-1B segment recorded two U.S.-Mexico International Boundary Monuments and 44 rock cairns or similar rock features. These isolated occurrences are not considered as sites and, thus, are not eligible for listing on the National Register of Historic Places (NRHP).

3.7.2 Effects of the Project

Although the Secretary's waiver means that CBP no longer has any specific legal obligations under the National Historic Preservation Act (NHPA), for the TI segments addressed in this ESP, the Secretary committed the Department to responsible environmental stewardship of our valuable natural and cultural resources. CBP supports this objective and has applied the appropriate standards and guidelines associated with the NHPA as the basis for evaluating potential environmental impacts and appropriate mitigations.

As mentioned above, the 44 isolated occurrences are not considered historic properties. However, the two Border Monuments are considered historic properties and appropriate measures will be implemented to avoid impacts on these two features. Consequently, no historic properties will be affected by the Project. In addition, during construction, orange fabric barrier fencing, or similar material, will be positioned on the edges of established roads to prevent vehicle traffic from impacting undisturbed cultural sites outside of the surveyed corridor. Use of an on-site archaeological monitor will also be considered to monitor construction activities and travel routes. If any cultural material is discovered during construction, all activities within the vicinity of the discovery will be halted until cleared by a qualified archeologist.

Additionally, construction and operation of TI will increase border security in the Project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors and therefore are considered unpredictable and beyond the scope of this ESP. Beneficial indirect impacts on cultural resources are expected, as the vehicle fence will substantially reduce or eliminate vehicular traffic north of the Project corridor.

SECTION 4.0
BEST MANAGEMENT PRACTICES AND MITIGATION MEASURES

4.0 BEST MANAGEMENT PRACTICES AND MITIGATION MEASURES

The following sections describe those measures that will be implemented to reduce or eliminate potential adverse impacts on the human and natural environment. Many of these measures have been incorporated by CBP as standard operating procedures on past Projects. Mitigation measures are presented for each resource category that will be potentially affected. It should be emphasized that these are general mitigation measures; development of specific mitigation measures have been on-going for certain activities implemented under the Project and are included in the BRP. The mitigation measures will be coordinated through the appropriate agencies and land managers or administrators.

4.1 GENERAL CONSTRUCTION ACTIVITIES

BMPs will be implemented as standard operating procedures during all construction activities, and will include proper handling, storage, and/or disposal of hazardous and/or regulated materials. 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 industry guidelines, and all vehicles will have drip pans during storage to contain minor spills and drips. Although a major spill is unlikely to occur, any spill of 5 gallons or more will be contained immediately within an earthen dike, and an absorbent (e.g., granular, pillow, sock, etc.) will be applied to contain the spill. Furthermore, a spill of any regulated substance in a reportable quantity will be cleaned up and reported to the appropriate Federal and state agencies. Reportable quantities of regulated substances will be included as part of a Project-specific SPCCP. An SPCCP will be in place prior to the start of construction and all personnel will be briefed on the implementation and responsibilities of this plan.

All equipment maintenance, laydown, and dispensing of fuel, oil, or any other such activities, will occur in staging areas identified for use in this ESP. The designated staging areas will be located in such a manner as to prevent any runoff from entering WUS, including wetlands. All used oil and solvents will be recycled if possible. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed in manners consistent with EPA standards.

Solid waste receptacles will be maintained at staging areas. Non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in on-site receptacles. Waste materials and other discarded materials contained in these receptacles will be removed from the site as quickly as practicable. Solid waste will be collected and disposed of properly.

Once activities in any given construction segment of the Project corridor are completed, active measures will be implemented to rehabilitate the staging areas. CBP will coordinate with the appropriate land managers to determine the most suitable and cost-effective measures for successful rehabilitation.

For successful rehabilitation, all or some of the following measures may be conducted on the part of USBP:

- Site preparation through ripping and disking to loosen compacted soils.
- Hydromulch with native grasses and forbs in order to control soil erosion and ensure adequate re-vegetation.
- Planting of native shrubs as needed.
- Temporary irrigation (*i.e.*, truck watering) for seedlings.
- Periodic monitoring to determine if additional actions are necessary to successfully rehabilitate disturbed areas.

4.2 AIR QUALITY

Mitigation measures will be incorporated to ensure that particulate matter less than 10 microns in size (PM-10) emission levels remain minimal. Measures will include dust suppression methods to minimize airborne particulate matter created during construction activities. Standard construction BMPs, such as routine watering of the construction site and access roads, will be used to control fugitive dust during the construction phases of the Project. Additionally, all construction equipment and vehicles will need to be kept in good operating condition to minimize exhaust emissions.

4.3 SOILS

Proper site-specific BMPs are designed and utilized to reduce the impact of non-point source pollution during construction activities. BMPs include such things as buffers around washes to reduce the risk of siltation, installation of waterbars to slow the flow of water down hill, and placement of culverts, low-water crossings, or bridges where washes need to be traversed. These BMPs will greatly reduce the amount of soil lost to runoff during heavy rain events and ensure the integrity of the construction site. Soil erosion BMPs can also beneficially impact air quality by reducing the amount of fugitive dust.

Areas with highly erodible soils will be given special consideration to ensure incorporation of various and effective compaction techniques, aggregate materials, wetting compounds, and rehabilitation to reduce potential soil erosion. Erosion control measures such as waterbars, gabions, straw bales, and re-vegetation will be implemented during and after construction activities. Re-vegetation efforts will be implemented to ensure long-term recovery of the area and to prevent significant soil erosion problems.

4.4 WATER RESOURCES

CBP will require its contractor(s) to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) to avoid or reduce erosion and sedimentation outside the construction footprint. Coordination with the Regulatory Functions Branch of USACE, Los Angeles District will continue in order to avoid or reduce construction-related impacts to washes and arroyos that are potentially jurisdictional WUS. Compensatory mitigation will be implemented, as appropriate.

All engineering designs and subsequent hydrology reports will be provided to USIBWC prior to start of construction activities for recommendations of measures to avoid an increase, concentration, or relocation of overland surface flows into either the U.S. or Mexico. Furthermore, CBP will routinely check and maintain drainage structures, including LWCs, and vehicle fence installed within drainages. Such activities may include, but are not limited to, removal of debris that will impede proper conveyance of floodwaters, repair/maintenance of erosional features, installation of energy dissipation measures, and re-vegetation of temporarily disturbed areas.

4.5 BIOLOGICAL RESOURCES

BMPs to avoid impacts to biological resources are included in the BRP and are summarized here. Construction equipment will be cleaned using a high-pressure water system prior to entering and departing the Project corridor to minimize the spread and establishment of non-native invasive plant species. Soil disturbances in temporary impact areas will be rehabilitated. Rehabilitation includes re-vegetation or the distribution of organic and geological materials over the disturbed area to reduce erosion while allowing the area to naturally revegetate. Rehabilitation methods will be outlined in a rehabilitation plan. At a minimum, the rehabilitation plan will include: the plant species to be used, a planting schedule, measures to control non-native species, specific success criteria, and the party responsible for maintaining and meeting the success criteria. Seeds or plants native to the affected area will be used to the extent practicable.

Disturbed and restored areas will be monitored for the spread and removal of non-native invasive plants as part of periodic maintenance activities as appropriate.

A qualified biologist (*i.e.*, professional biologist with education and training in wildlife biology or ecology) will monitor construction operations to ensure adherence with the BMPs and provide advice to the construction contractor as needed.

Since the breeding/nesting season (March through September) will be avoided for this Project, surveys for migratory birds and Mexican spotted owls will not be necessary. Activities in areas occupied by Mexican spotted owl will be avoided to the extent practicable. Species specific BMPs are provided below for those species potentially affected by the project.

Chiricahua Leopard Frog

1. Roads will be designed to minimize animal collisions and fragmentation of federally listed populations. Exclusion fencing might be appropriate where road kill is likely or to direct species to underpasses or other passageways. Specific protocols are available for Chiricahua leopard frog.
2. Monitoring of effects on the frog's terrestrial and aquatic habitat during construction could be appropriate. Disease prevention protocols will be employed if the project is in areas known or likely to harbor chytridiomycosis (consult with the USFWS to identify these areas). In such cases, if vehicles/equipment use will occur in more than one frog habitat, ensure that all equipment is clean and dry or disinfected before it moves to another habitat.
3. To the extent practicable, removal of riparian vegetation within 100 feet of aquatic habitats will be avoided to provide a buffer area to protect the habitat from sedimentation.

Jaguar and Ocelot

1. If construction or maintenance activities continue at night, all lights will be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers.
2. Roads will be designed to minimize animal collisions and fragmentation of T&E populations to the extent practicable.

Huachuca Water Umbel

1. Because loss of habitat is a significant risk to the water umbel, no roads, fences, structures, or other on-ground facilities will be placed within 0.5 miles of occupied or potentially suitable habitat areas to the extent practicable. If these areas cannot be avoided, minimization and mitigation will be included in the project design. No TI is currently planned to cross the Santa Cruz River.
2. If facilities must be located within 0.5 miles of known or potential habitat, vegetation clearing will be limited to that needed to meet the objectives of the construction project, and erosion-control measures put in place to reduce sediment runoff potential. Monitoring of effects to aquatic habitat during construction could be appropriate.
3. Preconstruction surveys are not appropriate as long as projects are located at least 0.5 miles from occupied habitat areas so that watershed effects will not reach the water umbel habitat.
4. Whenever practicable, road construction and maintenance will not improve or create new available access to water umbel habitats.
5. For construction purposes, use of existing roads and trails in or adjacent to water umbel habitat will be maximized. Educational briefing materials on the presence of the species will be provided as part of pre-construction training. Maps can be helpful for this purpose.

4.6 CULTURAL RESOURCES

Prior to ground-disturbing activities near sites determined to be potentially eligible or eligible for listing on the National Register for Historic Places (NRHP), the Arizona State Historic Preservation Officer (SHPO) and the appropriate tribes will be informed. Additionally, through continued coordination with the Arizona SHPO, measures to avoid or mitigate for adverse effects will be identified and implemented; including the potential to: (1) avoid sites to the extent practicable; (2) monitor construction activities to ensure potential effects are minimized; (3) data recovery. During construction, orange fabric barrier fencing (or similar material) will be positioned on the edges of established roads to prevent vehicle traffic from impacting undisturbed cultural sites. Use of an on-site archaeological monitor will also be considered to monitor construction activities where site avoidance will occur. Consequently, with the implementation of avoidance and mitigation measures as appropriate, the Project will either not have an adverse impact or mitigate for any adverse impact on cultural resources.

As stated in an interagency agreement between the USIBWC and the CBP, the Project will not affect the permanence of existing boundary monuments nor impede access for their inspection and maintenance. If potential cultural sites are discovered during construction activities, work will cease and the USFS, Arizona SHPO, and appropriate Tribal Historic Preservation Officer (THPO) will be consulted immediately. The construction contractor may continue to work in areas that have been previously surveyed for cultural resources, unless further cultural materials are discovered in these areas. The appropriate mitigation measures will be identified and implemented.

4.7 HAZARDOUS MATERIALS

Refueling of machinery will be allowed only at a properly located and designated fuel truck equipped with a proper spill containment kit. All vehicles will have drip pans during storage to contain minor spills and drips, in accordance with the SPCCP.

All used oil and solvents will continue to be recycled if possible. All non-recyclable hazardous and regulated wastes will continue to 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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SECTION 5.0
RELATED PROJECTS AND POTENTIAL EFFECTS

5.0 RELATED PROJECTS AND POTENTIAL EFFECTS

This section of the ESP addresses the potential cumulative impacts associated with the implementation of the Project and other Projects/programs that are planned for the region.

USBP has been conducting law enforcement actions along the border since its inception in 1924, and has continually transformed its methods as new missions, IA modes of operation, agent needs, and National enforcement strategies have evolved. Development and maintenance of training ranges, station and sector facilities, detention facilities, and roads and fences have affected thousands of acres, with synergistic and cumulative impacts to soil, wildlife habitats, water quality, and noise. Beneficial effects have resulted from the construction and use of these roads and fences, including, but not limited to: increased employment and income for border regions and surrounding communities; protection and enhancement of sensitive resources north of the border; reduction in crime within urban areas near the border; increased land value in areas where border security has increased; and increased knowledge of the biological communities and pre-history of the region through numerous biological and cultural resources surveys and studies.

With continued funding and implementation of CBP's environmental conservation measures, environmental awareness training, use of biological and archaeological monitors, and restoration activities, adverse impacts of future and ongoing Projects will be prevented or minimized. However, recent, ongoing, and reasonably foreseeable proposed Projects will result in cumulative impacts. General descriptions of these types of activities are discussed in the following paragraphs.

Cumulative Fencing along Southwestern Border. There are currently 62 miles of landing mat pedestrian fence at various locations along the U.S./Mexico border (CRS 2006); approximately 30 miles of single, double, and triple pedestrian fence in San Diego, California and Yuma, Arizona; vehicle fence in Arizona along the Organ Pipe Cactus National Monument; and pedestrian fences at POE facilities throughout the southern border. In addition, 225 miles of fence are currently being planned for Texas, New Mexico, Arizona, and California.

Past Actions. Past actions are those within the cumulative effects analysis areas that have occurred prior to the development of this ESP. The effects of these past actions are generally described throughout Section 3 of this ESP. For example, past mining activities have locally affected groundwater quality and vegetation in the Patagonia Mountains.

Present Actions. Present actions include current or funded construction Projects; CBP or other agency actions in close proximity to the primary pedestrian fence locations; and current resource management programs and land use activities within the cumulative

effects analysis areas. Ongoing actions considered in the cumulative effects analysis include the following:

Construction of Primary Fence. The FY 2007 DHS Appropriations Act provided \$1.2 billion for the installation of fencing, infrastructure, and technology along the border (CRS 2006). By the December 31, 2008 CBP will have constructed up to 370 miles of primary fence and up to 300 miles of vehicle fence in all southwest border Sectors except Laredo.

Reasonably Foreseeable Future Actions. Reasonably foreseeable future actions consist of activities that have been approved and can be evaluated with respect to their effects. The following activities are reasonably foreseeable future actions:

Laredo Cane Removal Project – CBP plans to remove approximately 16 miles (approximately 585 acres) of Carrizo cane (*Arundo donax*) along the Rio Grande within the Laredo Sector. The project is located within and near Laredo, Texas. Approximately 1.7 miles of cane will be removed beginning in March 2009 as part of a pilot project. The remaining 15.3 miles of cane will be removed within the next 5 years. The project also includes the treatment of cane resprouts following the initial removal of cane and revegetating the area with native vegetation.

CBP's Secure Border Initiative (SBI). The Secure Border Initiative (SBI) is a comprehensive multi-year plan established by the Department of Homeland Security (DHS) to secure America's borders and reduce illegal migration. *SBI_{net}* is responsible for the development, installation and integration of technology solutions, and SBI TI develops and installs physical components designed to secure the border consisting of the following major components: pedestrian fence, vehicle fence, roads, lights and vegetation control. *SBI_{net}* will improve deterrence, detection, and apprehension of illegal aliens into the United States. When fully implemented, *SBI_{net}* and SBI TI will improve ability of CBP personnel to rapidly and effectively respond to illegal cross border activity and help DHS and CBP to manage, control, and secure the Nation's borders. SBI TI has constructed 36 miles of primary pedestrian fencing along the U.S./Mexico border within the Barry M. Goldwater Range and 6 miles west of the range (122 acres).

SBI_{net} program has identified 11 potential locations for surveillance and communication towers within the Sonoita Station AO. These towers typically require a 100-foot x 100-foot area and are usually located near an established, but sometimes unimproved road. The towers are generally less than 200 feet tall and can be powered by batteries, solar panels, wind turbines, natural gas generators, or from existing electrical grids. The towers are to be used as a force multiplier to assist USBP in the detection of illegal cross-border activity. Currently, there are 68 towers being assessed within the Tucson Sector. For a Project of this size, it would be expected that approximately 100 acres, including construction/improvement of access roads, would be impacted. Typical of all CBP Projects, sites are surveyed for the presence of sensitive resources and, where practicable, such resources are avoided.

A list of the past, on-going, and proposed Projects within the region surrounding the Sonoita Station's AO is presented below:

- Relocation of checkpoints in the Sonoita, Ajo, Casa Grande, Tucson and Nogales stations' AO (approximately 1 acre total) beginning in 2001 and on-going;
- About 30 to 50 portable lights in a 10.5 mile corridor near the Naco POE (approximately 0.5 acres) were put into operation in 2002;
- A total of six emergency beacons within the Cabeza Prieta National Wildlife Refuge (CPNWR) and Barry M. Goldwater Range (0.0012 acre) were installed in 2002;
- A new USBP station located about 2 miles west of Douglas (about 15 acres) was constructed in 2003;
- Improvements to 2 miles of Kings Ranch Road to provide north/south access from the new Douglas Station to the border (approximately 9 acres) completed in 2003;
- Construction of a Joint Processing Center within the Tohono O'odham Nation completed in 2003;
- Implementation of three temporary USBP checkpoints on Federal and Tohono O'odham Nation lands occurred in 2003;
- A total of 10 rescue beacons on Federal and privately owned lands were proposed, some of which were installed in 2003;
- Installation of nine RVS systems (approximately 0.4 acres) and the placement of portable lighting within Naco and Douglas stations' AO was completed in 2005;
- Acquisition of hanger space at Sierra Vista completed in 2004;
- Acquisition of space for the Nogales Station completed in 2006;
- Restoration of Ephraim Ridge near Nogales (1.1 acres) completed in 2006;
- Proposed lease of an existing vehicle maintenance facility in Ajo, Arizona has been completed;
- 30 acre expansion of the existing USBP Ajo Station including a station coral expansion with barns, vehicle parking, and modular structure usage is ongoing;
- 16 RVS systems installed in the Nogales Station's AO in late 2004 and early 2005;
- 15 miles of border road improvements and pedestrian fence construction west of Naco (approximately 10 acres) is on-going;

- Installation of 36 miles of temporary vehicle fence at 21 different locations within the Nogales, Tucson and Sonoita stations' AO completed in 2006;
- Proposed establishment of three helicopter insert/extract sites within Millers Peak Wilderness (currently being coordinated with Coronado National Forest);
- Proposed repeater sites in the Huachuca and Patagonia mountains and the Miller Peak Wilderness depending on operational necessities;
- Installation of permanent vehicle fence and road improvements within the CPNWR (23 miles completed) and BMGR (15 miles completed); and,
- 30 miles of road improvements and vehicle barriers in the San Rafael Valley completed in 2007.

In addition, Projects are currently being planned by other Federal entities which could affect areas in use by USBP. CBP maintains close coordination with these agencies so that CBP activities do not conflict with other agencies' policies or management plans to the extent practicable. CBP typically coordinates with applicable state and Federal agencies prior to performing any construction activities so that USBP operations do not substantially impact the mission of other agencies. The following paragraphs list Projects that other Federal and state agencies are conducting or have completed within the region.

The USFS has several projects planned for the Coronado National Forest. Implementation of the San Rafael Valley Manzanita Fuels Reduction Project will result in the mechanical removal of up to 12,000 acres of manzanita-dominated mesas and ridge tops with a hydro-axe machine. The USFS plans to implement an Integrated Vegetation Management approach to the control of invasive exotic plant species throughout the Coronado National Forest. Other plans include the consolidation of lands through a land exchange with a private owner near Lone Mountain and road work.

The Arizona Department of Transportation has several road improvement Projects planned to occur in Cochise County over the next few years, including: construction of passing lanes, improvements to interchanges, construction of weight and inspection stations, road widening and bridge replacements. Projects planned for Santa Cruz County include construction of new roads in San Rafael State Park, replacement of Santa Cruz River Bridge #1478 on State Route 82, and acquisition of a scenic easement on State Route 82. However, none of these Projects are located within the San Rafael Valley.

A summary of the anticipated cumulative impacts of the Project in conjunction with other Projects in the area are presented in the following sections. Discussions are presented for each of the resources described previously.

5.1 AIR QUALITY

The emissions generated during and after the construction of the primary pedestrian fence will be short-term and minor. Although maintenance of the fence and construction road will result in cumulative impacts on the region's airshed, these impacts will be considered negligible, even when combined with the other proposed developments in the border region. BMPs designed to reduce fugitive dust have been and will continue to be standard operating procedure for CBP construction Projects. Deterrence of and improved response time to cross border violators due to the construction of the fence and road has reduced the need for off-road enforcement actions by USBP agents.

5.2 LAND USE AND AESTHETICS

The Project described herein will occur within the Roosevelt Reservation, which was set aside specifically for border control actions. This action, therefore, is consistent with the authorized land use and, when considered with other potential alterations of land use, will have negligible cumulative impacts. Recent activities that have most affected land use near the TI are ranching and USFS operations. The removal of manzanita north of the Roosevelt Reservation to provide an adequate area for road construction in rugged terrain and at the temporary staging area will facilitate the USFS's plans in this area and contribute to the anticipated beneficial effects.

The additional construction of TI within the San Rafael Valley will contribute to a general degradation of visual resources; however, much of the area is inaccessible by the general public and out of view from public roads. Additionally, areas north of the border within the construction corridors will be expected to experience beneficial, indirect cumulative impacts through the reduction of trash, soil erosion, and creation of roads by illegal vehicle traffic. Therefore, moderate cumulative impacts to visual resources will be expected from implementing the Project, when considered with existing and proposed developments in the surrounding areas.

5.3 SOILS

The Project and other USBP actions will not reduce prime farmland soils or agricultural production. Pre- and post-construction SWPPP measures for this and other Planned and Proposed Actions will be implemented to control erosion. The loss of biological production from 40 acres of regionally abundant soils as a result of the Project, when combined with past and proposed Projects in the region, will result in moderate cumulative impacts to soils, primarily through the loss of biological production.

5.4 WATER RESOURCES

As a result of the Project when combined with other USBP Projects, increased temporary erosion during construction will occur; however, increased sediment and turbidity will have minimal cumulative impacts on water quality. Pre- and post-construction SWPPP measures for this and other Planned and Proposed Actions will be implemented to control erosion. Limited and short-term withdrawal from the regional

groundwater basins will not affect long-term water supplies or groundwater quality. The volume of water withdrawn will not affect the public drinking water supplies, but could indirectly contribute to aquifer contamination from surface runoff. With proper implementation of the SWPPP and associated BMPs, these effects will be minimized. The indirect effects of altered surface drainage and potential consequent erosion will have minimal beneficial and adverse cumulative impacts to surface water quality.

5.5 BIOLOGICAL RESOURCES

The TI currently planned as well as future TI will permanently impact up to 40+ acres of vegetation communities. These impacts could be considered moderate to major cumulative impacts; however, BMPs will be developed, which include the restoration of temporarily impacted areas to offset these potential impacts. Additionally, the reduction of illegal traffic north of the planned and proposed TI will have beneficial cumulative impacts on vegetation communities in the region.

The planned and proposed TI will have negligible cumulative impacts on fish or other aquatic species because the construction activities will not take place in flowing or standing water. Construction in or near drainage crossings will use BMPs and follow the SWPPP to reduce potential impacts downstream. Adverse cumulative impacts will occur to wildlife species through the permanent reduction of 40+ acres of habitat. However, due to the presence of similar habitat adjacent to the study corridor (over 1.5 million acres), these impacts will be considered minor to moderate. Additionally, because vehicle fence is planned for 96 percent of the ROI rather than primary pedestrian fence, negligible cumulative impacts will occur regarding opportunities for transboundary migration.

CBP has maintained close coordination with USFWS and the Arizona Game and Fish Department regarding the special status species and USFWS has provided valuable guidance to CBP regarding these species. Through the use of BMPs developed in coordination with USFWS, the potential impacts as a result of the Project, as well as other past, present, and future actions, will ensure that major cumulative impacts on protected species do not occur.

5.6 CULTURAL RESOURCES

The Project will have no adverse impacts on any known cultural resources sites. Therefore, this action, when combined with other existing and proposed Projects in the region, will have no adverse cumulative impacts on historical properties. Beneficial cumulative impacts will occur from the protection afforded to previously discovered and any undiscovered cultural resources north of the planned and proposed TI components.

5.7 SOCIOECONOMICS

The planned and proposed TI in the ROI will have negligible cumulative impacts on the local employment or income, will not induce a permanent in-migration of people nor will

there be additional permanent employees. Therefore, there will be no cumulative increase in demand for housing. However, TI will benefit socioeconomics of the ROI by reducing the costs associated with illegal activity through the USBP's increased deterrence and apprehension capabilities.

5.8 HAZARDOUS MATERIALS

Only minor increases in the use of hazardous substances (*e.g.*, POL) will occur as a result of the construction and maintenance of the primary pedestrian fence. No health or safety risks will be created by the Project. When combined with other ongoing and proposed Projects in the region, the Project will have a negligible cumulative impact.

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SECTION 6.0
REFERENCES



6.0 REFERENCES

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APPENDIX A
Secretary's published waiver pursuant to the IIRIRA

FOR FURTHER INFORMATION CONTACT: Ken Hunt, Executive Director, 245 Murray Lane, Mail Stop 0550, Washington, DC 20528, 703-235-0780 and 703-235-0442, privacycommittee@dhs.gov.

Purpose and Objective: Under the authority of 6 U.S.C. section 451, this charter establishes the Data Privacy and Integrity Advisory Committee, which shall operate in accordance with the provisions of the Federal Advisory Committee Act (FACA) (5 U.S.C. App).

The Committee will provide advice at the request of the Secretary of DHS and the Chief Privacy Officer of DHS on programmatic, policy, operational, administrative, and technological issues within the DHS that relate to personally identifiable information (PII), as well as data integrity and other privacy-related matters.

Duration: The committee's charter is effective March 25, 2008, and expires March 25, 2010.

Responsible DHS Officials: Hugo Teufel III, Chief Privacy Officer and Ken Hunt, Executive Director, 245 Murray Drive, Mail Stop 0550, Washington, DC 20528, privacycommittee@dhs.gov, 703-235-0780.

Dated: April 1, 2008.

Hugo Teufel III,

Chief Privacy Officer.

[FR Doc. E8-7277 Filed 4-7-08; 8:45 am]

BILLING CODE 4410-10-P

DEPARTMENT OF HOMELAND SECURITY

Office of the Secretary

Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as Amended

AGENCY: Office of the Secretary, Department of Homeland Security.

ACTION: Notice of determination; correction.

SUMMARY: The Secretary of Homeland Security has determined, pursuant to law, that it is necessary to waive certain laws, regulations and other legal requirements in order to ensure the expeditious construction of barriers and roads in the vicinity of the international land border of the United States. The notice of determination was published in the **Federal Register** on April 3, 2008. Due to a publication error, the Project Area description was inadvertently omitted from the April 3 publication. For clarification purposes, this document is a republication of the April 3 document including the omitted Project Area description.

DATES: This Notice is effective on April 8, 2008.

Determination and Waiver

The Department of Homeland Security has a mandate to achieve and maintain operational control of the borders of the United States. Public Law 109-367, 2, 120 Stat. 2638, 8 U.S.C. 1701 note. Congress has provided the Secretary of Homeland Security with a number of authorities necessary to accomplish this mandate. One of these authorities is found at section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 ("IIRIRA"). Public Law 104-208, Div. C, 110 Stat. 3009-546, 3009-554 (Sept. 30, 1996) (8 U.S.C 1103 note), as amended by the REAL ID Act of 2005, Public Law 109-13, Div. B, 119 Stat. 231, 302, 306 (May 11, 2005) (8 U.S.C. 1103 note), as amended by the Secure Fence Act of 2006, Public Law 109-367, 3, 120 Stat. 2638 (Oct. 26, 2006) (8 U.S.C. 1103 note), as amended by the Department of Homeland Security Appropriations Act, 2008, Public Law 110-161, Div. E, Title V, 564, 121 Stat. 2090 (Dec. 26, 2007). In Section 102(a) of the IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United States. In Section 102(b) of the IIRIRA, Congress has called for the installation of fencing, barriers, roads, lighting, cameras, and sensors on not less than 700 miles of the southwest border, including priority miles of fencing that must be completed by December of 2008. Finally, in section 102(c) of the IIRIRA, Congress granted to me the authority to waive all legal requirements that I, in my sole discretion, determine necessary to ensure the expeditious construction of barriers and roads authorized by section 102 of the IIRIRA.

I determine that the following area of Hidalgo County, Texas, in the vicinity of the United States border, hereinafter the Project Area, is an area of high illegal entry:

- Starting approximately at the intersection of Military Road and an unnamed road (i.e. beginning at the western end of the International Boundary Waters Commission (IBWC) levee in Hidalgo County) and runs east in proximity to the IBWC levee for approximately 4.5 miles.
- Starting approximately at the intersection of Levee Road and 5494 Wing Road and runs east in proximity

to the IBWC levee for approximately 1.8 miles.

- Starting approximately 0.2 mile north from the intersection of S. Depot Road and 23rd Street and runs south in proximity to the IBWC levee to the Hidalgo POE and then east in proximity to the new proposed IBWC levee and the existing IBWC levee to approximately South 15th Street for a total length of approximately 4.0 miles.

- Starting adjacent to Levee Road and approximately 0.1 miles east of the intersection of Levee Road and Valley View Road and runs east in proximity to the IBWC levee for approximately 1.0 mile then crosses the Irrigation District Hidalgo County #1 Canal and will tie into the future New Donna POE fence.

- Starting approximately 0.1 mile east of the intersection of County Road 556 and County Road 1554 and runs east in proximity to the IBWC levee for approximately 3.4 miles.

- Starting approximately 0.1 mile east of the Bensten Groves road and runs east in proximity to the IBWC levee to the Progreso POE for approximately 3.4 miles.

- Starting approximately at the Progreso POE and runs east in proximity to the IBWC levee for approximately 2.5 miles.

In order to deter illegal crossings in the Project Area, there is presently a need to construct fixed and mobile barriers and roads in conjunction with improvements to an existing levee system in the vicinity of the border of the United States as a joint effort with Hidalgo County, Texas. In order to ensure the expeditious construction of the barriers and roads that Congress prescribed in the IIRIRA in the Project Area, which is an area of high illegal entry into the United States, I have determined that it is necessary that I exercise the authority that is vested in me by section 102(c) of the IIRIRA as amended. Accordingly, I hereby waive in their entirety, with respect to the construction of roads and fixed and mobile barriers (including, but not limited to, accessing the project area, creating and using staging areas, the conduct of earthwork, excavation, fill, and site preparation, and installation and upkeep of fences, roads, supporting elements, drainage, erosion controls, safety features, surveillance, communication, and detection equipment of all types, radar and radio towers, and lighting) in the Project Area, all federal, state, or other laws, regulations and legal requirements of, deriving from, or related to the subject of, the following laws, as amended: The National Environmental Policy Act (Pub. L. 91-190, 83 Stat. 852 (Jan. 1,

1970) (42 U.S.C. 4321 *et seq.*), the Endangered Species Act (Pub. L. 93–205, 87 Stat. 884) (Dec. 28, 1973) (16 U.S.C. 1531 *et seq.*), the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) (33 U.S.C. 1251 *et seq.*), the National Historic Preservation Act (Pub. L. 89–665, 80 Stat. 915 (Oct. 15, 1966) (16 U.S.C. 470 *et seq.*), the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*), the Clean Air Act (42 U.S.C. 7401 *et seq.*), the Archeological Resources Protection Act (Pub. L. 96–95, 16 U.S.C. 470aa *et seq.*), the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*), the Noise Control Act (42 U.S.C. 4901 *et seq.*), the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*), the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 *et seq.*), the Archeological and Historic Preservation Act (Pub. L. 86–523, 16 U.S.C. 469 *et seq.*), the Antiquities Act (16 U.S.C. 431 *et seq.*), the Historic Sites, Buildings, and Antiquities Act (16 U.S.C. 461 *et seq.*), the Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*), the Coastal Zone Management Act (Pub. L. 92–583, 16 U.S.C. 1451 *et seq.*), the Federal Land Policy and Management Act (Pub. L. 94–579, 43 U.S.C. 1701 *et seq.*), the National Wildlife Refuge System Administration Act (Pub. L. 89–669, 16 U.S.C. 668dd–668ee), the Fish and Wildlife Act of 1956 (Pub. L. 84–1024, 16 U.S.C. 742a, *et seq.*), the Fish and Wildlife Coordination Act (Pub. L. 73–121, 16 U.S.C. 661 *et seq.*), the Administrative Procedure Act (5 U.S.C. 551 *et seq.*), the Rivers and Harbors Act of 1899 (33 U.S.C. 403), the Eagle Protection Act (16 U.S.C. 668 *et seq.*), the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.*), the American Indian Religious Freedom Act (42 U.S.C. 1996), the Religious Freedom Restoration Act (42 U.S.C. 2000bb), and the Federal Grant and Cooperative Agreement Act of 1977 (31 U.S.C. 6303–05).

I reserve the authority to make further waivers from time to time as I may determine to be necessary to accomplish the provisions of section 102 of the IIRIRA, as amended.

Michael Chertoff,

Secretary.

[FR Doc. E8–7450 Filed 4–7–08; 8:45 am]

BILLING CODE 4410–10–P

DEPARTMENT OF HOMELAND SECURITY

Office of the Secretary

Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as Amended

AGENCY: Office of the Secretary, Department of Homeland Security.

ACTION: Notice of determination; correction.

SUMMARY: The Secretary of Homeland Security has determined, pursuant to law, that it is necessary to waive certain laws, regulations and other legal requirements in order to ensure the expeditious construction of barriers and roads in the vicinity of the international land border of the United States. The notice of determination was published in the **Federal Register** on April 3, 2008. Due to a publication error, the description of the Project Areas was inadvertently omitted from the April 3 publication. For clarification purposes, this document is a republication of the April 3 document including the omitted description of the Project Areas.

DATES: This Notice is effective on April 8, 2008.

Determination and Waiver

I have a mandate to achieve and maintain operational control of the borders of the United States. Public Law 109–367, 2, 120 Stat. 2638, 8 U.S.C. 1701 note. Congress has provided me with a number of authorities necessary to accomplish this mandate. One of these authorities is found at section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (“IIRIRA”). Public Law 104–208, Div. C, 110 Stat. 3009–546, 3009–554 (Sept. 30, 1996) (8 U.S.C. 1103 note), as amended by the REAL ID Act of 2005, Public Law 109–13, Div. B, 119 Stat. 231, 302, 306 (May 11, 2005) (8 U.S.C. 1103 note), as amended by the Secure Fence Act of 2006, Public Law 109–367, 3, 120 Stat. 2638 (Oct. 26, 2006) (8 U.S.C. 1103 note), as amended by the Department of Homeland Security Appropriations Act, 2008, Public Law 110–161, Div. E, Title V, 564, 121 Stat. 2090 (Dec. 26, 2007). In Section 102(a) of IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United

States. In Section 102(b) of IIRIRA, Congress has called for the installation of fencing, barriers, roads, lighting, cameras, and sensors on not less than 700 miles of the southwest border, including priority miles of fencing that must be completed by December 2008. Finally, in section 102(c) of the IIRIRA, Congress granted to me the authority to waive all legal requirements that I, in my sole discretion, determine necessary to ensure the expeditious construction of barriers and roads authorized by section 102 of IIRIRA.

I determine that the following areas in the vicinity of the United States border, located in the States of California, Arizona, New Mexico, and Texas are areas of high illegal entry (collectively “Project Areas”):

California

- Starting approximately 1.5 mile east of Border Monument (BM) 251 and ends approximately at BM 250.
- Starting approximately 1.1 miles west of BM 245 and runs east for approximately 0.8 mile.
- Starting approximately 0.2 mile west of BM 243 and runs east along the border for approximately 0.5 mile.
- Starting approximately 0.7 mile east of BM 243 and runs east along the border for approximately 0.9 mile.
- Starting approximately 1.0 mile east of BM 243 and runs east along the border for approximately 0.9 mile.
- Starting approximately 0.7 mile west of BM 242 and stops approximately 0.4 mile west of BM 242.
- Starting approximately 0.8 mile east of BM 242 and runs east along the border for approximately 1.1 miles.
- Starting approximately 0.4 mile east of BM 239 and runs east for approximately 0.4 mile along the border.
- Starting approximately 1.2 miles east of BM 239 and runs east for approximately 0.2 mile along the border.
- Starting approximately 0.5 mile west of BM 235 and runs east along the border for approximately 1.1 miles.
- Starting approximately 0.8 mile east of BM 235 and runs east along the border for approximately 0.1 mile.
- Starting approximately 0.6 mile east of BM 234 and runs east for approximately 1.7 miles along the border.
- Starting approximately 0.4 mile east of BM 233 and runs east for approximately 2.1 miles along the border.
- Starting approximately 0.05 mile west of BM 232 and runs east for approximately 0.1 mile along the border.

- Starting approximately 0.2 mile east of BM 232 and runs east for approximately 1.5 miles along the border.
- Starting 0.6 mile east of Border Monument 229 heading east along the border for approximately 11.3 miles to BM 225.
- Starting approximately 0.1 mile east of BM 224 and runs east along the border for approximately 2.5 miles.
- Starting approximately 2.3 miles east of BM 220 and runs east along the border to BM 207.

Arizona

- Starting approximately 1.0 mile south of BM 206 and runs south along the Colorado River for approximately 13.3 miles.
- Starting approximately 0.1 mile north of County 18th Street running south along the border for approximately 3.8 miles.
- Starting at the Eastern edge of BMGR and runs east along the border to approximately 1.3 miles west of BM 174.
- Starting approximately 0.5 mile west of BM 168 and runs east along the border for approximately 5.3 miles.
- Starting approximately 1 mile east of BM 160 and runs east for approximately 1.6 miles.
- Starting approximately 1.3 miles east of BM 159 and runs east along the border to approximately 0.3 mile east of BM 140.
- Starting approximately 2.2 miles west of BM 138 and runs east along the border for approximately 2.5 miles.
- Starting approximately 0.2 miles east of BM 136 and runs east along the border to approximately 0.2 mile west of BM 102.
- Starting approximately 3 miles west of BM 99 and runs east along the border approximately 6.5 miles.
- Starting approximately at BM 97 and runs east along the border approximately 6.9 miles.
- Starting approximately at BM 91 and runs east along the border to approximately 0.7 miles east of BM 89.
- Starting approximately 1.7 miles west of BM 86 and runs east along the border to approximately 0.7 mile west of BM 86.
- Starting approximately 0.2 mile west of BM 83 and runs east along the border to approximately 0.2 mile east of BM 73.

New Mexico

- Starting approximately 0.8 mile west of BM 69 and runs east along the border to approximately 1.5 miles west of BM 65.

- Starting approximately 2.3 miles east of BM 65 and runs east along the border for approximately 6.0 miles.
- Starting approximately 0.5 mile east of BM 61 and runs east along the border until approximately 1.0 mile west of BM 59.
- Starting approximately 0.1 miles east of BM 39 and runs east along the border to approximately 0.3 mile east of BM 33.
- Starting approximately 0.25 mile east of BM 31 and runs east along the border for approximately 14.2 miles.
- Starting approximately at BM 22 and runs east along the border to approximately 1.0 mile west BM 16.
- Starting at approximately 1.0 mile west of BM 16 and runs east along the border to approximately BM 3.

Texas

- Starting approximately 0.4 miles southeast of BM 1 and runs southeast along the border for approximately 3.0 miles.
- Starting approximately 1 Mi E of the intersection of Interstate 54 and Border Highway and runs southeast approximately 57 miles in proximity to the IBWC levee to 3.7 miles east of the Ft Hancock POE.
- Starting approximately 1.6 miles west of the intersection of Esperanza and Quitman Pass Roads and runs along the IBWC levee east for approximately 4.6 miles.
- Starting at the Presidio POE and runs west along the border to approximately 3.2 miles west of the POE.
- Starting at the Presidio POE and runs east along the border to approximately 3.4 miles east of the POE.
- Starting approximately 1.8 miles west of Del Rio POE and runs east along the border for approximately 2.5 miles.
- Starting approximately 1.3 Mi north of the Eagle Pass POE and runs south approximately 0.8 miles south of the POE.
- Starting approximately 2.1 miles west of Roma POE and runs east approximately 1.8 miles east of the Roma POE.
- Starting approximately 3.5 miles west of Rio Grande City POE and runs east in proximity to the Rio Grande river for approximately 9 miles.
- Starting approximately 0.9 miles west of County Road 41 and runs east approximately 1.2 miles and then north for approximately 0.8 miles.
- Starting approximately 0.5 mile west of the end of River Dr and runs east in proximity to the IBWC levee for approximately 2.5 miles.
- Starting approximately 0.6 miles east of the intersection of Benson Rd

and Cannon Rd and runs east in proximity to the IBWC levee for approximately 1 mile.

- Starting at the Los Indios POE and runs west in proximity to the IBWC levee for approximately 1.7 miles.
 - Starting at the Los Indios POE and runs east in proximity to the IBWC levee for approximately 3.6 miles.
 - Starting approximately 0.5 mile west of Main St and J Padilla St intersection and runs east in proximity to the IBWC levee for approximately 2.0 miles.
 - Starting approximately 1.2 miles west of the Intersection of U.S. HWY 281 and Los Ranchitos Rd and runs east in proximity to the IBWC levee for approximately 2.4 miles.
 - Starting approx 0.5 miles southwest of the intersection of U.S. 281 and San Pedro Rd and runs east in proximity to the IBWC levee for approximately 1.8 miles.
 - Starting approximately 0.1 miles southwest of the Intersection of Villanueva St and Torres Rd and runs east in proximity to the IBWC levee for approximately 3.6 miles.
 - Starting approximately south of Palm Blvd and runs east in proximity to the City of Brownsville's levee to approximately the Gateway-Brownsville POE where it continues south and then east in proximity to the IBWC levee for a total length of approximately 3.5 miles.
 - Starting at the North Eastern Edge of Ft Brown Golf Course and runs east in proximity to the IBWC levee for approximately 1 mile.
 - Starting approximately 0.3 miles east of Los Tomates-Brownsville POE and runs east and then north in proximity to the IBWC levee for approximately 13 miles.
- In order to deter illegal crossings in the Project Areas, there is presently a need to construct fixed and mobile barriers (such as fencing, vehicle barriers, towers, sensors, cameras, and other surveillance, communication, and detection equipment) and roads in the vicinity of the border of the United States. In order to ensure the expeditious construction of the barriers and roads that Congress prescribed in the IIRIRA in the Project Areas, which are areas of high illegal entry into the United States, I have determined that it is necessary that I exercise the authority that is vested in me by section 102(c) of the IIRIRA as amended.
- Accordingly, I hereby waive in their entirety, with respect to the construction of roads and fixed and mobile barriers (including, but not limited to, accessing the project area, creating and using staging areas, the

conduct of earthwork, excavation, fill, and site preparation, and installation and upkeep of fences, roads, supporting elements, drainage, erosion controls, safety features, surveillance, communication, and detection equipment of all types, radar and radio towers, and lighting) in the Project Areas, all federal, state, or other laws, regulations and legal requirements of, deriving from, or related to the subject of, the following laws, as amended: The National Environmental Policy Act (Pub. L. 91–190, 83 Stat. 852 (Jan. 1, 1970) (42 U.S.C. 4321 *et seq.*)), the Endangered Species Act (Pub. L. 93–205, 87 Stat. 884 (Dec. 28, 1973) (16 U.S.C. 1531 *et seq.*)), the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) (33 U.S.C. 1251 *et seq.*)), the National Historic Preservation Act (Pub. L. 89–665, 80 Stat. 915 (Oct. 15, 1966) (16 U.S.C. 470 *et seq.*)), the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*), the Clean Air Act (42 U.S.C. 7401 *et seq.*), the Archeological Resources Protection Act (Pub. L. 96–95, 16 U.S.C. 470aa *et seq.*), the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*), the Noise Control Act (42 U.S.C. 4901 *et seq.*), the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*), the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 *et seq.*), the Archeological and Historic Preservation Act (Pub. L. 86–523, 16 U.S.C. 469 *et seq.*), the Antiquities Act (16 U.S.C. 431 *et seq.*), the Historic Sites, Buildings, and Antiquities Act (16 U.S.C. 461 *et seq.*), the Wild and Scenic Rivers Act (Pub. L. 90–542, 16 U.S.C. 1281 *et seq.*), the Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*), the Coastal Zone Management Act (Pub. L. 92–583, 16 U.S.C. 1451 *et seq.*), the Wilderness Act (Pub. L. 88–577, 16 U.S.C. 1131 *et seq.*), the Federal Land Policy and Management Act (Pub. L. 94–579, 43 U.S.C. 1701 *et seq.*), the National Wildlife Refuge System Administration Act (Pub. L. 89–669, 16 U.S.C. 668dd–668ee), the Fish and Wildlife Act of 1956 (Pub. L. 84–1024, 16 U.S.C. 742a, *et seq.*), the Fish and Wildlife Coordination Act (Pub. L. 73–121, 16 U.S.C. 661 *et seq.*), the Administrative Procedure Act (5 U.S.C. 551 *et seq.*), the Otay Mountain Wilderness Act of 1999 (Pub. L. 106–145), Sections 102(29) and 103 of Title I of the California Desert Protection Act (Pub. L. 103–433), 50 Stat. 1827, the National Park Service Organic Act (Pub. L. 64–235, 16 U.S.C. 1, 2–4), the National Park Service General

Authorities Act (Pub. L. 91–383, 16 U.S.C. 1a–1 *et seq.*), Sections 401(7), 403, and 404 of the National Parks and Recreation Act of 1978 (Pub. L. 95–625), Sections 301(a)–(f) of the Arizona Desert Wilderness Act (Pub. L. 101–628), the Rivers and Harbors Act of 1899 (33 U.S.C. 403), the Eagle Protection Act (16 U.S.C. 668 *et seq.*), the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.*), the American Indian Religious Freedom Act (42 U.S.C. 1996), the Religious Freedom Restoration Act (42 U.S.C. 2000bb), the National Forest Management Act of 1976 (16 U.S.C. 1600 *et seq.*), and the Multiple Use and Sustained Yield Act of 1960 (16 U.S.C. 528–531).

This waiver does not supersede, supplement, or in any way modify the previous waivers published in the **Federal Register** on September 22, 2005 (70 FR 55622), January 19, 2007 (72 FR 2535), and October 26, 2007 (72 FR 60870).

I reserve the authority to make further waivers from time to time as I may determine to be necessary to accomplish the provisions of section 102 of the IIRIRA, as amended.

Michael Chertoff,

Secretary.

[FR Doc. E8–7451 Filed 4–7–08; 8:45 am]

BILLING CODE 4410–10–P

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

[USCG–2008–0202]

Information Collection Request to Office of Management and Budget; OMB Control Numbers: 1625–0044, 1625–0045, and 1625–0060

AGENCY: Coast Guard, DHS.

ACTION: Sixty-day notice requesting comments.

SUMMARY: In compliance with the Paperwork Reduction Act of 1995, the U.S. Coast Guard intends to submit Information Collection Requests (ICRs) and Analyses to the Office of Management and Budget (OMB) requesting an extension of their approval for the following collections of information: (1) 1625–0044, Outer Continental Shelf Activities—Title 33 CFR Subchapter N; (2) 1625–0045, Adequacy Certification for Reception Facilities and Advance Notice—33 CFR part 158; and (3) 1625–0060, Vapor Control Systems for Facilities and Tank Vessels. Before submitting these ICRs to OMB, the Coast Guard is inviting comments as described below.

DATES: Comments must reach the Coast Guard on or before June 9, 2008.

ADDRESSES: To avoid duplicate submissions to the docket [USCG–2008–0202], please submit them by only one of the following means:

(1) *Online:* <http://www.regulations.gov>.

(2) *Mail:* Docket Management Facility (DMF) (M–30), U.S. Department of Transportation, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue, SE., Washington, DC 20590–0001.

(3) *Hand delivery:* DMF between the hours of 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The telephone number is 202–366–9329.

(4) *Fax:* 202–493–2251.

The DMF maintains the public docket for this notice. Comments and material received from the public, as well as documents mentioned in this notice as being available in the docket, will become part of this docket and will be available for inspection or copying at room W12–140 on the West Building Ground Floor, 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. You may also find this docket on the Internet at <http://www.regulations.gov>.

A copy of the complete ICR is available through this docket on the Internet at <http://www.regulations.gov>. Additionally, copies are available from Commandant (CG–611), U.S. Coast Guard Headquarters (Attn: Mr. Arthur Requina), 2100 2nd Street, SW., Washington, DC 20593–0001. The telephone number is 202–475–3523.

FOR FURTHER INFORMATION CONTACT: Mr. Arthur Requina, Office of Information Management, telephone 202–475–3523, or fax 202–475–3929, for questions on these documents. Contact Ms. Renee V. Wright, Program Manager, Docket Operations, 202–366–9826, for questions on the docket.

SUPPLEMENTARY INFORMATION:

Public Participation and Request for Comments

The Coast Guard invites comments on whether this information collection request should be granted based on it being necessary for the proper performance of Departmental functions. In particular, the Coast Guard would appreciate comments addressing: (1) The practical utility of the collections; (2) the accuracy of the estimated burden of the collections; (3) ways to enhance the quality, utility, and clarity of information subject to the collections; and (4) ways to minimize the burden of

APPENDIX B
Coordination Activity



AK-CHIN INDIAN COMMUNITY

Cultural Resources Office

42507 W Peters & Nall Road • Maricopa, Arizona 85239 • Telephone: (520) 568-1369 • Fax: (520) 568-1366



July 31, 2008

Chris Oh
U.S. Dept. of Homeland Security
U.S. Customs and Border Protection
1300 Pennsylvania Ave, NW
Suite 3.4 D
Washington, DC 20229

Re: Environmental Stewardship Plans for the Construction, Operation, and Maintenance of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol, Tucson Sector, Arizona

Dear Mr. Oh:

The Ak-Chin Cultural Resources Office did receive a letter dated July 7, 2008 regarding the above-referenced matter.

Our office does appreciate that, despite the Secretary of the Department of Homeland Security's waiver of over 30 environmental laws and regulations, the U.S. Customs and Border Protection (CBP) has stated and confirmed that it is committed to responsible environmental stewardship along the southwestern border and will continue to consult with Native American Tribes during the construction, operation, and maintenance of the tactical infrastructure. Our office will defer additional comments to the Tohono O'Odham Nation

Thank you for informing our office about this important matter. If you have any questions, please contact me at (520) 568-1369.

Sincerely,

A handwritten signature in black ink that reads "Gary Gilbert".

Gary Gilbert
Cultural Resources Technician II
Cultural Resources Office
Ak-Chin Indian Community

AK-CHIN INDIAN COMMUNITY

Cultural Resources Office

42507 W Peters & Nall Road • Maricopa, Arizona 85239 • Telephone: (520) 568-1369 • Fax: (520) 568-1366



July 30, 2008

Chris Oh
U.S. Dept. of Homeland Security
U.S. Customs and Border Protection
1300 Pennsylvania Ave, NW
Suite 3.4 D
Washington, DC 20229

Re: Environmental Stewardship Plans for the Construction, Operation, and Maintenance of Tactical Infrastructure, U.S. Department of Homeland Security, U.S. Customs and Border Protection, U.S. Border Patrol, Yuma Sector, Arizona

Dear Mr. Oh:

The Ak-Chin Cultural Resources Office did receive a letter dated July 1, 2008 regarding the above-referenced matter.

Our office does appreciate that, despite the Secretary of the Department of Homeland Security's waiver, the U.S. Customs and Border Protection (CBP) has stated and confirmed that it is committed to responsible environmental stewardship along the southwestern border and will continue to consult with Native American Tribes during the construction, operation, and maintenance of the tactical infrastructure. Our office will defer additional comments to the Tohono O'Odham Nation.

Thank you for informing our office about this important matter. If you have any questions, please contact me at (520) 568-1369.

Sincerely,

A handwritten signature in black ink that reads "Gary Gilbert".

Gary Gilbert
Cultural Resources Technician II
Cultural Resources Office
Ak-Chin Indian Community



OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

July 29, 2008

Robert F. Janson
Acting Executive Director
Facilities Management and Engineering
U.S. Customs and Border Protection
Department of Homeland Security
Washington, D.C. 20229

Subject: Environmental Stewardship Plans for the Construction, Operation, and Maintenance of Tactical Infrastructure, U.S. Border Patrol, Yuma, Tucson, and El Paso Sectors

Dear Mr. Janson:

This letter responds to your letters dated July 1st, 2nd, and 7th requesting information on potential environmental impacts to natural resources along the international boundary in Arizona and New Mexico, specifically within the Yuma, Tucson and El Paso Sector areas of operation. In January 2008, the United States Section, International Boundary and Water Commission (USIBWC) and the United States Customs and Border Protection (CBP) signed a Memorandum of Agreement (MOA) that formalizes the procedures and coordination among the two agencies in implementing their respective duties and missions along the international border (see attached).

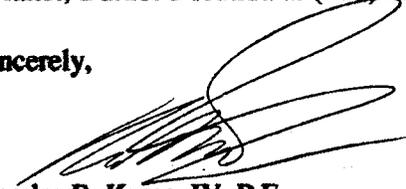
The USIBWC has a duty to access, maintain, and utilize the international boundary monuments along the U.S./Mexico international land boundary. The USIBWC is charged with these duties through treaties and international agreements between the United States and Mexico. We require that the proposed works and related facilities not affect the permanence (disturb the foundations) of existing boundary monuments nor impede access for their inspection and maintenance. In addition, any proposed construction must allow for line-of-sight visibility between each of the boundary monuments. The majority of the monuments along the international boundary are eligible for inclusion in the national register under Criterion A – a structure “...associated with events that have made a significant contribution to the broad patterns of our history.” Therefore we request that you provide full consideration to the monuments in your Environmental Stewardship Plans, and avoid or minimize any potential adverse effects.

The USIBWC requires that engineering drawings be submitted to the USIBWC for review and approval prior to beginning any construction near the international boundary. These drawings must show the location of each component in relation to the international boundary and the monuments. The USIBWC requires that all structures be offset from the international boundary by a minimum of 3 feet and allow a clear line-of-sight between any affected boundary monuments.

The USIBWC requests that proposed construction activities be accomplished in a manner that does not change historic surface runoff characteristics at the international border. The USIBWC will not approve any construction near the international boundary in the United States that increases, concentrates, or relocates overland drainage flows into either country. This requirement is intended to ensure that developments in one country will not cause damage to lands or resources in the other country. The USIBWC will need copies of any hydrological or hydraulic studies and site-specific drawings for work proposed in the vicinity of the international boundary, particularly if culverts, roads or other structures are proposed to be constructed in any drainage courses that cross the boundary. We will also require that you assure that structures constructed along the U.S./Mexico border are maintained in an adequate manner.

We look forward to participating in the development and review of the ESP's as they become available. If you have any questions regarding these comments, please call me at (915) 832-4741 or contact Environmental Protection Specialist, Daniel Borunda at (915) 832-4767.

Sincerely,



Charles B. Kruse, IV, P.E.
Chief, Planning & Integration Division

Attachment:
As Stated

cc: Scott Recinos, Chief Engineer
Secure Border Initiative Tactical Infrastructure
1300 Pennsylvania Avenue,
Washington DC 20299

**INTERAGENCY AGREEMENT BETWEEN
UNITED STATES CUSTOMS AND BORDER PROTECTION
AND
UNITED STATES SECTION, INTERNATIONAL BOUNDARY
AND WATER COMMISSION**

This Memorandum of Agreement (MOA) is made by and between the United States Section, International Boundary and Water Commission, United States and Mexico, an instrumentality of the United States federal government, hereinafter referred to as the "USIBWC," and United States Customs and Border Protection, a component of the Department of Homeland Security, hereinafter referred to as "CBP." Collectively the USIBWC and CBP are hereinafter referred to as the "PARTIES" to this MOA.

WITNESSETH

WHEREAS, the International Boundary and Water Commission (the "IBWC") is an officially recognized international organization pursuant to Executive Order 12467, and in which the United States participates pursuant to 22 U.S.C. §277 *et seq.*, and *inter alia* the 1889 International Boundary Convention (26 Stat. 1512) and 1944 Treaty between the United States and Mexico for the "Utilization of Waters of the Colorado, Tijuana and Rio Grande Rivers" (59 Stat. 1219) (the "1944 Treaty"); and

WHEREAS, the 1944 Treaty provides that the jurisdiction of the IBWC shall extend to the limitrophe parts of the Rio Grande and the Colorado River, to the land boundary between the two countries, and to works located upon their common boundary;

WHEREAS, the President is authorized pursuant to 22 U.S.C. Section §277b to construct any project or works which may be provided for in a treaty entered into with Mexico and to repair, protect, maintain or complete works now existing or now under construction or those that may be constructed under treaty provisions; to construct any project or works designed to facilitate compliance with the provisions of the treaties between the United States and Mexico; and to operate and maintain any project or works so constructed and provide rules and regulations for continuing supervision by the USIBWC; and

WHEREAS, the 1970 Treaty to "Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado Rivers as the International Boundary" between the United States and Mexico (the "1970 Boundary Treaty") provides that both governments will prohibit the construction of works in the channel of the rivers or within its territory, which, in the judgment of the IBWC, may cause deflection or obstruction of the normal flow of the Rio Grande and Colorado River or of their flood flows; and

WHEREAS, the Secretary of State, acting through the United States Commissioner of the USIBWC, is authorized by 22 U.S.C. §277(a) to conduct technical and other investigations relating to the defining, demarcation, fencing construction, or monumentation of the land and water boundary between the United States and Mexico; to

flood control, water resources, conservation, utilization of water, sanitation and prevention of pollution, channel rectification, stabilization, and other related matters upon the international boundary between the United States and Mexico; and to construct and maintain fences, monuments and other demarcations of the boundary line between the United States and Mexico; and

WHEREAS, CBP, as a component of the Department of Homeland Security, is authorized, pursuant to various provisions, including the Homeland Security Act of 2002, Pub. L. 107-296, codified at 6 U.S.C. §§ 101 *et seq.*, Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, as amended, 8 U.S.C. § 1103 and other Acts amendatory thereof and supplementary thereto, to control and guard the boundaries and borders of the United States against illegal border crossing activities, to install border infrastructure as needed to deter illegal crossings, and obtain operational control of the border; and

WHEREAS, this MOA is intended to provide for the coordination between the PARTIES in areas related to tactical infrastructure installation and utilization of land, floodways, levees and roads along the United States-Mexico border for security and law enforcement operations; and

WHEREAS, the intent of this MOA is to facilitate cooperation between the USIBWC and CBP in carrying out each party's responsibilities along the boundaries of the United States and the United Mexican States;

NOW THEREFORE, the USIBWC and CBP hereto agree as follows:

Article I. USIBWC'S RESPONSIBILITIES

The USIBWC agrees to the following:

- 1. USIBWC will cooperate with CBP in situations where CBP is conducting infrastructure construction or other security related activities at or near the U.S. - Mexico border that are subject to and/or implicate any provision of any law, treaty, or other legal requirement whose implementation is overseen by, under the jurisdiction of, or enforced by the USIBWC.**
- 2. Subject to the provisions of this MOA, USIBWC will grant and/or facilitate CBP's access to property under USIBWC jurisdiction, including levee gates, areas with restricted access, and/or other areas under USIBWC control, for the purposes of securing the border, to include tracking, surveillance, interdiction, establishment of observation points, and installation of fences, roads, vehicle deterrent barriers, remote detection systems, and other related tactical infrastructure. However, nothing set forth in this MOA should be construed to restrict, limit, or otherwise affect CBP's statutory authority to access lands for the**

purposes of patrolling the border and/or otherwise carry out its statutory mission to control and guard the borders and boundaries of the United States.

3. For each geographic region where CBP activities and/or projects are subject to terms and conditions of this MOA, USIBWC will provide a representative, and an alternate representative in case of emergency, authorized to act as the main point of contact regarding any provision in this MOA.
4. USIBWC will review and comment on CBP projects along the U.S.-Mexico border assuring expedited comments and revisions. USIBWC will strive to provide comments within three business days of receipt. Issues and concerns identified by the USIBWC that may delay or impede the construction of CBP infrastructure projects along the border will be elevated as necessary for resolution by leadership of the USIBWC and CBP.
5. In those instances where the USIBWC deems it appropriate to notify the Mexican Section of the IBWC (MXIBWC) of CBP projects or activities, the timing of any such notification will be coordinated between the PARTIES so that the notification takes place at a time that is mutually agreeable to both PARTIES. For construction activities on the western land boundary with no cross-boundary drainage issues, USIBWC will provide the MXIBWC courtesy notification of the proposed project. For construction activities on areas covered by the 1970 Boundary Treaty, USIBWC will endeavor to expedite its coordination with MXIBWC. It is understood that USIBWC cannot guarantee a timeline for MXIBWC response.
6. USIBWC will strive to perform a verification of the boundary in an expedited manner by coordinating with the MXIBWC with the understanding that verification must occur in a timely manner.
7. In the event of emergency flood operations, USIBWC will notify CBP at the earliest possible opportunity that it is invoking its right to remove or order removal of CBP infrastructure in order to gain access to project areas.

Article II. CBP'S RESPONSIBILITIES

CBP agrees to the following:

1. CBP will cooperate with the USIBWC in situations where CBP is conducting infrastructure construction or other security related activities at or near the U.S.-Mexico border that are subject to and/or implicate any provision of any law, treaty, or other legal requirement whose implementation is overseen by, under the jurisdiction of, or enforced by the USIBWC.
2. CBP will consult with the USIBWC as needed before construction of tactical infrastructure at or near the U.S.-Mexico border. CBP will ensure that there is a

three-foot setback from and gated access to the boundary monuments so as to not impede the ability of USIBWC to undertake periodic maintenance of its land-boundary markers or monuments. CBP will not undertake construction of works in the channel of the boundary rivers or within U.S. territory, which in the judgment of the USIBWC would cause deflection or obstruction of the normal flow of the Rio Grande and Colorado River or of their flood flows.

- 3. CBP will provide USIBWC all necessary information regarding construction and environmental review activities along the U.S.-Mexico border in an expedited manner. CBP will strive to provide comments within three business days of request of information. Issues and concerns identified by CBP that may delay or impede the construction of CBP infrastructure along the border will be elevated for resolution by leadership for the USIBWC and CBP.**
- 4. CBP will endeavor to take the proper measures to protect existing USIBWC levees and hydraulic structures. In the event of any damage incurred as a direct result of CBP infrastructure changes to such levees or structures, CBP will restore the damaged levees and hydraulic structures to a condition equal to that existing before such damage in a timely manner. CBP will ensure that the U.S. Army Corps of Engineers will have documented the conditions of levees and hydraulic structures prior to any CBP construction efforts related to SBI infrastructure.**
- 5. In the event of emergency flood operations, any repair or replacement of CBP infrastructure removed for flood control purposes would be repaired and replaced at CBP expense. USIBWC will assist where possible in the reinstallation of any CBP infrastructure damaged or removed during flood control operations.**
- 6. CBP will consult with the USIBWC to coordinate the location, placement, design and hydraulic impact of fences, roads, vehicle deterrent barriers and, to the extent its location and placement may be disclosed and is not law enforcement sensitive information, other related tactical infrastructures that it plans to install or construct on the US-Mexico border. CBP agrees that the location and placement of such fences, roads, vehicle deterrent barriers, and other related tactical infrastructure will be subject to review and approval by the USIBWC to ensure construction is within U.S. territorial limits and does not obstruct the boundary line of sight between monuments or cause deflection or obstruction of the normal flow of transboundary creeks, arroyos, rivers or their flood flows or impede the operation of IBWC binational projects or activities. CBP will be responsible for ensuring environmental regulatory compliance for CBP infrastructure.**
- 7. CBP will perform the required maintenance to remove accumulated debris from water crossings where CBP infrastructure crosses the path of transboundary flows.**

8. **CBP will be responsible for any liabilities, costs, claims, or expenses arising out of CBP employees' or contractors' activities along the U.S. – Mexico border that are subject to this MOA. USIBWC will be responsible for any liabilities, claims, costs or expenses arising out of activities undertaken by USIBWC employees or contractors that result in damage to the fences, roads, vehicle deterrent barriers, or other tactical infrastructure that is subject to this MOA. USIBWC will not be responsible for any damage to such fences, roads, vehicle deterrent barriers, or other tactical infrastructure due to flood or force majeure events.**
9. **CBP will coordinate and not interfere with the USIBWC, its employees, contractors or agents performing work on behalf of the USIBWC.**
10. **CBP will consult with USIBWC to coordinate the work needed to control the vegetation impeding DHS's ability to conduct border security operations along the U.S.-Mexico border.**
11. **CBP will provide a representative, and an alternate representative in case of emergency, authorized to act as the main point of contact with regard to any provision in Articles I and II of this MOA in each geographic area where work is to be performed.**
12. **DHS will respond appropriately to terrorist or criminal attacks and/or threats requiring emergency law enforcement action as a part of its core mission and CBP will coordinate with local law enforcement entities where necessary. When requested, and where operationally feasible, CBP will coordinate a security presence for USIBWC employees and contractors during maintenance activities.**
13. **CBP will be the sole owner of infrastructure constructed by CBP pursuant to U.S. law. Consequently, CBP, as the executive agent for DHS border infrastructure, will own, operate and fund all maintenance, construction and upgrades necessary to keep said CBP-owned infrastructure operational. This agreement does not effect the allocation of responsibility for the maintenance, operation, and upgrade of infrastructure owned by or under the jurisdiction of the USIBWC which has been coordinated between the PARTIES and memorialized in separate agreement(s) pursuant to Article V, Section 4 of this MOA.**

Article III. DURATION AND MODIFICATION OF MOA

This MOA will take effect when signed by the PARTIES hereto and shall remain in effect unless terminated, in writing, by either PARTY after 60 days notice. This MOA may be modified at any time by written agreement of both PARTIES, and does not restrict either PARTY from enforcing any laws within its authority or jurisdiction.

Article IV. INTERAGENCY COMMUNICATIONS

To provide for consistent, recurring, and effective communication between both PARTIES, each PARTY shall immediately designate representatives to serve as the points of contact on all matters relating to this MOA. Each PARTY will advise the other PARTY, in writing, of the names and telephone numbers of the representative designated within 10 calendar days of the MOA's execution.

Article V. MISCELLANEOUS PROVISIONS

1. Nothing in this MOA may be construed to obligate the Parties or the United States to any current or future expenditure of funds in advance of the availability of appropriations, nor does this MOA obligate the agencies or the United States to spend funds for any particular project or purpose, even if funds are available.
2. This MOA is to be implemented consistent with the statutory and treaty provisions pursuant to which the PARTIES undertake their activities. Nothing in this MOA will be construed as affecting the authority or jurisdiction of either Party in carrying out its responsibilities under applicable statutes or treaties.
3. This document is an intra-governmental agreement among the PARTIES and does not create or confer any rights, privileges, or benefits upon any person, party, or entity. This MOA is not and shall not be construed as a rule or regulation.
4. This MOA will provide the basis for more detailed, project specific agreements between CBP and USIBWC for USIBWC projects along the U.S.-Mexico border. This MOA will not affect existing agreements between CBP and USIBWC for USIBWC projects along the U.S.-Mexico border.
5. In carrying out the provisions of this MOA, the PARTIES shall not release or disclose to any third party, any and all information that is pre-decisional, law enforcement sensitive, classified, or otherwise protected or sensitive information that relates to the construction, alignment, or placement of existing and/or proposed border infrastructure, including observation points, fences, roads, vehicle deterrent barriers, remote detection systems, and other related tactical infrastructure. The PARTIES shall also be prohibited from releasing or disclosing to any third party, any and all information that is pre-decisional, law enforcement sensitive, classified, or otherwise protected or sensitive information concerning existing or proposed border enforcement operations, activities, or constructs. In those instances where the USIBWC deems it appropriate to notify the Mexican Section of the IBWC (MXIBWC) of CBP projects or activities, the USIBWC will consult with CBP regarding the timing of any such notification or coordination with the MXIBWC so that contact with the MXIBWC is initiated at a time that is mutually agreeable to both PARTIES.

6. When appropriate and necessary the PARTIES will enter into specific reimbursable agreements for work performed by one Party on behalf of the other pursuant to the Economy Act, 31 U.S.C. Section 1535.

IN WITNESS WHEREOF, the PARTIES hereto execute this instrument on the date(s) set forth below:

FOR U.S. CUSTOMS AND BORDER PROTECTION

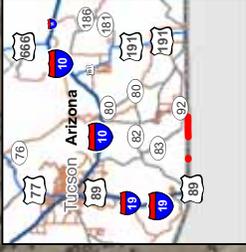
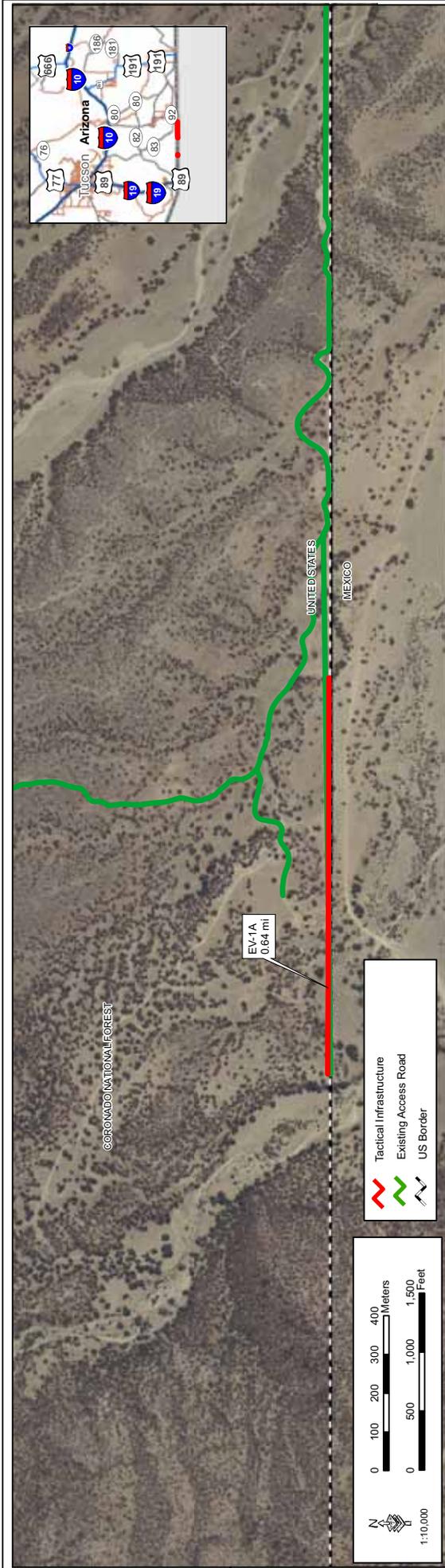
DATE: 1/18/08 W. Ralph Basham
W. Ralph Basham
Commissioner,
U. S. Customs and Border Protection,
Department of Homeland Security

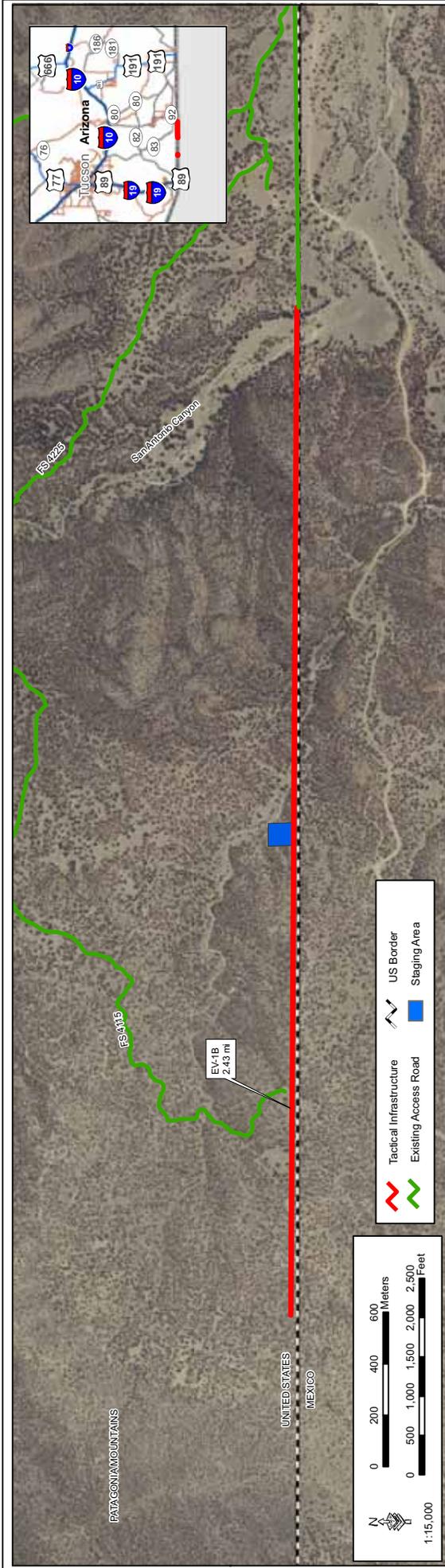
**FOR UNITED STATES SECTION, INTERNATIONAL BOUNDARY AND
WATER
COMMISSION, UNITED STATES AND MEXICO**

DATE: 12/08/07 Carlos Marin
Carlos Marin,
Commissioner,
United States Section,
International Boundary and Water Commission
United States and Mexico

APPENDIX C
Detailed Project Maps







EV-1B Project Area

APPENDIX D
Biological Survey Report

Letter Report for
Biological Surveys of VF300
Sections EV-1A, EV-1B
Tucson Sector, Sonoita Station

Date Surveyed: 22 and 23 April, 2008
Climate: Slightly overcast, calm winds, 95 degrees F

Attendees:
Michael Hodson - Gulf South Research Corporation
Josh McEnany - Gulf South Research Corporation
Chris Ingram - Gulf South Research Corporation

The project corridor was surveyed by three Gulf South Research Corporation (GSRC) biologists in April of 2008. The EV-1A segments consisted of existing vehicle fence and a border road and no biological resource were observed. The EV-1B segments consisted of Manzanita Scrub and Oak Woodland communities.

The Manzanita Scrub community was abundant on ridge tops and slopes at higher elevations in the western portion of the EV-1. This community consisted of monotypic stands of point-leaf manzanita (*Arctostaphylos patula*) at high densities. Grasses and forbs were sparse, although canyon grape (*Vitis arizonica*) was often found on slopes and in disturbed areas.

At lower elevations in the Patagonia Mountain foothills, within the western section of the EV-1B segment, a more open Oak Woodland community replaced Manzanita Scrub. This community was composed of large oaks forming an open canopy with a moderate cover of grasses, forbs, and cacti on the woodland floor. Mexican blue oak (*Quercus oblongifolia*) was the most common tree species throughout this community. Shrub live oak (*Q. turbinella*), squaw bush (*Rhus trilobata*), cholla (*Opuntia fulgida*), and alligator juniper (*Juniperus deppeana*) were also found at higher elevations. Honey mesquite (*Prosopis glandulosa*) was often found at lower elevations. The Oak Woodland community was also observed within the eastern section of the EV-1B segment in the foothills of the Huachuca Mountains. Here, the canopy is nearly closed and vegetation diversity is lower.

Several stock tanks were observed within 0.1 miles of access roads planned to be used during construction and within 0.1 miles of the EV-1A segment. These stock tanks

provide potential habitat for Chiricahua leopard frogs and Sonoran tiger salamander. Suitable habitat for the Mexican spotted owl occurs within both the eastern and western sections of the EV-1B segment. Critical Habitat for the Mexican spotted owl is located within 1.9 miles of the western EV-1B segment and within the entire 0.42 mile length of the eastern EV-1B segment. Additionally, the 2 acre staging area associated with the western section of the EV-1B segment is within Critical Habitat. The nearest known Mexican spotted owl primary activity centers (PAC)s are located 1.7 miles north of planned construction activity within the western section of the EV-1B segment

APPENDIX E
Air Quality Calculations / Emissions Calculations

CALCULATION SHEET-COMBUSTABLE EMISSIONS-PLANNED ACTION - SANTA CRUZ COUNTY

Assumptions for Combustable Emissions						
Type of Construction Equipment	Num. of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs	
Water Truck	2	300	12	30	216000	
Diesel Road Compactors	2	100	12	30	72000	
Diesel Dump Truck	3	300	12	30	324000	
Diesel Excavator	2	300	12	30	216000	
Diesel Hole Cleaners/Trenchers	0	175	12	30	0	
Diesel Bore/Drill Rigs	0	300	12	30	0	
Diesel Cement & Mortar Mixers	0	300	12	30	0	
Diesel Cranes	3	175	12	30	189000	
Diesel Graders	2	300	12	30	216000	
Diesel Tractors/Loaders/Backhoes	2	100	12	30	72000	
Diesel Bull Dozers	2	300	12	30	216000	
Diesel Front End Loaders	2	300	12	30	216000	
Diesel Fork Lifts	4	100	12	30	144000	
Diesel Generator Set	3	40	12	30	43200	

Emission Factors							
Type of Construction Equipment	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	PM-10 g/hp-hr	PM-2.5 g/hp-hr	SO2 g/hp-hr	CO2 g/hp-hr
Water Truck	0.440	2.070	5.490	0.410	0.400	0.740	536.000
Diesel Road Compactors	0.370	1.480	4.900	0.340	0.330	0.740	536.200
Diesel Dump Truck	0.440	2.070	5.490	0.410	0.400	0.740	536.000
Diesel Excavator	0.340	1.300	4.600	0.320	0.310	0.740	536.300
Diesel Trenchers	0.510	2.440	5.810	0.460	0.440	0.740	535.800
Diesel Bore/Drill Rigs	0.600	2.290	7.150	0.500	0.490	0.730	529.700
Diesel Cement & Mortar Mixers	0.610	2.320	7.280	0.480	0.470	0.730	529.700
Diesel Cranes	0.440	1.300	5.720	0.340	0.330	0.730	530.200
Diesel Graders	0.350	1.360	4.730	0.330	0.320	0.740	536.300
Diesel Tractors/Loaders/Backhoes	1.850	8.210	7.220	1.370	1.330	0.950	691.100
Diesel Bull Dozers	0.360	1.380	4.760	0.330	0.320	0.740	536.300
Diesel Front End Loaders	0.380	1.550	5.000	0.350	0.340	0.740	536.200
Diesel Fork Lifts	1.980	7.760	8.560	1.390	1.350	0.950	690.800
Diesel Generator Set	1.210	3.760	5.970	0.730	0.710	0.810	587.300

CALCULATION SHEET-COMBUSTABLE EMISSIONS-PLANNED ACTION - SANTA CRUZ COUNTY

Emission factors (EF) were generated from the NONROAD2005 model for the 2006 calendar year. The VOC EFs includes exhaust and evaporative emissions. The VOC evaporative components included in the NONROAD2005 model are diurnal, hotsoak, running loss, tank permeation, hose permeation, displacement, and spillage. The construction equipment age distribution in the NONROAD2005 model is based on the population in U.S. for the 2006 calendar year.

Emission Calculations									
Type of Construction Equipment	VOC tons/yr	CO tons/yr	NOx tons/yr	PM-10 tons/yr	PM-2.5 tons/yr	SO2 tons/yr	CO2 tons/yr		
Water Truck	0.105	0.493	1.307	0.098	0.095	0.176	127.585		
Diesel Road Paver	0.029	0.117	0.389	0.027	0.026	0.059	42.544		
Diesel Dump Truck	0.157	0.739	1.960	0.146	0.143	0.264	191.378		
Diesel Excavator	0.081	0.309	1.095	0.076	0.074	0.176	127.657		
Diesel Hole Cleaners/Trenchers	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Diesel Bore/Drill Rigs	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Diesel Cement & Mortar Mixers	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Diesel Cranes	0.092	0.271	1.191	0.071	0.069	0.152	110.429		
Diesel Graders	0.083	0.324	1.126	0.079	0.076	0.176	127.657		
Diesel Tractors/Loaders/Backhoes	0.147	0.651	0.573	0.109	0.106	0.075	54.835		
Diesel Bull Dozers	0.086	0.328	1.133	0.079	0.076	0.176	127.657		
Diesel Front End Loaders	0.090	0.369	1.190	0.083	0.081	0.176	127.633		
Diesel Aerial Lifts	0.314	1.231	1.358	0.221	0.214	0.151	109.622		
Diesel Generator Set	0.058	0.179	0.284	0.035	0.034	0.039	27.959		
Total Emissions	1.242	5.012	11.607	1.022	0.994	1.620	1174.954		

Conversion factors	
Grams to tons	1.102E-06

CALCULATION SHEET-TRANSPORTATION COMBUSTABLE EMISSIONS-PLANNED ACTION-SANTA CRUZ COUNTY

Construction Worker/Personal Vehicle Commuting to Construction Sight-Passenger and Light Duty Trucks									
Pollutants	Emission Factors			Assumptions			Results by Pollutant		
	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of cars	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	1.36	1.61	60	200	40	40	0.72	0.85	1.57
CO	12.4	15.7	60	200	40	40	6.56	8.30	14.86
NOx	0.95	1.22	60	200	40	40	0.50	0.65	1.15
PM-10	0.0052	0.0065	60	200	40	40	0.00	0.00	0.01
PM 2.5	0.0049	0.006	60	200	40	40	0.00	0.00	0.01

Heavy Duty Trucks Delivery Supply Trucks to Construction Sight									
Pollutants	Emission Factors			Assumptions			Results by Pollutant		
	10,000-19,500 lb Delivery Truck	33,000-60,000 lb semi trailer rig	Mile/day	Day/yr	Number of trucks	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	0.29	0.55	60	200	6	6	0.02	0.04	0.07
CO	1.32	3.21	60	200	6	6	0.10	0.25	0.36
NOx	4.97	12.6	60	200	6	6	0.39	1.00	1.39
PM-10	0.12	0.33	60	200	6	6	0.01	0.03	0.04
PM 2.5	0.13	0.36	60	200	6	6	0.01	0.03	0.04

Construction Worker/Personal Vehicle Commuting to Construction Sight-Passenger and Light Duty Trucks									
Pollutants	Emission Factors			Assumptions			Results by Pollutant		
	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of cars	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	1.36	1.61	60	0	0	0	-	0.00	-
CO	12.4	15.7	60	0	0	0	-	0.00	-
NOx	0.95	1.22	60	0	0	0	-	0.00	-
PM-10	0.0052	0.0065	60	0	0	0	-	0.00	-
PM 2.5	0.0049	0.006	60	0	0	0	-	0.00	-

POV Source: USEPA 2005 Emission Facts: Average annual emissions and fuel consumption for gasoline-fueled passenger cars and light trucks. EPA 420-F-05-022 August 2005. Emission rates were generated using MOBILE.6 highway vehicle emission factor model.
 Fleet Characterization: 20 POVs commuting to work were 50% are pick up trucks and 50% passenger cars

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19 ton PM10/acre-month	MRI 1996; EPA 2001; EPA 2006	
New Road Construction	0.42 ton PM10/acre-month	MRI 1996; EPA 2001; EPA 2006	

PM2.5 Emissions

PM2.5 Multiplier 0.10 (10% of PM10 emissions assumed to be PM2.5) EPA 2001; EPA 2006

Control Efficiency

0.50 (assume 50% control efficiency for PM10 and PM2.5 emissions) EPA 2001; EPA 2006

Project Assumptions

	Conversion Factors	
Vehicle Fence (0.19 ton PM10/acre-month)		
Duration of Construction Project	3 months	acres per feet
Length	12 miles	feet per mile
Length (converted)	63360 feet	
Width	60 feet	
Area	87.27 acres	

New Road Construction (0.42 ton PM10/acre-month)

Duration of Construction Project	3 months
Length	2.4 miles
Length (converted)	12672 feet
Width	120 feet
Area	34.91 acres

	Project Emissions (tons/year)		
	PM10 uncontrolled	PM10 controlled	PM2.5 uncontrolled
Road Improvements	49.75	24.87	4.97
Fence and New Road Construction	43.99	21.99	4.40
Total	93.73	46.87	9.37
			4.69

References:

- EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
- EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
- MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

VF 300 Fugitive Dust Emissions Model

General Construction Activities Emission Factors

0.19 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM10/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM10/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM10/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM10/acre-month) and 75% of the average emission factor (0.11 ton PM10/acre-month). The 0.19 ton PM10/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM10/acre-month emission factor represents a refinement of EP

New Road Construction Emission Factor

0.42 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM10/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

PM2.5 Multiplier

0.10

PM2.5 emissions are estimated by applying a particle size multiplier of 0.10 to PM10 emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM10 and PM2.5

0.50

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas. Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

CALCULATION SHEET-SUMMARY OF EMISSIONS-PLANNED ACTION-SANTA CRUZ COUNTY

Proposed Action Construction Emissions for Criteria Pollutants (tons per year)						
Emission source	VOC	CO	NOx	PM-10	PM-2.5	SO ₂
Combustible Emissions	1.24	5.01	11.61	1.02	0.99	1.62
Construction Site-fugitive PM-10	NA	NA	NA	46.87	9.37	NA
Construction Workers Commuter & Trucking	1.64	15.22	2.54	0.04	0.04	NA
Total emissions	2.88	20.24	14.15	47.93	10.41	1.62
De minimis threshold	NA	NA	NA	100.00	NA	NA

CALCULATION SHEET-COMBUSTABLE EMISSIONS-PLANNED ACTION - COCHISE COUNTY

Assumptions for Combustable Emissions						
Type of Construction Equipment	Num. of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs	
Water Truck	2	300	12	90	648000	
Diesel Road Compactors	2	100	12	90	216000	
Diesel Dump Truck	3	300	12	90	972000	
Diesel Excavator	2	300	12	90	648000	
Diesel Hole Cleaners/Trenchers	0	175	12	90	0	
Diesel Bore/Drill Rigs	0	300	12	90	0	
Diesel Cement & Mortar Mixers	0	300	12	90	0	
Diesel Cranes	3	175	12	90	567000	
Diesel Graders	2	300	12	90	648000	
Diesel Tractors/Loaders/Backhoes	2	100	12	90	216000	
Diesel Bull Dozers	2	300	12	90	648000	
Diesel Front End Loaders	2	300	12	90	648000	
Diesel Fork Lifts	4	100	12	90	432000	
Diesel Generator Set	3	40	12	90	129600	

Emission Factors							
Type of Construction Equipment	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	PM-10 g/hp-hr	PM-2.5 g/hp-hr	SO2 g/hp-hr	CO2 g/hp-hr
Water Truck	0.440	2.070	5.490	0.410	0.400	0.740	536.000
Diesel Road Compactors	0.370	1.480	4.900	0.340	0.330	0.740	536.200
Diesel Dump Truck	0.440	2.070	5.490	0.410	0.400	0.740	536.000
Diesel Excavator	0.340	1.300	4.600	0.320	0.310	0.740	536.300
Diesel Trenchers	0.510	2.440	5.810	0.460	0.440	0.740	535.800
Diesel Bore/Drill Rigs	0.600	2.290	7.150	0.500	0.490	0.730	529.700
Diesel Cement & Mortar Mixers	0.610	2.320	7.280	0.480	0.470	0.730	529.700
Diesel Cranes	0.440	1.300	5.720	0.340	0.330	0.730	530.200
Diesel Graders	0.350	1.360	4.730	0.330	0.320	0.740	536.300
Diesel Tractors/Loaders/Backhoes	1.850	8.210	7.220	1.370	1.330	0.950	691.100
Diesel Bull Dozers	0.360	1.380	4.760	0.330	0.320	0.740	536.300
Diesel Front End Loaders	0.380	1.550	5.000	0.350	0.340	0.740	536.200
Diesel Fork Lifts	1.980	7.760	8.560	1.390	1.350	0.950	690.800
Diesel Generator Set	1.210	3.760	5.970	0.730	0.710	0.810	587.300

CALCULATION SHEET-COMBUSTABLE EMISSIONS-PLANNED ACTION - COCHISE COUNTY

Emission factors (EF) were generated from the NONROAD2005 model for the 2006 calendar year. The VOC EFs includes exhaust and evaporative emissions. The VOC evaporative components included in the NONROAD2005 model are diurnal, hotsoak, running loss, tank permeation, hose permeation, displacement, and spillage. The construction equipment age distribution in the NONROAD2005 model is based on the population in U.S. for the 2006 calendar year.

Emission Calculations									
Type of Construction Equipment	VOC tons/yr	CO tons/yr	NOx tons/yr	PM-10 tons/yr	PM-2.5 tons/yr	SO2 tons/yr	CO2 tons/yr		
Water Truck	0.314	1.478	3.920	0.293	0.286	0.528	382.755		
Diesel Road Paver	0.088	0.352	1.166	0.081	0.079	0.176	127.633		
Diesel Dump Truck	0.471	2.217	5.881	0.439	0.428	0.793	574.133		
Diesel Excavator	0.243	0.928	3.285	0.229	0.221	0.528	382.970		
Diesel Hole Cleaners/Trenchers	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Diesel Bore/Drill Rigs	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Diesel Cement & Mortar Mixers	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Diesel Cranes	0.275	0.812	3.574	0.212	0.206	0.456	331.287		
Diesel Graders	0.250	0.971	3.378	0.236	0.229	0.528	382.970		
Diesel Tractors/Loaders/Backhoes	0.440	1.954	1.719	0.326	0.317	0.226	164.504		
Diesel Bull Dozers	0.257	0.985	3.399	0.236	0.229	0.528	382.970		
Diesel Front End Loaders	0.271	1.107	3.570	0.250	0.243	0.528	382.898		
Diesel Aerial Lifts	0.943	3.694	4.075	0.662	0.643	0.452	328.865		
Diesel Generator Set	0.173	0.537	0.853	0.104	0.101	0.116	83.878		
Total Emissions	3.725	15.037	34.820	3.067	2.981	4.861	3524.862		

Conversion factors	
Grams to tons	1.102E-06

CALCULATION SHEET-TRANSPORTATION COMBUSTABLE EMISSIONS-PLANNED ACTION-COCHISE COUNTY

Construction Worker Personal Vehicle Commuting to Construction Sight-Passenger and Light Duty Trucks									
Pollutants	Emission Factors			Assumptions			Results by Pollutant		
	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of cars	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	1.36	1.61	60	90	40	40	0.32	0.38	0.71
CO	12.4	15.7	60	90	40	40	2.95	3.74	6.69
NOx	0.95	1.22	60	90	40	40	0.23	0.29	0.52
PM-10	0.0052	0.0065	60	90	40	40	0.00	0.00	0.00
PM 2.5	0.0049	0.006	60	90	40	40	0.00	0.00	0.00

Heavy Duty Trucks Delivery Supply Trucks to Construction Sight									
Pollutants	Emission Factors			Assumptions			Results by Pollutant		
	10,000-19,500 lb Delivery Truck	33,000-60,000 lb semi trailer rig	Mile/day	Day/yr	Number of trucks	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	0.29	0.55	60	90	6	6	0.01	0.02	0.03
CO	1.32	3.21	60	90	6	6	0.05	0.11	0.16
NOx	4.97	12.6	60	90	6	6	0.18	0.45	0.63
PM-10	0.12	0.33	60	90	6	6	0.00	0.01	0.02
PM 2.5	0.13	0.36	60	90	6	6	0.00	0.01	0.02

Construction Worker Personal Vehicle Commuting to Construction Sight-Passenger and Light Duty Trucks									
Pollutants	Emission Factors			Assumptions			Results by Pollutant		
	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of cars	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	1.36	1.61	60	0	0	0	-	0.00	-
CO	12.4	15.7	60	0	0	0	-	0.00	-
NOx	0.95	1.22	60	0	0	0	-	0.00	-
PM-10	0.0052	0.0065	60	0	0	0	-	0.00	-
PM 2.5	0.0049	0.006	60	0	0	0	-	0.00	-

POV Source: USEPA 2005 Emission Facts: Average annual emissions and fuel consumption for gasoline-fueled passenger cars and light trucks. EPA 420-F-05-022 August 2005. Emission rates were generated using MOBILE.6 highway vehicle emission factor model.
 Fleet Characterization: 20 POVs commuting to work were 50% are pick up trucks and 50% passenger cars

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19 ton PM10/acre-month		MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42 ton PM10/acre-month		MRI 1996; EPA 2001; EPA 2006

PM2.5 Emissions

PM2.5 Multiplier 0.10 (10% of PM10 emissions assumed to be PM2.5) EPA 2001; EPA 2006

Control Efficiency

0.50 (assume 50% control efficiency for PM10 and PM2.5 emissions) EPA 2001; EPA 2006

Project Assumptions

Vehicle Fence (0.19 ton PM10/acre-month)
 Duration of Construction Project 3 months
 Length 10 miles
 Length (converted) 5280 feet
 Width 60 feet
 Area 72.73 acres
 Conversion Factors 0.000022957 acres per feet
 5280 feet per mile

Fence and New Road Construction (0.42 ton PM10/acre-month)

Duration of Construction Project 3 months
 Length 0.42 miles
 Length (converted) 2218 feet
 Width 120 feet
 Area 6.11 acres

	Project Emissions (tons/year)		
	PM10 uncontrolled	PM10 controlled	PM2.5 uncontrolled
Road Improvements	41.45	20.73	4.15
Fence and New Road Construction	7.70	3.85	0.77
Total	49.15	24.58	4.92
			2.07
			0.38
			2.46

References:

- EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
- EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
- MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

VF 300 Fugitive Dust Emissions Model

General Construction Activities Emission Factors

0.19 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM10/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM10/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM10/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM10/acre-month) and 75% of the average emission factor (0.11 ton PM10/acre-month). The 0.19 ton PM10/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM10/acre-month emission factor represents a refinement of EP

New Road Construction Emission Factor

0.42 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM10/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

PM2.5 Multiplier

0.10

PM2.5 emissions are estimated by applying a particle size multiplier of 0.10 to PM10 emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM10 and PM2.5

0.50

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas. Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

CALCULATION SHEET-SUMMARY OF EMISSIONS-PLANNED ACTION-COCHISE COUNTY

Proposed Action Construction Emissions for Criteria Pollutants (tons per year)							
Emission source	VOC	CO	NOx	PM-10	PM-2.5	SO ₂	
Combustible Emissions	3.73	15.04	34.82	3.07	2.98	4.86	
Construction Site-fugitive PM-10	NA	NA	NA	24.58	4.92	NA	
Construction Workers Commuter & Trucking	0.74	6.85	1.14	0.02	0.02	NA	
Total emissions	4.46	21.89	35.96	27.66	7.92	4.86	
De minimis threshold	NA	NA	NA	NA	NA	NA	

APPENDIX F
List of Sensitive Species



U.S. Forest Service Sensitive Species List

Taxon	Elevation (feet)	Habitat
BIRDS		
Northern gray hawk <i>Asturina nitida maxima</i>		Riparian woodlands with large trees (cottonwoods), usually near mesquite forests. Sonoran Riparian Deciduous Forest and Woodlands and to a lesser extent in Madrean Evergreen Woodland.
Northern aplomado falcon <i>Falco temoralis septentrionalis</i>	3,300 -4,900	Grassland and savannah.
Eared trogon <i>Euptilotis neoxenus</i>	3,400 -6,800	Canyons with sufficient water flow for sycamore trees in riparian areas, and are vegetated by pines and oaks.
Bald eagle <i>Haliaeetus leucocephalus</i>		Large trees or cliffs near water (reservoirs, rivers, and streams) with abundant prey.
California brown pelican <i>Pelicanus occidentalis californicus</i>		Many Arizona lakes and rivers.
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>		Cottonwood/willow and tamarisk vegetation communities along rivers and streams.
Cactus ferruginous pygmy-owl <i>Glaucidium brasilianum cactorum</i>		Mature cottonwood/willow, mesquite bosques, and Sonoran desertscrub, usually with saguaros on nearby slopes. Less often it has been found along dry washes where large mesquite, paloverde, ironwood, and saguaro thrive.
Bell's vireo <i>Vireo bellii</i>		Lowland riparian areas with willows, mesquite, and seepwillows. The vireo prefers dense, low, shrubby vegetation in riparian areas.
Northern goshawk <i>Accipiter gentilis apache</i>		Old-growth forests; closed canopy Madrean Oak and Mexican pine-oak woodlands.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	90 - 6,710	Large blocks of riparian woodlands (Cottonwood, willow, or tamarisk galleries).
Mexican spotted owl <i>Strix occidentalis lucida</i>	1,300 - 4,000	Nests in canyons and dense forests with multi-layered foliage structure.
Masked bobwhite quail <i>Colinus virginianus ridgwayi</i>	3,090 - 3,720	Desert grasslands with diversity of dense native grasses, forbs, and brush.
American peregrine falcon <i>Falco peregrinus anatum</i>	3,500 - 9,000	Large cliffs overlooking chaparral, pinyon/juniper woodland, conifer forest, and riparian vegetation provide high-quality nesting/roosting and foraging habitat for this species.
Gould's wild turkey <i>Meleagris gallopavo mexicana</i>	4,500 - 6,500	Steep and rocky canyons.
INSECTS		
Ursine giant skipper <i>Megathymus ursus</i>	3,500 - 3,680	Grassy shrubland and open yucca-oak woodland.
A Tiger beetle <i>Amblycheila baroni</i>	3500 -5500	Oak grassland, frequently in areas with large rocks.
Mexican meadowfly <i>Sympetrum signiferum</i>	4,700-6,000	Slow flowing creeks, vegetated stream pools.
Pima orange tip <i>Anthocharis pima</i>	1,060 - 4,400	Sonoran and Chihuahuan desertscrub, and range barely into grassland.

Taxon	Elevation (feet)	Habitat
Obsolete viceroy <i>Limenitis archippus obsoleta</i>	2,040 - 4,100	Riparian areas in the Coronado National Forest below 1800m with healthy, extensive stands of <i>Salix gooddingii</i> .
Arizona metalmark <i>Calephelis arizonensis</i>	2,350 - 5,500	Encountered up off of the desert floor in the lower stretches of the mountains. Within these mountains it is found in riparian canyons in oak woodland or even more arid regions. Canyons with standing water for a good portion of the year appear to contain populations of this species as long as <i>Bidens</i> sp., a plant of riparian affinity, is present.
Poling's giant skipper <i>Agathymus polingi</i>	4,240 - 6,877	Open, rocky flats and slopes near stands of <i>Agave schottii</i> . It frequents dry, shindagger-covered hills of SE Arizona, sometimes in great numbers.
Arizona cave amphipod <i>Stygobromus arizonensis</i>	5,245	Aquatic habitats in subterranean caves and mine tunnels.
Blue silverspot butterfly <i>Speyeria nokomis coerulescens</i>	Above 5,000	Spring-fed meadows, in Chihuahua with violet laden, fern covered hillsides above moist canyon bottoms in pine forests.
Evansi brigadier <i>Agathymus evensii</i>	Above 5,900	Mixed pine, oak, and juniper stands in association with <i>Agave parryi</i> .
Chiricahua white <i>Neophasia terlootii</i>	Above 6,234	Pine forests.
Scudder's dusky wing <i>Erynnis scudderi</i>	Above 6,562	Higher elevation oak woodland.
MAMMALS		
Jaguarundi <i>Felis yagouaroundi tolteca</i>		Dense shrubbery and thickets, and on the edge of forests.
Ocelot <i>Felis pardalis</i>	Below 4,000	Subtropical thorn forest, thorn scrub and dense brushy thickets, often in riparian bottomland. Also likes rocky areas.
Lesser long-nosed bat <i>Leptonycteris curasoae yerbabuena</i>	1,190 - 7,320	Forage in areas of saguaro, ocotillo, paloverde, prickly pear and organ pipe cactus and later in the summer among agaves.
Southern pocket gopher <i>Thomomys umbrinus intermedius</i>	Below 6,000	Oak woodland belt shallow and rocky soils.
Jaguar <i>Panthera onca</i>	1,000 -3,500	Riparian bottomlands, which historically were cottonwood-willow forests, extensive mesquite bosques, adjacent desert foothills, low rocky mountains, canyons, and remote undisturbed areas.
Mexican gray wolf <i>Canis lupus baileyi</i>	3,000 - 12,000	Ecosystems that contain a variety of forest successional stages.
Black-footed ferret <i>Mustela nigripes</i>	5,250 -6,234	Arid prairies; An estimated 40-60 ha of prairie dog colony is needed to support 1 ferret.
Arizona shrew <i>Sorex arizonae</i>	8,200 - 9,630	Common in boreal and montane riparian habitats.
PLANTS		
Lemmon globe berry <i>Margaranthus lemmonii</i>		Dry washes.
Supine bean <i>Macropitilium supinum</i>		Prefer grassland and oak woodland habitats.
Chihuahuan sedge	1,109 - 8,000	Wet soils along streambeds and other mesic sites in

Taxon	Elevation (feet)	Habitat
<i>Carex chihuahuensis</i>		pine-oak and riparian woodlands.
Lumholtz nightshade <i>Solanum lumholtzianum</i>	3,000 - 4,000	Sandy soil at roadsides.
Superb beardtongue <i>Penstemon superbus</i>	3,100 - 5,500	Rocky canyons, dry hillsides, and washes; alluvium substrates; riparian floodplains, desert grasslands and transitions to desert grasslands.
Lemmon's stevia <i>Stevia lemmonii</i>	3,000 - 4,580	Rocky canyon slopes, ravines, and streambeds desert grasslands and pine-oak forests.
Sonoran noseburn <i>Tragia urticifolia</i> var. <i>laciniata</i>	3,500 - 5,650	Along streams and canyon bottoms and on shaded slopes; granitic and possibly limestone derived soils and coarse sand; oak woodland, pinyon juniper woodlands, and pine-oak woodlands.
Virlet paspalum <i>Paspalum virletii</i>	3,500 - 5,700	Sandy soil in canyon bottoms of semi-desert grasslands and in grassy areas in Madrean evergreen woodlands.
Thurber hoary pea <i>Tephrosia thurberi</i>	3,500 - 7,000	Dry, rocky slopes; road cuts; south or southwest exposure; pine-oak and oak woodlands and grasslands.
Huachuca golden aster <i>Heterotheca rutteri</i>	3,560 - 5,275	Level, open grassland. Grows on roadcuts, and disturbed sites. May be mistaken for yellow daisy.
Beardless chinch weed <i>Pectis imberbis</i>	3,600 - 6,475	In open grassland and oak/grassland. Adapted to disturbance; grows along road cuts. This species has an extremely broad range.
Santa Cruz beehive cactus <i>Coryphantha recurvata</i>	3,680 - 6,000	Alluvial soils of valleys and foothills in desert grassland and oak woodland. Plants are either on rocky hillsides with good grass cover, or in rock crevices where runoff accumulates and provides a more favorable moisture relationship than the surrounding soils.
Large-flowered blue star <i>Amsonia grandiflora</i>	3,685 - 4,500	Canyon bottoms and sides in oak woodlands, typically dominated by Emory oak (<i>Quercus emoryi</i>) and Mexican blue oak, however, site specific qualities are inconsistent. Adapted to rock fall disturbance. Mainly northern exposure in full sun or partial shade.
Thurber's morning glory <i>Ipomoea thurbei</i>	3,800 - 5,150	Rocky hillsides and canyon slopes in Madrean evergreen woodlands and semi-desert grasslands.
Woolly fleabane <i>Laennecia eriophylla</i>	4,250 - 5,650	Gravelly soil on rocky slopes and ridges with good grass cover; semi-desert grasslands, dry oak woodlands, and pine-oak woodlands.
Arid throne fleabane <i>Erigeron arisolius</i>	4,265 - 5,650	Grasslands and areas of oak woodlands, in grassy openings or on roadsides. It often occurs in moist areas.
Huachuca milkweed vine <i>Pherotrichis balbisii</i>	4,920 - 6,232	Canyons, flats, and grazed grasslands within oak and pine-oak woodlands.
Kearney's blue-star <i>Amsonia kearneyana</i>		
Acuna cactus <i>Echinomastus erectocentrus acunensis</i>	1,300 - 2,000	Restricted to well-drained knolls and gravel ridges between major washes. Substrates include granite, limestone, and andesite.
Arizona giant sedge <i>Carex ultra</i>	2,040 - 6,000	Moist soil near perennially wet springs and streams; undulating rocky-gravelly terrain. Southeast-facing, often shaded.
Box Canyon muhly <i>Muhlenbergia dubioides</i>	2,750 - 6,000	Rocky slopes in canyons and along stream courses, often on cliffs.

Taxon	Elevation (feet)	Habitat
Chiricahua mock pennyroyal <i>Hedeoma costatum</i>	3,000 - 7,500	Arid calcareous mountain regions of mixed pine and oak woodlands, on open rocky limestone outcrops and cliff faces, and road embankments.
Wiggins milkweed vine <i>Metastelma mexicanum</i>	3,500 - 5,550	Open slopes within open oak woodland on granitic soils over Juniper Flats granite.
Santa Cruz striped agave <i>Agave parviflora</i> spp. <i>Parviflora</i>	3,600 - 5,820	Open, rocky slopes and mesas in Sonoran desertscrub, chaparral, or juniper grassland.
Pima pineapple cactus <i>Coryphantha scheeri</i> var. <i>robustispina</i>	3,600 - 6,400	Dry, open, slopes (20-30 degrees) in Madrean evergreen woodlands/interior chaparral transition zone and on stable, partially shaded, coarse alluvium along dry washes at 3,600-3,800 ft. elevation under deciduous riparian trees and shrubs in Sonoran desertscrub or desertscrub-grassland ecotone.
Bartram stonecrop <i>Graptopetalum bartramii</i>	3,650 - 6,700	Cracks in rocky outcrops in shrub live oak-grassland communities along meandering arroyos on sides of rugged canyons. Usually heavy litter cover and shade where moisture drips from rocks, often with Madrean evergreen woodland. North exposure.
Mexican hemlock parsley <i>Conioselinum mexicanum</i>	3,800 - 5,750	Cool, shaded mountain slopes.
Mock pennyroyal <i>Hedeoma dentatum</i>	3,850 - 8,200	40 - 80 % slopes in Oak woodland, oak-pine forest, pine forest. It can be found on open roadcuts, steep rocky outcrops, and gravelly slopes in wooded canyons with open to full sunlight.
Seeman groundsel <i>Senecio hartwegii</i>	4,000 - 6,000	Rich shaded soil.
Greene milkweed <i>Asclepias uncialis</i>	4,000 - 6,400	Open hills or at the base of mesas, canyons, and blufs. Open grassland areas within the Madrean evergreen woodland interspersed between grasses. Tolerant of disturbance.
Chiricahua mountain brookweed <i>Samolus vagans</i>	4,000 - 7,200	Springs, seeps, and streams. Moist, sandy soil. Madrean evergreen woodlands up to mixed coniferous.
Lemmon's morning glory <i>Ipomoea tenuiloba</i> var. <i>lemmonii</i>	4,020 - 7,025	Shallow sandy or gravelly soil on bedrock terraces; rocky canyons or shaded mountains.
Redflower onion <i>Allium rhizomatum</i>	4,400 - 7,000	Grassy mountain slopes with north and east exposures, grasslands, and moist rocky places.
Chisos coral root <i>Hexalectris revoluta</i>	4,500 - 5,200	Under trees and shrubs on the edges of the canyon bottoms, and on hillsides leading up from the canyon. Under oaks, <i>H. revoluta</i> is found in heavy leaf litter, but closer to the canyon bottom it is found in very thin humus layers. In some areas, this orchid is found among rock outcrops or on the edges of rocky cliffs.
Canelo Hills ladies'-tresses (SC) <i>Spiranthes delitescens</i>	4,585 - 4,970	Marshy wetland or cienega intermixed with tall grasses and sedges. Grows on slope near water so soil is drained (aerated) although saturated. Grows in very dense vegetation.
Aryxna giant skipper <i>Agathymus aryxna</i>	4,585 - 7,642	Open hillsides, in grasslands and in rocky canyons where stands of <i>Agave palmeri</i> occurs.
Texas purple spike <i>Hexalectris warnockii</i>	5,000 - 7,000	Humus beneath rocks and fallen oaks along streambeds; Mixed oak woodland.
Tepic flame flower	5,000 - 7,000	Very shallow sandy soils on exposed bedrock ledges and

Taxon	Elevation (feet)	Habitat
<i>Talinum marginatum</i>		outcrops; opening in pine-oak woodlands and in the transition between oak woodlands and semi-desert grasslands.
Huachuca Mountain lupine <i>Lupinus huachuccanus</i>	5,000 - 7,000	Pine forest on moderate to steep slopes, canyon bottoms, and along roadsides.
Smooth Babybonnets <i>Coursetia glabella</i>	5,000 - 7,200	Dry, partially shaded slopes in Madrean oak woodland, oak-juniper and pine-oak forest.
Escoba <i>Marina diffusa</i>	5,000	
Elusive browallia <i>Browallia eludens</i>	5,065 - 5,250	Relatively narrow range of temperate, moist-summer habitats, which are found in and around the boundaries of Madrean Evergreen woodland moist damp soils adjacent to streams (usually temporary) or growing in mud adjacent to, or above, streams.
Pinos Altos flame flower <i>Talinum humile</i>	5,100	Shallow, coarse soil terraces overlying bedrock. Ephemeral stream bottoms of similar substrate opening in transition between semi-desert grassland and oak woodland.
Huachuca milk-vetch <i>Astragalus hypoxylus</i>	5,300 - 6,100	Open, limestone rocky clearings in oak-juniper-pinyon woodland. Found on hillsides with slopes of 25 to 30 percent. Generally unshaded. Southerly to southwesterly.
Lemmon milkweed <i>Asclepias lemmonii</i>	5,500 - 7,000	Canyons, roadsides, and open woodlands in Madrean evergreen woodlands.
Shade violet <i>Viola umbraticola</i>	5,500 - 7,300	Shady sites in canyon bottoms; mesic soils with leaf litter build up; Madrean evergreen and montane.
Lemmon lily <i>Lilium parryi</i>	5,500 - 7,800	Mesic, shady canyon bottoms along perennial streams or adjacent hillside springs. Sandy soil is high in organic material and remains saturated, or nearly so, year-round.
Huachuca morning glory <i>Ipomoea plummerae</i> var. <i>cuneifolia</i>	5,800 - 7,800	Open rocky and gravelly slopes within oak-manzanita scrub and pine forest.
Chiricahua rock cress <i>Arabis tricornuta</i>	6,000 - 8,800	Mesic wooded canyons, steep rocky slopes, and meadow margins in Madrean oak; north and east exposure.
Huachuca Mountain coyote thistle <i>Eryngium phyteumae</i>	6,560 - 7,550	Streams, wet meadows, and cienegas.
Huachuca groundsel <i>Senecio huachucanus</i>	7,000 - 9,000	Rocky, high elevation slopes and in canyon bottoms Moderate canopy cover in pine-oak woodlands and mixed coniferous forests.
Rusby hawkweed <i>Hieracium rusbyi</i>	8,800 - 9,300	Mixed conifer forests.
REPTILES		
Giant spotted whiptail <i>Cnemidophorus burti stictogrammus</i>	Below 4,500	Mountain canyons, arroyos, and mesas in arid and semi-arid regions, entering lowland desert along stream courses. Found in dense shrubby vegetation, often among rocks near permanent and intermittent streams. Open areas of bunch grass within these riparian habitats are also occupied.

Taxon	Elevation (feet)	Habitat
Lowland leopard frog <i>Rana yavapaiensis</i>	0 - 3,000	Small to medium streams, small springs, stock ponds, and occasionally in large rivers. Populations typically occur in aquatic systems with surrounding desert scrub, semidesert grassland, or evergreen woodland.
Arizona ridge-nosed rattlesnake <i>Crotalus wilardi willardi</i>	4,800 -9,000	Oak woodland to pine-fir forests, near rock crevices on forest and woodland floors, also (especially) mesic canyon bottoms with canopies of alder, box elder, maple, oak and other broadleaf deciduous trees; it is infrequently found in high grassland bordering the woodlands.
Sonoita mud turtle <i>Kinostemon sonoriense longifemorale</i>		Permanent slackwater habitats along intermittent or perennial streams with abundant submergent vegetation and benthic invertebrates
Western barking frog <i>Eleutherodactylus augusti cactorum</i>	0 – 8,900	Limestone or rhyolite rock outcrops on the hillsides of canyons within Madrean evergreen woodlands.
Sonoran desert tortoise <i>Gopherus agassizii</i>	510 - 5300	Primarily on rocky slopes and bajadas of Mojave and Sonoran desertscrub
Mexican garter snake <i>Thamnophis eques megalops</i>	3,000 - 5,000	Densely vegetated habitat surrounding cienegas, cienega-streams, and stock tanks and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat.
Sonora tiger salamander <i>Ambystoma tigrinum stebbinsi</i>	4,000 - 6,300	Breeds in stock tanks. Terrestrial salamanders probably spend much of the year in rodent burrows, rotted logs, and other moist cover sites.
Desert massasauga <i>Sistrurus catenatus edwardsi</i>	4,400 - 4,700	Tobosa (<i>Hilaria mutica</i>) grassland along sloping bajadas with surface rocks.

Coronado National Forest Management Indicator Species (CNF 2005)

	Group	Species
1	Cavity Nesters	Coppery-tailed (elegant) trogon Sulphur-bellied flycatcher Other primary and secondary cavity nesters*
2	Riparian Species	Gray hawk Blue-throated hummingbird Coppery-tailed (elegant) trogon Rose-throated becard Thick-billed kingbird Sulphur-bellied flycatcher Northern Beardless tyrannulet Bell's vireo Black bear
3	Species Needing Diversity	White-tailed deer Merriam's turkey Coppery-tailed (elegant) trogon Sulphur-bellied flycatcher Buff-breasted flycatcher Black bear
4	Species Needing Herbaceous Cover	White-tailed deer Mearn's quail Pronghorn antelope Desert bighorn sheep Merriam's turkey Black bear
5	Species Needing Dense Canopy	Bell's vireo Northern beardless tyrannulet Gray hawk
6	Game Species	White-tailed deer Mearn's quail Pronghorn antelope Desert bighorn sheep Merriam's turkey Black bear
7	Special Interest Species	Mearn's quail Gray hawk Blue-throated hummingbird Coppery-tailed (elegant) trogon Rose-throated becard Thick-billed kingbird Sulphur-bellied flycatcher Buff-breasted flycatcher Northern beardless tyrannulet Five-striped sparrow
8	Threatened and Endangered Species	Desert bighorn sheep Gray hawk Peregrine falcon Blue-throated hummingbird Coppery-tailed (elegant) trogon Rose-throated becard Thick-billed kingbird Sulphur-bellied flycatcher

	Group	Species
		Buffbreasted flycatcher Northern beardless tyrannulet Bell's vireo Baird's sparrow Five-striped sparrow Mexican stoneroller Arizona (Apache)trout Gila topminnow Gila chub Sonora chub Desert massassauga Twin-spotted rattlesnake Arizona ridge-nosed rattlesnake Huachuca (Sonora) tiger salamander Tarahumara frog Western barking frog Spikedace Arizona treefrog Mt. Graham spruce (red) squirrel Gould's turkey

* primary cavity nesters

Ladder-backed woodpecker, Arizona woodpecker, northern flicker, Gila woodpecker, acorn woodpecker, hairy woodpecker

* secondary cavity nesters

American kestrel, elf owl, flammulated owl, whiskered screech owl, western screech owl, northern pygmy-owl, Mexican spotted owl, elegant trogon, eared trogon, sulphur-bellied flycatcher, brown-crested flycatcher, ash-throated flycatcher, dusky capped flycatcher, Cordilleran flycatcher, violet green swallow, juniper titmouse, bridled titmouse, brown creeper, white-breasted nuthatch, red-breasted nuthatch, pygmy nuthatch, house wren, Bewick's wren, eastern bluebird, European starling, Lucy's warbler

Protected Species for Santa Cruz County, Arizona

Scientific Name	Common Name	ESA	BLM	NFS	WSCA	NPL
AMPHIBIAN						
AMBYSTOMA TIGRINUM STEBBINSI	SONORAN TIGER SALAMANDER	LE			WSC	
ELEUTHERODACTYLUS AUGUSTI CACTORUM	WESTERN BARKING FROG			S	WSC	
GASTROPHRYNE OLIVACEA	GREAT PLAINS NARROWMOUTH TOAD				WSC	
RANA CHIRICAHUENSIS	CHIRICAHUA LEOPARD FROG	LT		S	WSC	
RANA YAVAPAIENSIS	LOWLAND LEOPARD FROG	SC		S	WSC	
BIRD						
ACCIPITER GENTILIS	NORTHERN GOSHAWK	SC		S	WSC	
AIMOPHILA QUINQUESTRIATA	FIVE-STRIPED SPARROW			S		
AMAZILIA VIOLICEPS	VIOLET-CROWNED HUMMINGBIRD			S	WSC	
AMMODRAMUS BAIRDII	BAIRD'S SPARROW	SC			WSC	
ANTHUS SPRAGUEII	SPRAGUE'S PIPIT				WSC	
ASTURINA NITIDA MAXIMA	NORTHERN GRAY HAWK	SC	S	S	WSC	
ATHENE CUNICULARIA HYPUGAEA	WESTERN BURROWING OWL	SC	S			
BUTEOGALLUS ANTHRACINUS	COMMON BLACK-HAWK			S	WSC	
COCCYZUS AMERICANUS OCCIDENTALIS	WESTERN YELLOW-BILLED CUCKOO	C		S	WSC	
DENDROCYGNA AUTUMNALIS	BLACK-BELLIED WHISTLING-DUCK				WSC	
EMPIDONAX TRAILLII EXTIMUS	SOUTHWESTERN WILLOW FLYCATCHER	LE		S	WSC	
FALCO PEREGRINUS ANATUM	AMERICAN PEREGRINE FALCON	SC		S	WSC	
GLAUCIDIUM BRASILIANUM CACTORUM	CACTUS FERRUGINOUS PYGMY-OWL	LE			WSC	
PACHYRAMPHUS AGLAIAE	ROSE-THROATED BECARD				WSC	
PANDION HALIAETUS	OSPREY				WSC	
POLIOPTILA NIGRICEPS	BLACK-CAPPED GNATCATCHER				WSC	
STRIX OCCIDENTALIS LUCIDA	MEXICAN SPOTTED OWL	LT		S	WSC	
TROGON ELEGANS	ELEGANT TROGON				WSC	
TYRANNUS CRASSIROSTRIS	THICK-BILLED KINGBIRD				WSC	
TYRANNUS MELANCHOLICUS	TROPICAL KINGBIRD				WSC	
FISH						
AGOSIA	LONGFIN DACE	SC	S			

Scientific Name	Common Name	ESA	BLM	NFS	WSCA	NPL
CHRYSOGASTER						
CATOSTOMUS CLARKI	DESERT SUCKER	SC	S			
CATOSTOMUS INSIGNIS	SONORA SUCKER	SC	S			
CYPRINODON MACULARIUS	DESERT PUFFISH	LE			WSC	
GILA DITAENIA	SONORA CHUB	LT			WSC	
GILA INTERMEDIA	GILA CHUB	PE		S	WSC	
POECILIOPSIS OCCIDENTALIS OCCIDENTALIS	GILA TOPMINNOW	LE			WSC	
RHINICHTHYS OSCULUS	SPECKLED DACE	SC	S			
INVERTEBRATE						
AGATHYMUS ARYXNA	ARIZONA GIANT SKIPPER			S		
CALEPHELIS RAWSONI	ARIZONENSIS ARIZONA METALMARK			S		
HETERELMIS STEPHANI	STEPHAN'S HETERELMIS RIFFLE BEETLE	C		S		
LIMENITIS ARCHIPPUS OBSOLETA	OBSOLETE VICEROY BUTTERFLY			S		
NEOPHASIA TERLOOTII	CHIRICAHUA PINE WHITE			S		
PYRGULOPSIS THOMPSONI	HUACHUCA SPRINGSNAIL	C	S	S		
SYMPETRUM SIGNIFERUM	MEXICAN MEADOWFLY			S		
MAMMAL						
CHOERONYCTERIS MEXICANA	MEXICAN LONG- TONGUED BAT	SC	S		WSC	
CORYNORHINUS TOWNSENDII PALLESCENS	PALE TOWNSEND'S BIG-EARED BAT	SC				
LASIURUS BLOSSEVILLII	WESTERN RED BAT				WSC	
LEPTONYCTERIS CURASOAE YERBABUENAE	LESSER LONG-NOSED BAT	LE		S	WSC	
MACROTUS CALIFORNICUS	CALIFORNIA LEAF- NOSED BAT	SC	S		WSC	
MYOTIS VELIFER	CAVE MYOTIS	SC	S			
PANTHERA ONCA	JAGUAR	LE		S	WSC	
SIGMODON OCHROGNATHUS	YELLOW-NOSED COTTON RAT	SC				
SOREX ARIZONAE	ARIZONA SHREW	SC		S	WSC	
THOMOMYS UMBRINUS INTERMEDIUS	SOUTHERN POCKET GOPHER			S		
PLANT						
ABUTILON PARISHII	PIMA INDIAN MALLOW	SC		S		SR
ACACIA SMALLII	SWEET ACACIA			S		
AGAVE PARVIFLORA SSP PARVIFLORA	SANTA CRUZ STRIPED AGAVE	SC	S	S		HS
ALLIUM RHIZOMATUM	REDFLOWER ONION		S	S		SR

Scientific Name	Common Name	ESA	BLM	NFS	WSCA	NPL
AMOREUXIA GONZALEZII	SAIYA	SC		S		HS
AMSONIA GRANDIFLORA	LARGE-FLOWERED BLUE STAR	SC		S		
ARABIS TRICORNUTA	CHIRICAHUA ROCK CRESS			S		
ASCLEPIAS LEMMONII	LEMMON MILKWEED			S		
ASCLEPIAS UNCIALIS	GREENE MILKWEED	SC		S		
ASTRAGALUS HYPOXYLUS	HUACHUCA MILK-VETCH	SC	S	S		SR
BROWALLIA ELUDENS	ELUSIVE NEW BROWALLIA SPECIES	SC		S		
CAPSICUM ANNUUM VAR GLABRIUSCULUM	CHILTEPIN			S		
CAREX CHIHUAHUENSIS	A SEDGE			S		
CAREX ULTRA	ARIZONA GIANT SEDGE		S	S		
CHOISYA MOLLIS	SANTA CRUZ STAR LEAF	SC		S		
CONIOSELINUM MEXICANUM	MEXICAN HEMLOCK PARSLEY	SC		S		
CORYPHANTHA RECURVATA	SANTA CRUZ BEEHIVE CACTUS		S	S		HS
CORYPHANTHA SCHEERI VAR ROBUSTISPINA	PIMA PINEAPPLE CACTUS	LE				HS
COURSETIA GLABELLA		SC		S		
DALEA TENTACULOIDES	GENTRY INDIGO BUSH	SC	S	S		HS
ERIGERON ARISOLIUS				S		
EUPHORBIA MACROPUS	WOODLAND SPURGE	SC				SR
GRAPTOPETALUM BARTRAMII	BARTRAM STONECROP	SC	S	S		SR
HEDEOMA DENTATUM	MOCK-PENNYROYAL			S		
HETEROTHECA RUTTERI	HUACHUCA GOLDEN ASTER	SC	S	S		
HEXALECTRIS REVOLUTA	CHISOS CORAL-ROOT		S	S		
HEXALECTRIS SPICATA	CRESTED CORAL ROOT					SR
HIERACIUM PRINGLEI	PRINGLE HAWKWEED	SC		S		
IPOMOEA PLUMMERAE VAR CUNEIFOLIA	HUACHUCA MORNING GLORY			S		
IPOMOEA THURBERI	THURBER'S MORNING-GLORY			S		
LAENNECIA ERIOPHYLLA	WOOLLY FLEABANE			S		
LILAEOPSIS SCHAFFNERIANA VAR RECURVA	HUACHUCA WATER UMBEL	LE				HS
LILIUM PARRYI	LEMMON LILY	SC		S		SR
LOBELIA FENESTRALIS	LEAFY LOBELIA					SR
LOBELIA LAXIFLORA	MEXICAN LOBELIA					SR
LOTUS ALAMOSANUS	ALAMOS DEER VETCH			S		

Scientific Name	Common Name	ESA	BLM	NFS	WSCA	NPL
LUPINUS HUACHUCANUS	HUACHUCA MOUNTAIN LUPINE			S		
MACROPTILIUM SUPINUM	SUPINE BEAN	SC		S		SR
MALAXIS CORYMBOSA	MADREAN ADDERS MOUTH					SR
MALAXIS PORPHYREA	PURPLE ADDER'S MOUTH					SR
MAMMILLARIA WRIGHTII VAR WILCOXII	WILCOX FISHHOOK CACTUS					SR
MANIHOT DAVISIAE	ARIZONA MANIHOT			S		
MARINA DIFFUSA	ESCOBA			S		
METASTELMA MEXICANUM	WIGGINS MILKWEED VINE	SC		S		
MUHLENBERGIA XEROPHILA	WEeping MUHLY			S		
NOTHOLAENA LEMMONII	LEMMON CLOAK FERN	SC				
PASPALUM VIRLETII	VIRLET PASPALUM			S		
PASSIFLORA FOETIDA	FOETID PASSIONFLOWER			S		
PECTIS IMBERBIS	BEARDLESS CHINCH WEED	SC		S		
PENSTEMON DISCOLOR	CATALINA BEARDTONGUE			S		HS
PENSTEMON SUPERBUS	SUPERB BEARDTONGUE			S		
PHYSALIS LATIPHYSA	BROAD-LEAF GROUND-CHERRY			S		
PSILOTUM NUDUM	WHISK FERN					HS
SAMOLUS VAGANS	CHIRICAHUA MOUNTAIN BROOKWEED			S		
SCHIEDEELLA PARASITICA	FALLEN LADIES'-TRESSES					SR
SENECIO CARLOMASONII	SEEMANN GROUNDSEL			S		
SENECIO HUACHUCANUS	HUACHUCA GROUNDSEL			S		HS
SISYRINCHIUM CERNUUM	NODDING BLUE-EYED GRASS			S		
SOLANUM LUMHOLTZIANUM	LUMHOLTZ NIGHTSHADE			S		
SPIRANTHES DELITESCENS	MADREAN LADIES'-TRESSES	LE				HS
STENORRHYNCHOS MICHUACANUS	MICHOACAN LADIES'-TRESSES	SR				
STEVIA LEMMONII	LEMMON'S STEVIA			S		
TALINUM HUMILE	PINOS ALTOS FLAME FLOWER	SC		S		SR
TALINUM MARGINATUM	TEPIC FLAME FLOWER	SC		S		SR
TEPHROSIA THURBERI	THURBER HOARY PEA			S		
TRAGIA LACINIATA	SONORAN NOSEBURN			S		

Scientific Name	Common Name	ESA	BLM	NFS	WSCA	NPL
VIOLA UMBRATICOLA	SHADE VIOLET			S		
REPTILE						
CNEMIDOPHORUS BURTI STICTOGRAMMUS	GIANT SPOTTED WHIPTAIL	SC	S	S		
CROTALUS WILLARDI WILLARDI	ARIZONA RIDGENOSE RATTLESNAKE			S	WSC	
GOPHERUS AGASSIZII (SONORAN POPULATION)	SONORAN DESERT TORTOISE	SC			WSC	
OXYBELIS AENEUS	MEXICAN VINE SNAKE				WSC	
THAMNOPHIS EQUES MEGALOPS	MEXICAN GARTER SNAKE	SC		S	WSC	

ESA = Endangered Species ACT
 LE = Listed Endangered
 LT = Listed Threatened
 XN = Experimental Nonessential population
 PE = Proposed Endangered
 PT = Proposed Threatened
 C = Candidate
 SC = Species of Concern

BLM = Bureau of Land Management
 S = Sensitive
 P = Population

NFS = National Forest Service
 S = Sensitive

WSCA = Wildlife of Special Concern for Arizona
 WSC = Wildlife of Special Concern

NPL = Native Plant Law
 HS = Highly Safeguarded
 SR = salvage Restricted
 ER = Export Restricted
 SA = Salvage Assessed
 HR = Harvest Restricted

Appendix C
LIST OF ARIZONA PROTECTED SPECIES
OCCURRING IN COCHISE COUNTY

Appendix C
State Protected Species of Potential Occurrence in Cochise County, Arizona

Common Name	Scientific Name	WCSA Status	NPL Status
MAMMALS			
Mexican long-tongued bat	<i>Choeronycteris mexicana</i>	WC	--
western red bat	<i>Lasiurus blossevillii</i>	WC	--
western yellow bat	<i>Lasiurus xanthinus</i>	WC	--
lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuenae</i>	WC	--
jaguar	<i>Panthera onca</i>	WC	--
Arizona shrew	<i>Sorex arizonae</i>	WC	--
BIRDS			
northern goshawk	<i>Accipiter gentilis</i>	WC	--
violet-crowned hummingbird	<i>Amazilia violiceps</i>	WC	--
Baird's sparrow	<i>Ammodramus bairdii ammordramus</i>	WC	--
northern gray hawk	<i>Asturina nitida maxima</i>	WC	--
western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	WC	--
black-bellied whistling duck	<i>Dendrocygna autumnalis</i>	WC	--
northern buff-breasted flycatcher	<i>Empidonax fulvifrons pygmaeus</i>	WC	--
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	WC	--
American peregrine falcon	<i>Falco peregrinus anatum</i>	WC	--
Mexican spotted owl	<i>Strix occidentalis lucida</i>	WC	--
elegant trogon	<i>Trogon elegans tyrannus</i>	WC	--
thick-billed kingbird	<i>Crassirostris tyrannus</i>	WC	--
tropical kingbird	<i>Melanocholicus agosia</i>	WC	--
REPTILES			
Arizona ridgenose rattlesnake	<i>Crotalus willardi willardi</i>	WC	--
Sonoran desert tortoise	<i>Gopherus agassizii</i>	WC	--
desert massasauga	<i>Sistrurus catenatus edwardsi</i>	WC	--
Mexican garter snake	<i>Thamnophis eques megalops</i>	WC	--
AMPHIBIANS			
Sonoran tiger salamander	<i>Ambystoma tigrinum stebbinsi</i>	WC	--
western barking frog	<i>Eleutherodactylus augusti cactorum</i>	WC	--
plains leopard frog	<i>Rana blairi</i>	WC	--
Chiricahua leopard frog	<i>Rana chiricahuensis</i>	WC	--
Ramsey Canyon leopard frog	<i>Rana subaquavocalis</i>	WC	--
lowland leopard frog	<i>Rana yavapaiensis</i>	WC	--
FISH			
Mexican stoneroller	<i>Campostoma ornatum</i>	WC	--
beautiful shiner	<i>Cyprinella formosa</i>	WC	--
Yaqui chub	<i>Gila purpurea</i>	WC	--
Yaqui topminnow	<i>Poeciliopsis occidentalis sonoriensis</i>	WC	--
PLANTS			
plummer onion	<i>Allium plummerae</i>	--	SR
redflower onion	<i>Allium rhizomatum</i>	--	SR

Cochise County Continued.

Common Name	Scientific Name	WSCA Status	NPL Status
chiricahua rock flower	<i>Apacheria chiricahueniss</i>	--	SR
coppermine milk-vetch	<i>Cobrensis var. maguirei</i>	--	SR
Huachuca milk-vetch	<i>Astragalus hypoxylus</i>	--	SR
playa spider plant	<i>Cleome multicaulis</i>	--	SR
Cochise pincushion cactus	<i>Coryphantha robbinsorum</i>	--	HS
slender needle corycactus	<i>Coryphantha scheeri var. valida</i>	--	SR
cob corycactus	<i>Coryphantha strobiliformis</i>	--	SR
pinaleno hedgehog cactus	<i>Echinocereus ledingii</i>	--	SR
Texas rainbow cactus	<i>Echinocereus pectinatus var. pectinatus</i>	--	SR
needle-spined pineapple cactus	<i>Echinomastus erectocentrus var. erectocentrus</i>	--	SR
button cactus	<i>Epithelantha micromeris</i>	--	SR
chiricahua fleabane	<i>Erigeron kuschei</i>	--	SR
lemmon fleabane	<i>Erigeron lemmonii</i>	--	HS
woodland spurge	<i>Euphorbia macropus</i>	--	SR
Wislizeni gentian	<i>Gentianella wislizeni</i>	--	SR
Bartram stonecrop	<i>Graptopetalum bartramii</i>	--	SR
crested coral root	<i>Hexalectris spicata</i>	--	SR
Texas purple spike	<i>Hexalectris warnockii</i>	--	HS
Huachuca water umbel	<i>Lilaeopsis schaffneriana var. recurva</i>	--	HS
lemmon lily	<i>Lilium parryi</i>	--	SR
Madrean adders mouth	<i>Malaxis corymbosa</i>	--	SR
purple adders mouth	<i>Malaxis porphyrea</i>	--	SR
slender adders mouth	<i>Malaxis tenuis</i>	--	SR
varied fishhook cactus	<i>Mammillaria viridiflora</i>	--	SR
Wilcox fishhook cactus	<i>Mammillaria wrightii var. wilcoxii</i>	--	SR
night-blooming cereus	<i>Peniocereus greggii var. greggii</i>	--	SR
catalina beardtongue	<i>Penstemon discolor</i>	--	HS
Chiricahua rock daisy	<i>Perityle cochisensis</i>	--	SR
Thurber's bog orchid	<i>Platanthera limosa</i>	--	SR
blumer's dock	<i>Rumex orthoneurus</i>	--	HS
fallen ladies'-tresses	<i>Schiedeella parasitica</i>	--	SR
Huachuca groundsel	<i>Senecio huachucanus</i>	--	HS
Michoacan ladies'-tresses	<i>Stenorrhynchos michuacanus</i>	--	SR
tepic flame flower	<i>Talinum marginatum</i>	--	SR
limestone Arizona rosewood	<i>Vauquelinia californica spp. pauciflora</i>	--	SR
green death camas	<i>Zigadenus virescens</i>	--	SR

Legend: WSCA – Wildlife of Special Concern in Arizona
 NPL – Arizona Native Plant Law
 E – Federally Endangered
 T – Federally Threatened
 C – Candidate
 PT – Proposed Threatened
 SC – Species of Concern
 WC – Wildlife of Special Concern
 SR – Salvage Restricted: collection only with permit
 HS– Harvest Restricted: permits required to remove plant by-products

Source: Arizona Game and Fish Department 2003. Last Updated by AGFD, January, 2003.

Highly Safeguarded Protected Native Plants

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

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 phillipsiana Hodgson
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
Erigeron rhizomatus Cronquist-Zuni 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

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.: *Cochisea 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 horizontalionius Lemaire var. *nicholii* L. Benson-Nichol's Turk's head 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-Paradise 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-Variiegated beardtongue

APPENDIX G
Biological Resource Plan



BIOLOGICAL RESOURCES PLAN
FOR
CONSTRUCTION, OPERATION, AND MAINTENANCE
OF TACTICAL INFRASTRUCTURE,
VEHICLE FENCE 300
TUCSON SECTOR, ARIZONA

SONOITA AND DOUGLAS STATIONS



U.S. DEPARTMENT OF HOMELAND SECURITY
U.S. CUSTOMS AND BORDER PROTECTION
U.S. BORDER PATROL TUCSON SECTOR

Prepared by



DECEMBER 2008

ABBREVIATIONS AND ACRONYMS

BLM	Bureau of Land Management
BMP	Best Management Practice
BRP	Biological Resources Plan
CBP	U.S. Customs and Border Protection
CITES	Convention of International Trade in Endangered Species
cm	centimeters
dBA	A-weighted decibels
DHS	U.S. Department of Homeland Security
FR	Federal Register
GIS	Geographic Information System
GPS	Global Positioning System
IA	illegal alien
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
mm	millimeters
mph	miles per hour
NPS	National Park Service
MSO	Mexican spotted owl
PAC	Protected Activity Center
PCE	Primary Constituent Element
TI	Tactical infrastructure
TVB	temporary vehicle barrier
U.S.	United States
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

EXECUTIVE SUMMARY

The U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP), U.S. Border Patrol (USBP) plans to construct, operate, and maintain tactical infrastructure (TI) consisting of primary vehicle fences, and supporting patrol and access roads in seven sections along the U.S./Mexico border in Cochise and Santa Cruz counties, Arizona. These sections will occur in three general areas along the border.

Table ES-1 outlines Federally listed species and Federally designated Critical Habitats known to occur or to potentially occur within or adjacent to the Project area and the determination of effects resulting from the Project.

Of the species listed in **Table ES-1**, the Project is likely to adversely affect the Sonora chub (*Gila ditaenia*), jaguar (*Panthera onca*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*) and Mexican spotted owl (*Strix occidentalis lucida*) in areas associated with each section, as noted in the table.

The Project may affect, but is not likely to adversely affect, the Huachuca water-umbel (*Lilaeopsis schaffneriana* ssp. *Recurva*), Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), Cochise pincushion cactus (*Coryphantha robbinsorum*), Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*), and ocelot (*Leopardus pardalis*).

The remaining Federally listed species in **Table ES-1** will not be affected by the Project, and therefore, are not discussed in this Biological Resources Plan (BRP).

On April 1, 2008, the Secretary of DHS, pursuant to his authority under Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), exercised his authority to waive certain environmental and other laws in order to ensure expeditious construction of TI along the U.S./Mexico border. Although the Secretary's waiver means that CBP no longer has any specific legal obligations under these laws, the Secretary committed DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP strongly supports this objective and remains committed to being a good steward of the environment. To that end, CBP has prepared the following BRP, which analyzes the potential impacts on threatened and endangered species associated with construction of TI in the USBP's Tucson Sector. The BRP also discusses CBP's plans as to how potential impacts on threatened and endangered species can be mitigated. The BRP will help to guide CBP's efforts going forward.

Table ES-1. Determination of Effects on Federally Listed and Candidate Species within Tucson Sector VF300 Segments

Species	Listing Status	Determination	Segments Affected
PLANTS			
Canelo Hills ladies'-tresses, <i>Spiranthes delitescens</i>	Endangered	No effect	EV-1B, FV-1B
Cochise pincushion cactus, <i>Coryphantha robbinsorum</i>	Endangered	Not likely to adversely affect	FV-1B
Huachuca water-umbel, <i>Lilaeopsis schaffneriana</i> <i>ssp. recurva</i>	Endangered	Not likely to adversely affect	EV-1A, FV-1B
Pima pineapple cactus, <i>Coryphantha scheeri</i> var. <i>robustispina</i>	Endangered	Not likely to adversely affect	EV-1B
INVERTEBRATES			
Stephan's riffle beetle, <i>Hetremis stephani</i>	Candidate	No effect	FV-1B
Huachuca springsnail, <i>Pyrgulopsis thomsoni</i>	Candidate	No effect	FV-1B
FISH			
Desert pupfish, <i>Cyprinodon macularius</i>	Endangered	No effect	FV-1B
Yaqui Chub <i>Gila purpurea</i>	Endangered	No effect	FV-1B
Yaqui topminnow <i>Poeciliopsis accidentalis</i> <i>sonoriensis</i>	Endangered	No effect	FV-1B
Yaqui catfish <i>Ictalurus pricei</i>	Threatened	No effect	FV-1B
Beautiful shiner <i>Cyprinella formosa</i>	Threatened	No effect	FV-1B
Spikedace <i>Meda fulgida</i>	Threatened	No effect	FV-1B
Loach minnow <i>Tiaroga cobitis</i>	Threatened	No effect	FV-1B
Gila chub, <i>Gila intermedia</i>	Endangered	No effect	FV-1B
Gila topminnow, <i>Poeciliopsis occidentalis</i> <i>occidentalis</i>	Endangered	No effect	EV-1A

Table ES-1, continued

Species	Listing Status	Determination	Segments Affected
Sonora chub, <i>Gila ditaenia</i>	Threatened	Likely to adversely affect	FV-1B
REPTILES AND AMPHIBIANS			
Chiricahua leopard frog, <i>Rana chiricahuensis</i>	Threatened	No effect	None
Sonora tiger salamander, <i>Ambystoma tigrinum stebbinsi</i>	Endangered	Not likely to adversely affect	EV-1A, EV-1B
Ramsey canyon leopard frog <i>Lithobates subaquavocalis</i>	Conservation Agreement	No effect	FV-1B
New Mexico ridge-nosed rattlesnake <i>Crotalus willardi obscurus</i>	Threatened	No effect	FV-1B
BIRDS			
Mexican spotted owl, <i>Strix occidentalis lucida</i>	Threatened, with Critical Habitat designated within the Project corridor	Likely to adversely affect	EV-1B
Southwestern willow flycatcher, <i>Empidonax traillii extimus</i>	Endangered	No effect	FV-1B
Yellow-billed cuckoo, <i>Coccyzus americanus</i>	Candidate	No effect	FV-1B
MAMMALS			
Jaguar, <i>Panthera onca</i>	Endangered	Likely to adversely affect	All
Lesser long-nosed bat, <i>Leptonycteris curasoae yerbabuenae</i>	Endangered	Likely to adversely affect	All except EV-1B
Ocelot, <i>Leopardus pardalis</i>	Endangered	Not likely to adversely affect	All

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**BIOLOGICAL RESOURCES PLAN
USBP TUCSON SECTOR,
SONOITA AND DOUGLAS STATIONS**

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1. PROJECT DESCRIPTION

The U.S. Department of Homeland Security (DHS), Customs and Border Protection (CBP), U.S. Border Patrol (USBP) plans to construct, operate, and maintain approximately 40.32 miles of tactical infrastructure (TI) along the U.S./Mexico border within the USBP Tucson Sector, Arizona. TI will include installation and renovations of primary vehicle fence, improvements to border access roads and construction of new construction/maintenance roads. Construction is expected to be completed by December 2008. In addition, 46 temporary staging areas will be used to facilitate construction of the TI.

On April 1, 2008, the Secretary of DHS, pursuant to his authority under Section 102(c) of the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), exercised his authority to waive certain environmental and other laws in order to ensure expeditious construction of TI along the U.S./Mexico border. Although the Secretary's waiver means that CBP no longer has any specific legal obligations under these laws, the Secretary committed DHS to responsible environmental stewardship of our valuable natural and cultural resources. CBP strongly supports this objective and remains committed to being a good steward of the environment. To that end, CBP has prepared this Biological Resources Plan (BRP), which analyzes the potential impacts on threatened and endangered species associated with construction of TI in the USBP's Tucson Sector. The BRP also discusses CBP's plans regarding mitigation of potential impacts to threatened and endangered species. The BRP will help to guide CBP's efforts going forward.

1.1 LOCATION

CBP plans to construct, operate, and maintain TI consisting of primary vehicle fence and new maintenance and construction access roads in three discrete sections (Sections EV-1A, EV-1B, and FV-1B) in the Tucson Sector in Cochise and Santa Cruz counties, Arizona (**Figure 1-1**). The Project includes the construction, operation, and maintenance of TI along approximately 40.32 miles of the U.S./Mexico border in Cochise and Santa Cruz counties, Arizona. The fence will be installed approximately 3 to 6 feet north of the U.S./Mexico border.

1.2 CONSTRUCTION, OPERATION, AND MAINTENANCE

The Project consists of the following components: (1) the construction, operation, and maintenance of vehicle fence along the U.S./Mexico border; (2) retrofit or replacement of temporary vehicle barriers (TVB) to permanent vehicle fence; (3) the construction of new access roads; and (4) the development of 46 temporary construction staging areas.

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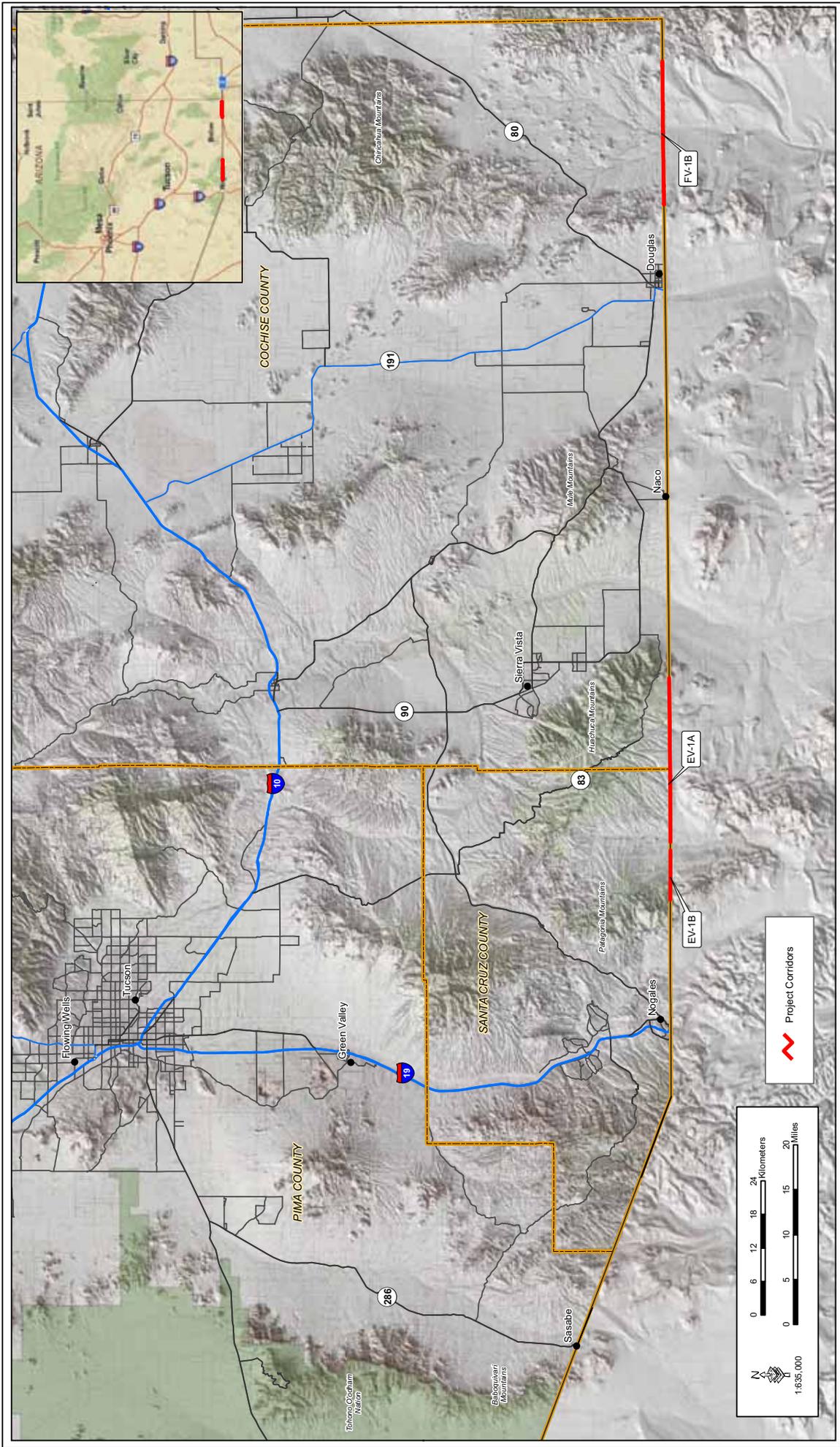


Figure 1-1: Project Vicinity Map

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A road will be constructed along the border in a manner that will allow installation and maintenance of the fence. For most segments, the road would encompass the entire 60-foot wide Roosevelt Reservation. Due to steep terrain in the EV-1B segment the construction footprint will be up to 120 feet wide. This area constitutes the Project corridor in which all construction, operation, and maintenance activities of the vehicle fence will be conducted. Routine maintenance will occur, as needed, to preserve the integrity of the new and existing vehicle fence. The vehicle fence will be repaired, as needed, using welders and other equipment, and vegetation and debris within the Project corridor will be removed, as needed, to maintain flood prevention, visibility and mobility.

Nighttime construction activities will occur only when absolutely necessary for adequate concrete pours or if a 24-hour work day is needed to maintain the work task schedules, as Federally mandated. To facilitate construction activities during these work hours, portable lights will be used. It is estimated that no more than 10 lights will be in operation at any one time at each Project site. A 6-kilowatt self-contained diesel generator will power these. Each unit typically has four 400- to 1,000-watt lamps. The portable light systems can be towed to the desired construction location, as needed. Upon completion of construction activities, all portable lights will be removed from the Project corridor. Lights will be oriented to illuminate the work area, but the areas affected by illumination will be limited to 200 feet from the light source. Also, the lights will have shields placed over the lamps to reduce or eliminate the effects of backlighting.

1.2.1 Fence

TI includes the construction of approximately 18.76 miles of new primary vehicle fence and 21.56 miles of retrofit or replacement of TVB to permanent vehicle fence. The lengths of each fence segment and the associated road improvements or construction required to access the border (i.e., north-south access roads) are presented in Table 1-1. Construction access roads will also be built adjacent to the border in those areas where no roads currently exist to facilitate installation and maintenance of the vehicle fence. More detailed maps of these segments are presented in Appendix A. Two fence types are planned: Post on Rail Vehicle Fence and Normandy style Vehicle Fence (Photographs 1-1 and 1-2).

Table 1-1. Length of Vehicle Fence and Access Roads*

Segment	Vehicle Fence Length (miles)	Access Road (miles)
EV-1B	2.76	0
EV-1A	21.56	0
FV-1B	16	7.95

- With the exception of EV-1A, a construction access road will be built adjacent to the vehicle fence for all segments.

Photograph 1-1. Post on Rail Style Vehicle Fence



Photograph 1-2. Normandy Style Vehicle Fence



The vehicle fence will be a permanent structure designed to prevent illegal entry of vehicles across the U.S./Mexico border. It is not designed to preclude pedestrian or wildlife movement. The post-on-rail style vehicle fence entails drilling holes in the ground at 4 foot centers using a small drill truck. Hollow, square, steel posts (approximately 6 to 8 inches inside width) are placed into the holes. The steel posts and bore hole (footing) are filled with concrete. The posts are leveled and once the

concrete has dried, a span of railroad rail is welded horizontally across the vertical posts.

The Normandy-style vehicle fence designed to prevent vehicle passage through various washes and major drainages. The design allows the fence to be removed during the monsoon season to avoid impeding water flow during high water events. The vehicle fence will be replaced when flood conditions are no longer imminent. Sections of the Normandy style fence will be transported to the site by small trucks with lowboy trailers. The vehicle fence will be put into place using forklifts. A construction/maintenance road will be constructed in order to install the vehicle fence; installation of Normandy style fence typically requires a 60-foot impact corridor. No pile driving will be required for construction of this fence type.

The Project will result in the permanent loss of 197.1 acres of vegetation, which includes 2.2 acres of semidesert grassland, 152.7 acres of desert scrub, 0.58 acres of cottonwood/willow riparian woodlands, 1.2 acres of cottonwood/sycamore riparian woodlands, and 40 acres of Manzanita scrub/oak woodland. Semidesert grassland is dominated by herbaceous species and, therefore, would be the most resistant to disturbance. The desert scrub communities are widespread throughout the Sonora desert and the loss of 152.7 acres would be considered a minimal to moderate impact, relative to the regional abundance of this community type. While not as abundant as the Manzanita scrub/oak woodland and the cottonwood/willow, cottonwood/sycamore communities are common both locally and regionally; thus, degradation or loss of a small portion of this community will be a moderate impact within a local or regional context.

1.2.2 Roads

As stated above, construction/maintenance roads will be constructed adjacent to the north side of the border to allow installation of the vehicle fence. In addition, construction access roads, which provide north-south access to the border from existing public roads, will be improved or constructed.

1.2.3 Staging Areas

The Project includes the establishment of 46 temporary staging areas, only two of which will be required for construction within the EV-1B / EV-1A segments. These staging areas would be approximately 0.5 to 2.1 acres in size. Storage of equipment and materials at the 46 temporary staging areas will result in the temporary disturbance of 53.2 acres of the common vegetation communities. Upon completion of construction activities, natural vegetation will be allowed to regenerate from the existing seed bank, undamaged root stocks of shrubs, and stem segments of cacti, or undergo active rehabilitation, if deemed necessary.

1.2.4 Fence Maintenance Operations

The vehicle fences will be made from non-reflective steel and will not require any painting. Fence maintenance will include removing any accumulated debris on the fence after a rain event to avoid potential future flooding. Brush removal could include mowing, removal of small trees, and application of herbicide, if needed. Within major drainages, the Normandy-style vehicle fence will be installed rather than the post-on-rail fence, because the Normandy-style fence can be easily moved and relocated. The vehicle fence within these washes will be removed prior to each monsoon season and replaced shortly after flood flows subside. Any destruction or breaches of the fence will be repaired, as needed.

1.3 BEST MANAGEMENT PRACTICES

1.3.1 General Best Management Practices

The following best management practices (BMPs) should be implemented to avoid or minimize impacts associated with the Project during construction. These represent Project objectives for implementation to the extent possible and will be incorporated into construction and monitoring contracts.

1. The perimeter of all areas to be disturbed during construction or maintenance activities will be clearly demarcated using flagging or temporary construction fence, and no disturbance outside that perimeter will be authorized.
2. CBP will develop (in coordination with U.S. Fish & Wildlife Service [USFWS]), U.S. Forest Service (USFS), and National Park Service (NPS), a training plan regarding Trust Resources for construction personnel. At a minimum, the program will include the occurrence of the listed and sensitive species in the area, their general ecology, sensitivity of the species to human activities, protection afforded these species, and Project features designed to reduce the impacts to these species and promote continued successful occupation of the Project area environments by the species.

Included in this program will be color photos of the listed species, which will be shown to the employees. Following the education program, the photos will be posted in the office of the contractor and resident engineer, where they will remain through the duration of the Project. The selected construction contractor will be responsible for ensuring that employees are aware of the listed species.

3. Project Reports. Within 3 months of Project completion, a Project Report will be developed that details the BMPs that were implemented, identifies how well the BMPs worked, discusses ways that BMPs could be improved for either protection of species and habitats or implementation efficiency, and reports on any Federally listed species observed at or near the Project site. If site restoration was included as part of the Project, the implementation of that restoration and any follow-up monitoring will be included. Annual reports could

- be required for some longer-term Projects. The Project and any annual reports will be made available to the USFWS.
4. If it is determined that salvage of plants is the best approach, a salvage plan for Federally listed plants will be developed and coordinated with USFWS. The CBP biological monitor will identify a location for storing any salvaged cactus and/or agaves. For particular actions, the USFWS will advise CBP regarding the relocation of plants.
 5. Individual Federally listed animals found in the Project area will be relocated by a qualified biologist to a nearby safe location in accordance with accepted species-handling protocols to the extent practicable.
 6. All construction projects in habitats of Federally listed species will have a qualified designated biological monitor on site during the work. Duties of the biological monitor will include ensuring that activities stay within designated Project areas, evaluating the response of individuals that come near the Project site, and implementing the appropriate BMP. The designated biological monitor will notify the construction manager of any activities that might harm or harass an individual of a Federally listed species. Upon such notification, the construction manager may temporarily suspend all activities in question and notify the Contracting Officer, the Administrative Contracting Officer, and the Contracting Officer's Representative of the suspense so that the key U.S. Army Corps of Engineers (USACE) personnel can be notified and apprised of the situation for resolution. The biological monitor will document implementation of construction-related BMPs designed for the Project to reduce the potential for adverse effects on the species or their habitats. Weekly reports from the biological monitor should be used for developing the Project Report.
 7. Where a construction Project could be located within 1 mile of occupied species habitats, but the individuals of the species are not likely to move into the Project area, a biological monitor is not needed. However, the construction monitor will be aware of the species-specific BMPs and ensure that BMPs designed to minimize habitat impacts are implemented and maintained as planned. This category includes the lesser long-nosed bat and all protected aquatic species.
 8. Particular importance is given to proper design and location of roads so that the potential for roadbed erosion into Federally listed species habitat will be avoided or minimized.
 9. Particular importance is given to proper design and location of roads so that the potential for entrapment of surface flows within the roadbed due to grading will be avoided or minimized. Depth of any pits created will be minimized so animals do not become trapped.
 10. Particular importance is given to proper design and location of roads so that the widening of existing or created roadbed beyond the design parameters due to improper maintenance and use will be avoided or minimized.
 11. Particular importance is given to proper design and location of roads so that excessive use of unimproved roads for construction purposes that results in

their deterioration that affects the surrounding Federally listed species habitat areas will be minimized. Road construction and use for construction will be monitored and documented in the Project Report.

12. Particular importance is given to proper design and location of roads so that the fewest roads needed for construction will be developed and that these are maintained to proper standards. Roads no longer needed by the government should be closed and restored to natural surface and topography using appropriate techniques. The Global Positioning System (GPS) coordinates of roads that are thus closed should be recorded and integrated into the USBP Geographic Information System (GIS) database. A record of acreage or miles of roads taken out of use, restored, and revegetated will be maintained.
13. The width of all roads that are created or maintained by CBP for construction purposes will be measured and recorded using GPS coordinates and integrated into the USBP GIS database. Maintenance actions should not increase the width of the roadbed or the amount of disturbed area beyond the roadbed.
14. Construction equipment will be cleaned using BMPs prior to entering and departing the Project corridor to minimize the spread and establishment of non-native invasive plant species.
15. Surface water from untreated sources, including water used for irrigation purposes, will not be used for construction or maintenance Projects located within 1 mile of aquatic habitat for Federally listed aquatic species. Groundwater or surface water from a treated municipal source will be used when close to such habitats. This is to prevent the transfer of invasive animals or disease pathogens between habitats in case water on the construction site were to reach the Federally listed species habitats.
16. Materials such as gravel or topsoil will be obtained from existing developed or previously used sources, not from undisturbed areas adjacent to the Project area. Fill material brought in from outside the Project area will be identified as to source location and will be weed-free to the extent practicable.
17. When available, areas already disturbed by past activities or those that will be used later in the construction period will be used for staging, parking, and equipment storage, where practicable.
18. Within the designated disturbance area, grading or topsoil removal will be limited to areas where this activity is needed to provide the ground conditions needed for construction or maintenance activities. Minimizing disturbance to soils will enhance the ability to restore the disturbed area after the Project is complete.
19. Water for construction use will be from wells or irrigation water sources at the discretion of the landowner (depending on water rights). If local groundwater pumping creates an adverse effect on aquatic-, marsh-, or riparian-dwelling Federally listed species, treated water from outside the immediate area will be utilized.

20. Surface water from aquatic or marsh habitats will not be used for construction purposes if that site supports aquatic Federally listed species or if it contains nonnative invasive species or disease vectors and there is any opportunity to contaminate a Federally listed species habitat through use of the water at the Project site.
21. Water tankers that convey untreated surface water will not discard unused water where it has the potential to enter any aquatic or marsh habitat.
22. Water storage on the Project area should be in closed on-ground containers located on upland areas, not in washes.
23. Pumps, hoses, tanks, and other water storage devices will be cleaned and disinfected with a 10 percent bleach solution at an appropriate facility before use at another site. If untreated surface water was used, measures shall be implemented to ensure that this water does not enter any surface water area. If a new water source is used that is not from a treated or groundwater source, the equipment will require additional cleaning. This is important to kill any residual disease organisms or early life stages of invasive species that could affect local populations of Federally listed species.
24. CBP will develop and implement storm water management plans for every Project, as appropriate.
25. A CBP-approved spill protection plan will be developed and implemented at construction and maintenance sites to ensure that any toxic substances are properly handled and that escape into the environment is prevented. Agency standard protocols will be used. Drip pans underneath equipment, containment zones used when refueling vehicles or equipment, and other measures are to be included.
26. Nonhazardous waste materials and other discarded materials, such as construction waste, will be contained until removed from the construction site. This will assist in keeping the Project area and surroundings free of litter and reduce the amount of disturbed area needed for waste storage.
27. To avoid attracting predators of protected animals, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers and removed daily from the Project site.
28. Waste water is water used for Project purposes that is contaminated with construction materials, or was used for cleaning equipment and thus carries oils or other toxic materials or other contaminants in accordance with state regulations. Waste water will be stored in closed containers on site until removed for disposal. Concrete wash water will not be dumped on the ground, but is to be collected and moved offsite for disposal. This wash water is toxic to aquatic life.
29. Construction speed limits will not exceed 35 miles per hour (mph) on major unpaved roads (graded with ditches on both sides) and 25 mph on all other unpaved roads. Nighttime travel speeds will not exceed 25 mph, and might be

- less based on visibility and other safety considerations. Construction at night will be minimized.
30. No pets owned or under the care of the construction contractor or any and all construction workers will be permitted inside the Project's construction boundaries, adjacent native habitats, or other associated work areas. This BMP does not apply to any animals under service to the USBP (such as canine and horse patrols).
 31. If construction or maintenance activities continue at night, all lights will be shielded to direct light only onto the area required for worker safety and productivity. The minimum wattage needed will be used and the number of lights will be minimized.
 32. Light poles and other pole-like structures will be designed to discourage roosting by birds, particularly ravens or raptors that may use the poles for hunting perches.
 33. Noise levels for day or night construction and maintenance will be minimized. All generators will be in baffle boxes (a sound-resistant box that is placed over or around a generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.
 34. Transmission of disease vectors and invasive nonnative aquatic species can occur if vehicles cross infected or infested streams or other waters and water or mud remains on the vehicle. If these vehicles subsequently cross or enter uninfected or noninfested waters, the disease or invasive species could be introduced to the new area. To prevent this, crossing of streams or marsh areas with flowing or standing water will be avoided by construction vehicles and equipment, and, if not avoidable, the construction vehicle/equipment will be sprayed with a 10 percent bleach solution.
 35. Materials used for on-site erosion control will be free of nonnative plant seeds and other plant parts, to the extent practicable, to limit potential for infestation. Since natural materials cannot be certified as completely weed-free, if such materials are used, there will be follow-up monitoring to document establishment of nonnative plants, and appropriate control measures will be implemented for a period of time to be determined in the site restoration plan.
 36. Appropriate techniques to restore the original grade, replace soils, and restore proper drainage will be implemented for areas to be restored (e.g., temporary staging areas).
 37. A site restoration plan for Federally listed species and habitat will be developed during Project planning and provide an achievement goal to be met by the restoration activity. If seeding with native plants is identified as appropriate, seeding will take place at the proper season and with native seeds.
 38. During follow-up monitoring and during maintenance activities, invasive plants that appear on the site will be removed. Mechanical removal will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. All chemical applications on refuges must be used in coordination with the

USFS, Bureau of Land Management (BLM), or NPS Integrated Pest Management Coordinator to ensure accurate reporting. Herbicides can be used according to label directions. The monitoring period will be defined in the site restoration plan.

39. To prevent entrapment of wildlife species during emplacement of vertical posts/bollards, all vertical fence posts/bollards that are hollow (i.e., those that will be filled with a reinforcing material such as concrete), will be covered so as to prevent wildlife from entrapment. Covers will be deployed from the time the posts or hollow bollards are erected to the time they are filled with reinforcing material.
40. To prevent entrapment of wildlife species during the construction of the Project, all excavated, steep-walled holes or trenches will be provided with one or more escape ramps constructed of earth fill or wooden planks. The ramps will be located at no greater than 100-foot intervals and will be sloped less than 45 degrees. Each morning before the start of construction and before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. Any animals so discovered will be allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, before construction activities resume, or removed from the trench or hole by the biological monitor and allowed to escape unimpeded.

1.3.2 BMPs for Temporary Impacts

The following apply as offsetting conservation measures for temporary impacts.

1. Site restoration of temporarily disturbed areas such as staging areas and construction access routes will be monitored as appropriate. Where practicable, surface disturbance and removal of plant cover should be minimized in areas of temporary construction impacts and root stocks left intact.
2. During follow-up monitoring of any restoration area, invasive plants that appear on the site will be removed. Mechanical removal will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. All chemical applications on refuges must be used in coordination with the USFS, BLM or NPS Integrated Pest Management Coordinator to ensure accurate reporting. Herbicides will be used according to label directions. The monitoring period will be defined in the site restoration plan. Training to identify nonnative invasive plants will be provided for contractor personnel, as necessary.

1.3.3 Species-Specific BMPs

Pima Pineapple Cactus and Cochise Pincushion Cactus

1. Maintenance activities in Pima pineapple (*Coryphantha scheeri* var. *robustispina*) and Cochise pincushion cacti (*Coryphantha robbinsorum*) habitat should not increase the existing disturbed areas, subsequent to the construction of the Project.

2. Use of existing roads and trails should be maximized in areas of suitable habitat for the Pima pineapple and Cochise pincushion cacti. Maps of suitable habitat areas should be available and protection of the two cacti stressed in environmental education for contractors involved in construction or maintenance of facilities.
3. Salvage of individual Pima pineapple or Cochise pincushion cacti, if any undiscovered specimens are found, will be considered only when on-site or off-site habitat conservation is not possible and death of the individual is unavoidable.

Huachuca Water-Umbel

1. Because loss of habitat is a significant risk to the Huachuca water-umbel, (*Lilaeopsis schaffneriana ssp. recurva*) no roads, fences, structures, or other on-ground facilities will be placed within 0.25 miles of occupied or potentially suitable habitat areas. If these areas cannot be avoided, minimization and mitigation will be included in the Project design, including BMPs to control erosion and sedimentation.
2. TI must not be located within 0.25 miles of known or potential habitat, vegetation clearing will be limited, and erosion-control measures put in place to reduce sediment runoff potential. Monitoring of effects on aquatic habitat during construction could be required.
3. Preconstruction surveys are not required as long as Projects are located at least 0.25 miles from occupied habitat areas so that watershed effects will not reach the water-umbel habitat.
4. Whenever practicable, road construction and maintenance will not create new available access to known water-umbel habitats.
5. Use of existing roads and trails in or adjacent to water-umbel habitat will be maximized. Educational briefing materials including distribution maps, on the presence of the species will be provided as part of training. Maps can be helpful for this purpose.

Chiricahua Leopard Frog

1. Exclusion fencing might be appropriate where road kill is likely or to direct species to underpasses or other passageways. Specific protocols are available for Chiricahua leopard frog (*Rana chiricahuensis*).
2. Monitoring of effects on the frog's terrestrial and aquatic habitat during construction could be required. Disease prevention protocols will be employed if the Project is in areas known or likely to harbor chytridiomycosis (consult with the USFWS to identify these areas). In such cases, if vehicles/equipment use will occur in more than one frog habitat, ensure that all equipment is clean and dry or disinfected before it moves to another habitat.

3. To the extent practicable, removal of riparian vegetation within 100 feet of aquatic habitats will be avoided to provide a buffer area to protect the habitat from sedimentation. Construction within Sycamore Canyon Creek will be avoided to the maximum extent practicable.

Sonora Tiger Salamander

1. Exclusion fencing or underpasses should be installed within 0.3 mile of occupied Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*) habitat during the migration or leching seasons.
2. Operate construction vehicle/equipment at speeds of 25 mph or less within 0.3 mile of occupied tiger salamander habitat during the migration or leching season.
3. Avoid night time construction activities, particularly construction vehicle traffic, within 0.3 mile of occupied tiger salamander habitat, to the extent practicable.
4. If a tiger salamander individual is observed, construction activities in the immediate area, including vehicular traffic, should cease until the salamander leaves the road on its own volition, or can be removed from the area by a qualified person.
5. To the extent practicable, avoid removing vegetation within 100 feet to a stream, spring or stock tank to reduce the potential of erosion or sedimentation.

Jaguar and Ocelot

1. If construction or maintenance activities continue at night, all lights will be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers.

Lesser Long-Nosed Bat

1. When planning activities, avoid areas containing columnar cacti (e.g., saguaro [*Carnegiea gigantea*] and organ pipe) or agaves that provide the forage base for the bat. If they cannot be avoided, columnar cacti and agaves will be salvaged and transplanted to the extent practicable prior to construction activity. Any restoration (e.g., planting of cacti or agaves raised off-site or purchased) would be a compensation measure (see Compensation Measures below).
2. Maintenance activities for facilities can occur at any time; however, for major work on roads or fences where significant amounts of equipment will be required, the October to April period is the preferred period for such activities
3. If construction or maintenance activities occur at night, all lights will be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers.

Mexican Spotted Owl

1. If construction or maintenance activities continue at night, all lights will be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers.
2. Vegetation cleared for construction will be left as debris piles to provide prey habitat and increase presence of primary constituent elements (PCE) for the Mexican spotted owl (*Strix occidentalis lucida*) (MSO).
3. Clearing and grubbing will be minimized to the extent practicable within designated MSO Critical Habitat. In particular, components which comprise the MSO PCEs should be avoided.

1.3.4 Compensation Measures

It is CBP's policy to reduce impacts through the sequence of avoidance, minimization, and mitigation. Current estimates of impacts for MSO, jaguar (*Panthera onca*) and lesser-long nosed bat (*Leptonycteris curasoae yerbabuena*) habitat are presented in **Table 1-2**. Additionally, the Project may affect, but is not likely to adversely affect Cochise pincushion cactus, Pima pineapple cactus, Huachuca water-umbel, ocelot (*Leopardus pardalis*), and Sonora tiger salamander. If the Project results in adverse impacts on these species, CBP will mitigate as appropriate. Actual impacts to habitats will be documented during construction by the environmental monitors and included in the Project Report which will be made available to USFWS.

Table 1-2. Summary of Permanent Impacts of the Project on Habitat

Habitat Type	Estimated Acres of Permanent Total Impact	Segment	
		EV-1B	FV-1B
Semidesert grassland (habitat for jaguar and lesser long-nosed bat)	2.2	-	2.2
Manzanita scrub/oak woodlands (habitat for jaguar and MSO)	40	40	-
Sonora desertscrub (habitat for jaguar and lesser long-nosed bat)	152.7	-	152.7
Cottonwood-willow riparian woodlands (habitat for MSO, jaguar and ocelot)	0.58	-	0.58
Cottonwood-sycamore riparian woodlands (habitat for MSO, jaguar and ocelot)	1.2	-	1.2
Totals	197.1	40	157.7

Using funds contributed to the compensation pool by CBP, USFWS may offset permanent direct and indirect impacts on habitat used by Federal listed species. USFWS may use these monies to fund conservation actions benefitting these species.

Jaguar

1. Using funds from the mitigation pool established by CBP, USFWS may support Jaguar Conservation Team activities or support the monitoring program, such as funding for additional trip cameras at potential jaguar locations and radio telemetry.

Lesser Long-Nosed Bat

1. Using funds from the mitigation pool established by CBP, USFWS may continue monitoring of maternity and summer roost sites to assist in documenting the status of the species. Infra-red cameras could also be purchased to document bats at roosts.
2. When salvage is not possible, USFWS or relevant land management agencies may use funds from the mitigation pool established by CBP to conduct restoration for columnar cacti and agaves.
3. Using funds from the mitigation pool established by CBP, USFWS may plant Palmer's agave in suitable areas as part of revegetation and erosion-control actions. This would enhance foraging opportunities.
4. Using funds from the mitigation pool established by CBP, USFWS may support telemetry monitoring of foraging bats to determine the degree to which roads and fences act as barriers or increase habitat fragmentation to provide useful information for determining the effect on bat foraging and movement of future Projects.

Mexican Spotted Owl

1. Using funds from the mitigation pool established by CBP, USFWS may support monitoring of primary activity centers (PAC) to determine the degree to which roads and fences increase habitat fragmentation to provide useful information for determining the effect on owl foraging and movement of future Projects.
2. Using funds from the mitigation pool established by CBP, USFWS, and USFS may cooperate to provide intensive vegetation management to enhance the PCEs within designated Critical Habitat.

Sonora chub

1. Preconstruction surveys within the immediate footprint and downstream areas within FV-1B segments.
2. Land clearing within the watershed of occupied habitat will be minimized to the extent practicable and measures to control erosion off the construction site will

be implemented. Roads and fences that would require land clearing will be designed to avoid areas within 0.5 miles of sites containing habitat to the extent practicable.

3. If facilities must be located within 0.5 miles of occupied habitats, vegetation clearing will be limited, and erosion-control measures put in place concurrent to construction to reduce sediment runoff potential. Monitoring of effects on aquatic habitat during construction could be required.
4. Removal of riparian vegetation within 100 feet of streams will be avoided to the extent practicable to provide a buffer area to protect stream banks.

2. DESCRIPTION OF SPECIES AND THEIR HABITAT

This section summarizes information regarding some of the key species and habitats addressed in this document. Some listed species are not included here because the implementation of the agreed upon BMPs and conservation measures are anticipated to provide conditions that avoid adverse effect. For more complete information and supporting citations regarding species' descriptions, distribution and abundance, habitat needs, life history, and population ecology, the local USFWS office can be contacted.

2.1 JAGUAR

The U.S. population of jaguar was listed as Endangered on July 22, 1997 (62 *Federal Register* [FR] 39147) without Critical Habitat. Non-U.S. population was listed as Endangered on March 30, 1972 (37 FR 6476).

Land management/ownership for this species includes areas associated with NPS, USFS, BLM, various Native American Tribes, the State of Arizona, and private land holdings (USFWS 2000a).

2.1.1 Species Description

The species is a large, heavy-bodied, big-headed cat. Yellowish to tawny, spotted with black rosettes or rings in horizontal rows along the back and sides; most rings are tan inside, with one or two black spots. Legs, head, and tail have smaller, solid spots, usually giving way to incomplete bands near the end of the tail (USFWS 2000a).

The jaguar is the largest species of cat native to the Western Hemisphere. The species is muscular, with relatively short, massive limbs, a deep-chested body, cinnamon-buff in color with many black spots. Weight ranges widely from 90 to 300 pounds. Length is 7.8 feet from head to tail tip (USFWS 2000a).

2.1.2 Distribution and Abundance

The historic range included California, Arizona, New Mexico, Louisiana, south through Texas and into central South America. In Arizona the species was found in mountainous parts of eastern Arizona to the Grand Canyon (USFWS 2000a).

The current range includes central Mexico and into central South America as far south as northern Argentina. There are no known breeding populations in the U.S. (USFWS 2000a).

In Arizona, the general distribution of past sightings and the habitats associated with these sightings include areas of forest, woodland, and grassland vegetation types in the Baboquivari Mountains, the southern portion of the Altar Valley, a portion of the southern Santa Cruz River basin, and the San Pedro River basin south of Arivapa Creek. Recent (2001 to 2007) jaguar observations in south-central Arizona near the Mexican border have primarily occurred in Madrean oak woodland communities;

however, jaguars were also documented in open mesquite grasslands and desert scrub/grasslands on the desert valley floor (USFWS 2007a).

2.1.3 Habitat

The species is found near water in the warm tropical climate of savannah and forest. Rarely found in extensive arid areas. Individuals in Arizona have been found in Sonora desertscrub up through subalpine conifer forest (USFWS 2000a). Most jaguar detections occurred in Madrean oak woodland communities; however, jaguars were also documented in open mesquite grasslands and desert scrub/grasslands on the desert valley floor.

2.1.4 Threats

A number of threats contributed to or continue to affect the status of northern jaguar populations, including illegal shooting; overhunting of jaguar prey species; and habitat loss, fragmentation, and modification (USFWS 2000a). Changes in jaguar habitat have affected not only habitat for breeding and foraging, but also movement corridors.

2.2 HUACHUCA WATER-UMBEL

The Huachuca water-umbel was listed as Endangered on January 6, 1997 (62 FR 3) with Critical Habitat (64 FR 37441, July 12, 1999).

Land management/ownership for this species includes areas associated with the Coronado National Forest, San Bernardino National Wildlife Refuge, BLM, Fort Huachuca Military Reservation, and private land holdings (USFWS 2001a).

Critical habitat includes 51.7 miles of streams or rivers in Cochise and Santa Cruz counties, Arizona. The following general areas are included in the Critical Habitat: Sonoita Creek, Santa Cruz River, Scotia Canyon, Sunnyside Canyon, Garden Canyon, Lone Mountain Canyon, Rattlesnake Canyon, Bear Canyon, and 33.7 miles of the Upper San Pedro River (USFWS 2001a).

2.2.1 Species Description

The species is a slender, erect terrestrial perennial orchid found on slopes adjacent to marshy wetlands or cienegas intermixed with tall grasses and sedges. The water-umbel is an herbaceous semi-aquatic perennial in the parsley family (Umbelliferae) with slender erect leaves that grow from the nodes of creeping rhizomes. The leaves are segmented, hollow cylinders, and are 0.04 to 0.12 inches in diameter, but their length can vary from 1 to 9 inches, depending on the depth of the water. Tiny 3- to 10-flowered umbels arise from root nodes. The inflorescence is 0.5 to 2.0 inches long and is always shorter than the stems (USFWS 2001a).

2.2.2 Distribution and Abundance

The current range includes a number of disjunct localities in Santa Cruz, Cochise, and Pima counties, Arizona; and Sonora, Mexico. Potential range for the species could be wherever habitat conditions are met in southeastern Arizona or northern Mexico (USFWS 2001a).

2.2.3 Habitat

Typical habitat includes cienegas and associated vegetation within Sonora desertscrub, grassland or oak woodland, and conifer forest between 4,000 to 6,500 feet. *L. schaffneriana* ssp. *recurva* seems to require an intermediate level of flooding frequency to keep competition manageable, but populations can be destroyed when floods are too frequent and intense. Plants are found in unshaded or shaded sites. They require perennial water, gentle stream gradients, small- to medium-sized drainage areas, and (apparently) mild winters. Usually found in water depth from 2 to 10 inches (USFWS 2001a).

2.2.4 Threats

Wetland habitats for the species are rare and declining in the Southwest. Threats include watershed degradation due to livestock grazing and development, trampling by livestock, diversion of water and dewatering of habitats, and flash flooding (USFWS 2001a).

2.3 PIMA PINEAPPLE CACTUS

The Pima pineapple cactus was listed as Endangered on September 23, 1993 (58 FR 49875) without Critical Habitat.

Land management/ownership for this species includes areas associated with BLM, Coronado National Forest, Buenos Aires National Wildlife Refuge, State Land Department, possibly Bureau of Reclamation, and the Tohono O'odham and Pascua Yaqui Tribes (USFWS 2000b).

Protected from international trade, Pima pineapple cactus is covered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The species is also known as Scheer's strong-spined cory cactus. *Mammillaria robustispina* is a synonym for *Coryphantha scheeri* var. *robustispina*. This species can be confused with juvenile barrel cactus (*Ferocactus*) (USFWS 2000b).

2.3.1 Species Description

The Pima pineapple cactus is a low-growing cactus species that can be found as single- or multi-stemmed plants. The species grows in the transition zone between the semi-desert grasslands and Sonora desertscrub on alluvial bajadas and slopes of less than 10 percent at elevations between 2,300 to 4,600 feet (USFWS 2000b).

The Pima pineapple cactus is an attractive hemispherical plant; the adults measure 4 to 18 inches tall and 3 to 7 inches in diameter. The spines appear in clusters with one strong, usually hooked central spine and 6 to 15 straight radial spines. The spines are very stout, usually straw-colored, but become black with age. The plants can be single-stemmed, multiheaded, or can appear in clusters. The flowers are silky yellow (rarely white) in color and appear in early July with the summer rains. Flowering continues until August. The fruit is green, ellipsoid, succulent, and sweet (USFWS 2000b).

2.3.2 Distribution and Abundance

Pima pineapple cactus are found at elevations from 2,300 to 4,500 feet in Pima and Santa Cruz counties, Arizona; and northern Sonora, Mexico. The range extends east from the Baboquivari Mountains to the western foothills of the Santa Rita Mountains. The northernmost boundary is near Tucson. Potential habitat for this species is difficult to estimate due to its habitat requirements and the topographic complexity within its range (USFWS 2000b).

2.3.3 Habitat

This cactus grows in alluvial basins or on hillsides in semi-desert grassland and Sonora desertscrub in southern Arizona and northern Mexico. Soils range from shallow to deep, and silty to rocky, with a preference for silty to gravely deep alluvial soils. The plant occurs most commonly in open areas on flat ridge tops or areas with less than 10 to 15 percent slope (USFWS 2000b).

2.3.4 Threats

Threats to this species include illegal collection; habitat degradation due to recreation and historical and present overuse of the habitat by livestock; habitat loss due to mining, agriculture, road construction, urbanization, aggressive non-native grasses, and range management practices to increase livestock forage (USFWS 2000b).

2.4 COCHISE PINCUSHION CACTUS

The Cochise pincushion cactus was listed as a threatened species on January 9, 1986 (USFWS 1986). Critical habitat was not designated. The species was listed as threatened because of its small population size and threats related to collecting, potential minerals exploration and mining, and habitat degradation from livestock and wildlife.

2.4.1 Species Description

The Cochise pincushion cactus is a small (1 to 3 inches in diameter), unbranched cactus covered by white, cottony, areoles. The radial spines overlap with the areoles, giving the cacti an overall whitish appearance. The flowers are pale yellow or light beige and are produced in early spring (March). Fruits are orange-red to scarlet and may contain up to 20 seeds. Most of the stem is underground, with only the top 2 inches

visible above ground. During droughts and seasonal dry times, the cacti shrink or retract into the soil, making them difficult to see (USFWS 2007b).

2.4.2 Distribution and Abundance

The Cochise pincushion cactus is scattered among several limestone hills in southeastern Cochise County, Arizona. At least one population is known from northern Sonora, Mexico (USFWS 2007b).

2.4.3 Habitat

The cacti are located on Permian limestone hills, at elevations ranging from 4,200 to 4,700 feet. The soils are low in nutrients, with a pH of 7.9 to 8.0. Plants require well-drained substrates and grow in full sunlight. Dense colonies of the cacti occur on bedrock, with very little soil. Within their limited habitat the plants are found scattered, with a few dense clumps ranging from 100 to 1,000 individuals (USFWS 2007b).

2.4.4 Threats

Threats to the species include collecting, potential minerals exploration and development, and habit degradation from cattle, wildlife, feral animals (USFWS 1993), and invasive plant species, especially grasses (USFWS 2007b).

Southeastern Arizona has been experiencing long-term drought conditions since 2000. Survival and reproduction of the Cochise pincushion cactus seems to be affected by the ongoing lack of precipitation. It remains to be seen if populations will recover if/when the effects of the drought are over. In addition, areas along the U.S./Mexico border continue to see resource damage as a result of illegal immigration and drug smuggling. The topography of the area where the Cochise pincushion cactus occurs makes this area favorable for illegal border traffic. Trampling and ground disturbance resulting from border activities remains a potential threat to this species (USFWS 2007b).

2.5 SONORA TIGER SALAMANDER

The Sonora tiger salamander is Federally listed as endangered. There is no Critical Habitat designated in Arizona. The subspecies has been found in 53 ponds in the San Rafael Valley of Arizona (USFWS 2002a), which is where the EV-1A section is located.

2.5.1 Species Description

Sonora tiger salamanders begin their life as jelly-coated eggs laid in water. They hatch and grow as aquatic larvae with gills, and then either mature as gilled aquatic adults called branchiate adults, neotenes, or paedomorphs, or metamorphose into terrestrial salamanders without gills. Metamorphosed terrestrial Sonora tiger salamanders have a color pattern ranging from “a reticulate pattern with an irregular network of light coloration, often coupled with light spots, on a dark background color”, to a pattern of large, well-defined light or yellow spots or transverse bars, some of which encroach on

the dark venter. Metamorphosed Sonora tiger salamanders measure from about 1.8 to 6 inches snout to vent length. Branchiate adults are gray to olive on the dorsum, head, and tail, and off-white to yellow on the ventral side. They have three external gills on each side of their head, and measure between 2.5 to 6.5 inches. Male and female adult salamanders can be distinguished by the presence of two black folds of tissue (cloacal folds) on the caudal side of a male's vent. Larvae are gray on the dorsum head, and tail, with little pigment on the ventral surface. They have external gills and hatch without legs, but grow hind and fore-limbs early in development (USFWS 2002a).

2.5.2 Distribution and Abundance

Most known Sonora tiger salamander populations exist in the San Rafael Valley. The San Rafael Valley lies between the Huachuca and Patagonia Mountains, is bordered by the Canelo Hills to the north, and extends from Santa Cruz County in Arizona south for approximately 18 miles into Sonora, Mexico (USFWS 2002a).

Because so few sites were sampled prior to the 1980's, it is impossible to determine the historical distribution of Sonora tiger salamanders. However, based on collections and observations of salamanders and the distribution of the plains grassland and adjacent Madrean Evergreen Woodlands in which the salamander has been found, the range of the subspecies and its occupied and potentially occupied habitat is thought to extend from the crest of the Huachuca Mountains west to the crest of the Patagonia Mountains, including the San Rafael Valley and adjacent foothills from its origins in Sonora north to the Canelo Hills.

Surveys for the Sonora tiger salamander have been conducted on public land throughout the Arizona portion of the San Rafael Valley. Surveys have also been conducted on the San Rafael Cattle Ranch. The number of salamanders supported by each pond is difficult to determine, because metamorphosed salamanders can survive outside the ponds and it is not know what proportion of metamorphs breed each year. In some years, salamanders will be completely absent from a pond, only to return the following year to breed and produce many offspring (USFWS 2002a). Tiger salamanders have also been found in areas just outside the San Rafael Valley, such as Fort Huachuca, Harshaw Canyon, Copper Canyon, and Coronado Memorial.

2.5.3 Habitat

Cattle ponds or tanks are the primary habitat for Sonora tiger salamanders. Salamanders suspected of being Sonora tiger salamanders were found in the Los Fresnos cienega in Mexico, south of the U.S./Mexico border. Tiger salamanders were also found in a cave and vertical mining shaft at the northwestern edge of the San Rafael Valley (USFWS 2002a).

The most important habitat requirement for Sonora tiger salamanders is the availability of standing water for breeding from January through June. This gives the salamanders enough time to breed, grow as larvae, and metamorphose before the pond dries. Aquatic breeding habitats are used by all life stages; however, upland habitats are also

used by terrestrial adults when not at the breeding ponds. Aquatic and bank-line vegetation is missing from many ponds with salamanders, suggesting that these factors, although beneficial, are not necessary for the persistence of Sonora tiger salamanders.

Sonora tiger salamanders are tolerant of a wide range of temperatures, with temperatures in ponds varying from less than 41 degrees Fahrenheit (°F) at the beginning of the year up to 86° F during summer. Temperatures in the terrestrial environment range from below freezing to over 95° F. Mammal burrows or loosened soils outside the pond likely provide refugia for metamorphosed salamanders in the terrestrial environment, enabling them to burrow underground to avoid extreme environmental conditions.

2.5.4 Threats

Despite the fact that Sonora tiger salamander populations face threats of introduced predators, disease, genetic swamping, restricted distribution, and habitat dependent on human management, there is little reason to assume that Sonora tiger salamanders are in immediate danger of extinction. Because Sonora tiger salamanders have such a restricted distribution, and because persistence of their habitat depends directly on human management strategies, they will always be vulnerable to changes in land management and relatively small changes in environmental variables such as drying frequency, frequency of disease outbreaks, and frequency with which fish or non-native salamanders are introduced.

2.6 MEXICAN SPOTTED OWL

The MSO was listed as a threatened species on April 15, 1993. Critical habitat was designated in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties in Arizona on August 31, 2004 (69 FR 53182, August 31, 2004). The majority of the owls are found on National Forests lands. They are also found on tribal lands, NPS lands, and on BLM lands (USFWS 2008). The Recovery Plan for the MSO was completed in December 1995 and is currently being revised. A Final Recovery Plan is expected in November 2009. Tribal lands within Arizona are excluded from MSO Critical Habitat designation under Section 4(b)(2) of the Act (USFWS 2008).

2.6.1 Species Description

The MSO has large, dark eyes, dark to chestnut brown coloring, whitish spots on the head and neck, and white mottling on the abdomen and breast. The spots of the MSO are larger and more numerous than in the other two subspecies, giving it a lighter appearance. Several thin white bands mark an otherwise brown tail. Young owls less than 5 months old have a downy appearance. Females are larger than males.

2.6.2 Distribution and Abundance

The historical range extended from the southern Rocky Mountains in Colorado and the Colorado Plateau in southern Utah southward through Arizona, New Mexico, and far western Texas, through the Sierra Madre Occidental and Oriental, to the mountains at the southern end of the Mexican Plateau. The present range is thought to be similar to the historical range. Populations in Arizona are patchily distributed and occur where appropriate habitat is present throughout all but the arid southwestern portion of the state (USFWS 2008).

The owl occupies a broad geographical area, but does not occur uniformly throughout its range. It occurs in disjunct localities that correspond to isolated mountain systems and canyons. About 91 percent of known MSO existing in the U.S. between 1990 and 1993 occurred on land administered by the USFS, the primary administrator of lands supporting owls. Most owls have been found within the 11 National Forests of Arizona and New Mexico (USFWS 2004).

2.6.3 Habitat

The owl inhabits canyon and forest habitats across its range and is frequently associated with mature mixed-conifer, pine-oak, and riparian forests. They are also found in canyon habitat dominated by vertical-walled rocky cliffs within complex watersheds including tributary side canyons. Rock walls include caves, ledges, and other areas that provide protected nest and roost sites. Canyon habitat may include small isolated patches or stringers of forested vegetation including stands of mixed-conifer, ponderosa pine, pine-oak, pinyon-juniper, and/or riparian vegetation in which owls regularly roost and forage. Owls are usually found in areas with some type of water source (*i.e.*, perennial stream, creeks, and springs, ephemeral water, small pools from runoff, reservoir emissions) (USFWS 2004).

Roosting and nesting habitat exhibit certain identifiable features, including large trees with a trunk diameter of 12 inches or more, uneven aged tree stands, a multi-storied canopy, a tree canopy creating shade over 40 percent or more of the ground that overlook downed logs and snags (USFWS 2004). Owls use areas that contain a number of large trees of different types including mixed-conifer and pine-oak with smaller trees under the canopy of the larger trees. These types of areas provide vertical structure and high plant species richness that are important to owls. Owl foraging habitat includes a wide variety of forest conditions, canyon bottoms, cliff faces, tops of canyon rims, and riparian areas.

2.6.4 Threats

The USFWS (1995) cited historical alteration of the owl's habitat as the result of even-aged silviculture and the continuing practice of even-aged silviculture, and the danger of catastrophic wildfire as the two major threats to the owl.

In 1996, the Southwest Region of the USFS incorporated the Mexican spotted owl Recovery Plan guidelines as management direction into their Forest Plans. Thus, the management plans for the USFS Southwestern Region include biological goals consistent with the Recovery Plan for the owl, thereby eliminating one of the primary threats to the owl on USFS lands identified in the final listing rule (USFWS 2004).

2.7 LESSER LONG-NOSED BAT

The lesser long-nosed bat was listed as Endangered on September 30, 1988 (53 FR 38456) without Critical Habitat.

Land management/ownership for this species includes lands owned by or managed by USFWS, BLM, NPS, USFS, Department of Defense, several Tribes, the state of Arizona, and private land holdings (USFWS 2001b).

2.7.1 Species Description

The lesser long-nosed bat is a yellow-brown or cinnamon gray bat, with a total head and body measurement of approximately 3 inches. The tongue measures approximately the same length as the body. This species also has a small noseleaf. The wingspan of *L. curasoae yerbabuena* is approximately 10 inches and the mass is roughly 0.8 ounce. Previously known as Sanborn's long-nosed bat (*Leptonycteris sanborni*), the species is a medium-sized bat slightly smaller than the Mexican long-nosed bat (USFWS 2001b).

2.7.2 Distribution and Abundance

The species historically ranged from central Arizona and southwestern New Mexico through much of Mexico to El Salvador. Records exist for occurrences in the southern Peloncillo Mountains of New Mexico (USFWS 2001b).

The current range is similar to historic; however, the number of occupied roost sites and the number of individuals per colony have recently declined drastically. These bats are seasonal (April to September) residents of southeastern Arizona, and possibly extreme western Arizona (i.e., Cochise, Pima, Santa Cruz, Graham, Pinal and Maricopa counties, Arizona) (USFWS 2001b).

2.7.3 Habitat

Habitat for the species includes mainly desert scrub habitat in the U.S. portion of its range. In Mexico, the species occurs up into high elevation pine-oak and ponderosa pine forests. Altitudinal range is from 1,600 to 11,500 feet. Roosting is in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti are present. The species forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti (USFWS 2001b).

2.7.4 Threats

Considerable evidence exists for the interdependence of *Leptonycteris* bat species and certain agaves and cacti. Excess harvest of agaves in Mexico; the collection of cacti in the U.S.; and the conversion of habitat for agricultural uses, livestock grazing, wood-cutting, and other development might contribute to the decline of long-nosed bat populations. These bats are particularly vulnerable due to many individuals using only a small number of communal roosts (USFWS 2001b).

2.8 OCELOT

The ocelot was listed as endangered on March 28, 1972.

2.8.1 Species Description

Ground colors of the short fur of the ocelot, varies from creamy, or tawny yellow, to reddish grey and grey. The underside of the body, tail, and insides of the limbs is whitish. Rather more blotched than spotted, the chain-like spots are bordered with black. Ocelots have both solid and open dark spots which sometimes run in lines along the body. The back of the ears is black with a central yellowy/white band. Solid black spots mark the head and limbs. There are two black stripes on the cheeks and one or two transverse bars on the insides of the forelegs. The tail is either ringed or marked with dark bars on its upper surface. The eye sockets or orbits are incomplete at the back, and the anterior upper premolars are present.

2.8.2 Distribution and Abundance

The historic range of the ocelot includes southern Texas and Arizona to northern Argentina (USFWS 1990). Virtually nothing is known of the ocelot in Arizona but unverified reports of ocelots in southeastern Arizona warrant further investigation of its status in Arizona and northern Sonora.

2.8.3 Habitat

The ocelot inhabits desert-scrub communities in Arizona (AGFD 2004). The critical component in suitable habitat for the ocelot is dense cover. The minimum acreage required for an area to be classified as suitable habitat is 99 acres of brush or 74 acres of two or more proximate brush stands (USFWS 1990).

2.8.4 Threats

Threats to ocelot include habitat alteration and loss (primarily due to brush clearing), and predator control activities (AESFO 2002).

2.9 SONORA CHUB

In 1986, the Sonora chub was listed as a threatened species with critical habitat by the USFWS (51 FR 16042). Designated critical habitat includes Sycamore Creek, extending downstream from and including Yank's Spring continuing to the international border. Also listed as critical habitat, are the lower 1.2 miles of Penasco Creek and the lower 0.25 miles of an unnamed stream, both are tributaries entering Sycamore Canyon approximately 1.5 miles downstream of Yanks Spring. In addition to the aquatic environment, critical habitat includes the riparian area (25 ft wide) along each side of both Sycamore and Penasco creeks. This riparian area is believed to be essential to maintaining the creek ecosystem and stream channels, and to the conservation of the species (USFWS 1992). The Sonora chub is locally abundant in Sycamore Creek; however, the habitat is limited in areal extent (AGFD 2001). All of the critical habitat, except for Yank's Spring, are located within designated wilderness areas. This critical habitat totals 7.6 miles of rivers and streams within the Tucson and Nogales stations' areas of operation.

2.9.1 Species Description

The Sonora chub can be described as a tenacious, desert adapted species, adept at exploiting small marginal habitats and can survive under severe environmental conditions (AGFD 2001). It has been determined that breeding is not limited by season, due to juvenile fish and larvae being collected in both the spring and fall. Food for the Sonora chub includes, but is not limited to, aquatic and terrestrial insects and algae. Sonora chub is most likely an opportunistic feeder that takes advantage of seasonally available food resources.

2.9.2 Distribution and Abundance

In Mexico, the Sonora chub occurs in the Rios Magdalena and Altar. In Arizona, it occurs in Sycamore Creek (Bear Canyon), a tributary of the Rio Altar, 15.5 miles west of Nogales in Santa Cruz County. In addition, it occurs in two tributaries of Sycamore Canyon (Penasco Creek and an unnamed stream) (AGFD 2001). As reported to AGFD, Sycamore Creek is at the edge of the habitat of the species, is isolated from other populations of Sonora chub, and provides marginal habitat (AGFD 2001). Although the Sonora chub is stated as having a very limited range in the U.S., it is locally abundant in Sycamore Creek (AGFD 2001).

2.9.3 Habitat

The Sonora chub is endemic to streams of the Rio de la Concepcion drainage of Sonora, Mexico and the State of Arizona. This species typically inhabits intermittent streams that occur near cliffs, boulders, or other cover in the channel and thrive in the largest, deepest, and most permanent pools, with bedrock-sand substrates and areas free of thick pads of floating algae (AGFD 2001). The associated plant community is

comprised of riparian vegetation including sycamore, Fremont cottonwood (*Populus fremontii*), alder, willow, oak (*Quercus* sp.), and pine (*Pinus* sp.) (AGFD 2001).

2.9.4 Threats

The major threat to the Sonora chub is the modification of suitable habitat by human activities including grazing, mining, recreation, and the introduction of exotic taxa (USFWS 1992). This population of the Sonora chub is isolated from other populations and has marginal habitat. Potential threats to Sonora chub are related to additional watershed development, such as channel degradation, siltation, and water pollution. Predation by non-native vertebrates is also a threat to populations of the Sonora chub. For example, the predation by exotic green sunfish and small mammals is a cause for concern regarding the reason for decline of this species. Remaining populations of Sonora chub continue to be threatened by non-native fishes and alteration of habitat through various land uses.

3. ACTION AREA

The action area consists of those lands that will be directly and indirectly impacted by the Project and are known to be occupied or potentially occupied by 26 Federally listed species or species of concern. The action area is defined by a corridor that extends approximately 300 feet in all directions from construction access routes, staging areas, and construction sites. This is the area directly affected by the Project. The extension of 300 feet represents the approximate distance that Project-related noise is estimated to attenuate from approximately 80 A-weighted decibels (dBA) to approximate ambient noise levels of around 55 dBA. The action area includes areas directly and indirectly impacted by the primary vehicle fence and access roads, the access road construction activities, and the construction staging areas (see **Figure 1-1** for a map of the action area).

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4. EFFECTS OF THE PROJECT

The following is an analysis of the effects of the Project. Implementation of the Project is likely to adversely affect the jaguar, lesser long-nosed bat, MSO, and Sonora chub. The Project may affect, but is not likely to adversely affect: Huachuca water-umbel, Pima pineapple cactus, Cochise pincushion, Sonora tiger salamander, and ocelot. Potentially suitable habitat exists within the Project corridor for the species listed above. However, none of these species were observed during 2008 surveys conducted for these species and their habitats. Based on survey results and the implementation of BMPs, the Project is not likely to directly adversely affect individuals or populations of Federally listed plants, but could directly affect potential habitat for these species. Implementing general and species-specific BMPs will help to avoid impacts on these species and their habitats (see **Section 1.3.2**).

4.1 JAGUAR

The Project is likely to adversely affect the jaguar. Sightings have been documented at various locations within or near Project corridor within Coronado National Forest, Pozo Verde Mountains, and Pajarita Mountains (DHS 2008).

Project-related loss of habitat is likely to adversely affect this species. Most jaguar detections occurred in Madrean oak woodland communities; however, jaguars were also documented in open mesquite grasslands and desert scrub/grasslands on the desert valley floor (USFWS 2007a). The permanent loss of 197.1 acres of vegetation includes 2.2 acres of semidesert grassland, 152.7 desert scrub, 0.58 acres of cottonwood/willow woodlands, 1.2 acres of cottonwood/sycamore woodlands and 40 acres of Manzanita scrub/oak woodlands. These habitat types represent suitable habitat for jaguar.

TI associated with the Project would not impede movements of jaguars across the border once the vehicle fences are completed. Jaguar would be able to pass under the vehicle fence that will be installed throughout the Project corridor.

Human activity and elevated noise levels during construction would disturb any jaguar in the immediate area and possibly hinder or impede jaguar movements into the U.S. Nighttime construction can temporarily affect foraging activity; however, construction activities are expected to be conducted during daylight hours to the maximum extent practicable.

Construction and operation of TI will increase border security in the project corridor and may result in a change to illegal traffic patterns. However, changes to illegal alien (IA) traffic patterns result from a myriad of factors. Beneficial indirect impacts will be expected, as the vehicle fence will substantially reduce or eliminate IA vehicle traffic and associated trash and illegal roads in the project corridor.

4.2 HUACHUCA WATER-UMBEL

The Project may affect, but is not likely to adversely affect Huachuca water-umbel. The species was not found during surveys (DHS 2008) and there are no known occurrences of this species within the Project footprint. No TI is planned for construction across streams with intermittent or perennial flows, which would provide habitat for Huachuca water-umbel.

There is a potential for introduction of exotic plant species through construction activities and use of new and existing roads. Implementing general and species-specific BMPs will help to avoid impacts on Huachuca water-umbel in the EV-1A and FV-1B Sections.

Construction and operation of TI will increase border security in the project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors. Beneficial indirect impacts will be expected, as the vehicle fence will substantially reduce or eliminate IA vehicle traffic and associated trash and illegal roads in the project corridor.

4.3 PIMA PINEAPPLE CACTUS

The Project may affect, but is not likely to adversely affect Pima pineapple cactus in Section EV-1B. The species has the potential to occur within or near the Project corridor. Suitable habitat for the Pima pineapple cactus exists throughout the Project area; however, recent surveys of the Project corridor indicate that no Pima pineapple cactus specimens were observed within the Project footprint (GSRC 2008). Construction within section EV-1A would not require expansion of extant disturbed areas and thus, there would be no potential to affect this species in this reach.

Project-related loss of habitat is not likely to adversely affect this species because no specimens were located within the Project footprint. There is also the potential for the introduction of invasive plant species through construction activities and use of new and existing roads. Implementing general and species-specific BMPs will help to avoid direct and indirect impacts on Pima pineapple cactus associated with invasive plant species.

Construction and operation of TI will increase border security in the project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors. Beneficial indirect impacts will be expected, as the vehicle fence will substantially reduce or eliminate IA vehicle traffic and associated trash and illegal roads in the project corridor.

4.4 COCHISE PINCUSHION CACTUS

The Project may affect, but is not likely to adversely affect Cochise pincushion cactus in Section FV-1B. The species has the potential to occur within or near the Project corridor. Suitable habitat for the Cochise pincushion cactus exists throughout the

Project area; however, recent surveys of the Project corridor indicate that no Cochise pincushion cactus specimens were observed within the Project footprint (e2m 2008).

Project-related loss of habitat is not likely to adversely affect this species because no specimens were located within the Project footprint. There is potential for the introduction of invasive plant species through construction activities and use of new and existing roads. Implementing general and species-specific BMPs will help to avoid direct and indirect impacts on Cochise pincushion cactus associated with invasive plant species.

Construction and operation of TI will increase border security in the project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors. Beneficial indirect impacts will be expected, as the vehicle fence will substantially reduce or eliminate IA vehicle traffic and associated trash and illegal roads in the project corridor.

4.5 LESSER LONG-NOSED BAT

Potential foraging habitat exists within and adjacent to the Project corridor but no suitable roosting habitat is present (DHS 2008). The removal or damage of foraging plants for road and fence construction can adversely affect the species. Scattered agave plants, saguaros, and yuccas (*Yucca* sp.) were identified within the Project corridor and would be removed. Thus, the Project is likely to adversely affect the lesser long-nosed bat in all Sections except EV-1B.

Impacts on potential foraging habitat could result from (1) introduction of non-native plant species through the construction process that could prevent the recruitment of plant forage species and could also carry fire that could further reduce number of forage plants, and (2) nighttime construction that could temporarily affect foraging activity. Construction of new TI has effects related to ground or surface disturbance for the infrastructure and the construction operations. The direct footprint for the infrastructure results in ground disturbances, vegetation removal, and soil compaction. Implementing general and species-specific BMPs will help to avoid impacts on the lesser long-nosed bat. Nighttime construction can temporarily affect foraging activity; however, construction activities are expected to be conducted during daylight hours to the maximum extent practicable.

4.6 OCELOT

Recent sightings of ocelots have been reported in Mexico, about 30 miles south of Nogales, Arizona (Sky Island Alliance [SIA] 2008). There are no known occurrences of this species within or immediately adjacent to the Project corridor (NatureServe 2008).

Road construction associated with the Project can temporarily impede movement of ocelots across the border and could result in fragmentation of ocelot habitat. However, ocelots will be able to pass through vehicle fence that will be installed throughout the corridor.

Project-related loss of habitat is not likely to adversely affect this species because of the lack of occurrences in the area and the vast amount of similar habitat north of the Project corridor. The permanent loss of 197.1 acres would be a minimal loss relative to the vast amount of similar vegetation communities throughout southern Arizona. Suitable ocelot habitat exists within densely vegetated areas within the Project corridor. The minimum acreage required for an area to be classified as suitable habitat is 99 acres of brush or 74 acres of two or more proximate brush stands (USFWS 1990).

Human activity and elevated noise levels during construction would disturb any ocelot in the immediate area and possibly hinder or impede ocelot movements into the U.S. Nighttime construction can temporarily affect foraging activity; however, construction activities are expected to be conducted during daylight hours to the maximum extent practicable.

4.7 SONORA TIGER SALAMANDER

Several stock tanks are located within 0.1 miles of access roads planned to be used during construction and within 0.1 miles of the EV-1A segment. These stock tanks provide potential habitat for Sonora tiger salamander. Implementation of a Storm Water Pollution Prevention Plan as well as the use of Normandy-style vehicle fence in major washes and drainages would prevent any sedimentation of potentially occupied habitats. Because construction activity would occur during the leaching season, when tiger salamander can wander up to 0.3 mile from aquatic habitats, there is some potential for individuals to be impacted on roadways. Exclusion fencing could be used to avoid these potential impacts. Use of a biological monitor for any construction activities on access roads or within the EV-1A segment will prevent harm to the Sonora tiger salamander. Implementation of a Spill Prevention Countermeasures and Containment Plan would prevent any contamination of aquatic habitats by petroleum, oil, and lubricants and hazardous materials or waste. Since no direct impacts to habitat will occur and CBP plans to implement the BMPs described herein, the project may affect, but is not likely to adversely affect, the Sonora tiger salamander.

Construction and operation of TI will increase border security in the project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors. Beneficial indirect impacts will be expected, as the vehicle fence will substantially reduce or eliminate IA vehicle traffic and associated trash and illegal roads in the project corridor.

4.8 MEXICAN SPOTTED OWL

Suitable habitat for the MSO occurs within both segments of EV-1B. Approximately 1.9 miles of the western section of this segment and all of the eastern section are located within Critical Habitat for the MSO. Additionally, the 2 acre staging area associated with the western segment of EV-1B is within Critical Habitat. The nearest known MSO PACs are located 1.7 miles north of planned construction activity within the western section of the EV-1B segment (see Appendix A), and would be affected by construction noise or lighting. Furthermore, the breeding season for the MSO lasts from March 1 to August

31. Construction is scheduled to begin on October 3, 2008, after the end of the MSO nesting season; thus, nesting activity would not be interrupted. Some PCEs of the Critical Habitat, such as the presence of large trees, would be affected. However, any trees removed would be left within rehabilitated areas, and would improve other PCEs (i.e., presence of large woody debris). Consequently, the project may adversely affect the MSO and its Critical Habitat.

4.9 SONORA CHUB

Suitable habitat for the Sonora chub exists within FV-1B segment. Exact footprints and designs for the drainage crossings have not been developed as yet, so definitive statements can not be made regarding the potential effects. However, direct and downstream impacts to Sonora chub habitat is likely and, therefore, CBP has determined that the project will adversely affect the Sonora chub. BMPs, as presented on page 1-18, will be implemented to reduce these impacts.

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5. DETERMINATION OF EFFECT

A total of 26 Federally listed species are known to occur or potentially occur within 25 miles of the Project corridor in Cochise and Santa Cruz counties, Arizona. **Table 5-1** outlines Federally listed species and Federally designated Critical Habitats known to occur or to potentially occur within or adjacent to the Project area and the determination of effects resulting from the Project. The Project may affect, and is likely to adversely affect the MSO, jaguar, lesser long-nosed bat and Sonora chub. The Project may affect, but is not likely to adversely affect, the Huachuca water-umbel, Pima pineapple cactus, Sonora tiger salamander, Cochise pincushion cactus, and ocelot. The remaining species will not be affected by the Project.

Table 5-1. Determination of Effects on Federally Listed and Candidate Species within Tucson Sector VF300 Segments

Species	Listing Status	Determination	Segments Affected
PLANTS			
Canelo Hills ladies'-tresses, <i>Spiranthes delitescens</i>	Endangered	No effect	EV-1B, FV-1B
Cochise pincushion cactus, <i>Coryphantha robbinsorum</i>	Endangered	Not likely to adversely affect	FV-1B
Huachuca water-umbel, <i>Lilaeopsis schaffneriana</i> ssp. <i>Recurva</i>	Endangered	Not likely to adversely affect	EV-1A, FV-1B
Pima pineapple cactus, <i>Coryphantha scheeri</i> var. <i>robustispina</i>	Endangered	Not likely to adversely affect	EV-1B
INVERTEBRATES			
Stephan's riffle beetle, <i>Hetremis stephani</i>	Candidate	No effect	FV-1B
Huachuca springsnail, <i>Pyrgulopsis thomsoni</i>	Candidate	No effect	FV-1B
FISH			
Desert pupfish, <i>Cyprinodon macularius</i>	Endangered	No effect	FV-1B
Yaqui Chub <i>Gila purpurea</i>	Endangered	No effect	FV-1B
Yaqui topminnow <i>Poeciliopsis accidentalis</i> <i>sonoriensis</i>	Endangered	No effect	FV-1B
Yaqui catfish <i>Ictalurus pricei</i>	Threatened	No effect	FV-1B

Table 5-1, continued

Species	Listing Status	Determination	Segments Affected
Beautiful shiner <i>Cyprinella formosa</i>	Threatened	No effect	FV-1B
Spikedace <i>Meda fulgida</i>	Threatened	No effect	FV-1B
Loach minnow <i>Tiaroga cobitis</i>	Threatened	No effect	FV-1B
Gila chub, <i>Gila intermedia</i>	Endangered	No effect	FV-1B
Gila topminnow, <i>Poeciliopsis occidentalis occidentalis</i>	Endangered	No effect	EV-1A
Sonora chub, <i>Gila ditaenia</i>	Threatened	Likely to adversely affect	FV-1B
REPTILES AND AMPHIBIANS			
Chiricahua leopard frog, <i>Rana chiricahuensis</i>	Threatened	No effect	None
Sonora tiger salamander, <i>Ambystoma tigrinum stebbinsi</i>	Endangered	Not likely to adversely affect	EV-1A, EV-1B
Ramsey canyon leopard frog <i>Lithobates subaquavocalis</i>	Conservation Agreement	No effect	FV-1B
New Mexico ridge-nosed rattlesnake <i>Crotalus willardi obscuras</i>	Threatened	No effect	FV-1B
BIRDS			
Mexican spotted owl, <i>Strix occidentalis lucida</i>	Threatened, with Critical Habitat designated east of the Project corridor	Likely to adversely affect	EV-1B
Southwestern willow flycatcher, <i>Empidonax traillii extimus</i>	Endangered	No effect	FV-1B
Yellow-billed cuckoo, <i>Coccyzus americanus</i>	Candidate	No effect	FV-1B
MAMMALS			
Jaguar, <i>Panthera onca</i>	Endangered	Likely to adversely affect	All
Lesser long-nosed bat, <i>Leptonycteris curasoae yerbabuena</i>	Endangered	Likely to adversely affect	All except EV-1B
Ocelot, <i>Leopardus pardalis</i>	Endangered	Not likely to adversely affect	All

Source: GSRC 2008

The determination of no effect for impacts on particular species was based on the absence of known occurrences or suitable habitat in any Sections of the Project.

Construction and operation of TI will increase border security in the project corridor and may result in a change to illegal traffic patterns. However, changes to IA traffic patterns result from a myriad of factors in addition to USBP operations and therefore are considered unpredictable and beyond the scope of this BRP. Besides any potential adverse environmental impacts already mentioned, beneficial indirect impacts will be expected for all protected species known or presumed to occur near the action area, as the vehicle fence will substantially reduce or eliminate IA vehicle traffic and associated trash and illegal roads in the project corridor.

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APPENDIX A
Detailed Maps



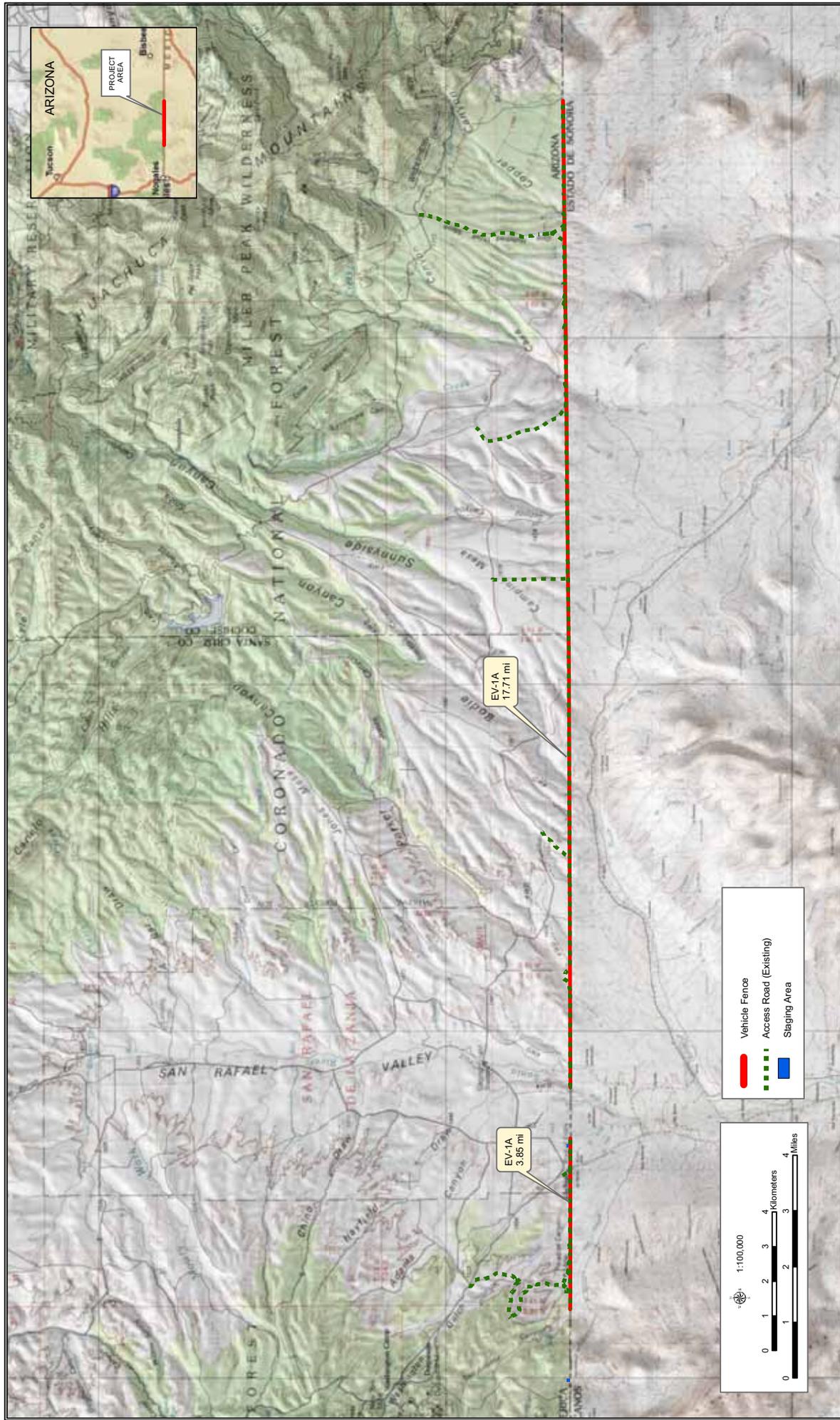


Figure A-1: Project Corridor for EV-1A

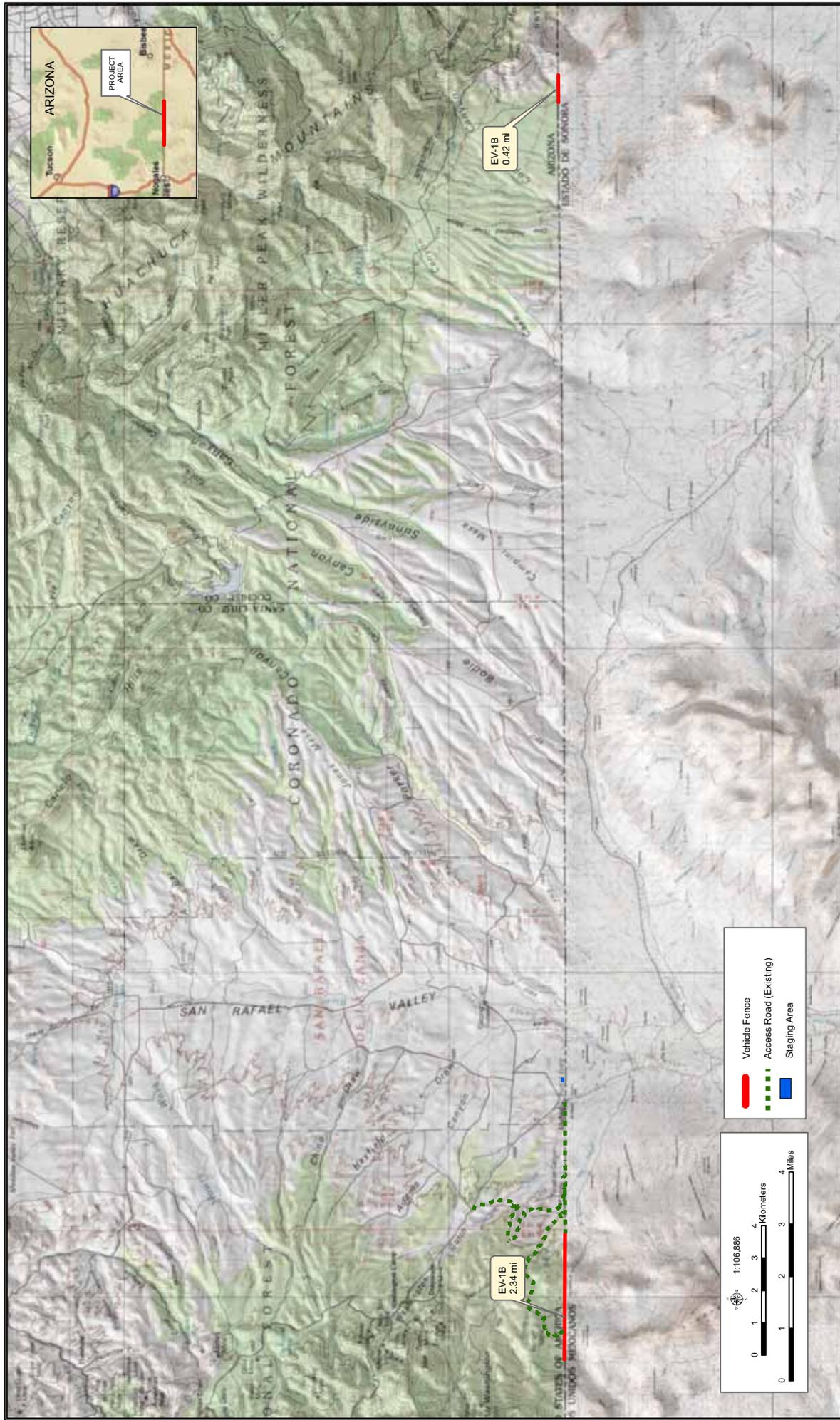


Figure A-2: Project Corridor for EV-1B

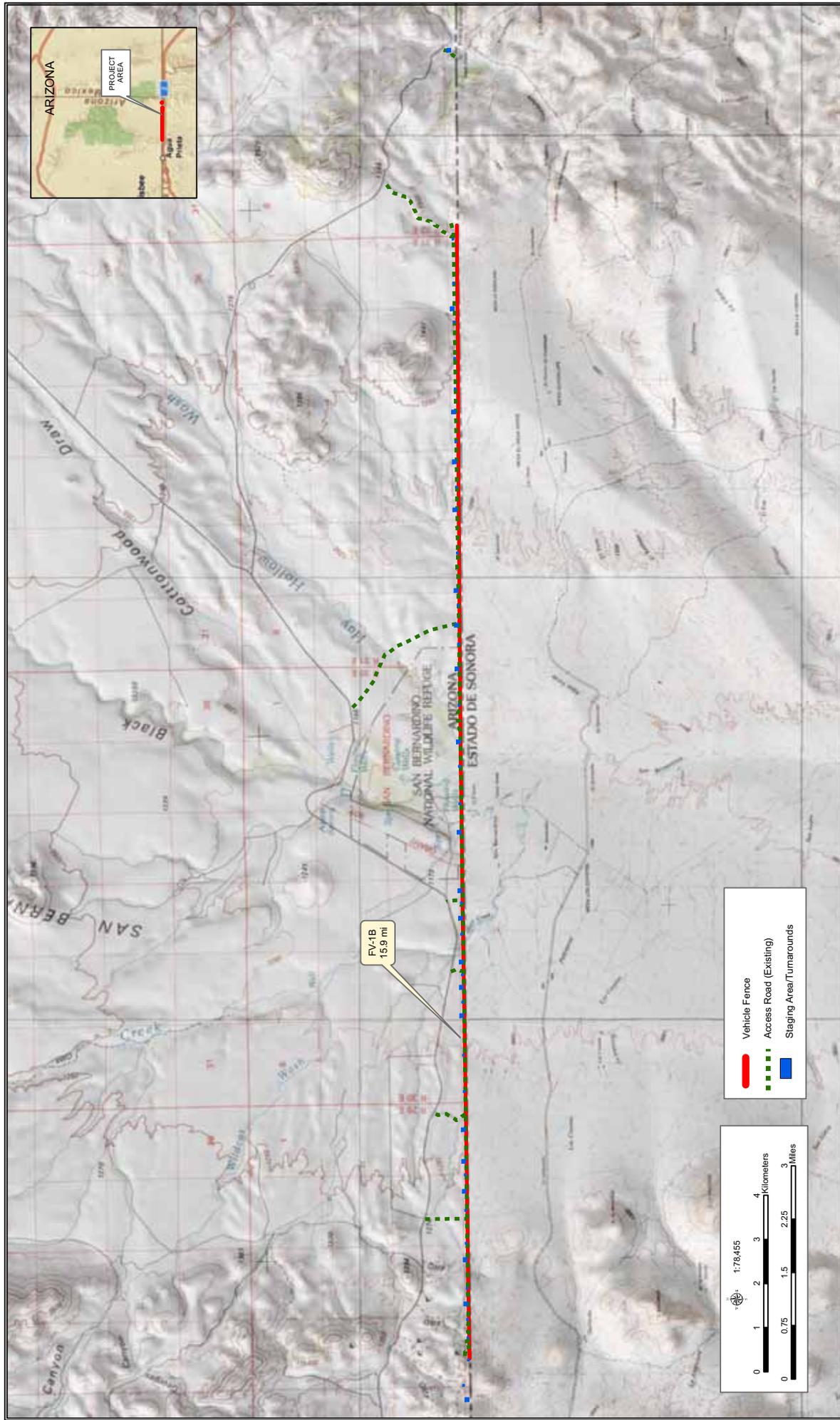


Figure A-3: Project Corridor for FV-1B

→ *continued from from cover*

USFWS United States Fish and Wildlife Service

USIBWC United States Section, International Boundary Water Commission

USNPS United States National Park Service

WUS Waters of the U.S.

