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REVISED PRELIMINARY DRAFT

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT FOR INFRASTRUCTURE WITHIN U.S. BORDER PATROL NACO-DOUGLAS CORRIDOR COCHISE COUNTY, ARIZONA

U.S. DEPARTMENT OF HOMELAND SECURITY
WASHINGTON, D.C.

REVISED PRELIMINARY DRAFT

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

FOR INFRASTRUCTURE WITHIN

U.S. BORDER PATROL NACO-DOUGLAS CORRIDOR

COCHISE COUNTY, ARIZONA

April 2003

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EXECUTIVE SUMMARY

PROPOSED ACTION:

This document supplements the Current and Future Alternatives analyzed in the Final EA for Infrastructure within U.S. Border Patrol Naco-Douglas Corridor, Cochise County, Arizona (INS 2000), herein referred to as the Corridor EA. This Supplemental Environmental Assessment (SEA) addresses the potential for effects, beneficial and adverse, of proposed infrastructure construction and improvements along the U.S.-Mexico border by the Department of Homeland Security and U.S. Border Patrol (USBP).

The Preferred Alternative (Proposed Action) involves infrastructure construction activities that consist of primary and secondary pedestrian barrier fencing, vehicle barrier fencing, roads (all weather patrol, maintenance, and drag), lighting, and associated drainage structures within the USBP Naco and Douglas Stations' Areas of Operation (AO).

PURPOSE AND NEED:

The purpose of the programs and improvements discussed in this SEA is to facilitate USBP law enforcement along the identified section of the U.S.-Mexico border as mandated by Federal laws. The need for these programs is to gain, maintain, and extend control of the U.S.-Mexico border. The major goals of the USBP enforcement strategy and the purpose of the proposed infrastructure components in this document are:

- Deter illegal entries
- Enhance the safety of USBP agents
- Reduce the current enforcement footprint
- Create a defensible and enforceable zone that reduces illegal crossings and drug smuggling operations
- Enhance response time for USBP agents

The USBP's primary function is to detect and deter the unlawful entry of undocumented aliens (UDA) and smuggling along the U.S. land borders. Deterrence can be created only when certainty of apprehension is achieved. The degree of current illegal activity, in addition to the level of enforcement advantage needed to gain, maintain and extend control of the border are the key factors that represent a strong need for the proposed border infrastructure system. In addition to the purpose and need stated above, the proposed border infrastructure system has been planned in compliance with the *Illegal Immigration Reform and Immigrant Responsibility Act* (IIRIRA) of 1996.

ALTERNATIVES ADDRESSED:

Three alternatives were carried forward in this SEA for detailed analysis of potential impacts to the natural and human environment. They include the No Action, the Preferred Alternative and the Full Build Out Alternative. Other alternatives were considered throughout the development of the SEA, but have been eliminated from further consideration as operationally non-effective and/or non-responsive relative to the spirit and intent of IIRIRA. Those alternatives carried forward are discussed in the following paragraphs.

The No Action Alternative would allow for the planned or current infrastructure projects which were identified in the 2000 Corridor EA. This SEA would suffice as the subsequent NEPA document required by the 2000 Corridor EA FONSI. The infrastructure to be completed under the No Action Alternative include: 14 miles of primary pedestrian fence, 3.25 miles of vehicle barriers, 29 miles of patrol roads upgrade improvements, and 11 miles of permanent lighting.

The Preferred Alternative includes only those infrastructure components that are considered essential to gain and maintain immediate control of the border. This alternative includes various types of infrastructure such as roads, fences, and lights at specified locations throughout the project corridor to develop an effective, safe, and defensible border control system. The infrastructure to be completed within the guidelines of the Preferred Alternative include: 22.4 miles of primary fence and primary fence maintenance roads, 18 miles of secondary fence, 8.2 miles of vehicle barriers, 44.7 miles of patrol roads, 7 miles of maintenance roads, 12.8 miles of drag roads, 60 low water crossings, and 13 miles of permanent lighting. The USBP believes that some areas can be controlled using vehicle barriers rather than fencing. Vehicle barriers would be installed to the maximum extent practicable in lieu of pedestrian fences, based on intelligence data gathered by the USBP.

The Full Build Out Alternative would require major construction activities and involves the combination of primary and secondary fencing, permanent lighting, and upgrades to various roadways across the 49-mile project corridor. The infrastructure to be implemented includes: 30.6 miles of primary fence, 49 miles of secondary fence, 43.8 miles of patrol roads, 46.8 miles of maintenance roads, 43.6 miles of drag roads, 60 new low water crossings, and 31 miles of permanent lighting.

ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE:

The Preferred Alternative would result in direct impacts to 420 acres of vegetation/wildlife habitat, 19 acres of floodplain, 5 acres of potential jurisdictional wetlands and 12 acres of Waters of the U.S. Approximately, 12 National Register of Historic Places (NRHP)-eligible cultural resource sites would be impacted; however, proper mitigation measures would be implemented to ensure mitigation of each impacted site. Approximately 0.2 acres of the spikedace and loach minnow critical habitat would be impacted as a result of installation of vehicle barriers and low water crossings across the San Pedro River. Impacts would also occur in the Douglas basin, as well as the Upper San Pedro basin as a result of contributing to the yearly recharge deficit that has been occurring been in either basin for some time.

Other impacts associated with this alternative are temporary impacts (i.e., regional income, air quality, noise, etc.) associated with the construction process of the border infrastructure system and would return to pre-construction upon completion of the proposed project. The indirect beneficial impacts associated with this alternative include reduction and possible elimination of trampling of sensitive habitats as well as, soil erosion.

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INTRODUCTION AND PURPOSE AND NEED

Location Map

USBP Naco Station AO

USBP Douglas Station AO

Bisbee, Arizona

Naco, Arizona

Naco, Sonora, Mexico

Douglas, Arizona

Agua Prieta, Sonora, Mexico

Naco/Douglas Project Corridor

Station Boundaries

1:270,000

0 1.5 3 6 9 12 Miles

Figure 1-1: Naco/Douglas Project Corridor

Sources: USGS 1:100,000 Digital Raster Graphics
All other data from Gulf South Research Corporation

GULF SOUTH RESEARCH CORPORATION

Date: February 2003

This SEA is also tiered from the Final Supplemental Programmatic Environmental Impact Statement for Immigration and Naturalization Service (INS) and Joint Task Force-Six (JTF-6) activities along the U.S.-Mexico Border (INS 2001a). The 2001 Supplemental Programmatic Environmental Impact Statement (PEIS) addressed past and proposed infrastructure for USBP along the entire southwestern border. JTF-6 was a cooperating agency because they had performed most of the border infrastructure projects for the USBP to date. Future infrastructure projects, such as those described herein, were identified and analyzed in the Supplemental PEIS. A commitment was made in the Supplemental PEIS to prepare site-specific NEPA documents, such as this one, as the need for future projects is identified.

This SEA is also referenced to several other documents, which contain actions within the project corridor:

- Final Environmental Assessment for Road Improvements Along King's Ranch Road and the U.S.-Mexico Border Near Douglas, Cochise County, Arizona (INS 2002).
- Final Environmental Assessment For Conversion of Vehicle Barriers To Landing Mat Fence Naco, Arizona (INS 2002a).
- Final Environmental Assessment for JTF-6 Proposed Fence, Lighting, Road Repair and Improvement Project Douglas, Cochise County, Arizona (INS 2001b).
- Draft Environmental Assessment For Naco Roadway and Fence Construction Naco, Cochise County, Arizona (USBP 2003).
- Final Environmental Assessment for JTF-6 Proposed Fence and Road Improvement Project, Naco, Cochise County, Arizona (USACE 2000).
- Final Environmental Assessment U.S. Border Patrol Temporary Vehicle Barriers Naco and Douglas, Arizona (INS 2002b).

This SEA is intended to evaluate the potential impacts that are expected to occur within the project corridor. The proposed action consists of the infrastructure (e.g., roads, fences, lights, and drainage structures) that is deemed essential for the effective enforcement of the border strategy and integral to the success of the USBP to maintain control of the border.

1.1 BACKGROUND

The Bureau of Land Management (BLM), the U.S. Fish and Wildlife Service (USFWS), the State of Arizona, and a handful of private landowners control the majority of the land composing the project corridor. While wildlife habitat preservation is the predominant land use on public lands, private landowners generally maintain their lands for agricultural purposes. The geography along the U.S.-Mexico border in the Naco Station generally consists of rolling hills covered by dense scrub brush and mesquite trees. The approximate elevation of the Naco Station is 4,800 feet mean sea level (msl). However, the southern reaches of the Huachuca Mountains, which bound the western most portion of the Naco Station AO, reach elevations up to 8,000 feet msl. In the Douglas Station AO, the geography along the U.S.-Mexico border is generally flat and cut by numerous washes. The approximate elevation of the station is 4,000 feet msl. Further, to the east, the Parilla, Pedregosa and Swisshelm Mountains provide a natural barrier for northern travel from the border; some of these mountains reach elevations up to 8,000 feet msl.

The summers are very hot and dry with temperatures rising well above 100 degrees Fahrenheit (ºF). In winter the average daily temperatures range from lows of 28ºF to highs of 60ºF. Snow can accumulate to a depth of several feet on the mountain peaks and can occur from November to April. Most of the rainfall in the area occurs during the summer months (July through September), usually as intense and violent thunderstorms.

The lack of natural barriers in areas along U.S.-Mexico border results in numerous opportunities for illegal traffic to cross into the U.S. These are harsh and dangerous environments. Some border roads exist, but most are unpaved and rarely maintained. Furthermore, there is a limited infrastructure system (i.e., roads) in the north-south direction for the USBP to effectively gain reliable access to the border within the Naco and Douglas Stations' AO.

1.1.1 USBP Organization and Authority

The USBP has the responsibility to regulate and control immigration into the U.S. In 1924, the U.S. Congress created the USBP to serve as the law enforcement entity of the INS and it did so until November 25, 2002, when Congress transferred all INS

responsibilities to the newly created Department of Homeland Security with the passage of the Homeland Security Act of 2002. The official transfer of responsibilities occurred on March 1, 2003. The USBP was transferred into the Bureau of Customs and Border Protection (BCBP). The BCCP also assumed responsibilities and functions of other branches of the as well as INS, Customs Service and Agricultural Quarantine Inspectors.

The USBP's primary function remains to detect and deter the unlawful entry of UDAs and smuggling along the U.S. land borders and between the ports-of-entry (POE). With the increase in illegal drug trafficking, the USBP also has become the leader for drug interdiction between land POEs. Illegal aliens have become a significant issue, as Mexican UDAs account for 54 percent of all UDAs residing within the U.S. Apprehension rates for the USBP currently average more than 1.5 million illegal aliens annually throughout the country. The INS reported that there are between 7 and 11 million illegal aliens in the U.S. (GAO 2001).

Following the terrorist attacks on U.S. soil on September 11, 2001, the U.S. Attorney General emphasized the need to prevent terrorism. The USBP is a key element in responding to this new threat to our nation and its citizens. The ability of the USBP to insure the integrity and security of our national borders would be an integral part of this effort to deter and prevent terrorism. The deployment of operations, infrastructure, and technology strategies along the U.S.-Mexico border are key elements in the USBP's efforts to deter and prevent terrorists from entering the U.S. For example, in FY 2002 the Tucson Sector apprehended UDAs from over 56 countries.

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

Subject to constitutional limitations, USBP officers may exercise the authority granted to them in the INA. The statutory provisions related to enforcement authority are found in Sections 287(a), 287(b), 287(c), and 287(e) [8 USC § 1357(a,b,c,e)]; Section 235(a) [8 USC § 1225]; Sections 274(b) and 274(c) [8 USC § 1324(b,c)]; Section 274(a) [8 USC § 1324(a)]; and Section 274(c) [8 USC § 1324(c)] of the INA. Other statutory sources of authority are Title 18 of the USC (18 USC), which has several provisions that specifically relate to enforcement of the immigration and nationality laws; Title 19 [19 USC § 1401(i)], relating to U.S. Customs Service cross designation of USBP officers; and Title 21 [21 USC § 878], relating to Drug Enforcement Agency cross-designation of USBP officers.

Section 287(a)(3) of the INA provides further authority to USBP agents to enter any lands and/or facilities within 25 miles of the international borders, without prior approval of the property owner, in the pursuit of illegal aliens and/or drug traffickers. The USBP attempts to stay on established roads during their apprehension efforts to avoid environmental impacts, increase their own safety, and reduce maintenance costs to vehicles. However, it is within their authority to traverse all lands during apprehension.

1.1.2 Naco Station

The Naco Station AO is located in southeastern Arizona within Cochise County and includes approximately 1,256 square miles. The Naco Station's AO includes approximately 36 miles of international border from Montezuma Pass near the Huachuca Mountains and eastward to a point on the border that is approximately 5 miles east of Bisbee Junction Road near Cook Canyon. However, in early Fiscal Year (FY) 2003 the Naco Station acquired 5 additional miles of what was formerly the jurisdiction of Douglas Station. Prior to this change in jurisdiction, the Naco Station AO included approximately 31 miles bounded in the east at a point directly south of the Bisbee Junction Road. In order to remain consistent with the Corridor EA, alternatives identified in this SEA will utilize the past jurisdictional alignments. This area of southern Arizona is rural and isolated. The Town of Naco (population 833) is the only community within the project corridor and is where the USBP station headquarters are located. Naco Station has a patrol force of approximately 250 agents that patrol the border (USBP 2002a, 2003). The nearest major community within the Naco Station AO is Bisbee (population 14,000) located approximately 10 miles north of Naco. The Naco Station experiences high

amounts of illegal traffic, both alien and narcotics. Staging of both UDAs and narcotics takes place just south of the border in Naco, Sonora.

USBP activities within the Naco Station's AO are spread out across the rural areas of the AO and near the Town of Naco. The Naco Station currently maintains a traffic checkpoint on State Route 90, north of Huachuca City. USBP agents patrol the entire AO on improved and semi-improved roads using 4x4 vehicles, all terrain vehicles (ATVs), and horses. Roving patrols are also conducted along public and private access roads leading to and from the border. In the Town of Naco, bike patrols are often used. However, operations that actually occur on the U.S.-Mexico border such as line-watch operations are limited due to access and lack of adequate patrol roads.

The Naco Station utilizes infrequent flights as patrol routes originating out of Fort Huachuca's Libby Army Airfield or the Tucson International Airport. The flight paths are usually limited to low-level flights along the alignment of the U.S.-Mexico border. Deviations from this route are only made to follow tracks, persons, or vehicles that have entered the U.S. illegally. Agents at the Naco Station patrol 47 miles of improved and semi-improved roads within their AO on a daily basis. There is currently one repeater (communications signal) and two checkpoints (Highway 80 and Highway 90) within the station's AO, although the checkpoint at Highway 80 located north of Tombstone is operated by the Wilcox Station. The Naco Station maintains 21 miles of drag roads along the border, 8 remote video surveillance (RVS) sites, and approximately 124 ground sensors in use within the station's AO. The majority of sensors are located near the Town of Naco.

1.1.3 Douglas Station

The Douglas Station AO is located within Cochise County Arizona and covers approximately 1,019 square miles. Figure 1-1(shown previously) illustrates that the station's AO includes approximately 20 (formerly 25 miles as noted earlier) miles of the international border from Cook Canyon, which is located approximately 6 miles east of Naco, Arizona, to approximately 12 miles east of Douglas. Douglas is the only major city located within the station AO and is where the station headquarters are located. Currently, there is a patrol force of approximately 500 USBP agents. The Douglas Station leads the Tucson Sector in terms of density of illegal traffic, both alien and

narcotics. It is not uncommon to have 100 to 200 illegal aliens staging along Mexico Highway 2 preparing to cross the border on any given evening. Just across the border from the City of Douglas is Agua Prieta, Sonora, Mexico, a town of 61,841 people, where organized smuggling operations of both aliens and narcotics are regularly staged (INS 2002c).

USBP activities within the Douglas Station's AO are primarily concentrated near the City of Douglas, as well as patrols occurring on approximately 88 miles of improved and semi-improved roads. The Douglas Station currently maintains a traffic checkpoint located on State Highway 191. There are 25 miles of drag roads within the Douglas Station's AO that are prepared once daily. Off-road activities entail the cross-country tracking of alien groups using horses or on foot, and are conducted several times daily throughout the station's AO. ATVs are also used outside the city limits to patrol the U.S.-Mexico border. The Douglas Station utilizes a total of 59 temporary vehicle barriers along approximately 0.9 mile of border. These are broken down with 3 barricades covering 0.1 mile east of the Port of Entry and 56 barricades covering approximately 0.8 mile west of the Port of Entry.

Douglas has helipad and refueling capabilities located at the local airport. There are currently no regular flights or set patrol routes in the Douglas area. When assistance is requested, helicopters fly along the border near the City of Douglas. Deviations from this route are only made to follow tracks, persons, or vehicles that have entered the U.S. illegally. There are approximately 300 ground sensors and 13 RVS sites in use by the Douglas Station. They are concentrated near the City of Douglas and along the border.

1.1.4 Infrastructure Components

The following subsections provide general descriptions of the types of infrastructure that have been completed or planned/proposed for construction for each alternative, including the No Action Alternative. The design of each infrastructure project will vary depending upon the USBP Station's strategic needs, local terrain, regulatory constraints and guidelines, community perceptions, funding, and the alternative that is ultimately selected for implementation.

1.1.4.1 Primary and Secondary Fencing

Primary pedestrian fences are generally 14 to 17 feet high and situated within 2 to 4 feet of the border. Generally, operational needs, terrain and other restricting obstacles dictate the placement of these structures. Examples of typical fences employed by USBP are provided in Photographs 1-1 though 1-4.

Secondary fences are pedestrian barrier fencing that are installed 130 to 300 feet north of the primary fence. These fences serve as a containment element that enhance the ability of apprehension through enhanced response time by impeding northward traffic and, thus assures deterrence to illegal crossings. This combination of primary and secondary pedestrian barrier fences serves to create the basis for absolute certainty of apprehension and therefore immediate deterrence defensibility in high traffic areas.

The majority of the proposed pedestrian barrier would likely be constructed from surplus military landing mat fence (Photograph 1-1) similar to the existing fence in the area at a cost of approximately $5,000/mile. Each landing mat panel would be welded to the next to form a solid fence. Vertical support poles would be installed using an auger and holes would be grouted with concrete. Currently only 4 miles in the Douglas AO and 3 miles in the Naco AO have been constructed.

Approximately 2 miles of decorative picket style fences (Photograph 1-2) have been used (e.g., near the Douglas POE where there are approximately 2 miles). The intended use of picket fences is for aesthetic reasons rather than structural or cost effectiveness. This fence has only been used in an urban setting due to the high cost of construction (approximately $200,000/mile) and the relative low durability of this design.

The bollard fence (Photograph 1-3) consists of a double row of 10- to 15-foot high steel pipe poles, approximately six inches in diameter, placed on 8.5-inch centers. The pipes would be filled with concrete for added strength and security. The two rows are offset, such that the gaps between the poles would be filled by the poles of the other row. A concrete footer is required to anchor the poles, approximately 20 inches wide and three feet deep. This type of fence is normally only used in areas with flowing water that would damage other types of fences. It is the most expensive to construct, costing approximately $1,000,000/mile.

Photograph 1-1. Landing Mat Style Fence

Photograph 1-2. Picket Style Fence

Photograph 1-3. Bollard Style Fence

Photograph 1-4. Sandia Style Fence

Sandia fences (Photograph 1-4) have been used in other areas along the border. The current standard design consists of vertical secura metal mesh panels attached to 16-foot steel poles. Additional 6-foot panels are secured to the top panels at an angle of 45 degrees toward the south. The poles would be anchored to a 12-inch wide by 4-foot deep concrete footing that runs the length of the proposed fence. Generally, this type of fence has been used as a secondary fence behind the landing mat panel fence or in maximum-security situations because of the high construction costs (approximately $200,000/mile) and high maintenance costs if subjected to vandalism.

1.1.4.2 Vehicle Barriers

Vehicle barriers are constructed in high vehicle traffic areas rather than primary pedestrian fences. As the name implies, vehicle barriers are designed to impede illegal vehicle entry; however, they do not preclude pedestrian or wildlife movement. It should

be noted that pedestrian fences could be barriers to illegal vehicular traffic as well, depending on materials/design. Permanent Barriers are placed on the southern toe of existing border roadways, unless natural barriers exist, providing significant deterrence and protection from illegal vehicle traffic. The vehicle barriers cannot be rolled or moved manually, and are permanently set in place. The proposed vehicle barriers are typically constructed of welded metal such as railroad track (Photograph 1-5), but may be also constructed of pipe (Photograph 1-6). Currently approximately 1.2 miles exist east of the Naco POE and 0.9 miles exist approximately 1 mile west of the POE west of the POE. Douglas Station also employs temporary (removable) vehicle barriers. These barricades are not permanently emplaced in order for the USBP to block off specific areas that are subjected to illegal vehicle entries. The majority of these barricades are constructed of railroad steel (photograph 1-7 and Photograph 1-8).

Photograph 1-5. Primary Vehicle Barrier (railroad track)

Photograph 1-6. Primary Vehicle Barrier (pipe)

Photograph 1-7. Temporary Vehicle Barrier (railroad track)

Photograph 1-8. Temporary Vehicle Barrier being loaded

1.1.4.3 Roadway Construction

Most of the existing patrol roads along the U.S.-Mexico border were not designed to withstand environmental elements and high vehicle traffic. As a result, many have succumbed to erosion and are impassable. To compound this problem, vast areas of the U.S.-Mexico border do not have any road access to the border at all, which greatly deminishes response times of USBP agents.

The majority of the dirt roads constructed within the border region were approximately 12 to 24 feet wide when originally built. Over the years, vegetation has encroached to the point that some roads are now typically less than 10 feet wide. In addition, most roads have experienced wind and water erosion that has resulted in long, impassable stretches. The current conditions of these roads do not allow efficient use by the USBP.

New road construction would encompass grading and leveling proposed roadbeds, filling areas with existing materials (existing on roadways) or engineered fill, lifting and bedding stretches of road, and installing drainage structures to aid with water drainage.

Typically, past upgrading or repair of these roads produced a road width of 20 feet with parallel drainage. To allow for added safety and increased response time, new roadway designs have been incorporated to increase the width of new or upgraded road construction to a total of 28 feet wide plus appropriate shoulder grades. A typical new border patrol road would be 28 feet wide consisting of a 24-foot wide all-weather surface with two 2-foot shoulders on each side and up to 5 feet on either side to allow for grade and parallel drainage.

Photograph 1-9. Typical Drag Road

Drag roads are typically constructed on the south side of patrol roads. Drag roads are essential tools utilized by USBP agents to detect illegal border crossings. Tires are pulled along the roadbed to smooth out the surface leaving a freshly prepared surface, as depicted in Photograph 1-9, which allows USBP agents to detect signs of recent illegal alien traffic.

Installation of primary fences and vehicle barriers generally requires the construction of a road (approximately 10 feet wide) immediately adjacent to construction activities. To allow future maintenance on fences, these construction roads are considered a permanent infrastructure component. In order to minimize cut and fill activities, these roads follow the contour of the land and would be used infrequently. Therefore, all-weather surfaces along the primary fencing are not required because USBP traffic can access these areas from adjacent patrol roads. Conversely, with the installation of secondary fences, maintenance roads are required to serve as reliable access to contained areas. These maintenance roads are constructed similar to that of the all-weather patrol roads (24-foot all-weather surface), yet shoulders would be minimized as required to limit construction activities.

The all-weather roads, maintenance roads, and drag roads ensure a greater enforcement presence along rural areas of the border and increase the safety of USBP agents. Additionally, improved access along the border enhances response time of agents, projects a certainty of apprehension, and thus creates deterrence to illegal crossing attempts. A diagram of a typical layout of these structures (patrol roads and drag road) is provided in Figure 1-2.

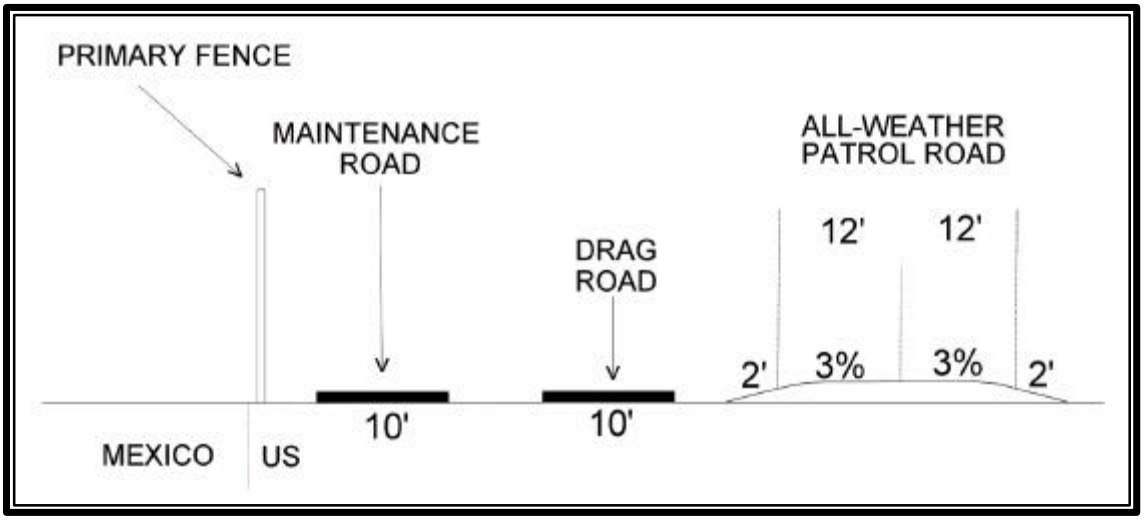


Figure 1-2. Typical Patrol Road and Drag Road Layout

1.1.4.4 Permanent Lighting

Photograph 1-10. Typical Permanent Lighting

Because many illegal aliens utilize the cover of darkness as camouflage to evade USBP agents, lighting has proven to be essential in deterring illegal crossings. Lighting increases effectiveness of USBP operations, as well as provides an element of security and safety for USBP agents.

Construction of permanent lights similar to the one presented in Photograph 1-10 consists of stadium-type lights approximately 80 to 100 feet above grade. Light bulbs are typically 1,000 watts and can be either low or high pressure sodium vapor or metal halide bulbs. Two types of poles are typically considered: wooden poles encased in concrete steel culverts (to prevent them from being cut down), and steel poles with concrete footings. Overhead or underground electrical lines provide power from existing grids. Placement of light poles is estimated to affect no more than a 5-foot by 5-foot area, and the area affected by illumination is expected to be within 60 to 300 feet of the border depending on the extent of illumination that is required for effective and safe enforcement. Approximately 5 miles (i.e., 2 miles in the Naco AO and 3 miles in the Douglas AO) of permanent lighting has been installed within the project corridor. Light poles have typically been spaced approximately 225-400 feet apart near the urban areas of the Town of Naco and the City of Douglas. New lighting designs have utilized different wattages (or types of lights) and realigned the light poles to 225 feet apart to control the illumination. The extent of illumination is reduced further, by shielding the north, east, and west sides of the bulbs (GTR 2002). Shielding techniques would effectively contain illumination; yet, supply adequate lighting for safe operations.

It should be noted that in addition to permanent lighting, the Naco and Douglas Stations employ portable generator powered lighting. A 10.5-mile corridor currently exists in the Naco AO (approximately 8 miles west of the Naco POE and 3.5 miles east) where portable lighting is used to enhance USBP patrols and driving conditions. In the Douglas Station, 73 portable lights are similarly proposed for use along the U.S. Mexico Border

across the entire AO. Portable lighting is often moved in response to illegal activity, so that the entire area is not continuously illuminated.

1.1.4.5 Drainage Structures

Low-water crossings such as the one presented in Photograph 1-11 would reduce erosion and road maintenance without adversely altering existing drainages along the border. Low-water crossings are typically concrete slabs or culverts with gravel, rip–rap, and other erosion control devices placed on the banks in order to control erosion. Many of the current washes in remote areas are not passable for extended periods of time following flood events. In light of this, construction and/or improvement of low-water crossings alone would improve USBP agents response time through reliable access. Engineers typically analyze each drainage and assess whether or not a low-water crossing is needed. Analysis includes the need for low-water crossings, minor culverts, major culverts, bridges or additional improvements.

Photograph 1-11. Typical Low-water Crossing

1.1.4.6 Remote Video Surveillance (RVS)

Ground sensors and RVS are components of USBP's Integrated Surveillance Intelligence Systems (ISIS), which has become an integral part of the detection process, thereby enhancing the agents' ability to apprehend illegal entrants. ISIS components include, but are not limited to, unattended ground sensors, low-light television cameras, infrared cameras, towers (and their connections to power and communication lines), and intelligent computer aided detection (ICAD). The various remote sensing systems can be used separately or in combination with several types of systems or with other, more routine, enforcement actions (i.e., patrols). However, to be most effective, or for maximum optimization, the ISIS needs to be utilized in conjunction with other infrastructure and resources.

RVS systems have become a powerful tool in the detection of UDAs and illegal drug traffickers. The purpose of RVS systems is to aide the USBP in the detection of illegal activity along the U.S. borders by providing 24-hour surveillance capabilities. The RVS system is a passive all-weather monitoring system, which provides continuous electronic surveillance using day and night imagery.

For the purpose of this SEA, discussion of RVS systems is limited to its purpose as an added component in combination with other infrastructure. Generally, these systems are tactically positioned north of the project corridor, yet within line of sight of target areas along the border. Currently the Douglas and Naco Stations have 8 RVS systems. An additional 9 RVS site locations were recently addressed in the Final EA for the installation and operation of RVS systems (INS 2003b). For general purposes, RVS sites are expected to occupy a 50-foot by 50-foot area each. The benefits associated with the USBP's ability to provide 24-hour surveillance capabilities would add to the overall effectiveness of the USBP fulfilling their mission. However, further discussion of RVS systems in this document will be limited since the actual number, location, and design are not known at the present time.

1.2 PURPOSE AND NEED

The purpose of the programs and improvements discussed in this SEA is to facilitate USBP law enforcement along the identified section of the U.S.-Mexico border as mandated by Federal laws. The need for these programs is to gain, maintain, and extend control of the U.S.-Mexico border. The major goals of the USBP enforcement strategy and the purpose of the proposed infrastructure components in this document are:

- Deter illegal entries
- Enhance the safety of USBP agents
- Reduce the current enforcement footprint
- Create a defensible and enforceable zone that reduces illegal crossings and drug smuggling operations
- Enhances response time for USBP agents

The U.S. experiences a substantial influx of illegal immigrants and drugs each year. Both of these illegal activities cost the American citizens billions of dollars annually. Costs are related directly to criminal activities, including the cost of apprehension, detention and incarceration of criminals; and, indirectly in loss of property, illegal participation in government programs and increased insurance costs. To combat the rising numbers of illegal aliens in the U.S., the Clinton Administration committed additional resources to law enforcement agencies, including the USBP. As indicated in Figure 1-3, the numbers of agents assigned to the Naco and Douglas Stations have dramatically increased since the FY of 1996. In response to these manpower increases UDA traffic has decreased, yet remain at unacceptable levels.

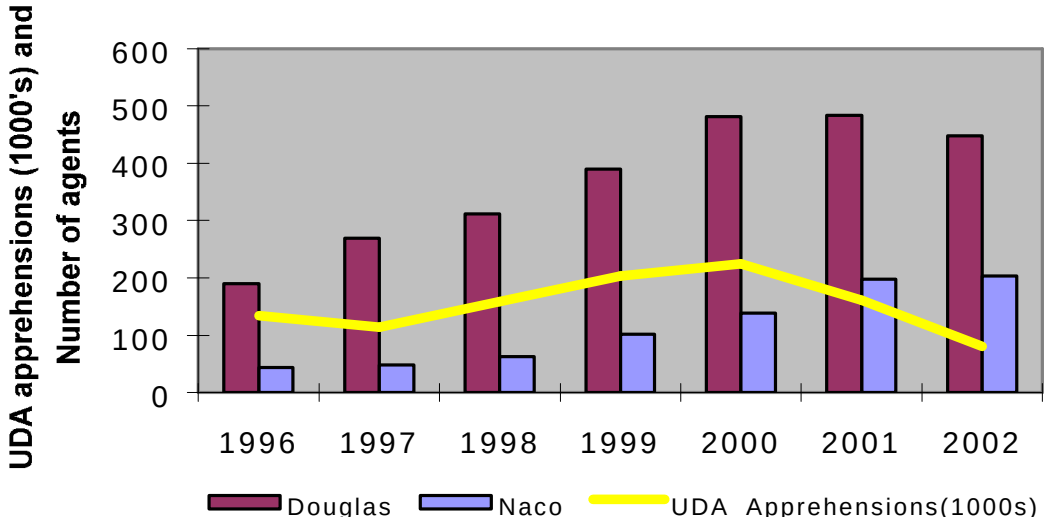


Figure 1-3. USBP Staffing Levels and UDA Apprehensions at Naco and Douglas Stations

Source: USBP 2000a, 2002a, 2002b

The constant flow of UDAs passing through the U.S.-Mexico border area also threatens public lands, archaeological and historic buildings/structures, and endangered species habitat. Vehicles used by smugglers are continuously being abandoned in National Parks and other natural and sensitive areas. Removal of these vehicles is becoming an ever-increasing burden on Federal and state land managers, private landowners, as well as the USBP. UDAs have trampled vegetation and left litter and deposited human excrement in an area that extends from the BLM's Guadalupe Canyon in the southeast

corner of Arizona to the U.S. Forest Service's (USFS) Coronado National Memorial south of Sierra Vista (Arizona Daily Star 2000). The following description was taken from a letter written by James Bellamy, Superintendent at the Coronado National Memorial to Senator Jon Kyl on June 20, 2000.

> *"This activity* [UDA invasion into protected areas] *has significantly impacted park resources. Human foot traffic has created several trails the width of one-lane roads. The large numbers of people have destroyed vegetation, exposed bare ground, eroded deep hillsides, and caused scars that will take years to heal. Smaller trails cover some parts of the park like spider webs. Litter covers the ground in many places, particularly plastic water bottles, food containers, discarded clothing and blankets. Conditions are very unsanitary in many places due to the amount of feces and toilet paper."*

Drug trafficking has also become an increasing problem. USBP stations along the southwestern border experienced a 19% increase in the number of drug seizures from FY 1998 to FY 1999. More importantly, the value and number of drug seizures along the southwestern border represent at least 95% of those made by the USBP throughout the nation. Partially in response to successful deterrence programs in other border areas such as San Diego, California and El Paso, Texas, the Naco and Douglas Stations experienced a steady rise in the number of seizures from FY 1996 to FY 2000. In response to increased manpower and infrastructure projects, the Naco and Douglas Stations experienced a steady fall in the number of seizures since FY 2000. However, the most alarming fact is that despite changes in the number of seizures, the USBP has seen a doubling effect in the pounds of drugs (particularly marijuana) seized since FY 1994 (Figure 1-4).

The negative impacts of widespread drug use on society continues to affect the work force, educational system, general law and order, and traditional family values and structure (Office of National Drug Control Policy 1998 and 1999). Rising rates of violent crime, serious damage to the nation's health and economy, and strains on vital relationships with international allies led the U.S. Congress to develop the National Drug Control Strategy. The National Drug Control Strategy included the USBP and mandated a "prevention through deterrence" strategy. The National Drug Control Strategy also formulated a multi-year approach that required the USBP and other local drug law

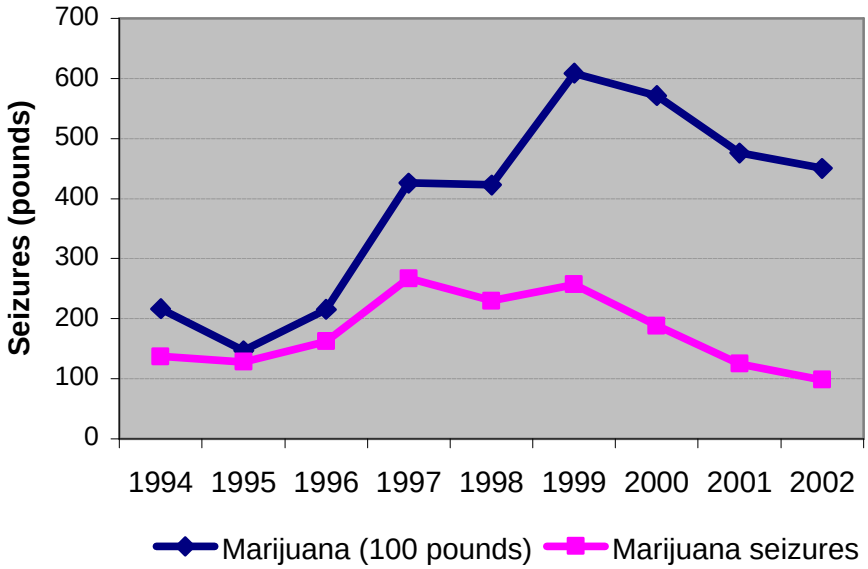


Figure 1-4. Total Marijuana Seizures and Total Pounds, For the USBP Douglas and Naco Stations Combined (1994-2002)
Source: USBP 2000, 2002a, 2002b

enforcement agencies to "... gain, maintain, and extend control..." of the border region necessitated the construction and implementation of various infrastructure systems to enhance the USBP's ability to detect and apprehend UDAs and drug traffickers. As mentioned earlier, collectively, the USBP Naco and Douglas Stations are responsible for approximately 57 miles of the U.S.-Mexico border, most of which are remote and rugged lands. Monitoring such a vast area creates a somewhat daunting task. Illegal immigrants and/or drug traffickers use many areas of the border to gain access to the U.S.

As a part of its enforcement operations, the USBP has had to establish highly trained rescue teams known as the Border Patrol Search Trauma and Rescue Team (BORSTAR). During FY 2002, the Tucson Sector BORSTAR engaged in 235 individual rescue missions in high-risk areas of the west desert corridor. These areas are considered to be high risk due to remoteness and rugged terrain, lack of transportation infrastructure, very limited water or shade, and temperatures that range from freezing winter nights to 115ºF summer temperatures. The 28-member Tucson Sector BORSTAR rescued 340 persons during the FY02 missions. BORSTAR personnel also provided medical treatment to 168 persons.

In the wake of the September 11, 2001, terrorist attacks on the U.S, the anti-terrorism function of the USBP is now an even more increased function over what it has been in the past. In fact, the creation of the Department of Homeland Security, and the transfer of the USBP to this new Department, is the direct result of this attack. The USBP's increased role requires more vigilance at the POEs and all areas along the borders. All enforcement activities and subsequent infrastructure and technological improvements, such as roads, fencing, RVS, and lighting, are necessary elements for the effective enforcement of the border strategy and integral to the success of the USBP to gain, maintain, and extend control of the border.

The Naco and Douglas Stations use a variety of methods to detect and deter illegal drug traffickers. Deterrence is achieved through the actual presence (24 hours per day, seven days per week) of USBP agents on the border, fences and other physical (natural and man-made) barriers, lighting, and the knowledge that the illegal entrants would be detected and apprehended. Detection of the illegal traffickers is accomplished through a variety of low-technology and high-technology resources including observing physical signs of illegal entry (vehicle tracks and footprints, clothes, etc.), visual observation of the illegal entries, information provided by private landowners or the general public, ground sensors, and RVS.

In past enforcement operations, strategies were reactive, and because little emphasis was placed on deterring illegal crossings, it diminished the importance of infrastructure along the U.S.-Mexico border. The USBP was forced to focus efforts primarily on making apprehensions after the international boundary was breached. This strategy utilized the "element of surprise" by deploying their limited resources away from the border in concealed positions. However, as illicit trafficking continued to increase, the area that the USBP was required to patrol also increased. The USBP's inability to deter or contain illegal migration resulted in an increase in the geographic footprint, and subsequent environmental impacts, of illegal immigration patterns.

The purpose and need for the Proposed Action is to effectively employ the necessary infrastructure so that the detection and apprehension can be assured at the border. This will substantially reduce the enforcement footprint, create a deterrence, increase the

safety of USBP agents, and decrease the environmental impacts associated with illegal entries.

1.3 REPORT ORGINIZATION

This report is organized into nine major sections including this introduction. Section 2 describes all alternatives considered during the preparation of the SEA. Section 3 discusses environmental baseline conditions for resources potentially affected by the proposed action, while Section 4 discusses the environmental consequences in relation to each of the viable alternatives. Mitigation measures are discussed in Section 5 and public involvement is addressed in Section 6. Sections 7, 8, and 9 present a list of the references cited in the document, a list of acronyms and abbreviations, and a list of the persons involved in the preparation of this document, respectively. Appendix A includes vegetation data and infrared photography of the entire project area. Appendix B provides correspondence conducted during the development of this SEA. Appendix C provides a list of species protected by the State of Arizona in Cochise County. Appendix D provides an air quality and emissions analysis. Appendix E has supporting documents of the public involvement program, such as the Notice of Availability (NOA).

1.4 APPLICABLE ENVIRONMENTAL STATUTES AND REGULATIONS

This SEA was prepared under contract to the USACE, Fort Worth District, in accordance with, but not limited to the NEPA of 1969; Endangered Species Act (ESA) of 1973, as amended; the National Historical Preservation Act (NHPA) of 1966, as amended; the Archaeological and Historical Preservation Act (AHPA) of 1974, as amended; Executive Order (E.O.) No. 11593, “Protection and Enhancement of the Cultural Environment”; E.O. No. 11988, “Floodplain Management”; E.O. No. 11990, “Protection of Wetlands”; E.O. No. 13007, “Indian Sacred Sites”; E.O. No. 13045, “Protection of Children from Environmental Health Risks”; and E.O. No. 12898 “Federal Actions to Address Environmental Justice.” Table 1-1 summarizes the pertinent environmental requirements that guided the development of this EA.

Table 1-1. Applicable Environmental Statutes and Regulations

Federal Statutes
Archaeological and Historical Preservation Act of 1974
Clean Air Act of 1955, as amended
Clean Water Act of 1977, as amended
Endangered Species Act of 1973, as amended
Migratory Bird Treaty Act of 1972
National Historic Preservation Act of 1966, as amended
National Environmental Policy Act of 1969, as amended
Watershed Protection and Flood Prevention Act of 1954
Wild and Scenic Rivers Act of 1968, as amended
Farmland Protection Policy Act of 1980
Native American Graves Protection and Repatriation Act of 1990
Executive Orders, Memorandums, etc.
Floodplain Management (E.O. 11988) of 1977
Protection of Wetlands (E.O. 11990) of 1977
Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (E.O. 12898) of 1994
Protection of Children from Environmental Health Risks (E.O. 13045) of 1997
Protection of Migratory Birds & Game Mammals (E.O. 11629) of 2001
Indian Sacred Sites (E.O. 13007) of 1996
Consultation and Coordination with Indian Tribal Governments (E.O. 13175) of 2000
Government-to-Government Relations with Native American Tribal Governments (Presidential Memorandum) of 1994

1.0 INTRODUCTION

This Supplemental Environmental Assessment (SEA) addresses the potential for effects, beneficial and adverse, of proposed infrastructure construction and improvements along the U.S.-Mexico border by the Department of Homeland Security (formerly the Immigration and Naturalization Service – INS) and the U.S. Border Patrol (USBP). The proposed infrastructure construction activities consist of primary and secondary pedestrian barrier fencing, vehicle barrier fencing, roads (all weather patrol, maintenance, and drag), lighting, and associated drainage structures within the USBP Naco and Douglas Stations' Areas of Operation (AO).

This document supplements the Final EA for Infrastructure within U.S. Border Patrol Naco-Douglas Corridor, Cochise County, Arizona (2000), herein referred to as the Corridor EA. The Corridor EA was prepared to document impacts associated with projects that facilitate the USBP's mission to deter the illegal entry of undocumented aliens (UDAs) into the U.S. and reduce illegal drug activity along the U.S.-Mexico border between Douglas and Naco Station AOs. It also addressed the cumulative effects of past and reasonably foreseeable projects in the Naco-Douglas corridor.

The project area, herein referred to as the project corridor, consists of proposed infrastructure that has not been identified as such in the Corridor EA or other subsequent National Environmental Policy Act (NEPA) documents. The actions that have already been addressed by previous NEPA documents will be discussed in detail later in this document. The project corridor extends from the western boundary of the USBP Naco AO to the eastern boundary of the USBP Douglas AO (Figure 1-1).

The infrastructure projects proposed by the USBP are part of a continued national strategy for controlling illegal border activity through deterrence. This initiative has involved the ongoing need to tactically position border infrastructure and operations to provide an effective and seamless deterrence against illegal crossings while enhancing the USBP's capability to safely and efficiently extend control of the U.S.-Mexico border.

Section 2.0
ALTERNATIVES

2.0 ALTERNATIVES

The dynamics of illegal entry dictate the placement and designs of various solutions for border control. A properly designed infrastructure system is an indispensable tool in deterring those attempting to illegally cross the U.S. border. The system is also integral to maintaining the USBP's flexibility in deploying agents and enforcement operations. A formidable infrastructure system relaxes stringent workforce demands by slowing down illegal entrants and increasing the window of time that agents have to respond. The more impenetrable the infrastructure is, the greater the window for apprehension and the lessening of a demand for personnel. As the flow of illegal traffic is decreased, greater benefits to the human and natural environment beyond the border will be realized. Strategically developed infrastructure systems would enable USBP managers to better utilize existing workforce when addressing the dynamic nature of illegal alien, terrorists, and narcotics trafficking.

The alternatives considered during the preparation of this SEA were formulated based upon their potential to satisfy the purpose and need as stated in Chapter 1, their potential to satisfy the spirit and intent of IIRIRA, and the knowledge and experience of the USBP. Obviously, any alternative to control the border must be placed in proximity to the border. However, several other selection criteria were used to develop and evaluated the alternatives for the USBP. Each criterion takes into consideration the health and safety of the USBP agents, capability to provide effective enforcement compatible aspects to other infrastructure components, potential environmental consequences, and compliance with the stated purpose and need. Briefly, the list of selection criteria includes:

- Area between primary and secondary fences should be at least 270 feet, where practicable, unless other constraints prohibit this width;
- Roads should be less than 20% vertical grade to provide clear line of site and safe driving conditions;
- Secondary fences should have minimal angles in their alignments to provide clear line of sight;
- Reduce the overall enforcement footprint as it currently exists;
- Impact the minimal amount of land as practicable, assuming other selection criteria are satisfied;
- Design should be compatible with ISIS components;

- Provide systems that can be operated 24 hours per day, seven days per week;
- Convey certainty of apprehension and, thus, provide deterrence
- Maximize flexibility in USBP agent deployment.

Viable alternatives, as defined in this SEA and NEPA, are constrained by those that meet the purpose and need to implement infrastructure that will achieve border control, satisfy the selection criteria above to the extent practicable, and provide a safe working environment for USBP agents. Three separate and distinct alternatives for completion of the proposed infrastructure along the international border will be evaluated in detail in this SEA: the No Action Alternative, the Preferred Alternative, and the Full Build Out Alternative. Other alternatives and alternative designs were considered initially, but have been eliminated from further consideration as operationally non-effective (i.e., does not satisfy the stated purpose and need) or did not satisfy the spirit and intent of IIRIRA. Each of these alternatives is described in detail in the following subsections.

2.1 NO ACTION ALTERNATIVE

The 2000 Corridor EA identified several projects that were approved and funded at the time the EA was published and other projects that the Naco and Douglas Stations had proposed as future actions. The preferred action presented by the 2000 Corridor EA contained both categories of "currently approved and funded" as well as "future" projects. The Finding of No Significant Impact (FONSI) for the 2000 Corridor EA committed that INS/USBP "…would allow projects that have been identified as necessary in the reasonably foreseeable future to continue, provided they are addressed in separate NEPA documentation, as appropriate, and tiered to this [2000 Corridor EA] Environmental Assessment." Several of these projects have since been addressed by site-specific EAs, as required by the FONSI, and either have been completed or are currently underway. Others have not been evaluated under separate NEPA documents, as of yet, and thus require this SEA or another site or project-specific NEPA document to be completed prior to implementation. The status of each of the projects identified in the 2000 Corridor EA, as the Preferred Alternative, is presented in Table 2-1.

Table 2-1. Status of projects Identified in the 2000 Corridor EA

Project	NEPA Document	Status	
		Addressed*	Remaining
Naco Station			
Construct 9 miles of steel landing mat fence	INS (October 2002; March 2003)	2.5 miles	6.5 miles
Construct 6.25 miles of vehicle barrier	USACE (Aug 2000)	3 miles	3.25 miles
Improve 8 miles of border road	USBP (March 2003)	4 miles	4 miles
Install 5 miles of stadium style lights	USACE (April 1999)	2 miles	3 miles
Install 7 RVS sites	INS (June 2000)	7 sites	
Construct 2 low water crossings	USBP (March 2003)	2 + sites	
Use of 11.5 miles of portable generator lights	INS (Dec 2001)	10.5 miles of portable lights (30-50)	
Construct a new USBP Station			1 station
Install additional 8 RVS sites	INS (Jan 2003)	8 sites (plus 1 in Douglas)	
Douglas Station			
Install 10 RVS sites	INS (Jan 2003)	1 site	9
Acquire and use 73 portable light generators			73 lights
Construct a bollard fence at Whitewater Draw	USACE (June2001)	Crossing and fence	
Construct 7.5 miles of landing mat fence			7.5 miles
Install 8 miles of stadium style lights			8 miles
Upgrade 25 miles of border road to a all-weather surface			25 miles
Construct a new USBP Station	USACE (July 2000)	1 station	

* Note: The projects identified as addressed were evaluated in separate NEPA documents tiered to the 2000 Corridor EA; however, these projects have either been completed or are currently under construction

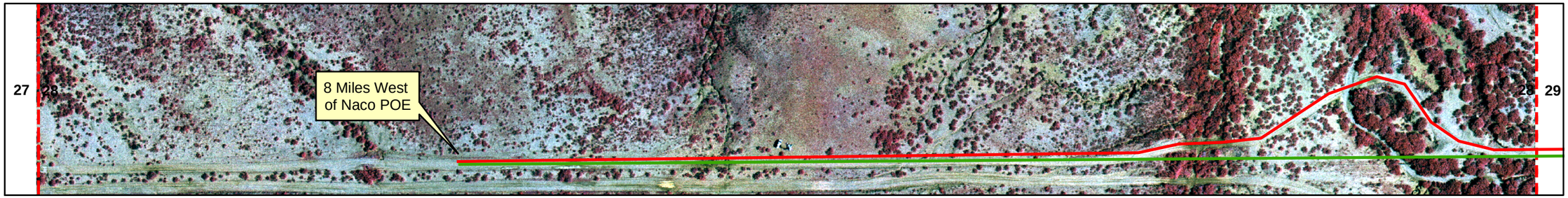
The No Action Alternative would allow the infrastructure activities presented in Table 2-1, with the exception of the Naco USBP Station, to be completed, since this SEA would suffice as the subsequent NEPA document required by the 2000 Cumulative EA FONSI. The “remaining” items described above would be the only infrastructure components that would result in additional impacts under the No Action Alternative, since the other items have been evaluated and disclosed under site-specific or project-specific NEPA documents. All of these items, however, are included in the cumulative impact analysis under Section 4 of this SEA.

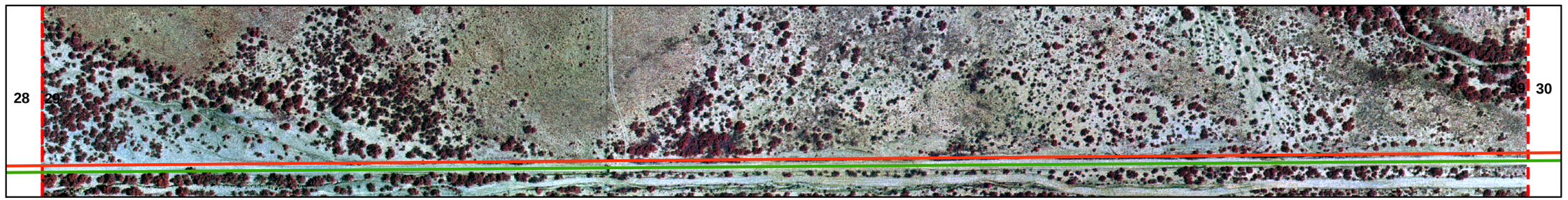
Construction of a new USBP Naco Station would require a separate NEPA document since no site-specific project or funding has been identified as of the date of this publication. The general locations of the completed and on-going infrastructure projects are depicted in Figures 2-1 and 2-2. A summary of the "remaining" items to be implemented under the No Action Alternative is presented in Table 2-2.

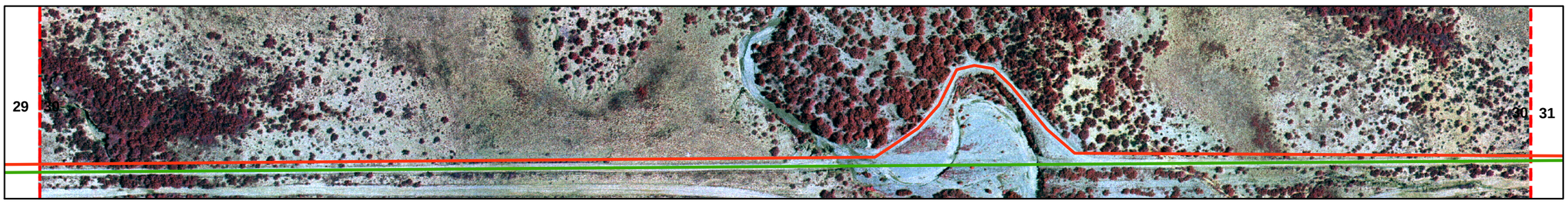
Table 2-2. Summary of Remaining Projects Identified under the No Action Alternative

Projects	Total	
Naco Station		
Primary Fence Projects		
• Primary pedestrian fence (landing mat, picket and bollard)	6.5	Miles
• Vehicle barriers	3.25	Miles
Lighting Projects		
• Permanent lighting (stadium lights)	3	Miles
Roadway Projects		
• Road way upgrade to an all-weather surface	4	Miles
Drainage Structures		
• Construction low-water crossings	18	Each
Douglas Station		
Primary Fence projects		
• Primary pedestrian fence (landing mat, picket and bollard)	7.5	Miles
Lighting Projects		
• Permanent lighting (stadium lights)	8	Miles
Roadway Projects		
• Upgrade existing roads to 24 foot all-weather surface road	25	Miles
RVS Sites		
• Install and operate RVS sites	9	Sites
Total Infrastructure for the No Action Alternative		
Primary Fence Projects	**17**	**Miles**
Lighting Projects	**11**	**Miles**
Roadway Projects	**29**	**Miles**
RVS Sites	**9**	**Each**

Implementation of any of these "remaining" projects prior to the completion of this SEA would require separate NEPA documentation, in compliance with the 2000 Corridor Impact EA, FONSI and NEPA/CEQ regulations. Other projects that are deemed urgent or necessary in response to an identified security issue, that are not identified herein, would also require a separate NEPA document that could be tiered to the 2000 Corridor EA or the INS/JTF-6 2001 SPEIS.







Projects

Remaining Primary Pedestrian Fence

Border Road Improvements

N
W
E
S

200 0 200 400 600 Feet

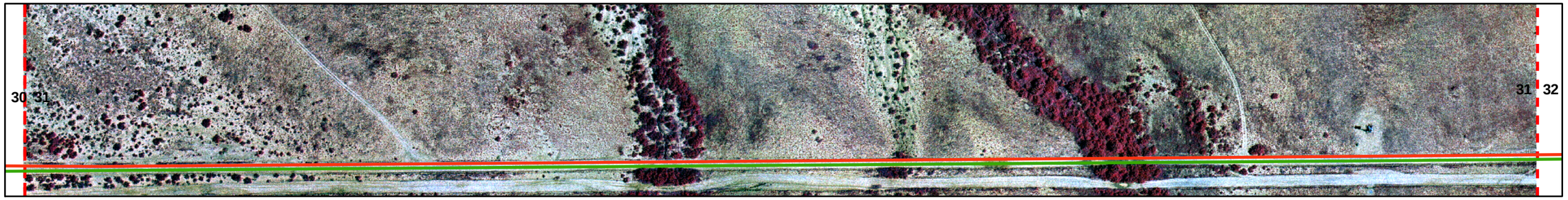
0.05 0 0.05 0.1 0.15 Miles

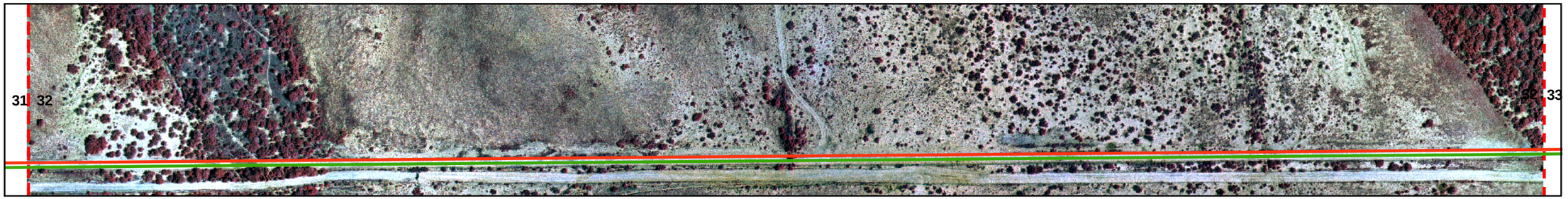
Figure 2-1a. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Naco West

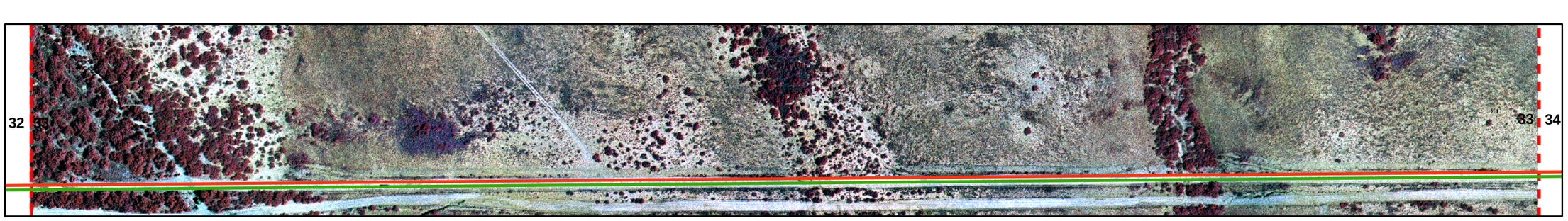
Sources: All Infrastructure was digitized by GSRC, 2003.

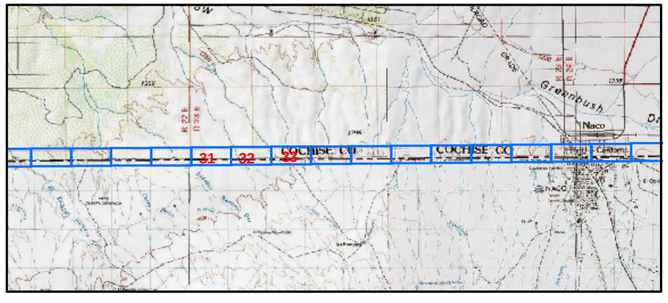
GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Projects

Remaining Primary Pedestrian Fence

Border Road Improvements

N
W
E
S

200 0 200 400 600 Feet

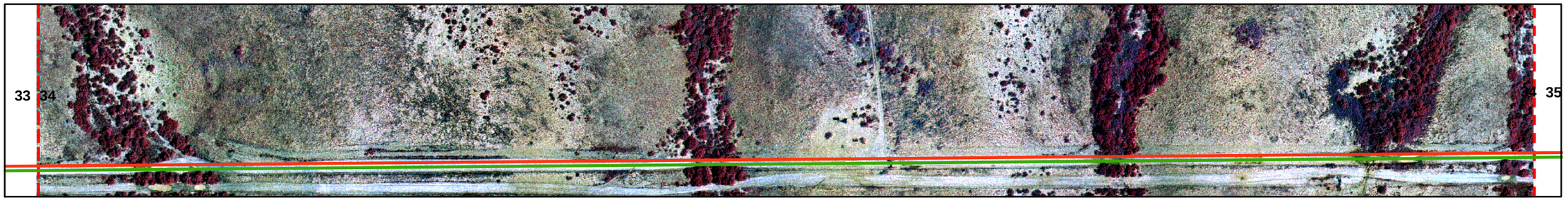
0.05 0 0.05 0.1 0.15 Miles

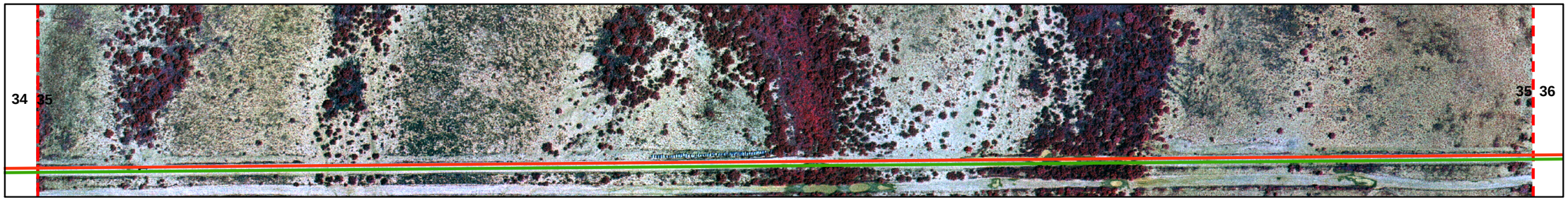
Figure 2-1b. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Naco West

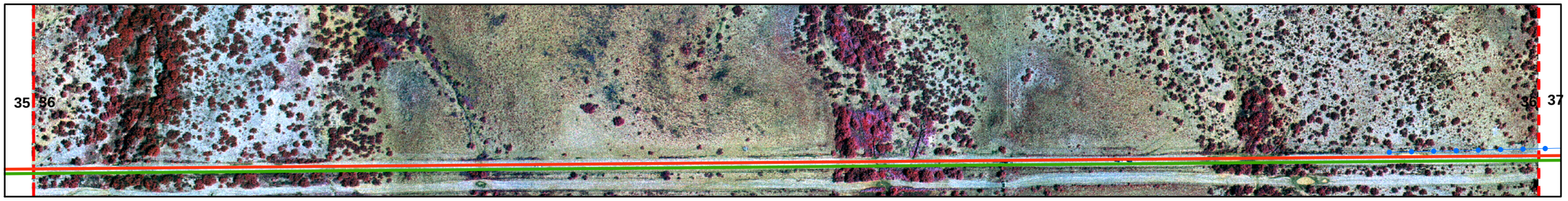
Sources: All Infrastructure was digitized by GSRC, 2003.

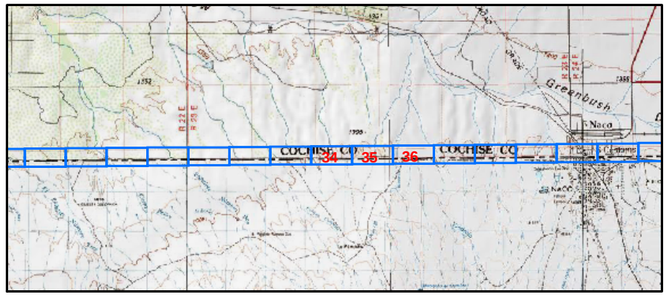
GSRC GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Projects

- Remaining Primary Pedestrian Fence
- Border Road Improvements
- Remaining Stadium Lights

N
W E
S

200 0 200 400 600 Feet

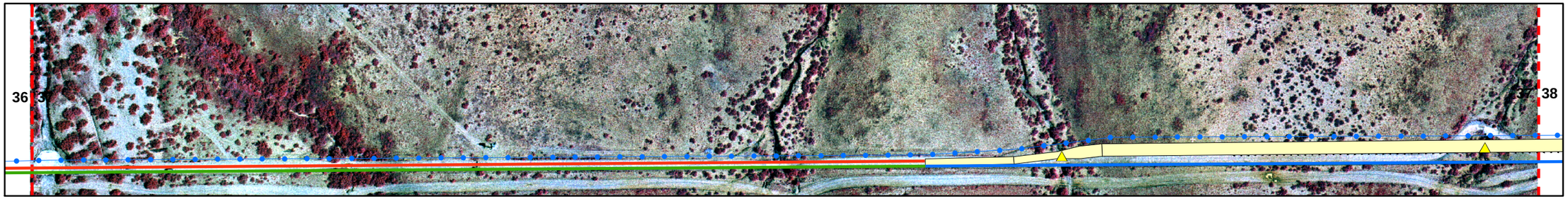
0.05 0 0.05 0.1 0.15 Miles

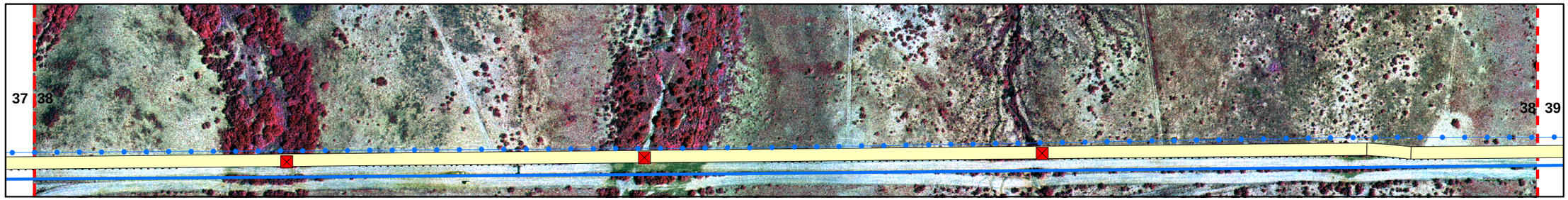
Figure 2-1c. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Naco West

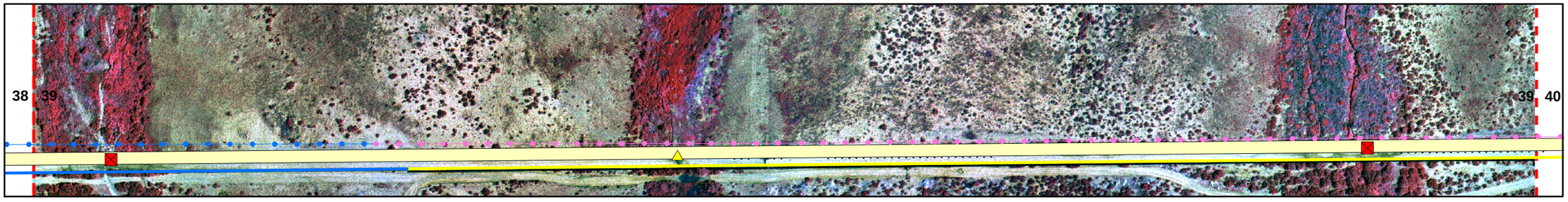
Sources: All Infrastructure was digitized by GSRC, 2003.

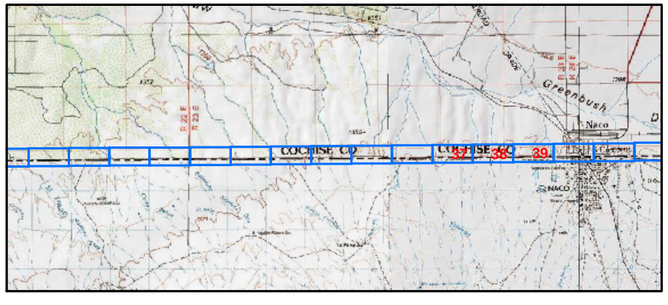
GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Projects

- Vehicle Barriers and Ongoing Primary Pedestrian Fence
- Primary Pedestrian Fence
- Remaining Stadium Lights
- Stadium Lights
- Remaining Primary Pedestrian Fence
- Border Road Improvements
- Ongoing Naco 4-Mile Road Upgrade
- Ongoing Low Water Crossing
- Ongoing Drainage Crossing

N
W E
S

200 0 200 400 600 Feet

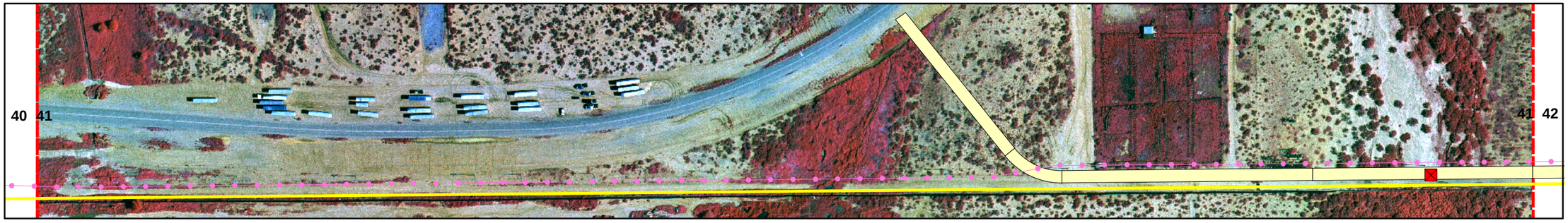
0.05 0 0.05 0.1 0.15 Miles

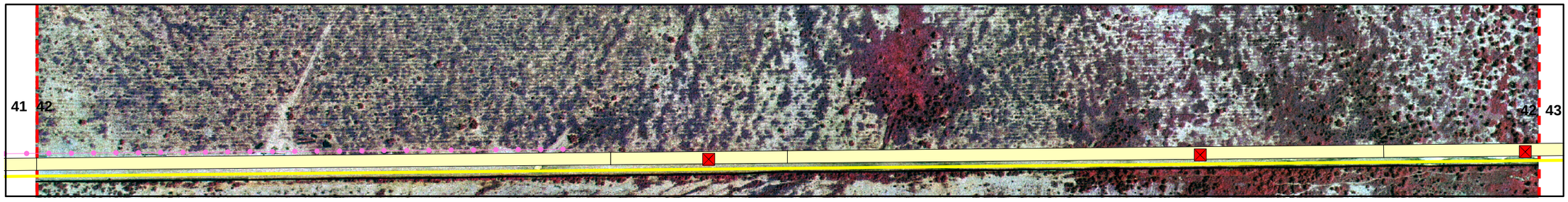
Figure 2-1d. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Naco West

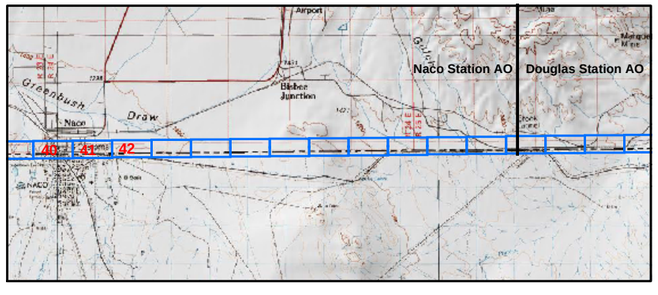
Sources: All Infrastructure was digitized by GSRC, 2003.

GSRC / GULF SOUTH RESEARCH CORPORATION

Date: February 2003







Projects

- Primary Pedestrian Fence
- Stadium Lights
- Ongoing Low Water Crossing
- Border Road Improvements
- Ongoing Naco 4-Mile Road Upgrade

N
W E
S

200 0 200 400 600 Feet

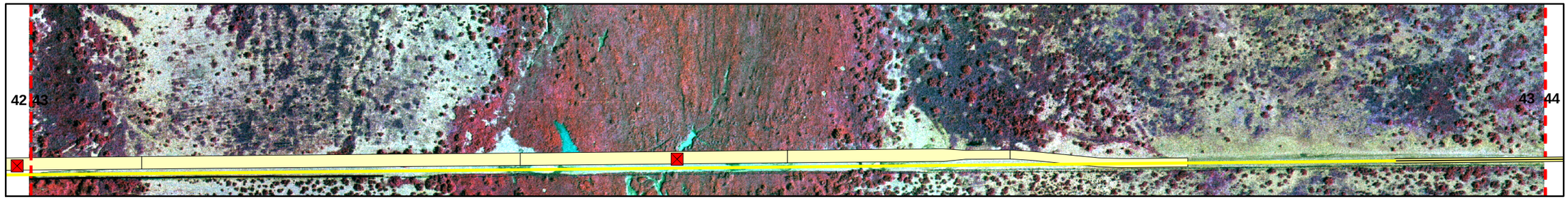
0.05 0 0.05 0.1 0.15 Miles

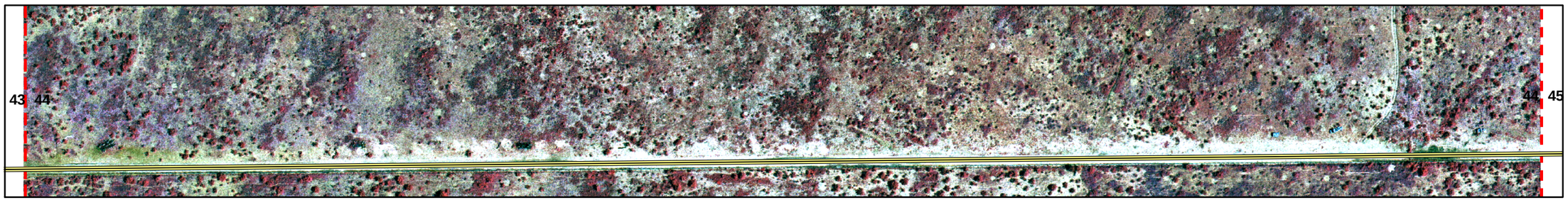
Figure 2-1e. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Naco East

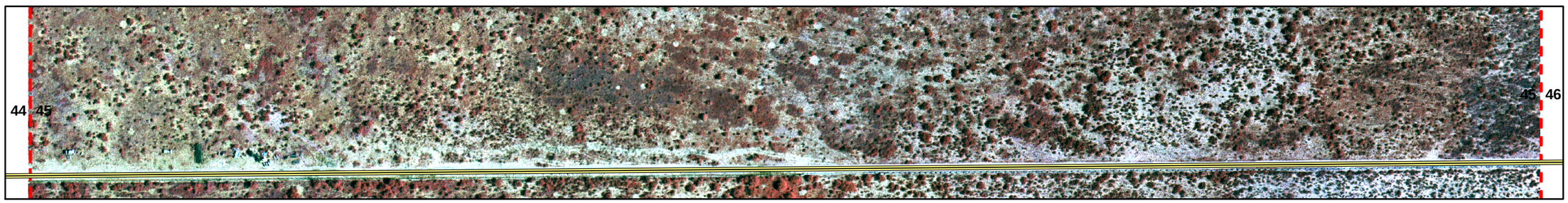
Sources: All Infrastructure was digitized by GSRC, 2003.

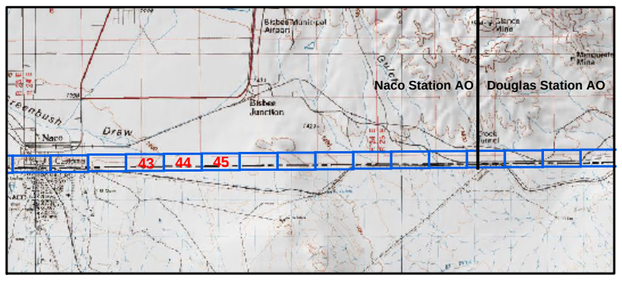
GSRC GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Primary Pedestrian Fence

Ongoing Naco 4-Mile Road Upgrade

Ongoing and Remaining Vehicle Barriers

Ongoing Low Water Crossing

N
W
E
S

200 0 200 400 600 Feet

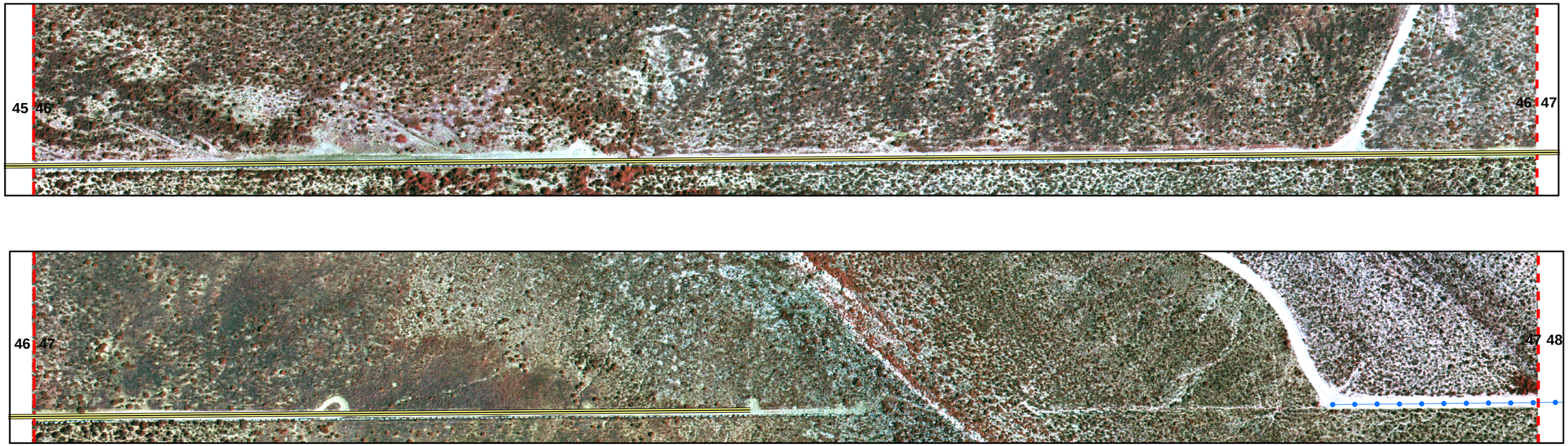
0.05 0 0.05 0.1 0.15 Miles

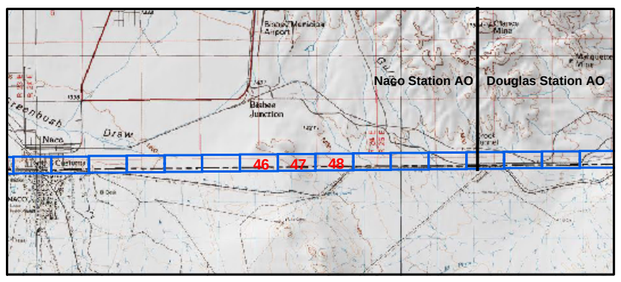
Figure 2-1f. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Naco East

Sources: All Infrastructure was digitized by GSRC, 2003.

GSRC / GULF SOUTH RESEARCH CORPORATION

Date: February 2003





Remaining Stadium Lights

Ongoing and Remaining Vehicle Barriers

N
W
E
S

200 0 200 400 600 Feet

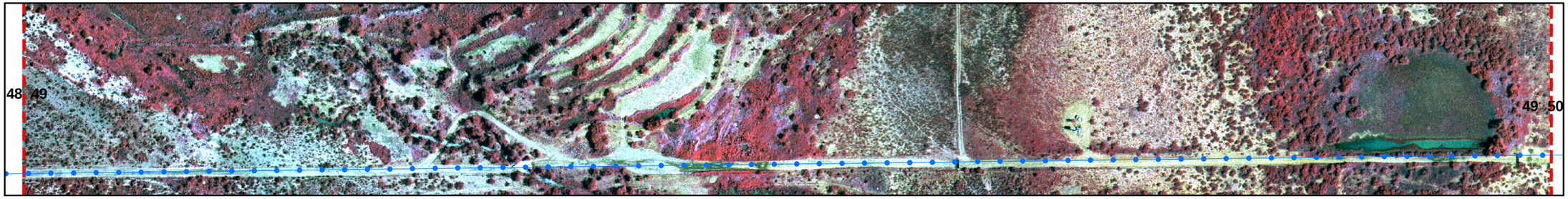
0.05 0 0.05 0.1 0.15 Miles

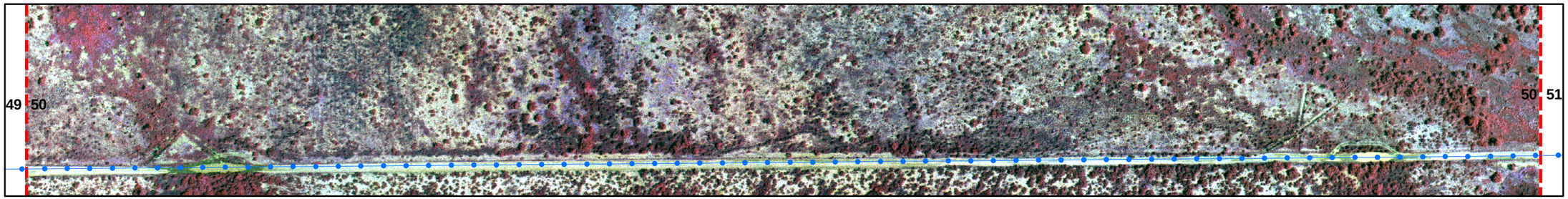
Figure 2-1g. Existing, Ongoing, and Remaining InfrastructureProjects under the No Action Alternative/Naco East

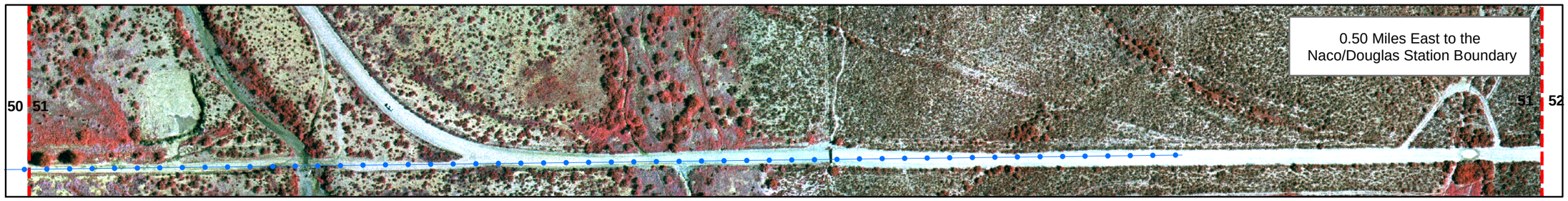
Sources: All Infrastructure was digitized by GSRC, 2003.

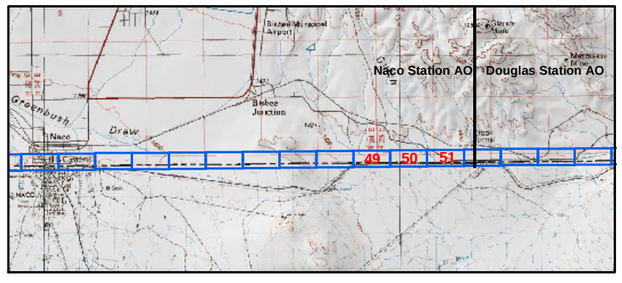
GSRC / GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Remaining Stadium Lights

N
W
E
S

200 0 200 400 600 Feet

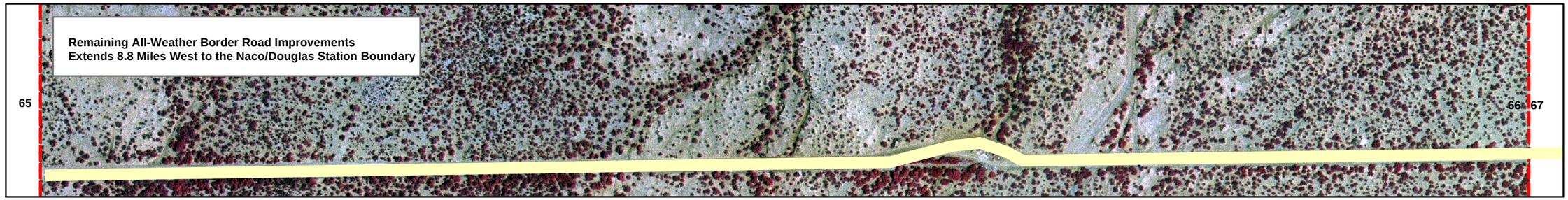
0.05 0 0.05 0.1 0.15 Miles

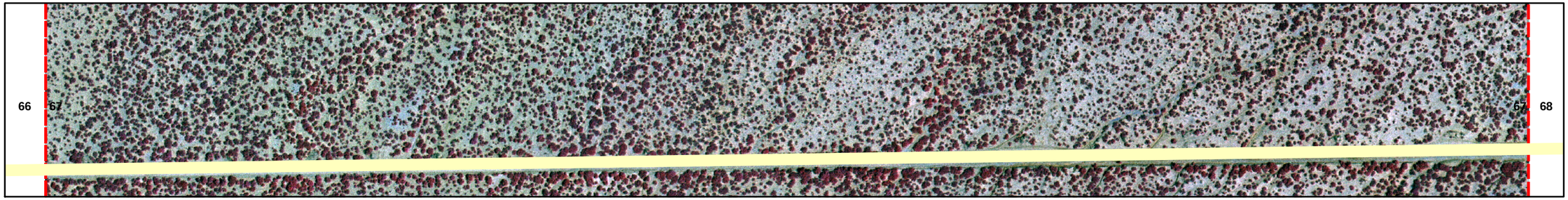
Figure 2-1h. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Naco East

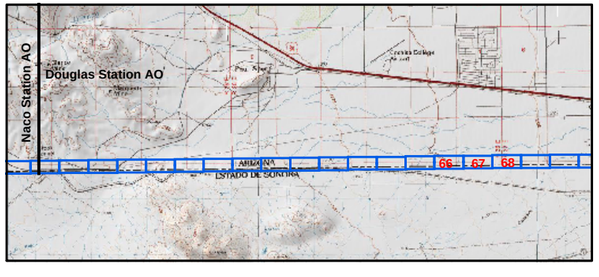
Sources: All Infrastructure was digitized by GSRC, 2003.

GULF SOUTH RESEARCH CORPORATION

Date: February 2003







Remaining All-Weather Border Road Improvements

Remaining Primary Pedestrian Fence

N
W E
S

200 0 200 400 600 Feet

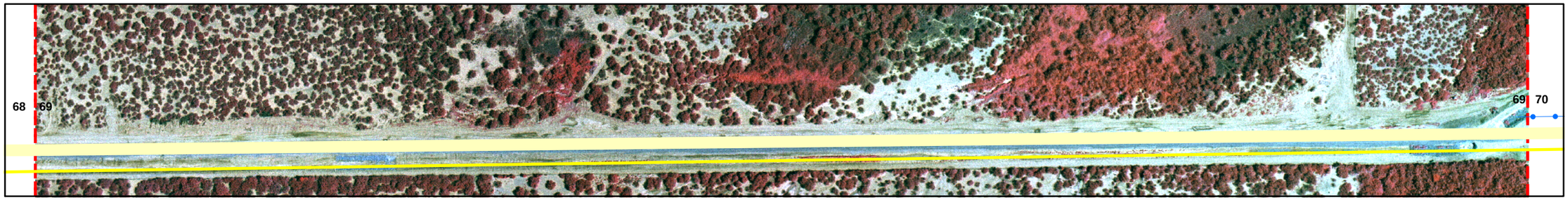
0.05 0 0.05 0.1 0.15 Miles

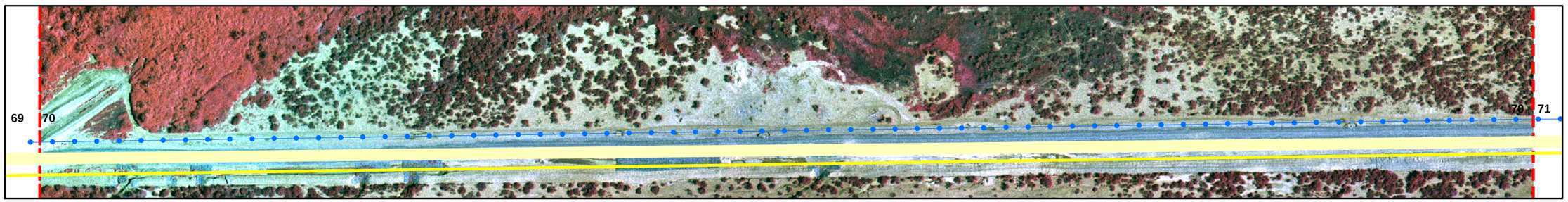
Figure 2-1i. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Douglas West

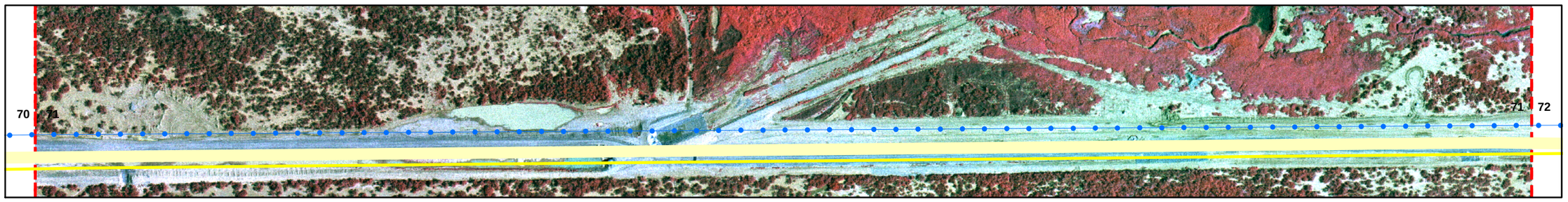
Sources: All Infrastructure was digitized by GSRC, 2003.

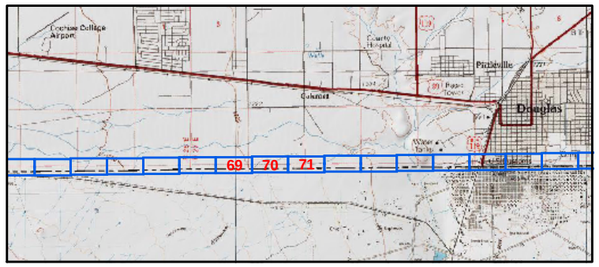
GSRC / GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Remaining All-Weather Border Road Improvements

Remaining Stadium Lights

Remaining Primary Pedestrian Fence

N
W
E
S

200 0 200 400 600 Feet

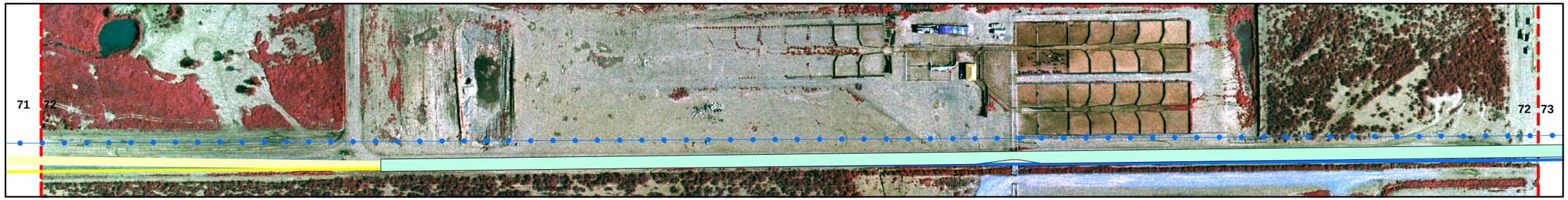
0.05 0 0.05 0.1 0.15 Miles

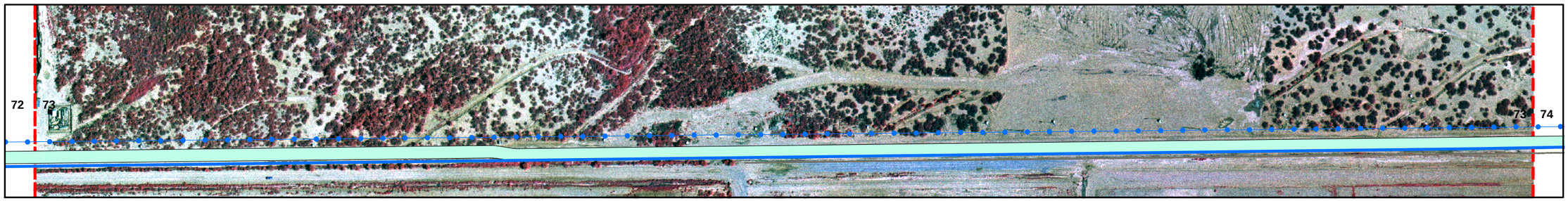
Figure 2-1j. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Douglas West

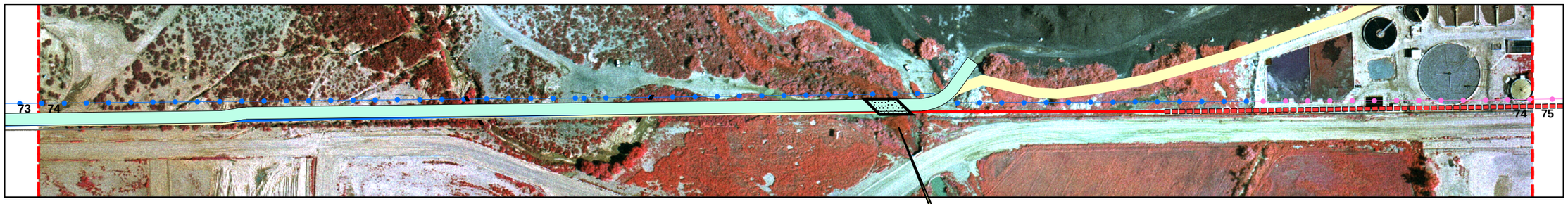
Sources: All Infrastructure was digitized by GSRC, 2003.

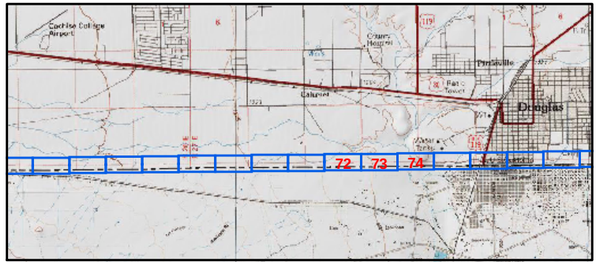
gsrc / GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Remaining Stadium Lights
Stadium Lights
Remaining Primary Pedestrian Fence
All-Weather Border Road Improvements
Ongoing Primary Pedestrian Fence
Ongoing Whitewater Draw Road Upgrade
Primary Pedestrian Fence
Ongoing Bollard Fence

N
W E
S

200 0 200 400 600 Feet

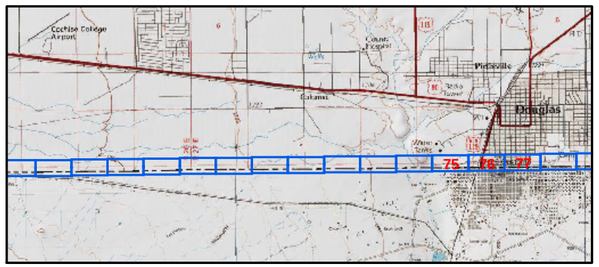
0.05 0 0.05 0.1 0.15 Miles

Figure 2-1k. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Douglas West

Sources: All Infrastructure was digitized by GSRC, 2003.

GULF SOUTH RESEARCH CORPORATION

Date: February 2003



Stadium Lights
Primary Pedestrian Fence
All-Weather Border Road Improvements

N
W
E
S

200 0 200 400 600 Feet

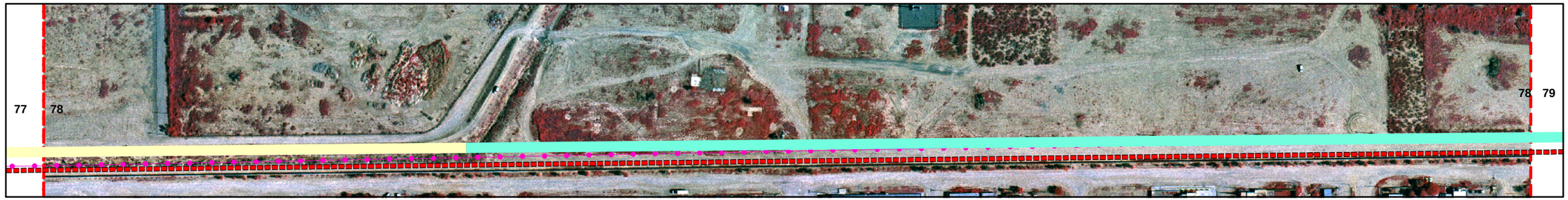
0.05 0 0.05 0.1 0.15 Miles

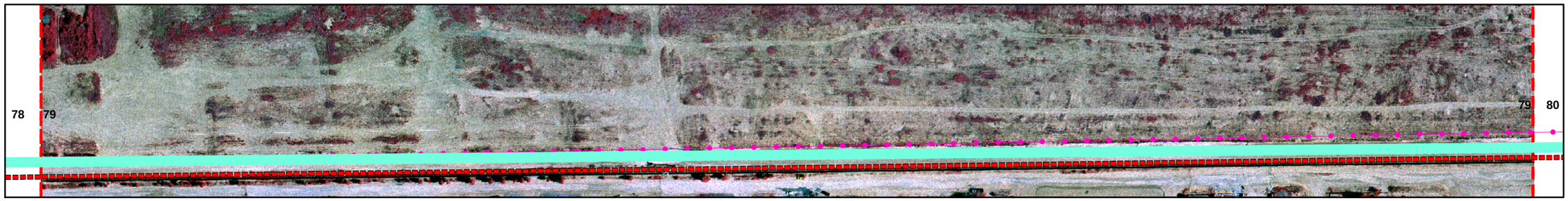
Figure 2-1l. Existing, Ongoing, Remaining Infrastructure Projects under the No Action Alternative/Douglas

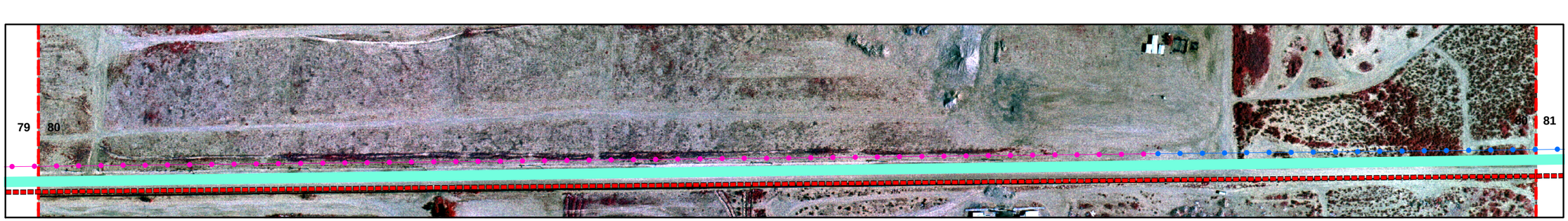
Sources: All Infrastructure was digitized by GSRC, 2003.

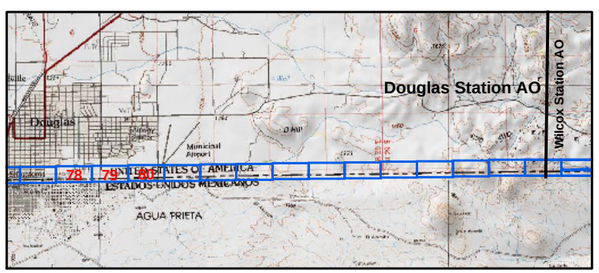
GSRC / GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Stadium Lights
Remaining Stadium Lights
Primary Pedestrian Fence
All-Weather Border Road Improvements
Remaining All-Weather Border Road Improvements

N
W E
S

200 0 200 400 600 Feet

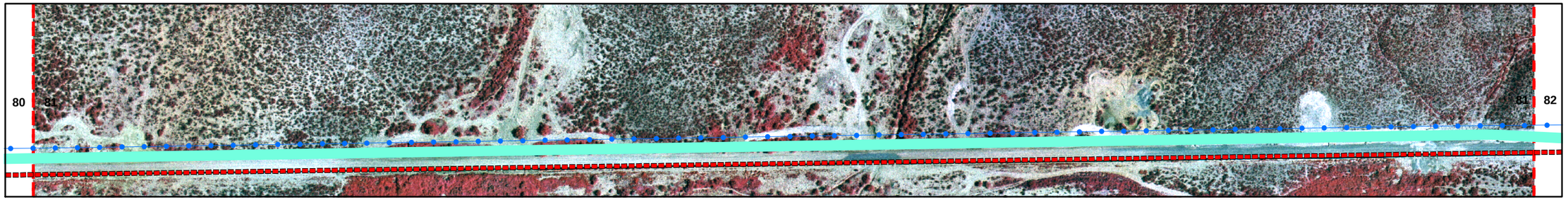
0.05 0 0.05 0.1 0.15 Miles

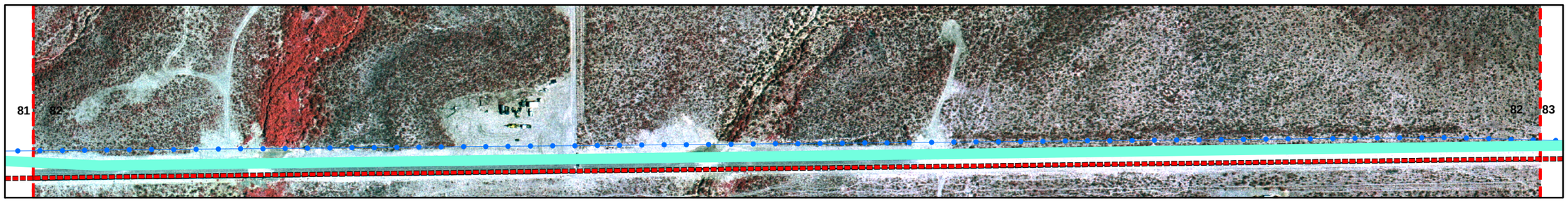
Figure 2-1m. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Douglas East

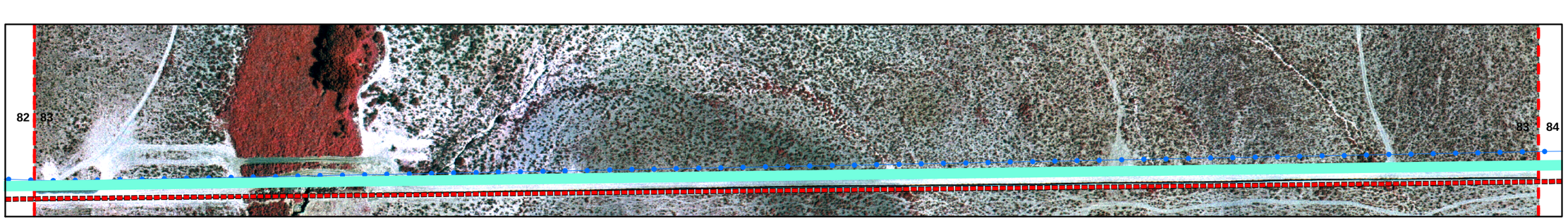
Sources: All Infrastructure was digitized by GSRC, 2003.

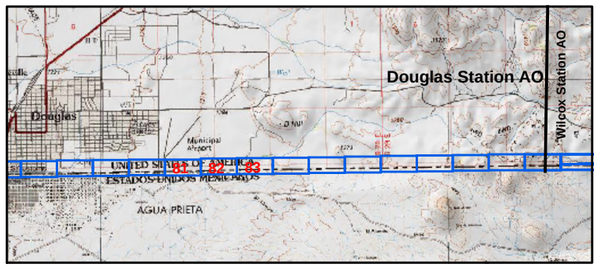
gsrc / GULF SOUTH RESEARCH CORPORATION

Date:February 2003









Remaninig Stadium Lights
Primary Pedestrian Fence
Remaining All-Weather Border Road Improvements

N
W
E
S

200 0 200 400 600 Feet

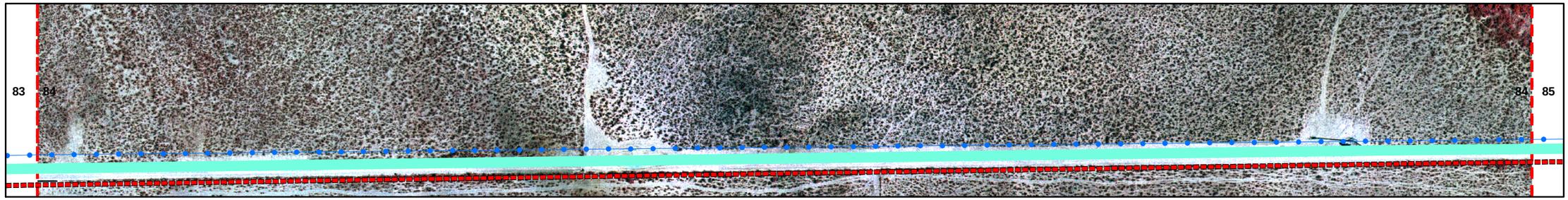
0.05 0 0.05 0.1 0.15 Miles

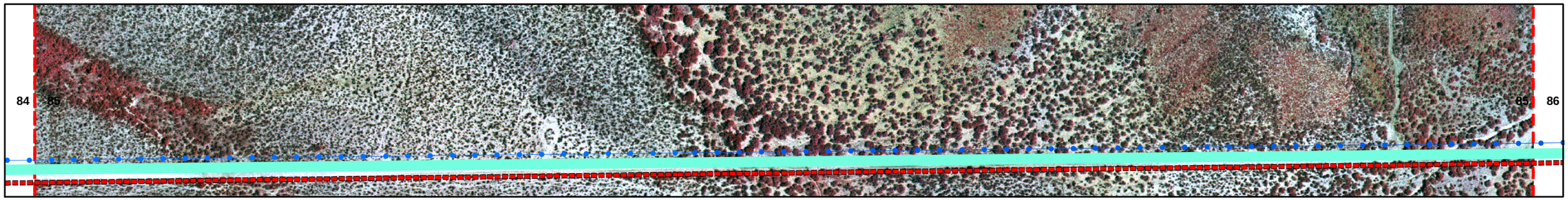
Figure 2-1n. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Douglas East

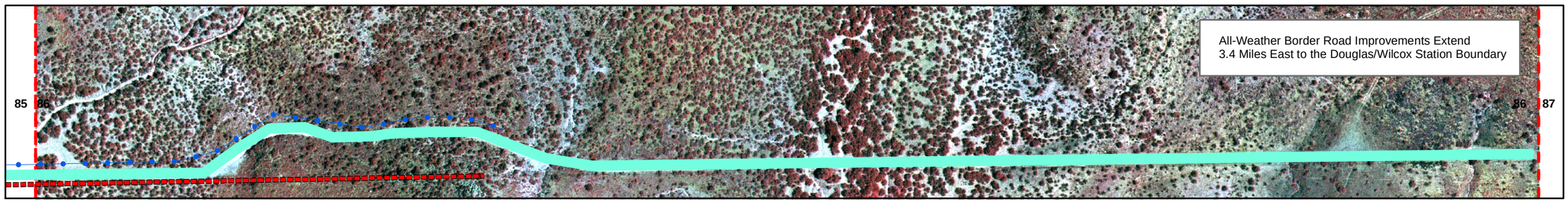
Sources: All Infrastructure was digitized by GSRC, 2003.

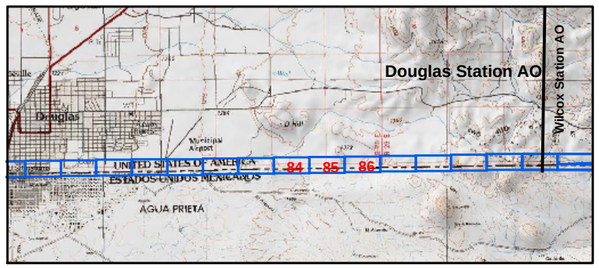
gsrc / GULF SOUTH RESEARCH CORPORATION

Date: February 2003









Primary Pedestrian Fence
Remaining Primary Pedestrian Fence
Remaining Stadium Lights
Remaining All-Weather Border Road Improvements

N
W E
S

200 0 200 400 600 Feet

0.05 0 0.05 0.1 0.15 Miles

Figure 2-1o. Existing, Ongoing, and Remaining Infrastructure Projects under the No Action Alternative/Douglas East

Sources: All Infrastructure was digitized by GSRC, 2003.

GSRC GULF SOUTH RESEARCH CORPORATION

Date: February 2003

2.2 PREFERRED ALTERNATIVE

The Preferred Alternative includes only those infrastructure components that are considered essential to gain and maintain immediate control of the border. This alternative includes various types of infrastructure such as roads, fences, and lights at specified locations throughout the project corridor to develop an effective, safe, and defensible border control system. The Preferred Alternative would incorporate the completed and proposed infrastructure components to develop an enforcement system.

The USBP has identified the importance of avoiding environmentally sensitive areas; therefore, infrastructure construction would not occur across the entire 57 miles of project corridor. Specifically, new infrastructure construction would not occur in the 8-mile portion from the eastern boundary of the Coronado National Memorial to the western limits of the Naco AO, within the Coronado National Forest.

The Naco and Douglas Stations have identified combinations of infrastructure that would provide different levels of control and specialized functions needed across the project corridor. A summary of the Preferred Alternative is provided in Figure 2-2 Summary and alignments of this infrastructure are provided in Figure 2-2a through 2-2e. These combinations range from minimal enforcement need that merely improves access, such as an all-weather roadway upgrade (Figure 2-3), to highly enforceable double fence systems, which incorporate all-weather patrols roads, drags roads, permanent lighting and all-weather maintenance roads (Figure 2-4). However, most of the areas without secondary fencing would incorporate primary fencing (Figure 2-5). In fact, the Preferred Alternative employs variations of two different concepts (areas with secondary fencing and areas without secondary fencing) to meet the specific level of enforcement required in an area.

Location Map

300 Ft. Alignment (Primary Pedestrain Fence, Maintenance Roads, Patrol Roads, Drag Roads, Permanent Lighting, and Secondary Pedestrain Fence)

60 Ft. Alignment (Primary Pedestrain Fence, Maintence Roads, Patrol Roads, Drag Roads, Permanent Lighting, and Secondary Pedestrain Fence)

Patrol Road Upgrade and Primary Fence (Vehicle Barriers and/or Pedestrain Fence)

Patrol Road Upgrade Only

60 Ft. Alignment along the International Ditch (Primary Pedestrain Fence, Maintenance Road, Concrete Lined Channel, Permanent Lighting, and Secondary Pedestrain Fence)

N W E S

1:230,000

0 1.25 2.5 5 7.5 10 Miles

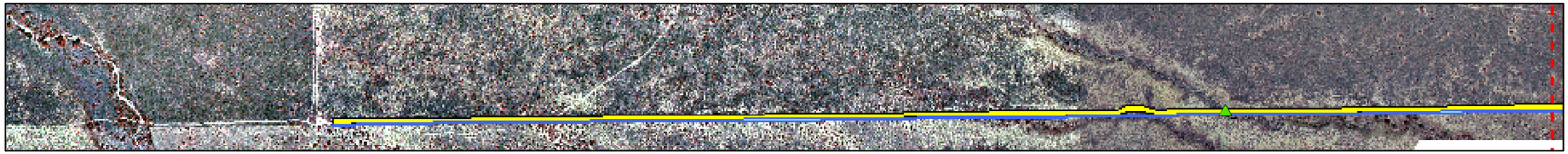
Figure 2-2: Summary - Preferred Alternative

Sources: USGS 1:100,000 Digital Raster Graphics
All other data from Gulf South Research Corporation

gsrc / GULF SOUTH RESEARCH CORPORATION

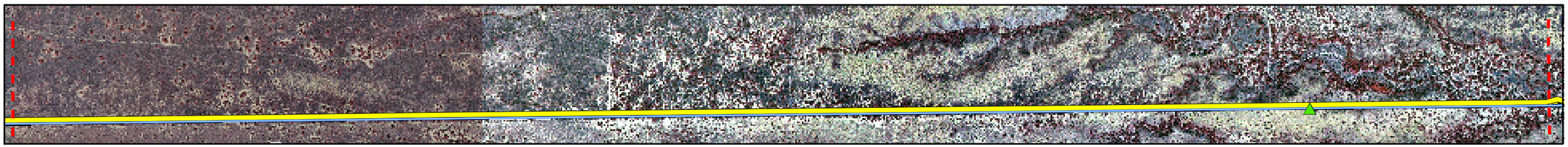
Date: April 2003

A



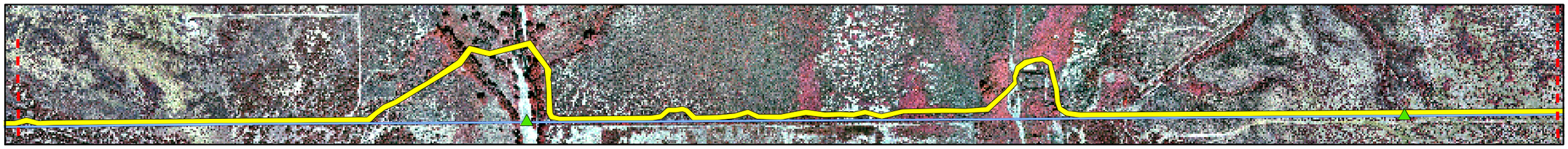
B

B



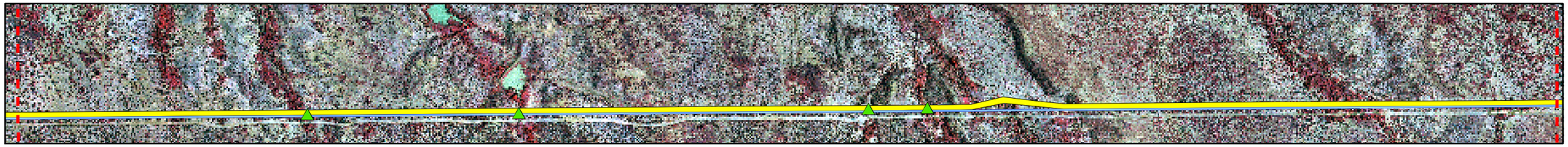
C

C



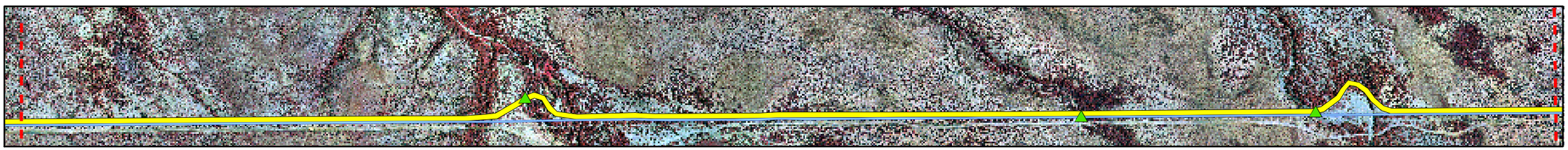
D

D



E

E



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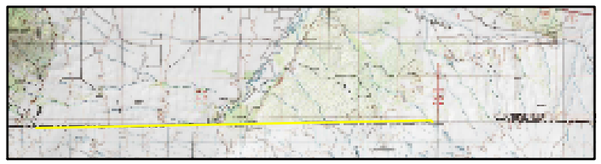


Patrol Road Upgrade with All-Weather Surface (See Figure 2-5)

Primary Vehicle Barrier and Maintenance Road (See Figure 2-5)

Proposed Drainage Structure

N

W E

S

0 500 1,000 2,000 3,000 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-2a. Preferred Alternative

GSRC / GULF SOUTH RESEARCH CORPORATION

Date: February 2003

Sources: All Infrastructure was digitized by GSRC, 2003.

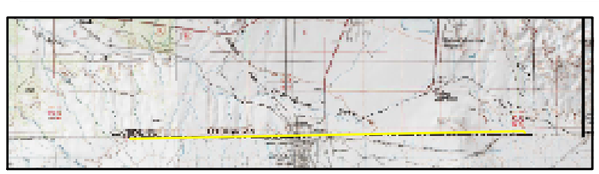
G H

H I

I J

J K

K L



Patrol Road Upgrade with All-Weather Surface (See Figure 2-5)

Primary Vehicle Barrier and Maintenance Road (See Figure 2-5)

Secondary Fence Corridor at 60 ft. (See Figure 2-6)

Secondary Fence Corridor at 300ft. (See Figure 2-4)

Proposed Drainage Structure

N W E S

0 500 1,000 2,000 3,000 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-2b. Preferred Alternative

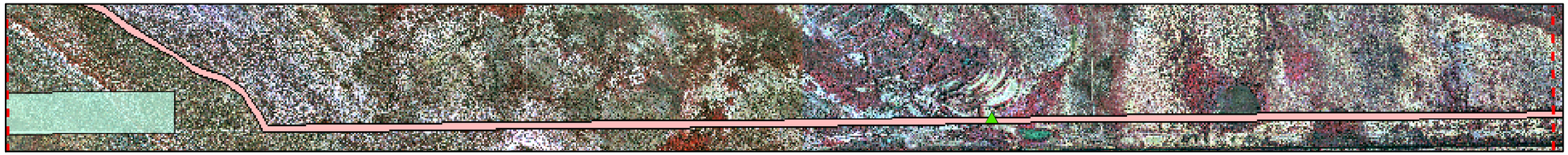
Sources: All Infrastructure was digitized by GSRC, 2003.

GULF SOUTH RESEARCH CORPORATION

Date: February 2003

K

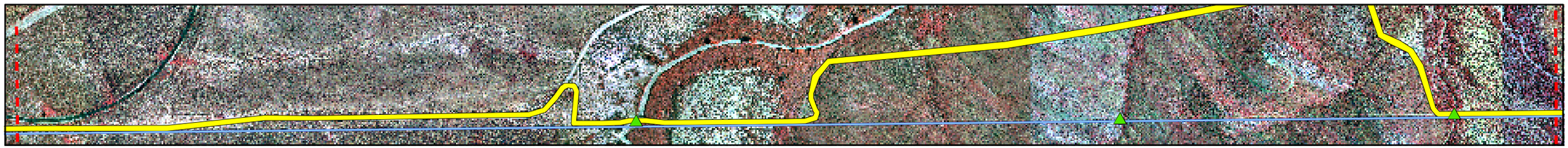
L



L

M

M



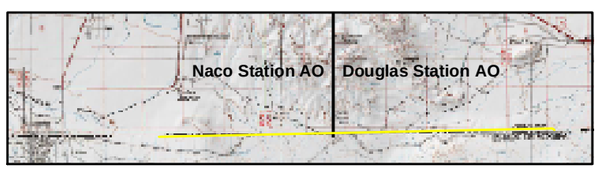
N

N

O

O

P



- Patrol Road Upgrade with All-Weather Surface (See Figure 2-5)
- Patrol Road Upgrade with All-Weather Surface (See Figure 2-3)
- Primary Pedestrian Fence and Maintenance Road (See Figure 2-5)
- Secondary Fence Corridor at 60ft. (See Figure 2-6)
- Proposed Drainage Structure

N
W E
S

0 495 990 1,980 2,970 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-2c. Preferred Alternative

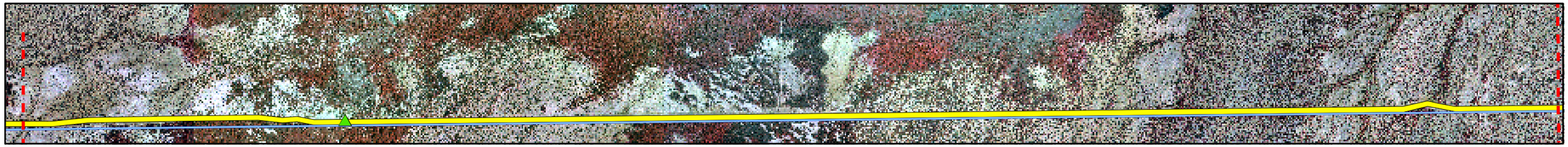
Sources: All Infrastructure was digitized by GSRC, 2003.

GULF SOUTH RESEARCH CORPORATION

Date: February 2003

P

Q



Q

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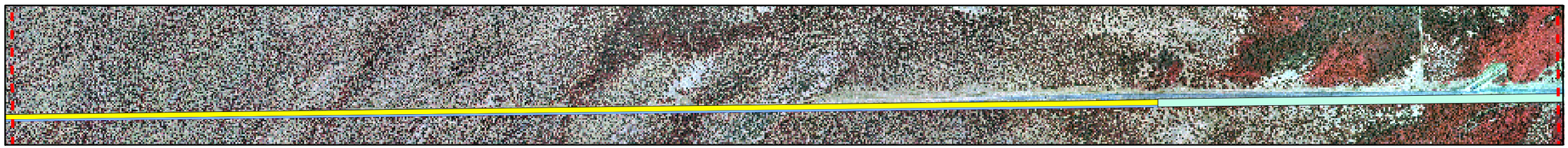

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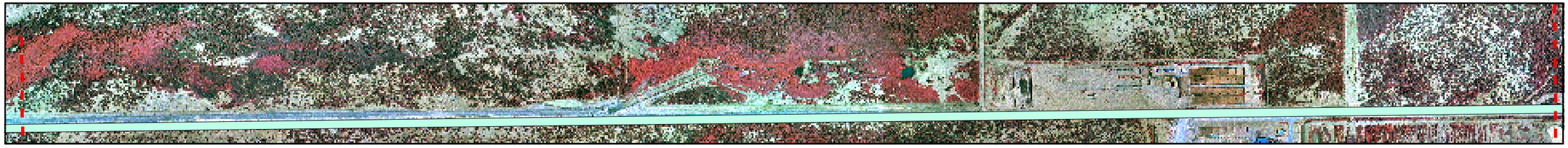

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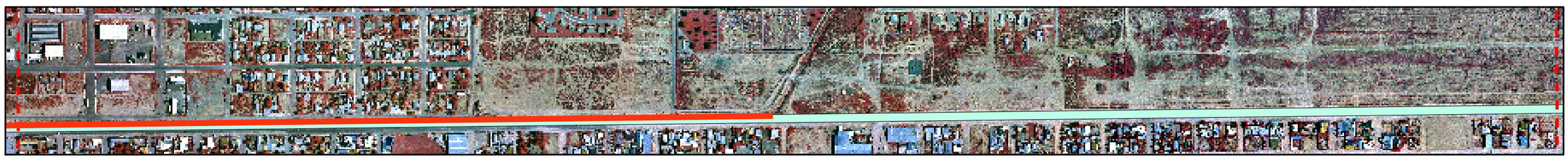

Patrol Road Upgrade with All-Weather Surface (See Figure 2-5)

Primary Pedestrian Fence and Maintenance Road (See Figure 2-5)

Secondary Fence Corridor at 60ft. (See Figure 2-6)

Proposed Drainage Structure

Secondary Fence Corridor/International Ditch (See Figure 2-7)

N

W E

S

0 495 990 1,980 2,970 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-2d. Preferred Alternative

Sources: All Infrastructure was digitized by GSRC, 2003.

GSRC GULF SOUTH RESEARCH CORPORATION

Date: February 2003

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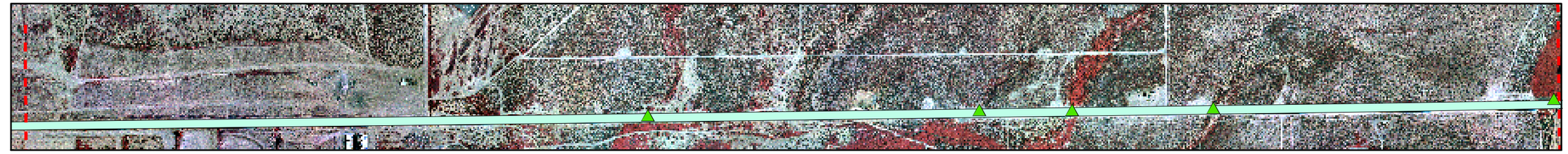

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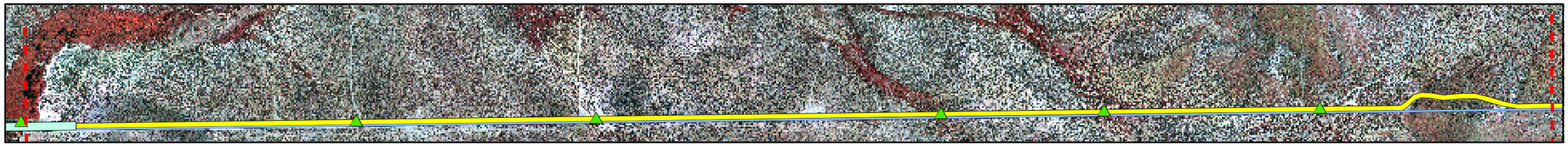

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X

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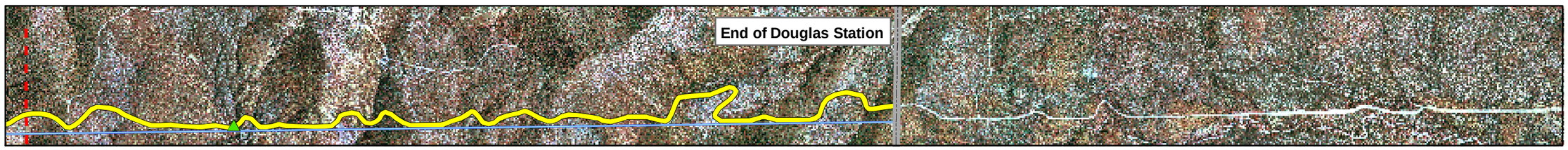

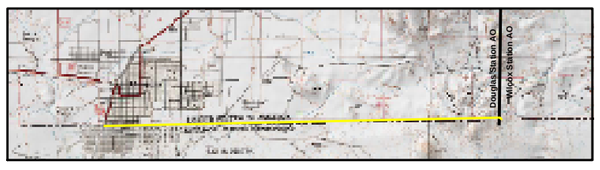

- Patrol Road Upgrade with All-Weather Surface (See Figure 2-5)
- Primary Pedestrian Fence and Maintenance Road (See Figure 2-5)
- Secondary Fence Corridor at 60ft. (See Figure 2-6)
- Proposed Drainage Structure

N
W E
S

0 495 990 1,980 2,970 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-2e. Preferred Alternative

Sources: All Infrastructure was digitized by GSRC, 2003.

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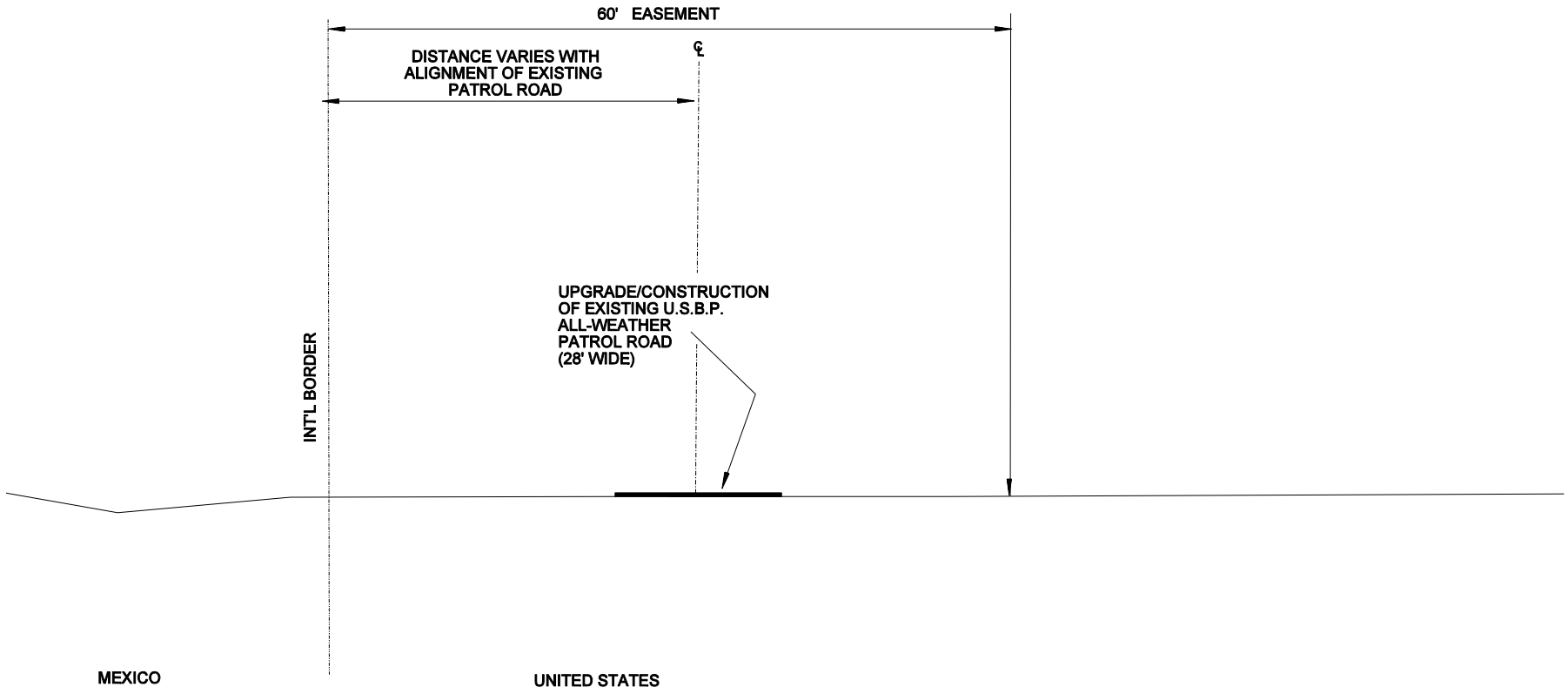

Figure 2-3: Schematic Cross Section of Infrastructure Components in Areas That Would Experience Roadway Upgrades Only

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SCALE: not to scale

DATE: March 2003

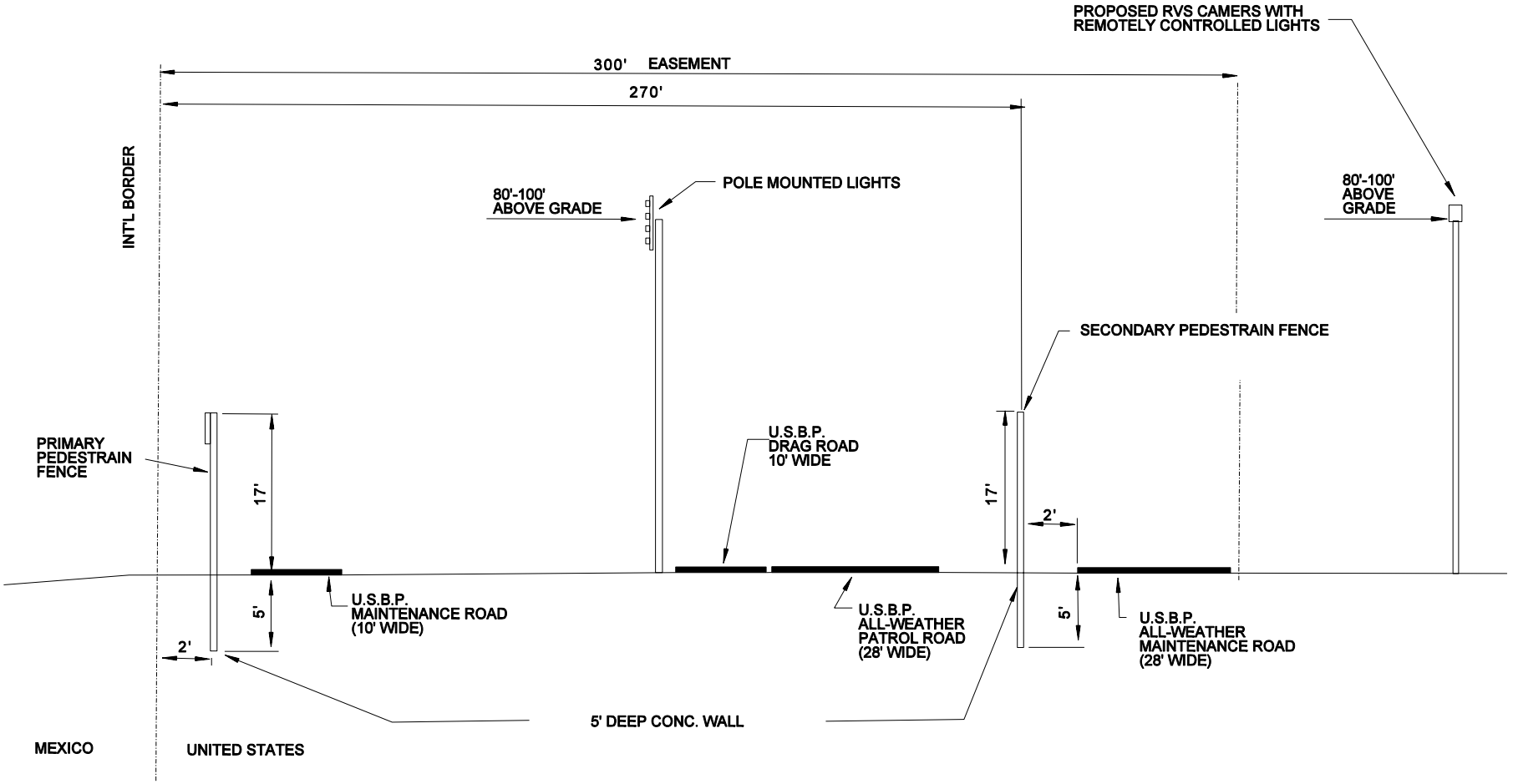

Figure 2-4: Typical Schematic Cross Section of Infrastructure Components
Where Secondary Fences Would Be Positioned 270 Feet North of the U.S.-Mexico Border

gsrc / GULF SOUTH RESEARCH CORPORATION

SCALE: not to scale

DATE: March 2003

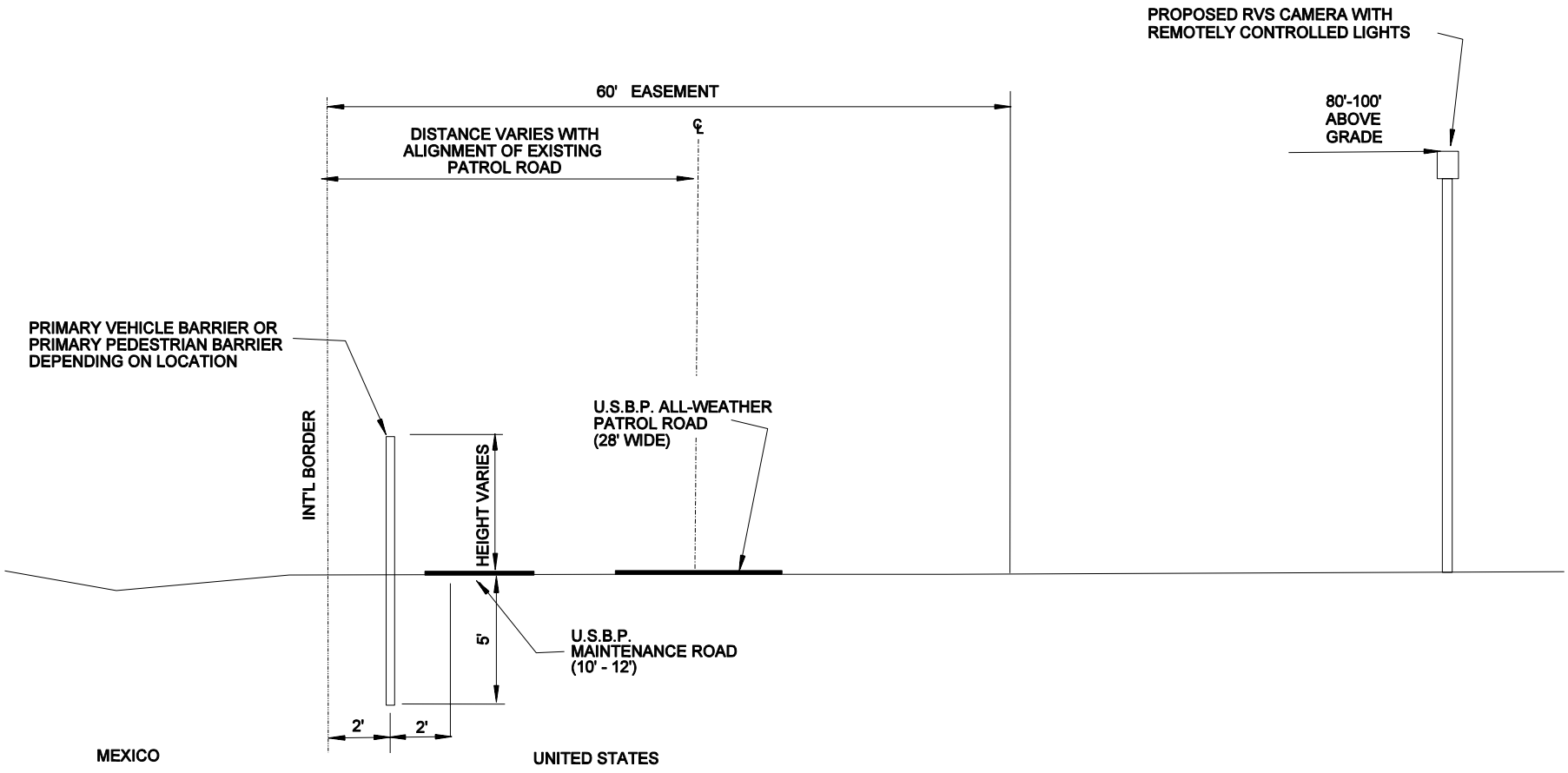

Figure 2-5: Schematic Cross Section of Infrastructure Components Where Secondary Fence Would Not Exist

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SCALE: not to scale

DATE: March 2003

While the goal of the Preferred Alternative is to achieve a border control system through the employment of a combination of components, individual components would require site-specific construction across the entire project corridor. The following discussion provides a more detailed description of how individual infrastructure components would be positioned across the project corridor. Table 2-3 provides a brief summary of individual infrastructure components that would be required to accomplish this alternative.

Table 2-3. Summary of Construction Required for the Preferred Alternative

Infrastructure Component	New Construction Required		
	Naco AO	Douglas AO	Total
Primary and Secondary Fencing			
Primary Pedestrian Fence (miles)	8.4	14	**22.4**
Secondary Pedestrian Fence (miles)	9	9	**18**
Primary Vehicle Barriers (miles)	8.2**	0**	**8.2**
Roadway Construction			
All-weather Primary Patrol Road (miles)	19.7	24	**44.7**
All-weather Maintenance Road (miles)	7	0	**7**
Primary Fence Maintenance Road	8.4	14	**22.4**
Drag Road (miles)	5	7.8	**12.8**
Drainage Structures			
(Low-water Crossings)	32	28	**60**
Lighting			
Permanent Lighting (miles)	7	6	**13**

** Installation of primary fencing would be analyzed for the need to install either pedestrian or vehicle barriers depending on operational needs assessed by the USBP.

2.2.1 Primary and Secondary Fences and Vehicle Barriers

Approximately 18.4 miles of primary pedestrian fencing have previously been addressed or implemented in past NEPA documents, including the 2000 Corridor EA. Under the Preferred Alternative, an additional 22.4 miles of primary pedestrian fencing would be positioned in the rural areas of the Naco and Douglas Stations AOs. In the Naco AO, approximately 6.2 miles would extend westward from about 2 miles west of the Naco POE. An additional 2.2 miles would then be installed, starting 2.3 miles east of the Naco POE and extending east. In the Douglas AO, primary fence construction would begin at the western station boundary near Crook Tunnel and extend westward about 10.5 miles, to the west side of Whitewater Draw. Approximately 3.5 miles of additional primary fence would be installed, starting 4.5 miles east of the POE.

As indicated above, the USBP Douglas Station is currently proposing primary fencing along 14 miles of the international border. However, the USBP believes that some of

this area can be controlled using vehicle barriers rather than fencing. Vehicle barriers would be installed to the maximum extent practicable in lieu of pedestrian fences. It is presently envisioned that vehicle barriers would be particularly useful within arroyos so that flow conveyance and transboundary wildlife migration would not be impeded, as discussed later in Chapter 4. However, the final determination on the extent, location, and need to install either vehicle barriers or pedestrian fencing would be made by the USBP based on operational needs and future intelligence.

The Preferred Alternative also proposes vehicle barriers within the Naco Station AO beginning at the eastern boundary of the Coronado National Memorial and extending eastward for 8.2 miles to the western limit of the proposed pedestrian fence (See Figure 2-5). The vehicle barriers would traverse the riparian areas along the San Pedro River. With the exception of arroyos and riparian areas, the USBP also believes future operational requirements may warrant that portions of this area would require pedestrian fencing instead of vehicle barriers. Again, the final determination would be made by the USBP based on future operational needs and intelligence.

Approximately 18 miles of secondary pedestrian fence are proposed for construction in the urban and surrounding areas of the Town of Naco and the City of Douglas and surrounding areas. Construction alignments for the first 2 miles of secondary fence in the Naco AO would be 60 feet from the primary fence and would extend 1 mile on either side of the Naco POE as depicted in Figure 2-6. This width is necessary to avoid displacement of businesses, residences and other facilities that have been built near the POE. The fence alignment would then be readjusted to 270 feet north of the primary fence and extend 3.5 miles on each side to further enhance enforcement capabilities (see Figure 2-3). The total length of the secondary fence in the Naco AO would therefore be 9 miles.

In the Douglas AO, the secondary fencing would be positioned 60 feet north of the primary fence and extend 4 miles west and 5 miles east from the Douglas POE (Figure 2-2d and Figure 2-2e). Also in the City of Douglas, a specialized design would be positioned immediately east of the Douglas POE. This design would encompass the international ditch, incorporating infrastructure components such as that depicted in Figure 2-7.

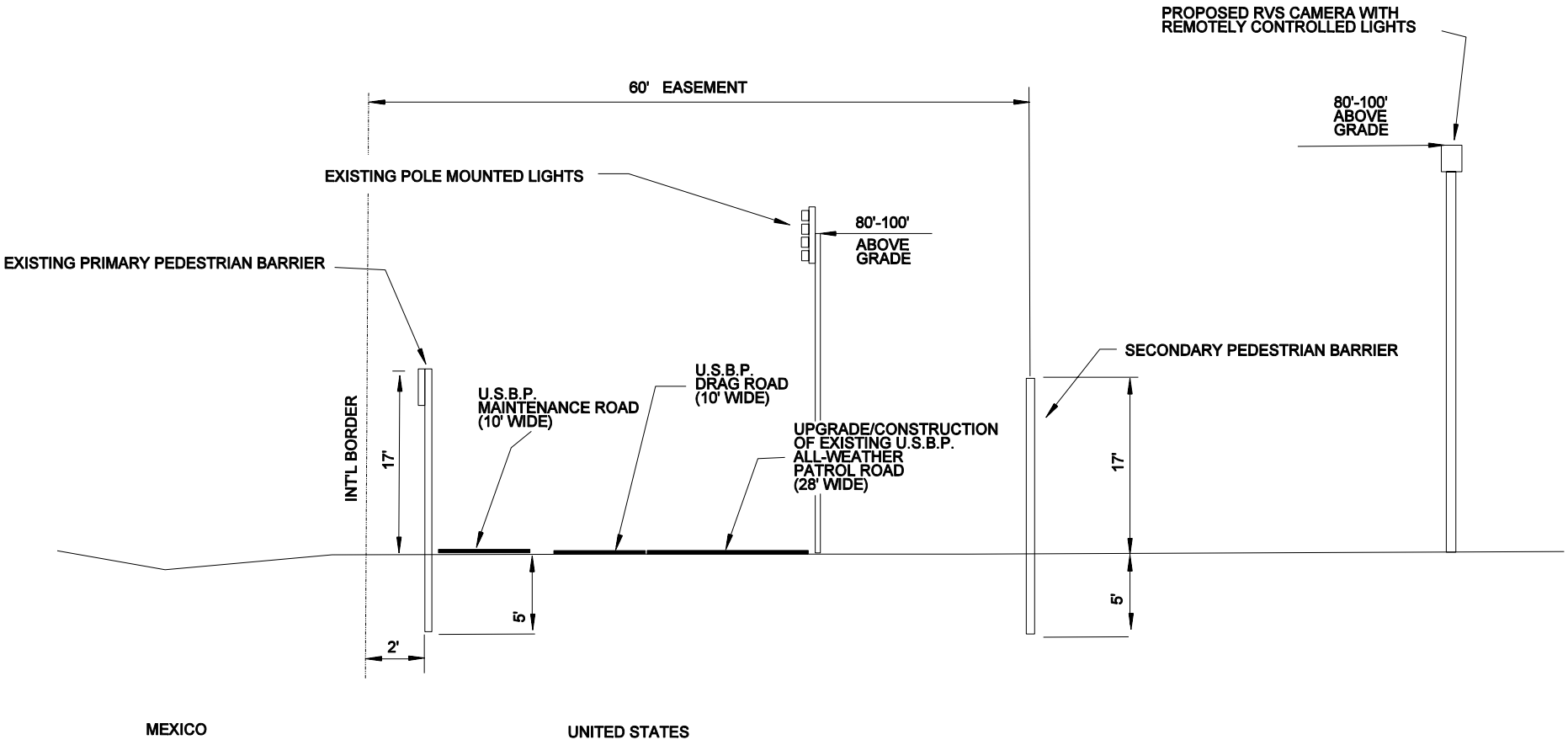

Figure 2-6: Schematic Cross Section of Infrastructure Components Where Secondary Fences would be Positioned 60 Feet North of the U.S./ Mexico Border

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SCALE: not to scale

DATE: March 2003

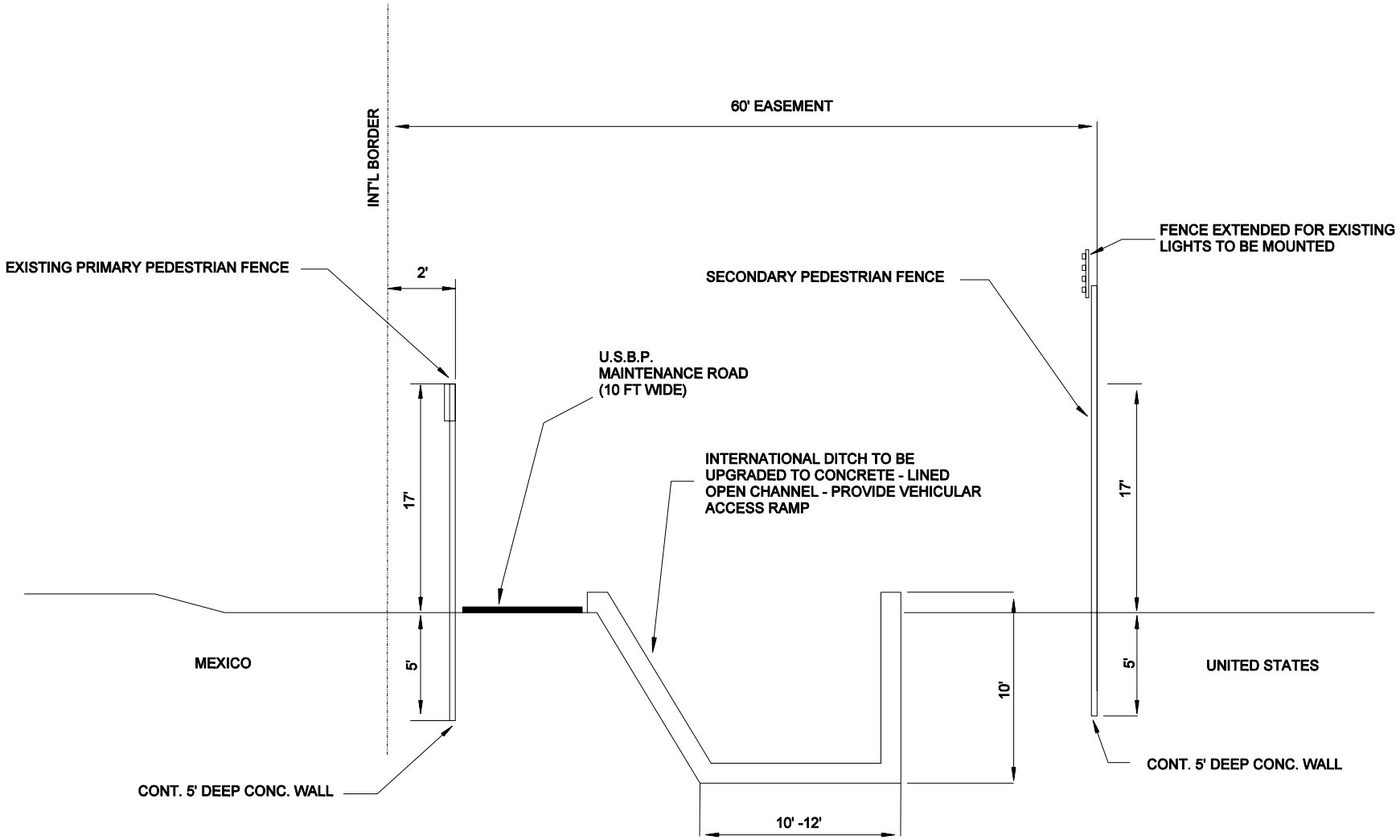


Figure 2-7: Typical Schematic Cross Section of Infrastructure Along the International Ditch in the City of Douglas

gsrc GULF SOUTH RESEARCH CORPORATION

SCALE: not to scale

DATE: March 2003

Within the reaches proposed for secondary fence installation, patrol, drag, and maintenance roads would also be constructed. This additional infrastructure would essentially encompass the entire corridor width at all locations where the secondary fence is proposed. These various roads are described in more detail in the following subsections.

2.2.1.1 Roadways

The majority of roadway work would consist of all-weather surface upgrades to portions of the existing patrol roads along the rural areas of the project corridor. New roadway construction would be required in certain areas due to the need to align roadways with proposed secondary fencing positioned at 270 feet. In these areas, roadway construction would consist of a new all-weather surface patrol road with adjacent drag road, a primary pedestrian fence maintenance road (only required where new fence construction would exist), and a secondary fence all-weather maintenance road.

All-weather road construction and upgrade projects have been addressed for approximately 4 miles in the Naco AO. Under the Preferred Alternative, road construction within the secondary fence alignments within the Naco AO would be required for 5 miles. All-weather surface upgrades to existing patrol roads would be provided for the remaining 14.7 miles in the Naco AO and the entire Douglas AO (approximately 24 miles). These improvements would start 2 miles west of the Naco POE and extend approximately 11.7 miles west to the Coronado National Memorial. The remaining 3 miles would start 2 miles east of the Naco POE and extend to the eastern limit of the Naco AO.

Under the Preferred Alternative, no new patrol road construction would be required in the Douglas AO. The existing patrol road would be upgraded to an all-weather surface and experience some widening and leveling to reduce curves and slope reducing risks to USBP agents' health and safety, erosion problems, and maintenance costs. The existing road would be widened from 24 feet to 38 feet, which would include 2 to 4-foot shoulders on either side of the road. These improvements would be required on 25 miles of existing border roads. In addition, low-water crossings would be installed, as needed, in drainage areas. Low water crossings would be constructed using concrete, culverts, asphalt, rock gabions, or a combination of these materials.

Past drag road activities were not considered as a specific infrastructure component; rather, the USBP agents dragged the sides of existing patrol roads to provide detection opportunities. The Preferred Alternative would incorporate 16.8 miles of drag roads in combination with patrol roads within areas where secondary fencing is proposed. Current drag roads along the shoulder of the existing patrol road would also be maintained.

Installation of additional primary fences and vehicle barriers would require about 22.4 miles of maintenance road to be constructed. These construction/maintenance roads would require little, if any, cut and fill activities. It is envisioned that these roads would be simply graded to remove vegetation and to provide a relatively smooth surface that would allow construction equipment (e.g., drilling rigs, welding trucks, cranes, fork lifts, cement trucks, etc.) to access the primary fence for construction and maintenance activities. These roads would be expected to be no more than 12 feet wide.

Typical of most road construction within southwest Arizona, earthwork would be required. The majority required by the Preferred Alternative would be conducted to the slope of new roads. In addition, roadway upgrades would only require some widening and leveling. Due to the topography of the project corridor, sections of the roadway may be elevated to as much as 20% vertical gradient (slope) in order to limit environmental impacts. Material requirements extrapolated from preliminary engineering designs suggest the total balance in cubic yards (CY) of cut (824,565 CY) and fill (948,689 CY) is estimated to result in approximately 124,124 CY of needed fill material. However, actual amounts of needed material would be greatly reduced since the portions of the project corridor that would only require all-weather upgrades would only entail widening and leveling of the existing roadway. Therefore, the potential to reduce or eliminate the actual fill requirements is likely.

2.2.2 Permanent Lighting

Under the Preferred Alternative, permanent lighting would only be installed in areas where secondary fencing is constructed. As indicated under the No Action Alternative, 2 miles of permanent lighting have been previously addressed or installed in Naco and 3 miles in Douglas. Therefore, only 13 miles of new lighting would be required to illuminate the remaining areas between the proposed secondary and primary fences. In

the Naco AO, lighting installation would start 1 mile on each side of the POE and extend 3.5 miles further, east and west of the POE. In the Douglas AO, approximately 3 miles of permanent lighting would be required west of the POE and 3 miles east.

2.2.3 Drainage Structures

Numerous low water crossings and other drainage structures have been completed or addressed throughout the border region in the Naco and Douglas AOs. The Preferred Alternative would include 60 additional potential low-water crossings and drainage structures at various locations along the project corridor. These structures are constructed within the footprint of the patrol roads and provide year-round access for USBP vehicles. More importantly, the structures reduce or eliminate erosion within stream channels, thus, reducing road and vehicle maintenance costs and sedimentation problems.

Implementation of the Preferred Alternative would ensure a greater presence along the rural areas of the border while minimizing environmental effects. Additionally, continuous access and control along the border would enhance response time of agents for apprehension and search and rescue operations, as well as serve to deter illegal crossings.

2.3 FULL BUILD OUT ALTERNATIVE

The Full Build Out Alternative includes an infrastructure system that is needed to ensure absolute control of illegal access across the U.S.-Mexico border. The infrastructure components in this alternative are similar to those identified in the Preferred Alternative. However, there are significant differences in the alignment of roadways, overall width of the project corridor, and the combination of infrastructure and overall extent of control across the project corridor.

Full Build Out Alternative
vs.
Preferred Alternative

- Secondary fences aligned 270 feet north of the U.S.-Mexico border increase from 7 miles to approximately 49 miles; All-weather maintenance roads increased accordingly 7 miles to 45.8 miles.
- Secondary fences aligned 60 feet north of the U.S.-Mexico border reduced to 2.2 miles rather than 11 miles.
- New all-weather surface primary patrol roads increased to 43.8 miles rather than 5 miles.
- Requires new construction of patrol roads rather than upgrades to existing patrol road alignments.
- Does not incorporate installation of primary vehicle barriers.
- New permanent lighting installation increased to 31 miles rather than 13 miles.

The component groups proposed under the Full Build Out Alternative encompass a combination of roads, fences, and lights throughout the project corridor to develop a highly enforceable and defensible corridor along the U.S.-Mexico border. Nevertheless, the USBP maintains the importance of avoiding environmentally sensitive areas. Specifically, infrastructure construction would not occur in the western most portion of the Naco AO from the eastern boundary of the Coronado National Memorial to the western limits of the Naco AO, within the Coronado National Forest. Therefore, as with the Preferred Alternative, construction of infrastructure would only occur across 49 miles of the project corridor.

The Full Build Out Alternative would involve the combination of primary and secondary fencing, permanent lighting, and upgrade various roadways across 49 miles of the project corridor. A map detailing the specific alignment of combinations of infrastructure components across the entire project corridor is provided in Figure 2-8a through Figure 2-8e.

2.3.1 Infrastructure Components

Many infrastructure component projects exist (either completed or ongoing) within the alignments of the project corridor that have previously been addressed by the Corridor EA and other NEPA documents. Therefore, actual construction required to accomplish this alternative would be somewhat reduced. Table 2-4 provides a brief summary of new construction required to accomplish this alternative. The following discussion provides a more detailed description of how the individual components would be positioned across the project corridor for the Full Build Out Alternative.

Table 2-4. Summary of New Construction Requirements for the Full Build Out Alternative

Infrastructure Component	New Construction Required
Primary and secondary Fencing	**Miles**
• Primary Pedestrian Fence	30.6
• Secondary Pedestrian Fence	49
Roadway Construction	**Miles**
• All-weather Primary Patrol Road	43.8
• All-weather Maintenance Road	45.8
• Drag Road	43.8
Drainage Structures	**Each**
• Low-water Crossings	60
Lighting	**Miles**
• Permanent lighting	31

A

B

B

C

C

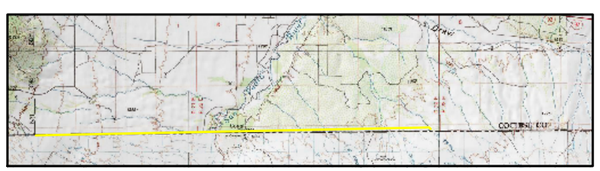
D

D

E

E

F



Secondary Fence at 300 ft. (See Figure 2-4)

Proposed Drainage Structure

N
W E
S

0 500 1,000 2,000 3,000 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-8a. Full Build Out Alternative

Sources: All Infrastructure was digitized by GSRC, 2003.

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Date: February 2003

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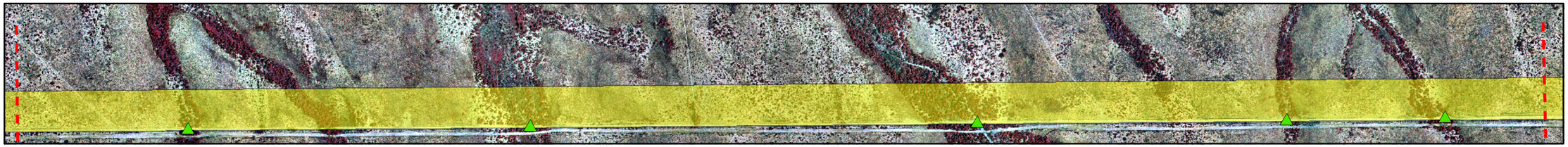

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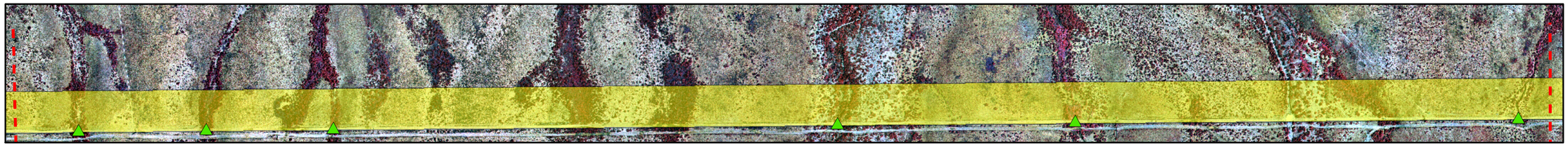

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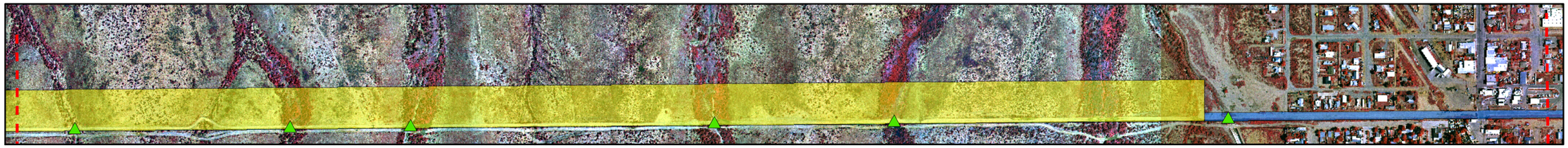

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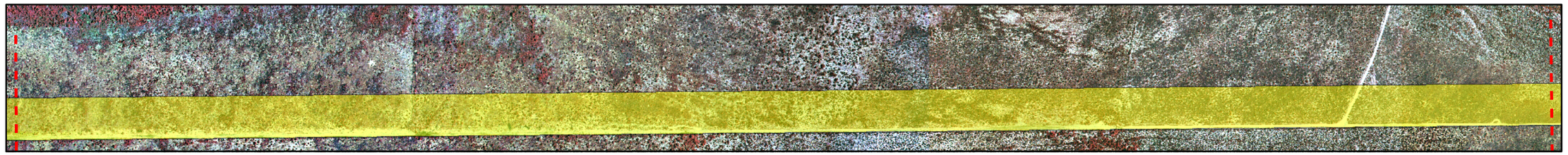

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Secondary Fence Corridor at 300 ft. (See Figure 2-4)

Secondary Fence Corridorat 60ft. (See Figure 2-6)

Proposed Drainage Structure

N
W E
S

0 500 1,000 2,000 3,000 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-8b. Full Build Out Alternative

Sources: All Infrastructure was digitized by GSRC, 2003.

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Date: February 2003

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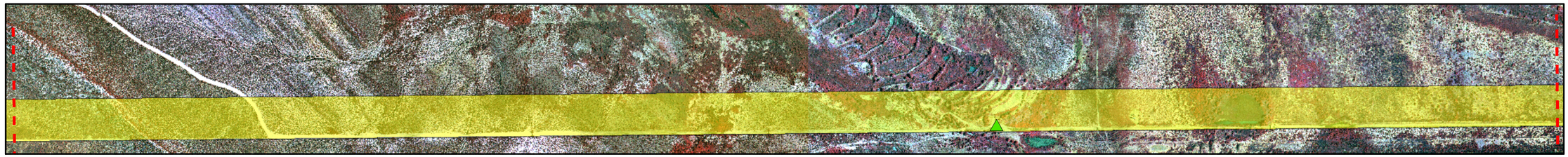
L



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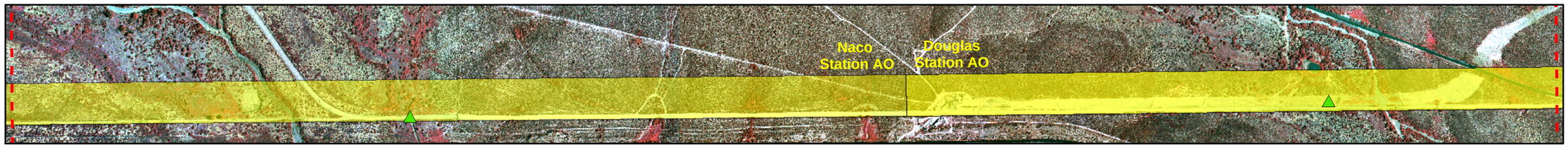

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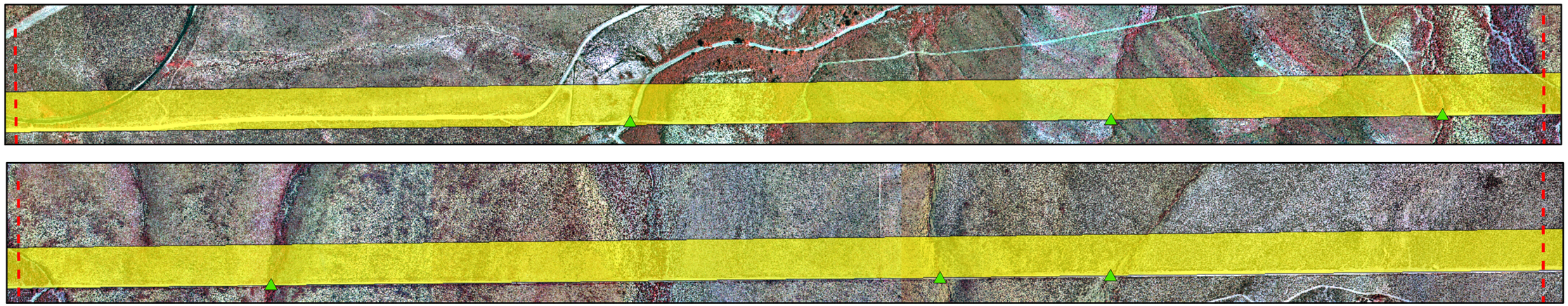

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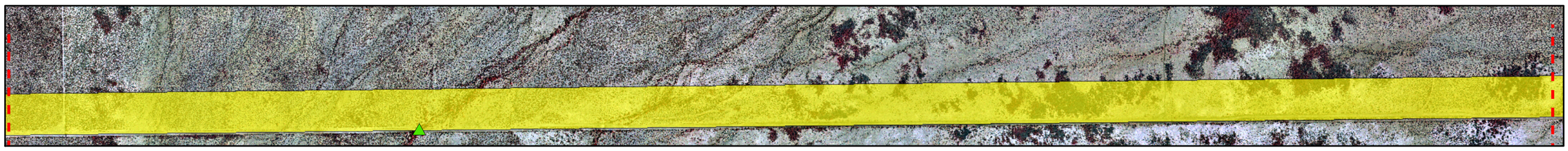

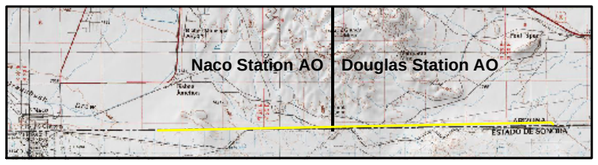

Secondary Fence Corridor at 300ft. (See Figure 2-4)

Proposed Drainage Structure

N
W E
S

0 490 980 1,960 2,940 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-8c. Full Build Out Alternative

Sources: All Infrastructure was digitized by GSRC, 2003.

GULF SOUTH RESEARCH CORPORATION

Date: February 2003

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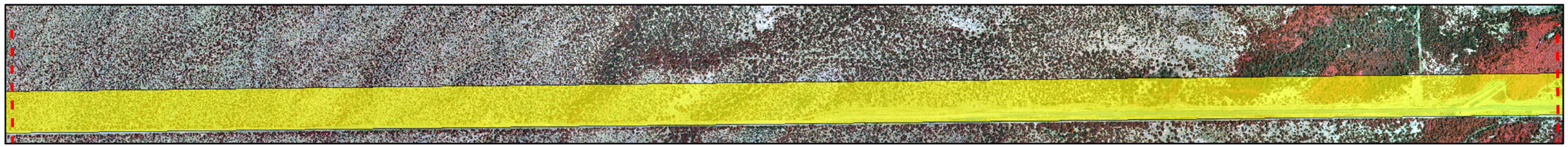

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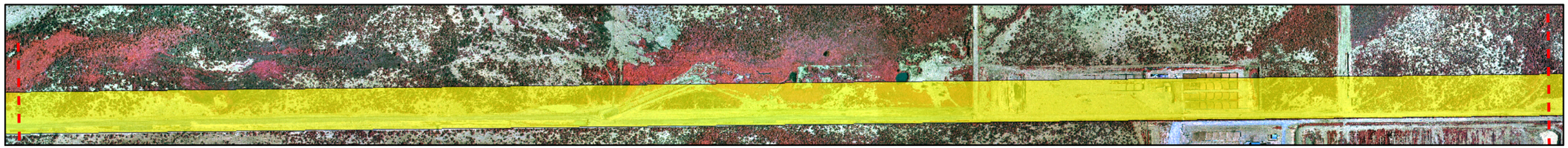

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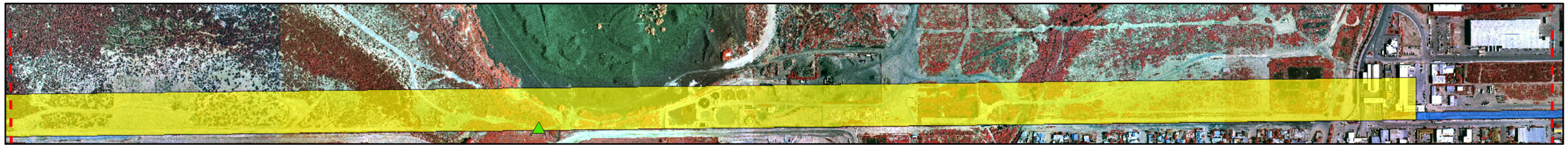

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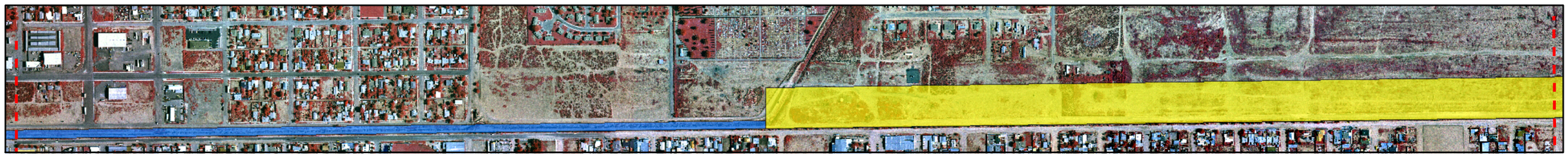

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Secondary Fence Corridor at 60ft./International Ditch (See Figure 2-7)

Secondary Fence Corridor at 300ft. (See Figure 2-4)

Proposed Drainage Structure

N

W E

S

0 500 1,000 2,000 3,000 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-8d. Full Build Out Alternative

Sources: All Infrastructure was digitized by GSRC, 2003.

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Date: February 2003

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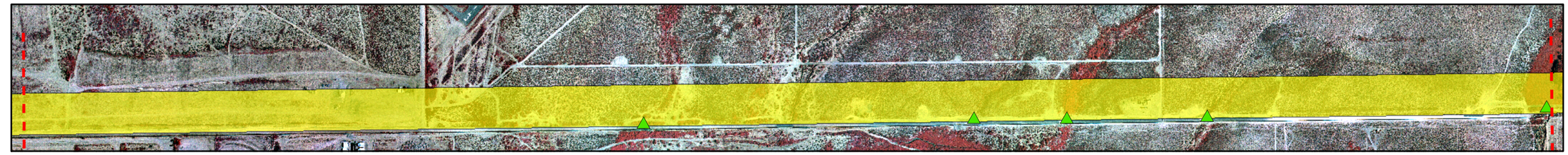

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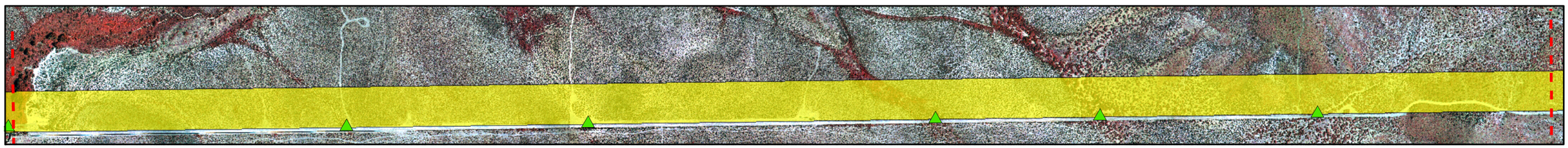

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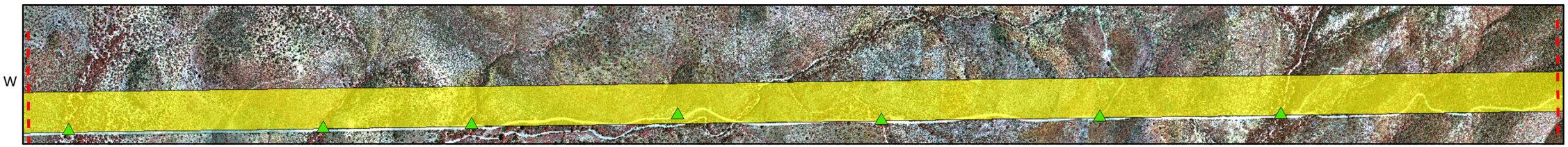
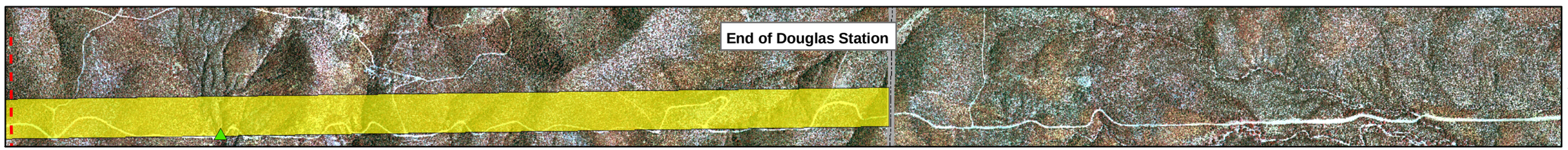


X

Y



Secondary Fence Corridor at 300ft. (See Figure 2-4)

Proposed Drainage Structure

N
W E
S

0 500 1,000 2,000 3,000 Feet

0 0.1 0.2 0.4 0.6 Miles

Figure 2-8e. Full Build Out Alternative

GULF SOUTH RESEARCH CORPORATION

Date: February 2003

Sources: All Infrastructure was digitized by GSRC, 2003.

2.3.1.1 Primary and Secondary Fences

Fence construction would consist of 30.6 miles of new primary pedestrian fencing across the project corridor and would extend from the eastern boundary of the Coronado National Memorial eastward to the eastern boundary of the Douglas AO, linking existing or ongoing primary fencing projects.

In addition, 49 miles of secondary fencing would be constructed under the Full Build Out Alternative. Depending on the location, construction alignments would vary slightly; however, the majority (45.8 miles) would be positioned 270 feet north of the U.S.-Mexico border in a virtually straight alignment. Due to the proximity of residential areas and limited space in the Town of Naco, the secondary fence alignment would be reduced to 60 feet north of the U.S.-Mexico border and extend approximately 0.4 miles west and 0.6 miles east of the POE (Figure 2-5). In the City of Douglas, new secondary pedestrian fencing would also be reduced to 60 feet for approximately 1.2 miles. The area encompassing the international ditch would be constructed in the same manner as described under the Preferred Alternative and depicted in Figure 2-7.

2.3.1.2 Roadways

Roadway construction would consist of an all-weather surface patrol road with an adjacent drag road, a primary pedestrian fence maintenance road (only required where new fence construction would exist), and a secondary fence maintenance road. Where practical, the existing roadways would be used as primary fence construction and maintenance roads. The patrol road would, for all intents and purposes, be a new road since it would need to be constructed parallel to the secondary fence and to a width of 38 feet. Construction of the secondary fencing would also require a maintenance road on the north side of the secondary fence to allow future maintenance and repair activities that could further serve as additional access to contained areas.

2.3.1.3 Earthwork

Typical of most road construction within southwest Arizona, earthwork would be required. The majority of this work required by the Full Build Out Alternative would be conducted to create the bed and vertical gradient (slope) of new and improved roads. The design of this slope is gennerally intended not to exceed 20%. However, due to the topography of the project corridor, sections of the roadway may be elevated to as much

as 20% slope in order to limit the area of disturbance. Preliminary engineering designs suggest the total balance in CY of cut (1,832,368 CY) and fill (2,108,199 CY) is estimated to result in approximately 275,831 CY of needed fill material. Every effort would be made to reduce or eliminate the actual fill requirements by minimizing slopes and gradient, as practical.

2.3.1.4 Permanent Lighting

Under the Full Build Out Alternative, approximately 31 miles of new permanent lighting would be required and would be positioned within the area between the primary and secondary fences. Light poles would be positioned approximately 225 feet apart and shielded to limit illumination to the extent of the project corridor. The final spacing would; however, be dictated by topography and operational needs. In the Naco AO, installation would occur from the eastern boundary of the Coronado National Memorial and extend approximately 15 miles eastward. On the east side of the Naco POE, installation would begin 1 mile east of the POE and extend 21 miles to Whitewater Draw, within the Douglas AO. In the City of Douglas, 1.5 miles of existing light would be replaced along the international ditch. Additional lights would be installed approximately 2 miles east of the POE and extend another 8 miles to the eastern boundary of the Douglas Station.

2.3.1.5 Drainage Structures

The Full Build Out Alternative would require low water crossings and drainage structures in the same 60 drainages, which were identified under the Preferred Alternative.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

Several alternatives were considered but eliminated from further consideration. These included:

- Primary Pedestrian Barrier Fence Only Alternative
- Primary Vehicle Barrier System Alternative
- Primary Patrol Road Only Alternative

While each of the components of these alternatives are considered valuable enforcement measures that have the ability to meet individual enforcement criteria, individually, they do not possess the ability to address all of the enforcement strategy requirements.

Construction of fences (pedestrian and vehicle) alone would provide an initial degree of deterrence; however, these barriers they would remain vulnerable to destruction on the southern side without the ability to identify and maintain such breeches that are accomplished from regular patrols. Secondly, if the primary fence is breached, USBP agents have to resort to time-consuming reactive enforcement measures such as waiting for illegal entrants to expose themselves further north or relying on substandard road conditions to respond. Exhaustive searches can and do have detrimental effects on the human and natural environments, as well as increase health and safety risks to USBP agents and UDAs.

Construction of a vehicle barrier only would cause as much damage as the construction of a pedestrian barrier/fence and would do nothing to deter illegal foot traffic. By constructing only a patrol road along the unfenced border, little would be accomplished to effectively deter or detect illegal crossings. A patrol road only alternative fails to provide for the conditions that deter an area's desirability for illegal entry and/or smuggling as well as limits agent response time.

Careful consideration has led the USBP to conclude that any configuration not including a combination of strategically positioned infrastructure would not provide the detection and apprehension capabilities needed to deter illegal activity or allow the USBP to control the immediate border. Therefore, these alternatives alone were not considered viable.

2.5 POSSIBLE CONTRACTORS AND STAGING SITES

National Guard units, USBP, Active and Reserve units provided through JTF-6, or private contractors would complete activities proposed under these alternatives. In order to stage equipment and manpower, several temporary staging sites would need to be identified prior to construction. Past construction activities have generally been located relatively close to the Town of Naco and the City of Douglas. In fact, two previously utilized staging sites have been identified. One is located on property owned by the City of Douglas, on Hwy 80 near the Cochise County Community College, Douglas Campus (approximately 20 acres) and the other is located immediately adjacent to the U.S.-Mexico Border on the west side of the Town of Naco. These sites would be utilized to

the fullest extent during construction activities. However, due to the linear nature of the project corridor, additional staging sites would be required and will be identified once mission commanders or private contractors identify their equipment needs. To the extent practicable, all sites would be selected in previously disturbed areas.

2.6 SUMMARY

Three alternatives, the No Action Alternative, Preferred Alternative, and Full Build Out Alternative, will be carried forward for analysis. A summary matrix (Table 2-5) shows how each of the alternatives satisfies the stated purpose and need. Table 2-6 presents a summary matrix of the impacts from each of the alternatives and how they affect the environmental resources in the project corridor and the Region of Influence (ROI). While the Full Build Out Alternative clearly provides the greatest measure of control in support of the stated Purpose and Need, the impacts to the human and natural environment would be much greater. The Preferred Alternative satisfies the goal of the USBP enforcement strategy while minimizing direct impacts to the natural environment. Indirect benefits through the protection of habitat north of the border and the reduction of adverse effects caused by UDA and drug smuggling traffic would occur under either alternative.

Table 2-5. Summary Matrix of How Alternatives Meet the Goals of the Stated Purpose and Need

Goals of the Purpose and Need Identified in Section 1.2	No Action	Preferred Alternative	Full Build Out Alternative	Primary Pedestrian Fence Only Alternative	Vehicle Barrier Fence Only Alternative	Patrol Road Only Alternative
Deter illegal entries (vehicle & pedestrian)	Some	Partially	Yes	Partially	No	Some
Enhance the safety of USBP agents	Some	Yes	Yes	No	No	Some
Reduce enforcement footprint	No	Partially	Yes	Partially	Some	No
Create a defensible and enforceable zone that reduces illegal crossings and drug smuggling operations	No	Yes	Yes	No	No	No
Enhances response time for USBP agents	Yes	Yes	Yes	No	No	Yes

Definition of Terms

Yes Meets the goals of the purpose and need.

No Does not meet the goals of the purpose and need.

Partially Alternative generally has the potential to meet the goals of the purpose and need, however it requires other elements to be considered effective.

Some Alternative may meet the goals of the purpose and need to some extent, yet lacks the consistency to be considered effective.

Table 2-6. Summary Matrix of Potential Impacts

Affected Environment	No Action Alternative	Preferred Alternative	Full Build Out Alternative
Land Use	Impacts would occur to 120 acres. However, a total of 96 acres have previously been disturbed.	A total of 458 acres of open rangeland would ultimately be converted to restricted access and 16 acres of conservation area would be impacted.	Impacts would occur to approximately 1,730 acres of open rangeland and by restricting access about 64 acres of conservation area would be altered. The remaining area consists of primarily rangeland and open space.
Aesthetics and Visual Resources	Impacts would be dependent on individual perspective. Illumination, fencing and roadway impacts would occur. However these activities would remain near more urban developments.	Impacts would be dependent on individual perspective. The aesthetic value would be reduced by the presence of illumination, fencing and roadways. However, by limiting the amount of tall fences and permanent lighting the magnitude of impacts would be reduced.	Impacts would be dependent on individual perspective. The aesthetic value would be reduced by the presence of illumination, fencing and roadways. Visual resource impacts would also occur to the San Pedro National Conservation Area as construction activities would conflict with visual recourses management objectives of the BLM.
Transportation	Minor Impacts requiring increased manpower to man and maintain checkpoints impacts.	Temporary indirect impacts would occur as a result of a slight increase in traffic along U.S. Hwy 80 between Douglas and Naco. Trucks transporting fill material would log between 24,000 and 48,000 miles per year during the period of construction. Indirect beneficial impacts would occur by reducing or eliminating UDA drive throughs and hindering northward movement of UDA traffic.	Temporary indirect impacts would occur as a result of a slight increase in traffic along U.S. Hwy 80 between Douglas and Naco. Trucks transporting fill material would log between 44,600 and 67,000 miles per year during the period of construction. Minor indirect beneficial impacts would occur by reducing UDA drive throughs and hindering northward movement of UDA traffic.
Geology, Soils and Prime Farmlands	Approximately 120 acres would be directly impacted; however, most of the soils have been previously disturbed. Indirect impacts would continue from illegal traffic and consequent enforcement activities.	Approximately 542 acres are likely to be disturbed because of construction activities. Since the identified 5 acres of prime farmlands are not properly irrigated and are not suitable to be utilized as such, impacts to prime farmland would be insignificant.	Approximately 1,730 acres would be directly impacted. Since the identified 13 acres of prime farmlands are not properly irrigated and are not suitable to be utilized as such, impacts to prime farmland would be insignificant.
Vegetation Community	Approximately 24 acres of undisturbed vegetation would be permanently altered; illegal traffic would indirectly impact vegetation communities.	Approximately 420 acres of vegetation would be permanently altered. Indirect impacts would occur to areas between fencing an roadways. Other indirect impacts could potentially occur to those areas lying outside the project corridor as UDA and smuggler activity possible shifts to avoid the enforceable areas.	Approximately 1,486 acres of vegetation would be permanently altered. Other indirect impacts could potentially occur to those areas lying outside the project corridor as UDA and smuggler activity possible shifts to avoid the enforceable areas.
Aquatic and Wildlife Resources	Approximately 24 acres of potential wildlife habitat would be impacted; illegal traffic would continue to damage vegetation, thereby causing synergistic impacts to wildlife.	Approximately 402 acres of wildlife habitat would be altered. Approximately 0.2 acres of aquatic habitat in the San Pedro River would be altered. Beneficial impacts to wildlife populations are anticipated through the protection of habitat to the north of the project corridor. Indirect impacts could occur as UDA and smuggler activity shift to areas that are outside of the project corridor.	Approximately 1,486 acres of wildlife habitat would be altered. Approximately, 3 acres of aquatic habitat in the San Pedro River would be altered. Beneficial impacts to wildlife populations are anticipated through the protection of habitat to the north of the project corridor. Indirect impacts could occur as UDA and smuggler activity shift to areas that are outside of the project corridor.

Table 2-6. Summary Matrix of Potential Impacts

Affected Environment	No Action Alternative	Preferred Alternative	Full Build Out Alternative
Unique and Sensitive Areas	No direct impacts; illegal traffic would continue to damage unique and sensitive areas by causing accidental wildfires, creating trails, and discarding trash.	No direct impacts to the Coronado National Forest or Coronado National Memorial would occur; however, 2.6 acres of the San Pedro Riparian NCA would be directly impacted (area encompassed by roadway and primary fencing) by the construction of vehicle barriers and road improvements. Indirect impacts would occur due to increased degradation of habitat to areas between the fence and roadway.	No direct impacts to the Coronado National Forest or Coronado National Memorial would occur. Approximately 64 acres of the San Pedro Riparian NCA, which is the area between two fences and all-weather maintenance roads. Indirect effects would also occur, as infrastructure would traverse through pristine habitats thus reducing scenic value. Additionally, beneficial indirect impacts would occur as UDA and smuggler activity in these unique and sensitive areas would be reduced and possibly eliminated.
Protected Species and Critical Habitat	No direct impacts; indirect impacts would occur due to UDAs and smugglers trampling habitat and possibly threatened and endangered plant species outside of the project corridor.	No direct impacts would occur to the Mexican spotted owl;. Impacts to the spikedace and loach minnow would occur a a result of disturbing approximately 0.2 acres of designated habitat. Temporary impacts would occur to the spikedace and the loach minnow during construction activities. Beneficial indirect impacts would also occur, as habitat north of the project corridor would be protected from trampling by UDAs. Other direct impacts may occur as a result of water withdrawals for construction activities.	No direct impacts would occur to the Mexican spotted owl; however, the Spikedace and loach minnow critical habitat (3 acres) would be directly impacted. Indirect impacts that would occur are the result of UDAs and smugglers shifting illegal activities to the outlying areas east and west of the project corridor in an attempt to avoid detection. Beneficial indirect impacts would also occur, as habitat north of the project corridor would be protected from trampling by UDAs. Other direct impacts may occur as a result of water withdrawals for construction activities.
Cultural Resources	Direct impacts would occur to 5 potentially eligible sites; however, activities would generally occur within existing alignments of the existing roadways Nevertheless, these sites would require mitigation. Indirect impacts could occur to known or unknown cultural sites due to continued foot and illegal vehicle traffic. Section 106 and mitigation of these sites would be completed.	Direct impacts would occur to 12 potentially eligible sites; indirect beneficial impacts would occur with the reduction and possible elimination of UDA and smuggler traffic. Section 106 and mitigation of these sites would need to be completed.	Direct impacts would occur to 17 potentially eligible cultural sites; indirect beneficial impacts could occur as the enforcement zone would protect against disturbances and destruction of known and unknown cultural resources from illegal activities. Section 106 and mitigation of these sites would need to be completed.

Table 2-6. Summary Matrix of Potential Impacts

Affected Environment	No Action Alternative	Preferred Alternative	Full Build Out Alternative
Air Quality	A short-term degradation in local air quality during construction would occur during construction activities; impacts are considered insignificant. Also, the improved roads would provide a reduction in fugitive dust across the Douglas AO and the surrounding urban area of the Town of Naco.	A short-term degradation in local air quality during construction would occur during construction activities; impacts are considered insignificant since tons/yr of emission levels would remain below the *de minimus* thresholds. Also, the improved roads would provide a reduction in fugitive dust.	A short-term degradation in local air quality during construction would occur during construction activities; impacts would also be considered insignificant since tons/yr of emission levels would remain below the *de minimus* thresholds. Also, the improved roads would provide a reduction in fugitive dust.
Water Resources	Approximately 63.5 acres of potential wetlands or Waters of the U.S. may be directly impacted. In addition, temporary impacts associated with construction of low-water crossing, roads, and fences would occur. Consultation would be made with the USACE to confirm potential impacts to wetlands or Waters of the U.S., and, if needed, proper permit(s) would be obtained (e.g. Section 404 permit). Roadway construction is estimated to result in minor impacts resulting from approximately 5.7 ac-ft over a 3 to 5-year construction period (construction and suppression).	Approximately 5 acres of potential wetland and 12 acres of Waters of the U.S. may be directly impacted. In addition, temporary impacts associated with construction of low-water crossing, roads, and fences would occur. Consultation would be made with the USACE to confirm potential impacts to wetlands or Waters of the U.S., and, if needed, proper permit(s) would be obtained (e.g. Section 404 permit). Roadway construction is estimated to result in temporary impacts from approximate 10 ac-ft of water over a 5 to 10-year construction period (construction and suppression).	Approximately 8.3 acres of potential wetlands and 28.8 acres of Waters of the U.S. may be directly impacted. In addition, temporary impacts associated with construction of low-water crossing, roads, and fences would occur. Consultation would be made with the USACE to confirm potential impacts to wetlands or Waters of the U.S., and, if needed, proper permit(s) would be obtained (e.g. Section 404 permit). Roadway construction is estimated to result in temporary impacts resulting from approximately 18 ac-ft of water over a 8 to 12-year construction period (construction and suppression).
Socioeconomic	Indirect impacts would result in minor noise, visual and dust and from societal costs from illegal immigration and smuggling.	Indirect socioeconomic impacts may result in minor noise, visual and dust. Indirect benefits from the effectiveness of the USBP in the reduction of illegal aliens and drug smuggling.	Indirect socioeconomic impacts may result in minor noise, visual and dust. Indirect benefits from the effectiveness of the USBP in the reduction of illegal aliens and drug smuggling.

Section 3.0
AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

The proposed infrastructure would be located within the USBP's Naco and Douglas Stations' AOs. Field reconnaissance surveys were conducted along the proposed corridor to ascertain the existing conditions. The surveys were conducted during the month of April 2002; however, surveys were also conducted as a part of the numerous NEPA documents from which this SEA is tiered. The results from these previous surveys are also incorporated into the following discussions and subsequent impact analysis. Data regarding wildlife, vegetation, and Federal and state listed protected species were collected. Only those parameters that have the potential to be affected by the proposed action are described. General descriptions of the resources at or surrounding the project corridor are provided in the following subsections.

3.1 LAND USE

Southern Arizona supports a multitude of land uses including agriculture, rangeland, urban, forest, recreation/special use, and water. Generally, land use has been indicative of its owner or steward. The largest areas of land within southern Arizona are controlled by the USFS and the BLM. The major state agencies controlling large areas of land are the Arizona State Land Department, Arizona State Parks, and the Arizona Game and Fish Department. Native American Nations also own significant areas. Specialized agricultural land or large tracts of rangeland used for grazing are often owned by either private citizens or corporate businesses. Smaller areas of land are controlled by other Federal agencies, such as, the National Park Service (NPS), Department of Defense (DoD), and USFWS, as well as county and municipal agencies.

3.1.1 Land Use in Cochise County

The total area of Cochise County is 6,170 square miles of primarily rural setting. The principal land use outside the urban areas is comprised of rangeland, agriculture (cotton, alfalfa, barley, corn, and vegetables), and recreation areas.

Land ownership along and north of the project corridor is categorized in Figure 3-1. The largest category is in private and corporate ownership. The second largest landowner is the State of Arizona, which controls areas used primarily for recreation, historical, and

Location Map

USBP Naco Station AO

USBP Douglas Station AO

Bisbee, Arizona

Naco, Arizona

Douglas, Arizona

Naco, Sonora, Mexico

Agua Prieta, Sonora, Mexico

- Project Corridor
- BLM
- Military
- NPS
- Private
- State Trust
- USFS
- BLM Wilderness Areas

N W E S

1:270,000

0 1.5 3 6 9 12 Miles

Figure 3-1: Naco/Douglas Project Corridor
Land Ownership

Sources: USGS 1:100,000 Digital Raster Graphics
Land Ownership was obtaind from USGS GAP, 2002
Project area data from GSRC, 2002.

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Date: February 2003

natural areas. Much of this land is held under public land trusts for the purpose of preservation, whereby property owners sell real estate development rights to the State of Arizona in return for ownership with a conservation easement. Finally, the Federal government is the third largest landowner with the USFS controlling approximately 490,000 acres; the majority of which is comprised of the multiple-use Coronado National Forest. The USFWS controls the San Bernardino National Wildlife Refuge (NWR) and Leslie Canyon NWR in the southeastern portion of Cochise County, while the BLM controls approximately 350,000 acres of rangeland and unique and sensitive areas. The BLM land includes the Chiricahua National Monument (managed by the NPS), San Pedro Riparian National Conservation Area (NCA), and numerous multiple use areas leased to ranchers for grazing. The NPS owns and manages the Coronado National Monument, approximately 4,750 acres of grasslands and oak woodlands, in the southern portion of the Huachuca Mountains.

3.1.1.1 Cochise County Comprehensive Plan

In 1994, the Cochise County government adopted a comprehensive growth plan to promote and guide future growth in a well-planned manner. With its latest amendment in 2002, the purpose of this plan is to achieve a balance among urban, rural and public land uses, which will enhance the customs, culture, economy and the qualities of the places where people choose to live (Cochise County 2002).

The vast majority of the project corridor resides within rural areas, which serve as rural/residential, agricultural areas and not as identifiable urban communities. The communities of Naco and Douglas have been designated as growth areas. In and near the southern portions of the City of Douglas the project corridor is surrounded by urban growth areas where the plan supports a moderate urban style growth. In particular, the areas that would be affected by construction activities under this SEA are designated with an ability to support commercial and industrial growth. In the Town of Naco the comprehensive plan supports a more rural growth trend with several areas designated as open space particularly along the U.S.-Mexico border, where it favors a slower rate of change and preserves the small town atmosphere.

3.1.2 Land Use in the Project Corridor

The total project corridor (300 feet by 57 miles) consists of approximately 2,069 acres of mostly rural open space and rangeland primarily utilized for cattle grazing, while a small percentage is mainly used for the conservation of sensitive and unique habitat. The majority of the land within the project corridor is privately owned or designated as state trust lands utilized by local ranchers as livestock grazing areas. The BLM manages the San Pedro Riparian NCA. The BLM also manages 277 grazing allotments across Arizona; two of these allotments occur within the project corridor and are located along the U.S. Mexico Border south of Paul Spur, west of Douglas (BLM 2003). This area accounts for approximately 98 acres. Other Federally owned areas are located in the Coronado National Forest, controlled by the USFS, and the Coronado National Memorial, managed by the NPS. In particular, approximately 20 percent of the project corridor is specified as the Roosevelt Easement, a Presidential Proclamation on May 27, 1907 that dedicated the first 60 feet north of the U.S.-Mexico border under Federal regulation.

3.2 ASTHETIC AND VISUAL RESOURCES

Aesthetics is essentially based on an individual or group of individuals' judgment as to whether or not an object is pleasing, and/or would influence quality of life. The major visual appeal to southern Arizona lies in its vast areas of naturally occurring landscape. It is known for its tranquil dark skies and scenic mountain ranges. The project corridor is positioned across scenic valleys between two mountain ranges. The Town of Naco and the City of Douglas are the only urban areas that exist within the project corridor. The majority of new infrastructure components would be installed within portions of the Sulphur Springs Valley and the San Pedro Valley, between the Parilla Mountains and the Huachuca mountains. Several unique and pristine areas exist within the corridor and contribute to the overall beauty of the southern desert region. For example, the San Pedro Riparian NCA is a rare, unique occurrence of lush vegetative habitat that can be seen for miles and is virtually, an oasis among the desertscrub surroundings. To the west of the San Pedro Riparian NCA lies the breathtaking scenery of the southern edge of the Huachuca Mountains, which contains the Coronado National Memorial and Coronado National Forest. The scenery from the roadside viewing area at the top of

Montezuma's Pass in the Coronado National Memorial portrays the entire picture of the relatively untouched scenic beauty of southeastern Arizona and Sonora, Mexico.

The BLMs management plan, which was incorporated in 1989, manages visual impacts in the San Pedro Riparian NCA under its Visual Resource Management System (VRM) (USDOI 1989). The VRM system is composed of 4 classes:

- Class I The objective is to preserve the existing character of the landscape (Research Natural Areas [RNA]). This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- Class II The objective is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- Class III The objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- Class IV The objective is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

The San Pedro Riparian NCA management plan dedicates approximately 86% of the Federal land as VRM Class I and II. The project corridor exists primarily in the Class II designation and consists of most of the scenic valley bottom along the San Pedro River. The nearest RNA is known as the San Rafael RNA and is located approximately eight miles north of the project corridor and the U.S.-Mexico border.

As discussed in Section 1.2 in an excerpt taken from a letter written by James Bellamy, Superintendent at the Coronado National Memorial to Senator Jon Kyl on June 20, 2000, past UDA traffic has greatly degraded the appeal of the landscape. Also, human induced fires, which destroy thousands of acres; excessive amounts of litter such as plastic water bottles; and illegal roads that impact pristine landscape on the Coronado

National Memorial, have all taken a negative toll on the landscape (INS 2002d). Based on USFS estimates, UDAs leave behind 8 to 10 pounds of trash per person at a cost of $0.25 per pound for clean up (USFS 2003). Given the 2002 UDA apprehension rate (125,900 individuals) for the Naco-Douglas area this amounts to at least $283,275. This figure does not account for UDAs that avoid apprehension.

3.3 TRANSPORTATION

3.3.1 Roadways

The highway system within Cochise County is somewhat well developed, especially the interstate highway system (Rand McNally 1997). The major transportation routes in the region are presented in Figure 3-2. Interstate 10 runs through Cochise County and continues west through the cities of Tucson and Phoenix. U.S. Highway 90 runs from Interstate 10, through Sierra Vista, to Bisbee. U.S. Highway 92 also runs from Sierra Vista to Bisbee, but takes a more southern route near Naco where it intersects the Coronado Memorial Highway. At this point, it runs east and provides access to the Coronado National Forest and Coronado National Memorial. U.S. Highway 80 runs from Interstate 10 (at Benson) to the New Mexico border, passing through Bisbee and Douglas. From Graham County (just above Cochise County), U.S. Highway 191 intersects Interstate 10 and runs south to Douglas. U.S. Highway 181 connects U.S. Highway 191 to the Chiricahua National Monument. U.S. Highway 186 also provides access to the Chiricahua National Monument via Interstate 10 at Wilcox.

The project corridor contains two legal POE's. One is located in the Town of Naco at its intersection with South Towner Avenue while the other is located in the City of Douglas. Substandard gravel and dirt roads primarily utilized by USBP agents and local landowners provide limited access to the project corridor.

3.3.2 Railroads

The Southern Pacific Railroad used to have operations in the area, but the company merged with Union Pacific Railroad in 1996 (Union Pacific 2000). There is currently no rail line in-use within the project corridor; however, the old Southern Pacific rail lines are still present.

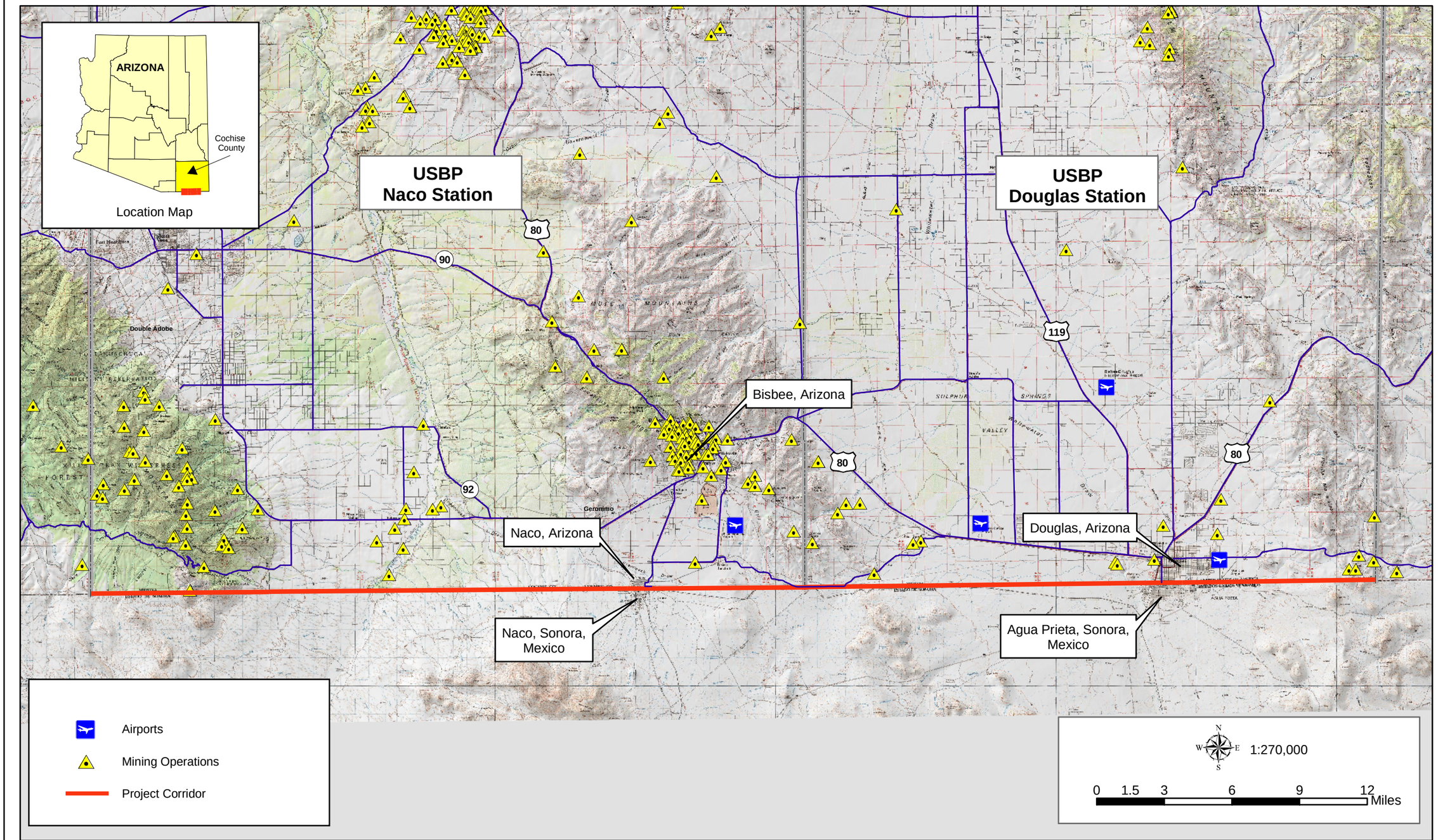

Figure 3-2: Naco/Douglas Project Corridor
Transportation and Mining Operations

Sources: USGS 1:100,000 Digital Raster Graphics
Land Ownership was obtaind from USGS GAP, 2002
Project area data from GSRC, 2002.

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Date: February 2003

3.3.3 Airports

There are eight small commercial airports located within Cochise County. These small to medium sized airports do not conduct regularly scheduled commercial or commuter flights. The closest operating airports are the Bisbee Municipal Airport, located approximately 5 miles south of Bisbee and 3 miles north of the project corridor, and the Douglas Municipal Airport, located east of Douglas and adjacent to the project corridor (see Figure 3-2).

3.3.4 Mining Operations

The value of Arizona's mineral production in 2000 was $2.8 billion and Arizona accounted for more than 65 percent of the U.S. copper production, leading the Nation in the production of this commodity as it has for decades. In 2000, the Arizona copper industry used approximately 187,900 acres of the state's more than 72,960,000 acres (Arizona Mining Association 2000 and ADMMR 2002). Hundreds of active and inactive mines are located throughout the county (see Figure 3-2). However, an accurate quantification of what is actually in operation is limited to available data held by the Arizona Department of Mine and Mineral Resources (ADMMR) and changes periodically. However, there are no active mines in the immediate vicinity of the project corridor. Bisbee operates several tourist industries based on past mining in the area, such as the Bisbee Mining and Historical Museum and Copper Queen Mine Tours. The slag (a waste-product from the copper smelting process) from a previous copper smelting plant exists on a small portion of the project corridor adjacent to Whitewater Draw, west of the City of Douglas.

3.4 GEOLOGY, SOILS, AND PRIME FARMLAND

3.4.1 Geologic Formations

Geological resources include physical surface and subsurface features of the earth such as topography, geology, soils, and the seismic nature of the area. Three geologic provinces occur in the State of Arizona: the Basin and Range Province, the Central Highlands, and the Colorado Plateau Province. The proposed project corridor exists entirely within the Basin and Range Province. Deposits within the project corridor consist predominantly of surficial deposits dating to the Holocene to Middle Pleistocene epochs followed by sedimentary rocks with local volcanic units dating to the Cretaceous

to the late Jurassic period. Also within the project corridor, though to a lesser extent, are young alluvium deposits dating to the Holocene to later Pleistocene epochs, older surficial deposits dating to the middle Pleistocene to later Pliocene epochs, and volcanic rocks dating to the middle Miocene to Oligocene epochs.

3.4.2 Soils

The major soils in the project corridor are associated with elevations ranging from 2,200 feet msl on level ground up to 6,000 feet msl on steep, exposures of the Huachuca Mountains in the western section of the project corridor. The dissecting fans of old alluvium are broad and moderately sloping in nature and extend from the relatively narrow, recent alluvial floodplains to the bases of rising mountain ranges (NRCS 2002a).

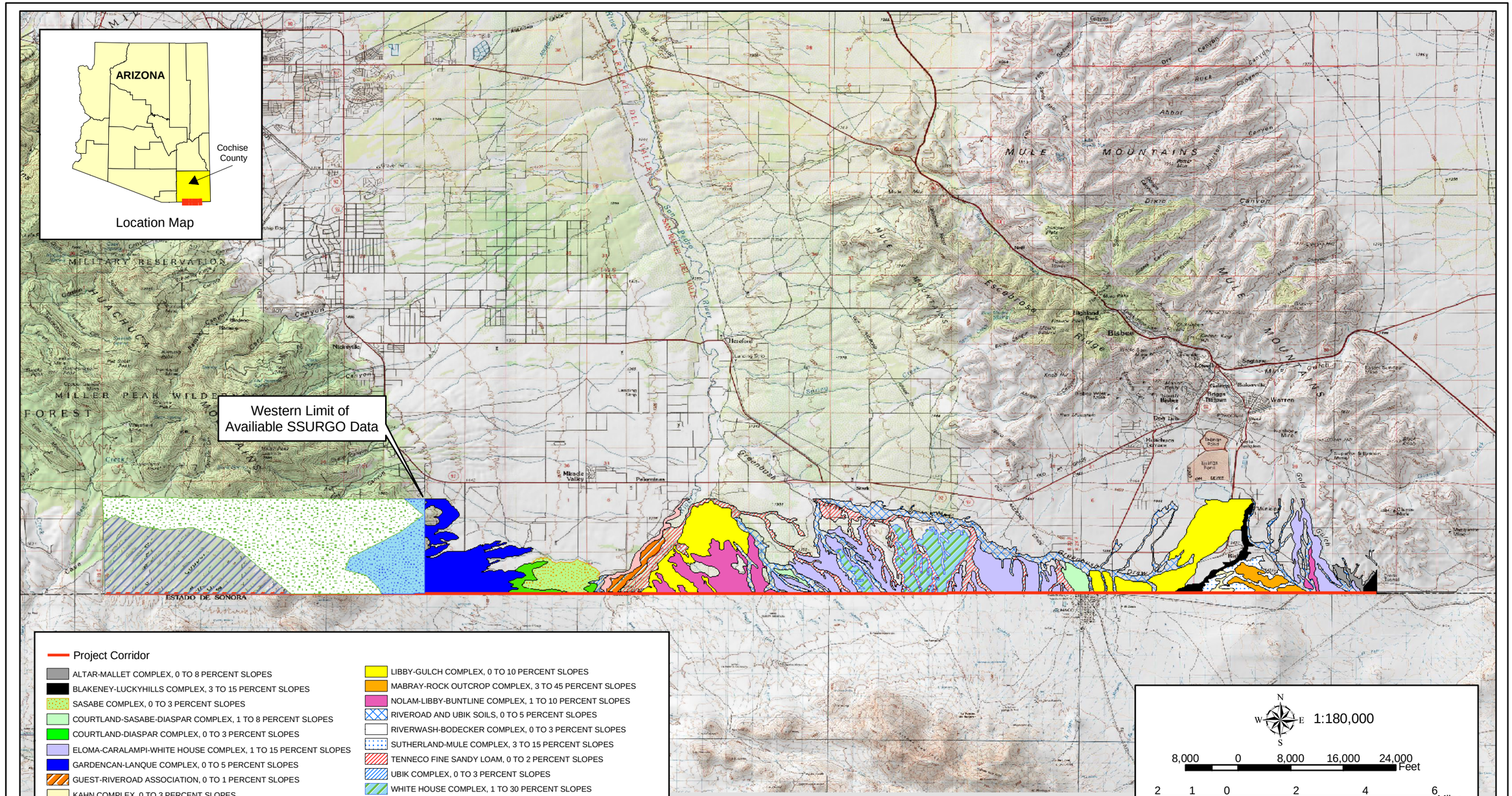
Soil Survey Geographic (SSURGO) data, provided by the Natural Resources Conservation Service (NRCS), identifies 27 soil complexes, associations, or series (Table 3-1). SSURGO data were queried from this NRCS database. Figure 3-3a and Figure 3-3b provide a general depiction of where these soils are located in reference to the project corridor. These soils consist of loamy to very gravelly soils with slopes from 0 to 60 percent. However, due to the limits of existing soil data, approximately 22% of the project corridor that exists primarily within the Huachuca Mountains and Coronado National Memorial and the Coronado National Forest are not characterized by SSURGO data.

However, the Corridor EA evaluated three soil associations that exist within the Coronado National Memorial and the Coronado National Forest based on 1985 data (Hendricks 1985). These soil associations are depicted in Figure 3-3a, and include the White House-Bernardino-Hathaway Association, Lithic Haplustolls-Lithic Argiustolls-Rock Outcrop Association, and Casto-Martinez-Canelo Association. Alternatives analyzed in this SEA do not include any activities within the Coronado National Memorial or the Coronado National Forest and therefore would not impact any of the soil associations located within this area. Nevertheless, the soil associations in this area are comprised of a broad mix of soil complexes and soil series that occur from a range of 3300 feet msl in the fan alluvium to 7,00 feet msl on the tops of mesa's and mountains.

Table 3-1. SSURGO Soil Complex Descriptions Based on 2002 Data

Soil	Percent Slope	USDA Texture
ALTAR-MALLET COMPLEX	0 to 3	sandy loam to extremely cobbly coarse loamy sand
BLAKENEY-LUCKYHILLS COMPLEX	3 to 15	fine sandy loam to loam
BROOKLINE-FLUVAQENTS-RIVERWASH COMPLEX	0 to 3	sandy loam to very gravelly coarse sand
BRUNKCOW-CHIRICAHUA-ANDRADA COMPLEX	3 to 20	coarse sandy loam to weathered and unweathered bedrock
COURTLAND-DIASPAR COMPLEX	0 to 3	sandy loam gravelly sandy clay loam
COURTLAND-SASABE-DIASPAR COMPLEX	1 to 8	sandy loam to clay loam
ELOMA SANDY LOAM	1 to 10	gravelly loam to very gravelly sandy clay loam
ELOMA-CARALAMPI-WHITE HOUSE COMPLEX	0 to 5	very gravelly sandy loam to very gravelly course sandy loam to extremely gravelly clay
GARDENCAN-LANQUE COMPLEX	0 to 5	sandy loam sandy clay loam to very cobbly sandy clay loam
GUEST-RIVEROAD ASSOCIATION	0 to 1	clay loam to silty clay loam to sandy loam
KAHN COMPLEX	0 to 3	fine sandy loam to clay loam
LIBBY-GULCH COMPLEX	0 to 10	very gravelly sandy loam to gravelly clay loam
LUCKYHILLS-MCNEAL COMPLEX	3 to 15	very gravelly sandy loam to sandy loam to gravelly loam
MABRAY-CHIRICAHUA-ROCK OUTCROP COMPLEX	3 to 45	very cobbly loam to weathered bedrock and unweathered bedrock
MABRAY-ROCK OUTCROP COMPLEX	3 to 45	extremely cobbly loam to unweathered bedrock
NOLAM-LIBBY-BUNTLINE COMPLEX	1 to 10	fine sandy loam to gravelly fine sandy loam to sandy clay loam
PITS-DUMPS COMPLEX	No Slope	(No defined texture)
RIVEROAD AND UBIK SOILS	0 to 5	silt loam to fine sandy loam
RIVERWASH-BODECKER COMPLEX	0 to 3	stratified gravel to loamy fine sand to very gravelly coarse sand
SASABE COMPLEX	0 to 3	sandy loam to silt loam
SUTHERLAND-MULE COMPLEX	3 to 15	gravelly fine sandy loam to very gravelly sandy loam
TENNECO FINE SANDY LOAM	0 to 2	fine sandy loam
UBIK COMPLEX	0 to 3	silt loam to fine sandy loam
WHITE HOUSE COMPLEX	1 to 30	gravelly loam to gravelly sandy loam to clay loam

Source: NRCS 2000, 2002b



Sources: USGS 1:100,000 Digital Raster Graphics
SSURGO Soil Classifications were obtained from NRCS, 2002
General Soil Map classifications from U.S. Dept. of Agriculture- Soil Conservation Service and University of Arizona Experimental Station, 1975. Project area data from GSRC, 2002.

Figure 3-3a: SSURGO Soil Classifications and General Soil Map Associations in the Naco AO

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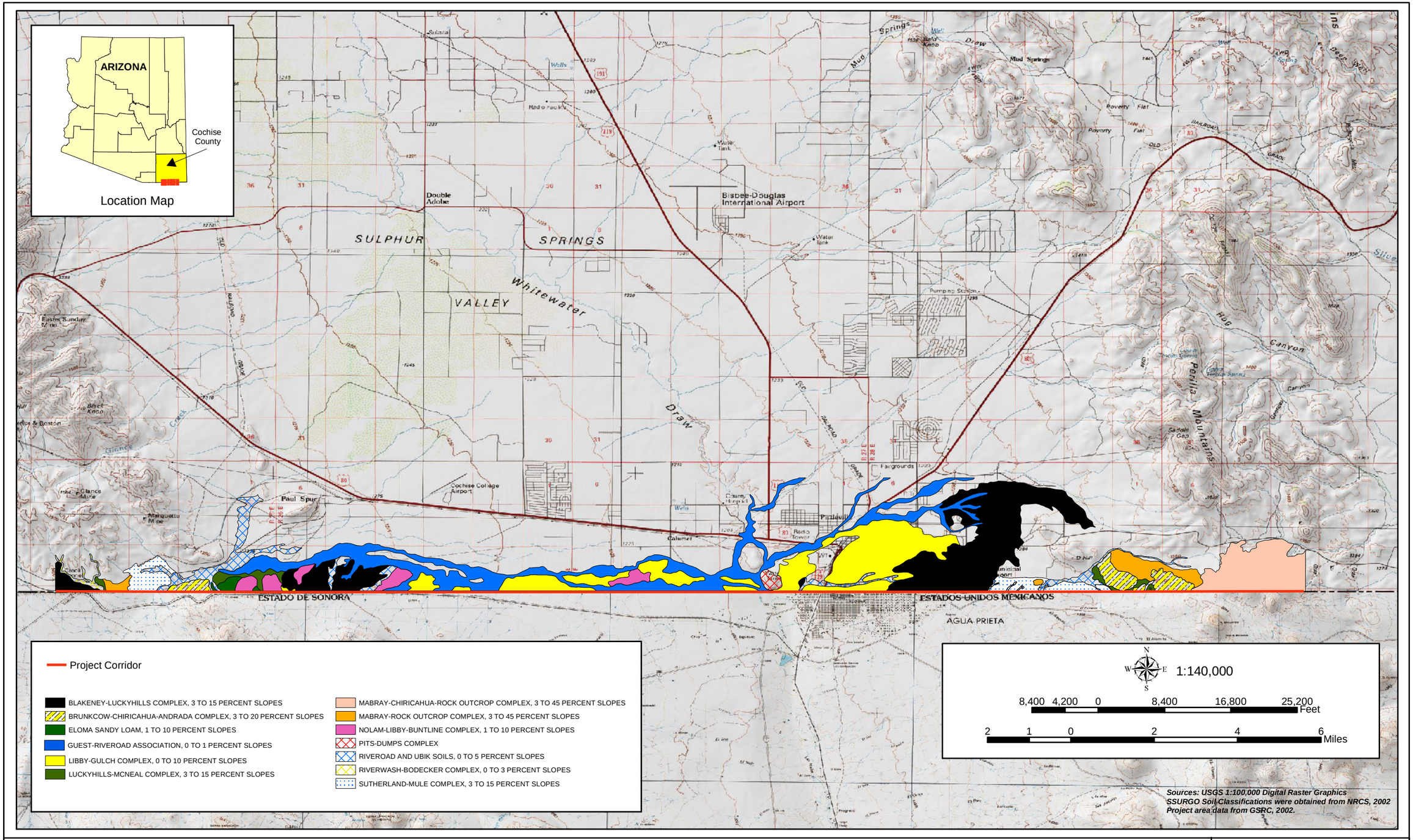

Figure 3-3b: SSURGO Soil Classifications in Douglas Project Area

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3.4.3 Hydric Soils

A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. According to the NRCS, no hydric soils have been mapped within Cochise County or in the project corridor (NRCS 2002a); however, 8.3 acres of potential jurisdictional wetlands were identified within the corridor during the April 2002 survey. Soils within these potential jurisdictional wetlands are likely functioning as hydric soils.

3.4.4 Prime Farmland

According to 7 U.S.C. 4201(c)(1)(A), prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, labor, and without intolerable soil erosion. Unique farmland is defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as, citrus, nuts, olives, cranberries, fruits, and vegetables (7 U.S.C. 4201(c)(1)(B)).

Potential prime farmland is present along the U.S.-Mexico border and has recently been mapped within the project corridor (Figure 3-4). These soils are associated with the Tenneco, fine sandy loam and the Ubik Complex and are generally found in stream terraces, existing floodplains, and relic basins. These soils are considered prime farmland only if properly irrigated. Furthermore, they are generally located within washes that are either not suitable for agriculture due to the topographic position and flash floods or within areas preserved for habitat conservation.

3.5 VEGETATION

Southeastern Arizona predominantly supports plant communities defined as semi-desert grassland scrub, which is a perennial grass-scrub community that is usually located between desertscrub and higher elevation plant communities. Intermixed among this primary community are several inclusions of other desertscrub communities, as well as topographically-associated areas such as riparian and forested areas. These habitat types are primarily found in southeastern Arizona, southwestern New Mexico, and

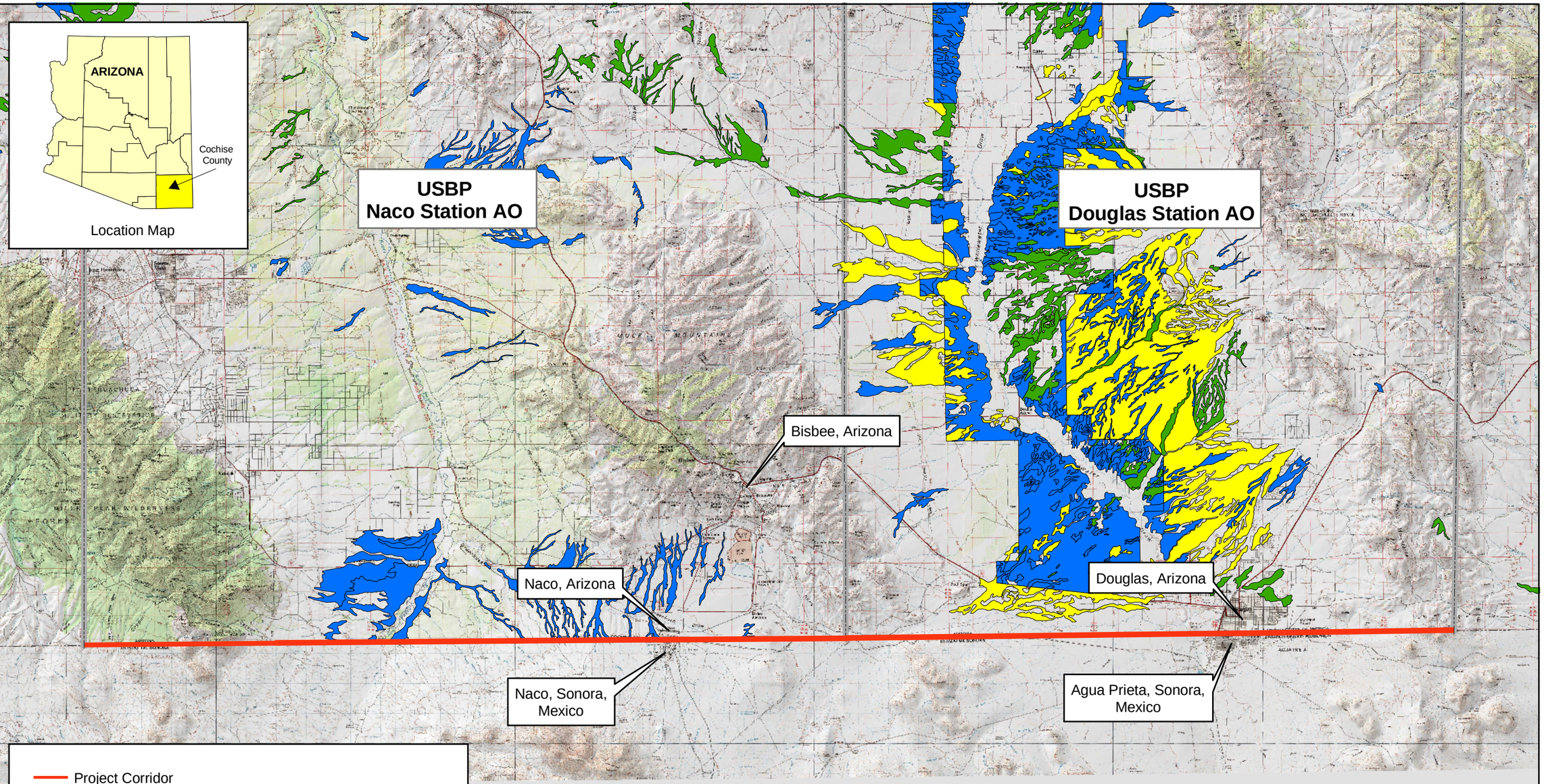

Figure 3-4: Naco/Douglas Project Corridor
Prime Farmland

Sources: USGS 1:100,000 Digital Raster Graphics
Farmland data was obtaind from SSURGO, 2002
Project area data from GSRC, 2002.

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northern Mexico between elevations of 4,000 and 8,000 feet msl. Below is a brief description of vegetation survey methods and results.

3.5.1 Vegetation Communities

A field reconnaissance survey was performed in April 2002 within the limits of the project corridor (within 300 feet of the U.S.-Mexico border). This survey was conducted in an effort to inventory biological resources in the project corridor and evaluate the potential effects of the action alternatives on these resources. Data collected from this survey have been analyzed, acreages calculated, and communities mapped using color infrared photography for the entire project corridor. The vegetative community maps are provided in Appendix A.

As expected, the April 2002 survey was consistent with previous investigations (INS 2000; USACE, 1994, 1996). The survey concluded that six major vegetation communities dominate the project corridor: semi desert grassland-scrub, Chihuahuan scrub, riparian scrub, interior riparian forest, interior chaparral, and encinal mixed oak. The nomenclature for vegetation community types is derived from the 1993 National Biological Survey's Geographic Analysis Program (GAP). Areas, which are considered disturbed were also delineated during this survey. These areas were identified as urban development, as well as any area that had been disturbed by existing infrastructure and vehicular or other traffic, which has resulted in a lack of vegetation.

Plant species that were found within the six major vegetation communities throughout the project corridor are identified and discussed in the following paragraphs.

3.5.1.1 Semi-desert Grassland Scrub

Semi-desert grasslands are prevalent in the valley areas of the project corridor accounting for 42 percent (736 acres). This vegetation community was dominated by grama grasses (*Bouteloua* spp.), honey mesquite (*Prosopis glandulosa*), aster (*Aster* sp.), plains lovegrass (*Eragrostis intermedia*), Arizona cottontop (*Digitaria californica*), and fairy duster (*Calliandra eriophylla*). Other species which are associated with this community include: acacia (*Acacia* sp.), ocotillo (*Fouquieria splendens*), cholla (*Opuntia fulgida*), little leaf sumac (*Rhus microphylla*), sotol (*Dasylirion wheeleri*), desert broom (*Baccharis sarothroides*), tobosa grass (*Hilaria mutica*), broom snakeweed (*Gutierrezia sarothrae*),

desert hackberry (*Celtis pallida*), one-seed juniper (*Juniperus monosperma*), and alkali sacaton (*Sporobolus airoides*). This vegetation community was generally found to have less than 15 percent ground cover.

3.5.1.2 Chihuahuan Scrub

The Chihuahuan scrub plant community is prevalent throughout southeast Arizona. Over 33 percent (577 acres) of the project corridor is dominated by the Chihuahuan scrub community with ground cover densities between 35 and 40 percent. The plant community consists of creosote bush (*Larrea tridentata*), tarbush (*Flourensia cernua*), mesquite (*Prosopis* sp.), lechuguilla (*Agave lechuguilla*), sotol, banana yucca (*Yucca baccata*), mimosa (*Mimosa* sp.), acacia, and ocotillo. Several other species that were identified during the April 2002 surveys included four-wing saltbush (*Atriplex canescens*), hedgehog cactus (*Echinocereus triglochidiatus*), and allthorn (*Koeberlinia spinosa*).

3.5.1.3 Riparian Scrub

As the name implies, this vegetative community is located in riparian areas adjacent to drainages and natural washes. The riparian scrub community was observed generally transecting the project corridor and accounted for approximately 7 percent (115 acres) of habitat within the project corridor. This community is dominated by honey mesquite, grama grasses, and desert broom with ground cover and/or canopy densities exceeding 75 percent. However, other species identified included acacia, white bursage (*Ambrosia dumosa*), soapberry (*Shepherdia canadensis*), dropseeds (*Sporobolus* sp.), and encelia (*Encelia* sp.).

3.5.1.4 Encinal Mixed Oak

Encinal mixed oak vegetation communities are often very diverse areas. Within the 300-foot survey corridor, this community consistently had densities ranging from 60 to 70 percent ground cover. The vegetation type was found exclusively within and west of the Coronado National Memorial. However, the 143 acres of Encinal mixed oak community type within the project corridor would not be subject to the proposed infrastructure activities under any of the alternatives, and therefore, would not be affected. This community type was typically found in the higher elevations and consists of pinyon pine (*Pinus edulis*), alligator juniper (*Juniperus deppeana*), Mexican pinyon (*P. cembroides*),

emory oak (*Quercus emoryi*), Arizona white oak (*Q. arizonica*), Mexican blue oak (*Q. oblongifolia*), and silverleaf oak (*Q. hypoleucoides*).

3.5.1.5 Interior Chaparral

Interior chaparral vegetation community generally occupied the lower slopes of mountainous areas above the grasslands. The ground cover densities were between 80 and 85 percent. The April 2002 surveys revealed that 1 percent (18.5 acres) of the affected project corridor is comprised of interior chaparral. This community supports vegetation that is a mix of shrubs, small trees, and grasses. Some of the more common interior chaparral species found in the project corridor were sugar bush (*Rhus ovata*), desert ceanothus (*Ceanothus greggii)*, sideoats grama (*Bouteloua curtipendula*), purple verbena (*Verbena wrightii*), Parry's agave (*Agave parryi*), and plains lovegrass (*Eragrostic intermedia*). Other species observed include sneezeweed (*Helenium* sp.), acacia, ocotillo, cholla, soap tree yucca (*Yucca elata*), prickly pear (*Opuntia* sp.), aster, little leaf sumac, and sotol.

3.5.1.6 Interior Riparian Forest

The interior riparian forest vegetative community is isolated to those lands where the project corridor transects the San Pedro River floodplain. Approximately, 1.8 acres of interior riparian forest were located within the project corridor. This area was primarily comprised of mature trees such as Goodding willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii*), and American sycamore (*Plantanus occidentalis*) and was limited to the stream banks of the San Pedro River. Other shrubs and grasses found in this area included, saltcedar (*Tamarix* sp.), rubber rabbit bush (*Chrysothamnus nauseosus*), grama grass, and acacia.

3.6 WILDLIFE

The native fauna of southeastern Arizona, which encompasses Cochise County, includes approximately 370 bird species, 109 mammals, 23 amphibians, and 72 reptiles. While the U.S.-Mexico border designates territories of the U.S. and Mexico, many species that inhabit the borderlands rely on suitable habitat on both sides of the border for sustainment. This behavior is known as trans-boundary migration. The bird population is dominated by sparrows and towhees (35 species); wood warblers (32

species); swans, geese, and ducks (31 species); tyrant flycatchers (30 species); and sandpipers and phalaropes (26 species). Bird species diversity is highest in the spring and fall when neotropical migrants (i.e., flycatchers and warblers) pass through on their way to summer breeding or wintering grounds, and in the winter when summer resident birds (i.e., robins, kinglets, and sparrows) from the northern U.S. and Canada arrive to winter in the area. The majority of the mammal species found in the area are bats and rodents (i.e., mice, rats, and squirrels). Rodents, such as pocket mice and kangaroo rats, are the most commonly encountered. Of the 23 amphibian species that inhabit southeastern Arizona, spadefoot toads and true toads are dominant and the most widespread. Iguanid lizards, colubrid snakes, and whiptails are the most common reptiles in the area. The types of wildlife commonly occurring in Cochise County can be referenced in Appendix A of the Corridor EA (INS 2000), and is incorporated herein by reference.

Birds encountered during the April 2002 field survey were the black phoebe (*Sayornis nigricans),* raven (*Corvus cryptoleucus*), barn swallow (*Hirundo rustica)*, black-throated sparrow (*Amphispiza* bilineata), Scott's oriole (*Icterus parisorum*), English sparrow (*Passer domesticus*), Brewer's blackbird (*Euphagus cyanocephalus*), rufous hummingbird (*Selasphorus rufus*), crow (*Corvus brachyrhynchos*), Gambel's quail (*Callipepla gambelii*), Montezuma quail (*Cyrtonyx* montezumae), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*), house finch (*Carpodacus mexicanus*), mourning dove (*Zenaida macroura*), scaled quail (*Callipepla squamata*), Swainson's hawk (*Buteo swainsoni*), Vermillion flycatcher (*Pyrocephalus rubinus*), Wilson's warbler (*Wilsonia pusilla*), mallard (*Anas platyrhynchos*), golden eagle (*Aquila shrysaetos*), common raven (*Corvus corax*), ash-throated flycatcher (*Myiarchus cinerascens*), violet-green swallow (*Tachycineta thalassine*), and western kingbird (*Tyrannus verticalis*).

Mule deer (*Odocoileus hemionus*), jackrabbits (*Lepus californicus)* and ground squirrels (*Spermophilus* spp.) were the only mammals observed. Signs of cougar (G. sp.) and coyotes (G. sp.) were also recorded. Several reptiles were encountered including Sonoran coachwhip (*Masticophis flagellum cingulum*), and numerous whiptail lizards (*Cnemidophorus* sp.) and earless lizards (*Holbrookia* sp.).

3.7 AQUATIC COMMUNITIES

Distribution patterns of freshwater fish in Arizona are controlled by climatic and geological factors. The San Pedro River is considered as being both a perennial and intermittent stream based upon its location. The portion, which intersects the proposed project corridor, is classified as being an intermittent stream while the northern portion of the river is known as perennial. An intermittent stream is defined as a stream that flows only at certain times of the year; it may be wet or dry most of the time depending upon the weather. Historically, 13 native species of fish were present in the San Pedro River (Table 3-2). Of these species, only two remain in the streams: the longfin dace (*Agosia chrysogaster*) and desert sucker (*Catostomus clarki*). Most of the fish (14 species) currently present in the San Pedro River system are non-native species (USDOI 1989).

Whitewater Draw, which is another intermittent stream existing within the project corridor, trends north/south and does support habitat suitable for aquatic species at certain locations. However, no fish species were observed during the April 2002 survey. If fishes do occur within this area, they would most probably be the introduced mosquitofish (*Gambusia affinis*) and green sunfish (*Lepomis cyanellus*).

Table 3-2. Historic and Current Fish Species of the San Pedro River, Cochise County, Arizona

Native Fish	Scientific Name	Non-Native Fish	Scientific Name
Colorado River squawfish	*Ptychocheilus lucius*	black bullhead	*Ameiurus melas*
desert pupfish	*Cyprinodon macularius*	bluegill	*Lepomis macrochirus*
desert sucker	*Catostomus clarki*	brook trout	*Salvelinus fontinalis*
flannel-mouth sucker	*Catostomus latipinnis*	channel catfish	*Ictalurus punctatus*
Gila chub	*Gila intermedia*	common carp	*Cyprinus carpio*
Gila topminnow	*Poeciliopsis occidentalis*	fathead minnow	*Pimephales promelas*
loach minnow	*Tiaroga cobitis*	goldfish	*Carassius auratus*
longfin dace	*Agosia chrysogaster*	green sunfish	*Lepomis cyanellus*
razorback sucker	*Xyrauchen texanus*	largemouth bass	*Miropterus salmoides*
roundtail chub	*Gila robusta*	mosquitofish	*Gambusia affinis*
speckled dace	*Rhinichthys osculus*	rainbow trout	*Oncorhynchus mykiss*
spikedace	*Meda fulgida*	red shinner	*Cyprinella lutrensis*
Sonoran sucker	*Catostomus insignis*	threadfin shad	*Dorosoma petenense*
		yellow bullhead	*Ameiurus natalis*

Source: USDOI 1989.

3.8 UNIQUE OR SENSITIVE AREAS

Many unique natural areas that are found in relatively few places worldwide characterize the project region. Southeastern Arizona is an ecological crossroads, where habitats and species from the Sierra Madre of Mexico, the Rocky Mountains, and the Sonoran and Chihuahuan deserts converge. Ongoing efforts by many government agencies, as well as private entities, have set aside millions of acres for preservation and public use. Most of these consist of riparian (riverbank) areas, basin wetlands, scenic canyons, and vast desert areas. Unique and sensitive areas do exist in the project corridor. In particular, the Coronado National Memorial, the Coronado National Forest and the San Pedro Riparian NCA are located in the western reaches of the project corridor (Figure 3-5) and are discussed in the following paragraphs.

3.8.1 San Pedro National Conservation Area

The San Pedro Riparian NCA encompasses over 56,500 acres of riparian habitat, which serves as the link between a perennial supply of water, and the terrestrial habitats of the San Pedro River basin. Over 40 miles of this riparian habitat has been set aside by BLM to preserve the last remnants of desert riparian ecosystem, which was once vast in the southwest (Great Outdoor Recreation Pages 2000). In fact, the San Pedro River is one of the last free-flowing rivers in the southwest, and is one of the most extensive and ecologically valuable riparian ecosystems remaining.

The Nature Conservancy (TNC) claims that the diversity of birds, mammals, and reptiles along the San Pedro River is unequalled in the U.S. In fact, TNC has named the river as one of the “Last Great Places” in the western hemisphere (TNC 2000).

The San Pedro Riparian NCA is managed by the BLM, which has established conservation goals to protect and enhance the riparian ecosystem along the San Pedro River. BLM currently allows public use where natural resources would not be significantly impacted.

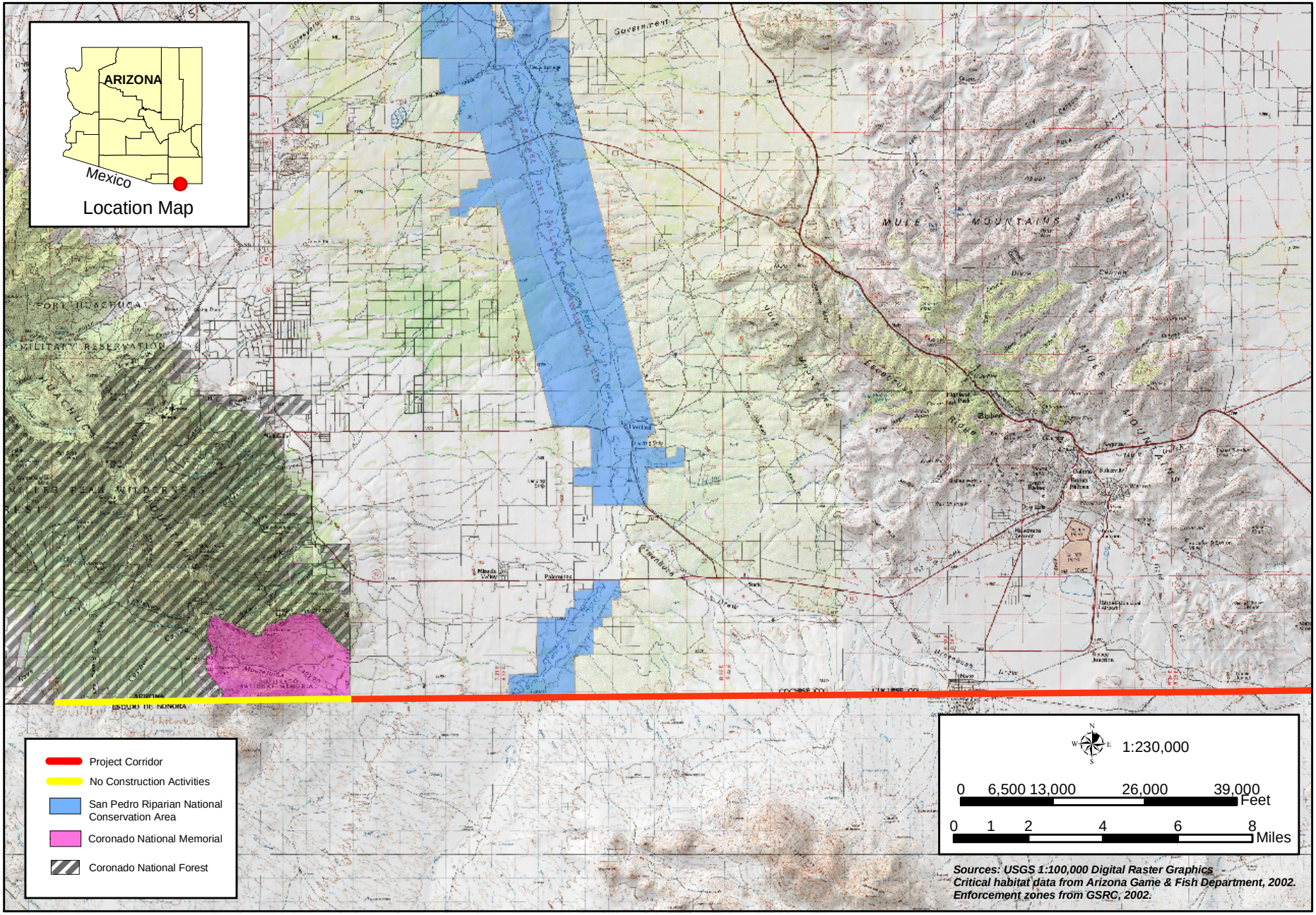

Figure 3-5: Unique and Sensitive Areas in the Project Corridor

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The biological diversity in the San Pedro Riparian NCA is vast, and therefore is its most valued aspect. Currently over 350 species of birds, 80 species of mammals, and 40 species of amphibians and reptiles inhabit the San Pedro Riparian NCA (Friends of the San Pedro River 2000).

3.8.2 Coronado National Memorial

This 4,976-acre national memorial commemorates the entry of the Spanish explorer Don Francisco Vasques de Coronado to southern Arizona from Mexico in 1540. The memorial park offers several trails with various levels of difficulty to accommodate all visitors. Visitors to the park are afforded sweeping views of mountainsides and deep valleys from atop Montezuma's Pass, which is at an elevation of 6,757 feet msl.

This vista provides spectacular views of both the San Pedro River Valley and the San Rafael Valley. In addition, the 780-mile Arizona Trail, which bisects the entire state, south to north, begins here at the Mexican border. Also, Coronado Cave offers a rare chance to explore subterranean expanses as well (Coronado National Memorial 2000).

3.8.3 Coronado National Forest

This national forest encompasses 1,780,000 acres of southeastern Arizona and southwestern New Mexico. Elevations range from 3,000 feet to 10,720 feet in 12 widely scattered mountain ranges. The Coronado National Forest, which is administered by the USFS, offers a wide variety of recreational opportunities to the public year round. In fact, recreation is one of their top priorities. Recreational uses are supported by over 1,100 miles of trails, four small lakes, and eight wilderness areas within the Coronado National Forest (USFS 2002).

3.9 PROTECTED SPECIES AND CRITICAL HABITAT

The Endangered Species Act (ESA) [16 U.S.C. 1531 et. seq.] of 1973, as amended, was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All Federal agencies are required to implement protection programs for designated species and to use their authorities to further the purposes of the act. Responsibility for the identification of a threatened or endangered species and

development of any potential recovery plan lies with the Secretary of the Interior and the Secretary of Commerce. The USFWS is the primary agency responsible for implementing the ESA.

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

3.9.1 Federally Listed Species

A total of 27 Federally listed endangered, threatened, proposed threatened, proposed endangered, and candidate species occur within Cochise County, Arizona (USFWS 2002 and 2003). Table 3-3 includes 13 species listed as endangered, nine as threatened, one as proposed endangered, one as proposed threatened, and three as candidate.

Coordination with USFWS for this EA can be found in Appendix B. Past coordination for this project corridor can be found in the EA for JTF-6 Proposed Fence and Road Improvement Project, Naco, Cochise County, Arizona (USACE 2000) and the Corridor EA (INS 2000).

Protected species that could be potentially affected by the proposed project include the Mexican spotted owl, lesser long-nosed bat, Huachuca water umbel, Chiricahua leopard frog, Gila chub, Gila topminnow, spikedace, and loach minnow. Critical habitat for the following species could be potentially affected by the proposed project: Mexican spotted owl, spikedace and loach minnow, and Huachuca water umbel. Occurrences and Critical Habitat designations for the above-mentioned species are found on Figure 3-6.

The Chiricahua leopard frog was listed as a threatened species on July 15, 2002. The Chiricahua leopard frog has been documented within the Naco Station's AO along the San Pedro River.

Table 3-3 Federally Listed, Proposed, and Candidate Species Potentially Occurring within Cochise County, Arizona

Common/Scientific Name	Federal Status	Date Listed	Designated Critical Habitat	Habitat Requirements
AMPHIBIANS				
Chiricahua leopard frog *Rana chiricahuensis*	T	6/13/02 50 FR 40791	NA	Streams, rivers, backwaters, ponds, and stock tanks
Sonora tiger salamander *Ambystoma tigrinum stebbinsi*	E	1/6/97 62 FR 665	NA	Stock tanks and impounded cienegas in San Rafael Valley, Huachuca Mountains
BIRDS				
Bald eagle *Haliaeetus leucocephalus*	T	7/12/95 60 FR 35999	NA	Large trees or cliffs near water (reservoirs, rivers, and streams) with abundant prey
California brown pelican *Pelecanus occidentalis californicus*	E	10/16/70 35 FR 16047	NA	Coastal land and islands; Arizona lakes and rivers
Cactus ferruginous pygmy-owl *Glaucidium brasilianum cactorum*	E	3/10/97 62 FR 10730	NA	Mature cottonwood/willow, mesquite bosques, and sonoran desertscrub
Mexican spotted owl *Strix occidentalis lucida*	T	4/11/91 56 FR 14678	2/1/01 66 FR 8530	Old growth forest associated with steep canyons
Mountain plover *Charadrius montanus*	PT	2/16/99 64 FR 7587	NA	Open arid plains, short-grass prairies, and cultivated forms
Northern aplomado falcon *Falco femoralis septentrionalis*	E	1/25/86 51 FR 6686	NA	Desert grasslands
Southwestern willow flycatcher *Empidonax traillii extimus*	E	2/27/95 60 FR 10694	NA	Dense riparian vegetation
FISHES				
Beautiful shiner *Cyprinella formosa*	T	8/31/84 49 FR 34490	8/13/84 49 FR 34490	Deep pools in creeks, scoured areas of cienegas, and other stream-associated quiet waters
Gila chub *Gila intermedia*	PE	8/9/02 67 FR 40789	NA	Pools, springs, cienegas, and streams
Loach minnow *Tiaroga cobitis*	T	10/28/86 51 FR 39468	3/8/94 59 FR 10898	Lower San Pedro River has been designated as critical Habitat by USFWS
Spikedace *Meda fulgida*	T	7/1/86 51 FR 23769	2/25/00 65 FR 24327	Lower San Pedro River has been designated as critical habitat by USFWS
Yaqui catfish *Ictalurus pricei*	T	8/31/84 49 FR 34490	8/13/84 49 FR 34490	Moderate to large streams with slow current over sand and rock bottoms
Yaqui chub *Gila purpurea*	E	8/31/84 49 FR 34490	8/13/84 49 FR 34490	Deep pools of small streams, pools, or ponds near undercut banks

Common/Scientific Name	Federal Status	Date Listed	Designated Critical Habitat	Habitat Requirements
Yaqui topminnow *Poeciliopsis occidentalis sonoriensis*	E	3/11/67 32 FR 4001	NA	Streams, springs, and cienegas between 4,000 - 5,000 feet elevation, primarily in shallow areas
INVERTEBRATES				
Huachuca springsnail *Pyrgulopsis thompsoni*	C	NA	NA	Aquatic areas, small springs with vegetation slow to moderate flow
MAMMALS				
Black-tailed prairie dog *Cynomys ludovicianus*	C	NA	NA	Burrows in plains and grassland habitats
Jaguar *Panthera onca*	E	7/22/97 62 FR 39147	NA	Variety of habitats including lowland wet habitats and typically swampy savannas
Lesser long-nosed bat *Leptonycteris curasoae yerbabuenae*	E	9/30/88 53 FR 38456	NA	Desertscrub habitat with columnar cacti and agave present as food plants
Mexican gray wolf *Canis lupus baileyi*	E	3/11/67 32 FR 4001	NA	Chapparal, woodland, and forested areas. May cross desert areas
Ocelot *Leopardus pardalis*	E	7/21/82 47 FR 31670	NA	Humid tropical and sub-tropical forests, savannas, and semi-arid thornscrub
PLANTS				
Canelo Hills ladies' tresses *Spiranthes delitescens*	E	1/6/97 62 FR 665	NA	Finely grained, highly organic, saturated soils of cienegas
Cochise pincushion cactus *Coryphantha robbinsorum*	T	1/9/86 51 FR 952	NA	Semidesert grassland with small shrubs, agave, other cacti, and grama grass
Huachuca water umbel *Lilaeopsis schaffneriana* ssp. *recurva*	E	1/6/97 62 FR 665	7/12/99 64 FR 37441	Cienegas, perennial low gradient streams, wetlands
Lemmon fleabane *Erigeron lemmonii*	C	NA	NA	Crevices, ledges, and boulders in canyon bottoms in pine-oak woodlands
REPTILES				
New Mexico ridge-nosed rattlesnake *Crotalus willardi obscurus*	T	4/4/78 43 FR 34479	8/4/78 43 FR 34476	Presumably canyon bottoms in pine-oak and pin-fir communities

Sources: USFWS 2002,USFWS 2003 (Updated February 17, 2003)

Legend: E = Endangered PE = Proposed Endangered C = Candidate PT = Proposed Threatened T = Threatened

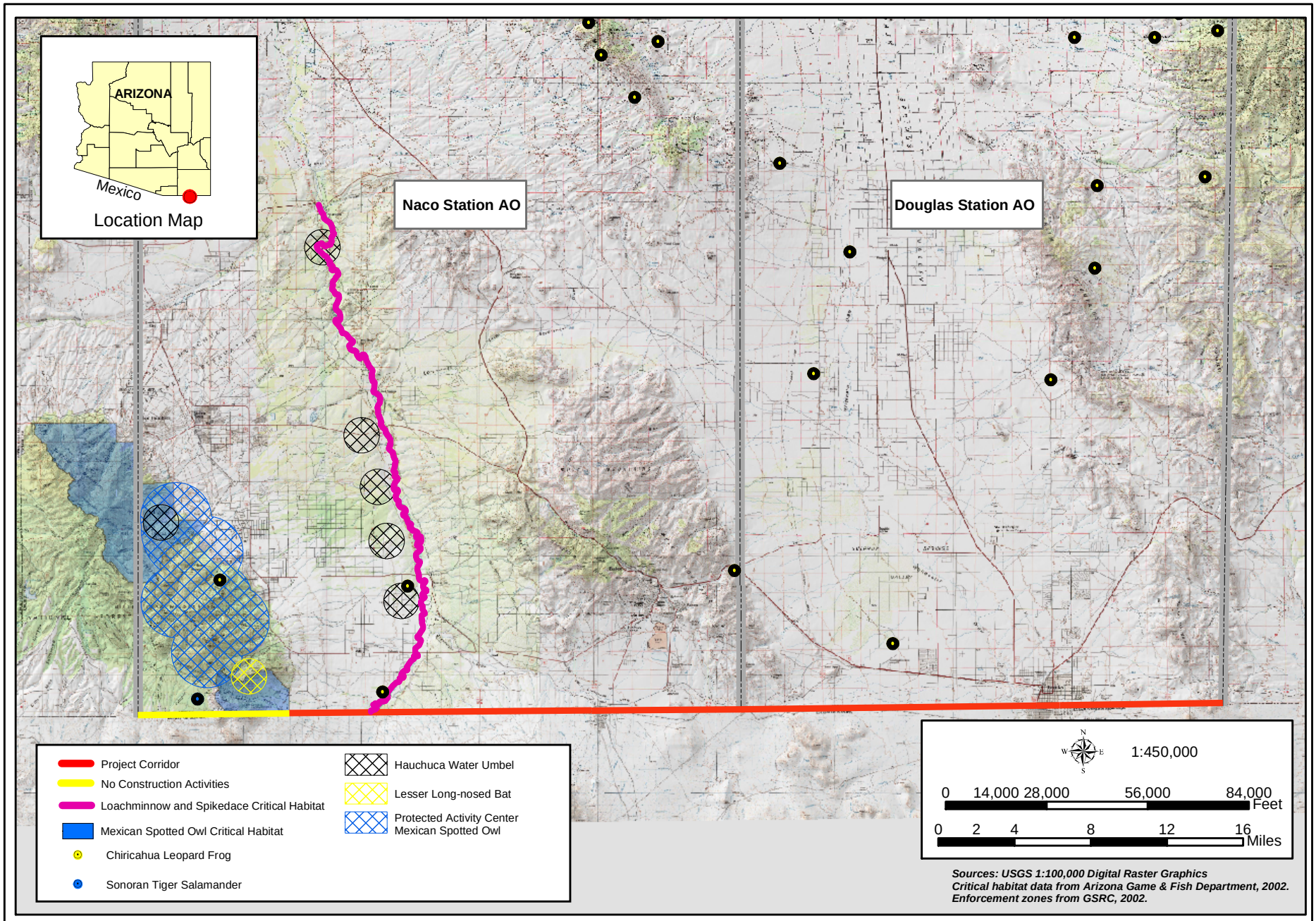

Figure 3-6: Critical Habitat and Occurance Locations in the Project Corridor

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Additionally, the species is known to occur within the Huachuca Mountains along the southwestern portion of the AO, as well as, in the Dragoon Mountains near the northeastern boundary of the station and in the Mule Mountains in the southeastern corner of the Naco Station's AO (Figure 3-6). The Chiricahua leopard frog is also documented in several areas within the Douglas Station AO (Figure 3-6). However, only one location, located northeast of Paul Spur, is recorded in the southern portion of the Douglas Station's AO.

Historical accounts of the frog occurring north of the project corridor has been identified in the Biological Assessment for the USBP Tucson Sector (INS 2002e) currently under informal consultation with the USFWS; JTF-6 Proposed Fence and Road Improvement Project, Naco, Cochise County, Arizona (USACE 2000); and the Corridor EA (INS 2000).

3.9.1.1 Chiricahua Leopard Frog

Habitat for the Chiricahua leopard frogs includes rocky streams with deep rock-bound ponds, river overflow pools, oxbows, permanent springs, stock tanks, and ponds (INS 2002e). The riparian habitat along these water bodies generally consist of oak and mixed oak and pine woodlands, but it can also range into areas of chaparral, grassland, and even desert.

3.9.1.2 Lesser Long-nosed Bat

The lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) was listed as an endangered species in 1988, with no critical habitat designation. The range of the lesser long-nosed bat exists from "southern Arizona and extreme southwestern New Mexico, through western Mexico, and south to El Salvador" and occurrences in southern Arizona range from "the Picacho Mountains southwest to the Agua Dulce Mountains, southeast to the Chiricahua Mountains" (INS 2002e). Lesser long-nosed bats migrate from Arizona to Mexico in September and October, where they breed and spend the winter. They then return to Arizona as early as April to bear young. Females form maternity colonies that may number in the hundreds or thousands, and males form smaller colonies. After the young are weaned, the maternity colonies begin to disband in July and August, but some bats remain in these roosts into October (INS 2002e). These bats are capable of overnight foraging flights of up to 40 miles from roost sites. The lesser long-nosed bats' diet consists of nectar and pollen from flowers of columnar cacti (e.g. saguara cactus

and organ pipe cactus) in early summer and agave later in the summer and early fall. They may also feed on ripe cactus fruits at the end of the flowering season (INS 2002e).

The lesser long-nosed bat's preferred plant community is described as palo verde/saguaro, semi-desert grassland, and oak woodland. Although the project corridor does not directly affect a known roost site, their habitats, roosting areas, and feeding requirements were evaluated. According to field observations from a survey conducted in April 2002, several species of agave were found within the project corridor.

Lesser long-nosed bats have been documented roosting in the State of Texas Mine within the Huachuca Mountains (Figure 3-6). The State of Texas Mine located to the southeast of Fort Huachuca is the only known roost site located within the Naco and Douglas Stations' AOs. This location is not considered a maternity roost site. However, because possible food sources for foraging lesser long-nosed bats do exist in the project corridor, the potential for foraging bats to occur in the project corridor exists from the Texas Mine roost site, east approximately 17 miles into the Douglas Station's AO.

3.9.1.3 Mexican Spotted Owl

The Mexican spotted owl (*Strix occidentalis lucida*) was listed as Federally threatened on March 16, 1993, final designation for critical habitat became effective on March 5, 2001. Nesting occurs in canyons and older forests of mixed-conifer or ponderosa pine (*Pinus ponderosa*)/Gambel's oak (*Quercus gambelii*) with a multi-layered foliage structure, usually at elevations between 4,100-9,000 feet. In southern Arizona, Madrean pine-oak forests are also commonly used for habitat (INS 2002e).

The Basin and Range – West Recovery Unit for the Mexican spotted owl is located in the Huachuca Mountains, which is in the Naco Station's AO. The Protected Activity Center and critical habitat of the Mexican spotted owls within the Huachuca Mountains are located on Figure 3-6.

3.9.1.4 Spikedace and Loach Minnow

The spikedace (*Meda fulgida*) and loach minnow (*Tiaroga cobitis*) were both listed as a Federally threatened species in 1986. Critical habitat designations for both species were approved on April 25, 2000. The spikedace and loach minnow occupy similar habitat, of

medium to large perennial streams within shallow riffles with moderate to swift currents and swift pools with sand, gravel, and rubble substrates. It inhabits shear zones where rapid-flow borders slower flow, areas of sheet flow at the upper ends of mid-channel sand/gravel bars; and eddies at downstream riffle edges. Recurrent flooding is required to maintain spikedace habitat and to provide the species with a competitive advantage over non-native aquatic species.

The spikedace's (*Meda fulgida*) range includes Aravaipa Creek, a tributary of the San Pedro River, Eagle Creek, and the Upper Verde River system in Arizona. Historically, this species was found in the San Pedro River near Charleston Pass, Arizona. The spikedace was formerly widespread in the Gila basin, but populations have decreased in its range. The spikedace occupies midwater habitats of runs, pools, and swirling eddies in shallow water (AGFD 2001d).

The loach minnow (*Tiaroga cobitis*) was historically endemic to the Gila River basin near and upstream of Phoenix, and included the Agua Fria, Gila, Salt, San Pedro, and Verde River systems in Arizona. The loach minnow's range has been drastically reduced and fragmented because of habitat destruction, competition, and predation by introduced fish species. Typical habitat for this species is turbulent, rocky riffles of mainstream rivers and tributaries. It prefers moderate to swift current and gravel or cobble substrates sometimes associated with dense, filamentous green algae (AGFD 2001e).

Critical habitat designations for the spikedace and loach minnow are found within the San Pedro River, which is located within the project corridor in the Naco Station's AO (Figure 3-6).

3.9.1.5 Huachuca Water Umbel

Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*) was listed as an endangered species in 1997 with critical habitat designated at this time. The Huachuca water umbel is know to occur in the Huachuca Mountains, and the San Pedro River area, in Cochise County, Arizona (Figure 3-6). Both the San Pedro River and the Huachuca Mountains are located within the Naco Station's AO.

According to the AGFD, Huachuca water umbel habitat is described as cienegas and associated vegetation within Sonoran desertscrub, grassland or oak woodland, and conifer forest (AGFD 1997). It requires perennial water, gentle stream gradients, small to medium sized drainage areas, and mild winters. It is usually found in water depths averaging from 2 to 16 inches. Optimum substrate consists of submerged sand, mud and/or silt. Habitat elevation ranges from 4,000 to 6,500 feet msl.

The Huachuca water umbel is found throughout southeastern Arizona with historical locations such as the Huachuca Mountains, San Pedro River, Saint David (extirpated), and San Bernadino Valley/Black Draw areas within Cochise County. The San Pedro Riparian NCA is the chief location for this plant on BLM land with most plants found along the San Pedro River. The Huachuca water umbel seems to be naturally re-colonizing the San Pedro River at several locations including the Highway 90 crossing and Boquillas Ranch.

3.9.1.6 Gila Chub

The Gila chub (*Gila intermedia*) was historically found in headwater streams of the Gila River drainage in Arizona and in the San Pedro River system. This species currently has a range within Arizona within the following drainages: Santa Cruz River, Middle Gila River, San Pedro River, Agua Fria River, and Verde River. The Gila chub is normally found in the smaller headwater streams, cienegas, springs and marshes of the Gila River basin. (AGFD 2001b) They normally prefer deep pools with heavily vegetated overbanks and vegetated backwaters.

3.9.1.7 Gila Topminnow

The Gila topminnow (*Poesiliopsis occidentalis occidentalis*) is presently found in several localities of the Gila River drainage in Arizona, and one locality in the Bill Williams River drainage. This species is known to occupy headwater springs, vegetated margins, and backwater areas of intermittent and perennial streams and rivers. The Gila topminnow prefers shallow warm water in a moderate current with dense vegetation and algae mats (AGFD 2001c).

No evidence of Federally listed threatened or endangered species were found within the survey corridor during the biological survey in April 2002, or during past surveys (INS 2000; USACE, 1994, 1996).

3.9.2 Critical Habitat

Critical habitat has been designated for eight species identified as potentially occurring in Cochise County, Arizona (USFWS 2000; ADFG 2000). Two of these designations fall within the project corridor and are located in the Naco Station's AO. Figure 3-6 provides the location of designated critical habitat within the project corridor.

The critical habitat of the Mexican spotted owl, which occurs within the project corridor, was designated by the USFWS on February 1, 2002 (66 FR 8530-8553).

Primary constituent elements are provided in canyons and mixed conifers, pine-oak, and riparian habitat types that typically support nesting and/or roosting.

The USFWS has designated seven areas (complexes) as critical habitat for the spikedace and loach minnow in Arizona and New Mexico (50 CFR 17.95(e)). Only Complex 5 is located within the project corridor. Complex 5 includes that portion of the San Pedro River beginning at the U.S. border with Mexico and extending upstream approximately 37.2 miles to the confluence with the Babocomari River.

3.9.3 State Listed Species

The AGFD maintains lists of Wildlife of Special Concern (WC). This list includes fauna whose occurrence in Arizona is or may be in jeopardy or with known or perceived threats or population declines (AGFD 2003). These species are not necessarily the same as those protected by the Federal government under the ESA. A list of all Arizona protected species is provided in Appendix C.

The Arizona Department of Agriculture maintains a list of protected plant species within Arizona. The 1993 Arizona Native Plant Law defined five categories of protection within the state. These include: Highly Safeguarded (HS), no collection allowed; Salvage Restricted (SR), collection only with permit; Export Restricted (ER), transport out of state

prohibited; Salvage Assessed (SA), permit required to remove live trees; and Harvest Restricted (HR), permit required to remove plant by-products (AGFD 2000).

There was no evidence or observation of any AGFD-listed flora or fauna in the project corridor during the survey conducted in April 2002. Species observed within the project corridor that are protected under the Arizona Native Plant Law include mesquite (SA, HR), sotol (SR), ocotillo (SR), cholla (SR), hedgehog cactus (HS, SR), Parry's agave (SR), and banana yucca (SR, HR). A Notice of Intent to Clear Land would be filed with the Arizona Department of Agriculture prior to the initiation of construction activities.

3.10 CULTURAL RESOURCES

3.10.1 Cultural Resources Overview

Cultural resources are extensive and diverse throughout the project corridor. There have been previous terrestrial investigations performed north of the U.S.-Mexico border in the Naco and Douglas Stations' AO, including sites within the project corridor. These previous investigations and their results, as well as a cultural chronology history of southern Arizona are discussed in detail in the 2000 Corridor EA (INS 2000) and in the EA for JTF-6 Proposed Fence and Road Improvement Project, Naco, Cochise County, Arizona (INS 2000). The cultural chronology, which is provided in the above-mentioned EAs, provides a broad overview prehistory in southern Arizona and is incorporated herein by reference. In order to evaluate impacts to cultural resources all properties that are or may be eligible for inclusion on the NRHP that could be impacted by an undertaking, need to be identified. For a property to be eligible for inclusion on the NRHP it needs to meet the National Register criteria, outlined in the Department of Interior regulations at 36 CFR Part 60:

The quality of significance in American History, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

a) *That area associated with events that have made a significant contribution to the broad patterns of our history; or*

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

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

d) *That have yielded, or may be likely to yield, information important in prehistory or history. [36 CFR § 60.4]*

If a property is not included on or eligible for inclusion in the NRHP, it is not a historic property for purposes of National Historic Preservation ACT (NHPA) and does not need to be considered under Section 106. The following discussions summarize previous and current cultural resources investigations that were performed in the project corridor. The investigations identified 17 newly and previously recorded sites that are considered eligible for listing in the NRHP.

3.10.2 Previous Investigations

Previous investigations conducted near the project corridor are discussed in the above referenced documents. A records check was conducted to identify previous cultural resource projects and cultural resource sites located within or adjacent to the project corridor. A total of 23 previously recorded archaeological sites were recorded within the 300-foot project corridor. Of the 23 previously recorded cultural resource locations 13 have been determined eligible for the NRHP and 10 are ineligible for listing in the NRHP. Sites that have been determined ineligible for listing in the NRHP are not considered "historic properties" and are not afforded any additional protection. As a result, ineligible sites will not be discussed further in this report. Table 3-4 outlines the previously recorded archaeological sites within the 300-foot survey corridor.

3.10.3 Current Investigations

An additional investigation was required for the project corridor to assess potential impacts to cultural resources by the implementation of the action alternatives. This investigation involved walking transects throughout the project corridor and focused on

investigations within 300 feet north of the U.S.-Mexico border. The purpose was to identify and record any existing and potential sites, in addition to reinvestigating known existing sites located within the project corridor that are considered eligible or potentially eligible for inclusion to the NRHP. As a result of these surveys, four new archaeological sites were recorded. All 17 of these sites were determined to be eligible for inclusion on the NRHP (Aztlan 2002). Table 3-5 summarizes the newly recorded sites within the 300-foot corridor.

Table 3-5. Summary of Newly Recorded Sites

Site Number	Site Type	Eligibility Criteria
AZ EE:12:60	Prehistoric Mogollon Village	Eligible - D
AZ EE:12:61	Corral Complex	Eligible - A, C, D
AZ FF:11:101	Prehistoric Scatter, Mogollon	Eligible – D
AZ FF:11:105	U.S.-Mexico border	Eligible – A, C

Source: AZTLAN 2002

3.11 AIR QUALITY

Primary standards are established to protect public health while secondary standards provide protection for the public's welfare including wildlife, climate, recreation, transportation, and economic values. Based on measured ambient criteria pollutant data, areas are designated as having air quality better than the standard (attainment) or worse than the standard (no attainment).

States are required to adopt ambient air quality standards that are at least as stringent as the National Ambient Air Quality Standards (NAAQS); although, the state standards may be more stringent. However, the State of Arizona has adopted the NAAQS (40 CFR Part 50) as the state's air quality criteria (Table 3-6).

With the exception of Paul Spur and Douglas, all of Cochise County is in attainment for all NAAQS. The Clean Air Act (CAA) requires that for areas designated "non-attainment", plans must be prepared and implemented to bring the area into attainment within a specified time.

Table 3-6: National Ambient Air Quality Standards

Pollutant	Standard Value	Standard Type
Carbon Monoxide (CO)		
8-hour average	9ppm (10mg/m^3)**	Primary
1-hour average	35ppm (40mg/m^3)**	Primary
Nitrogen Dioxide (NO_2)		
Annual arithmetic mean	0.053ppm (100µ/m^3)**	Primary and Secondary
Ozone (O_3)		
1-hour average*	0.12ppm (235µg/m^3)**	Primary and Secondary
8-hour average*	0.08ppm (157µg/m^3)**	Primary and Secondary
Lead (Pb)		
Quarterly average	1.5µg/m^3	Primary and Secondary
Particulate<10 micrometers (PM_{10})		
Annual arithmetic mean	50µg/m^3	Primary and Secondary
24-hour average	150µg/m^3	Primary and Secondary
Particulate<2.5 micrometers ($PM_{2.5}$)		
Annual arithmetic mean	15µg/m^3	Primary and Secondary
24-hour Average	65µg/m^3	Primary and Secondary
Sulfur Dioxide (SO_2)		
Annual arithmetic mean	0.03ppm (80µg/m^3)**	Primary
24-hour average	0.14ppm (365µg/m^3)**	Primary
3-hour average	0.50ppm (1300µg/m^3)**	Secondary

Source: USEPA 1995.
Legend: ppm = parts per million
mg/m^3 = milligrams per cubic meter of air
µg/m^3 = micrograms per cubic meter of air
*The ozone 1-hour standard applies only to areas that were designated non-attainment when the ozone 8-hour standard was adopted in July 1997.
**Parenthetical value is an approximate equivalent concentration.

The emissions responsible for the non-attainment designation are particulate matter less than 10 microns in diameter (PM_{10}) and sulfur dioxide (SO_2). The PM_{10} designation results from fugitive dust from unpaved roads, agricultural activities, and erosional forces of wind on agricultural land. The current State Implementation Plan (SIP), which is awaiting approval by the USEPA for attainment, indicated that 60 percent of the PM_{10} in the Douglas area originates in Mexico (ADEQ 2002).

The sulphur dioxide designation is a result of a copper smeltering plant that was dismantled in late 1987. Arizona's Department of Environmental Quality (ADEQ) has submitted an SIP to the USEPA showing reasonable further progress and has requested re-designation to attainment (ADEQ 2001).

Detailed information on air quality within the project corridor can be found in the Corridor EA (INS 2000) and the EA for JTF-6 Proposed Fence and Road Improvement Project, Naco, Cochise County, Arizona (USACE 2000). An air quality impact and conformity analysis was prepared in support of this document. The analysis report is included in Appendix D. Potential impacts identified in that report are summarized in section 4.11 of this SEA.

3.12 WATER RESOURCES

The project corridor receives water from surface runoff and groundwater via precipitation and snowmelt in the local mountains. Geologic forces have created a regional terrain that includes arroyos or washes (deep gullies), steep canyons, and somewhat flat basins. Due to the arid climate of southern Arizona, most of the drainage channels and floodplains are dry for much of the year. Rivers and streams that flow periodically due to fluctuations in precipitation are referred to as being ephemeral. The vast majority of the drainages that transect the project corridor are considered ephemeral drainages. Due to the flash flood tendency of these washes, sediment loads are high when water is present.

3.12.1 Surface Watersheds

The project corridor is located within three major surface watersheds, which influence the groundwater resources. Depicted in Figure 3-7, these watersheds include the Upper San Pedro basin, Whitewater Draw, and the Rio Yaqui.

3.12.1.1 Upper San Pedro Basin

Much of the project corridor lies within the San Pedro River Valley, which serves as a major surface water drainage influencing the project corridor. The San Pedro River, which starts in the desert grasslands of northern Sonora, Mexico, flows northward for 140 miles into the Gila River near Lineman, Arizona (USDOI 1989). The San Pedro River is the largest un-dammed river in the southwest.

The San Pedro basin is characterized by two separate basins (upper and lower). The project corridor is located within the Upper San Pedro basin. The total area encompassed by this basin is approximately 1,875 square miles (Figure 3-7).

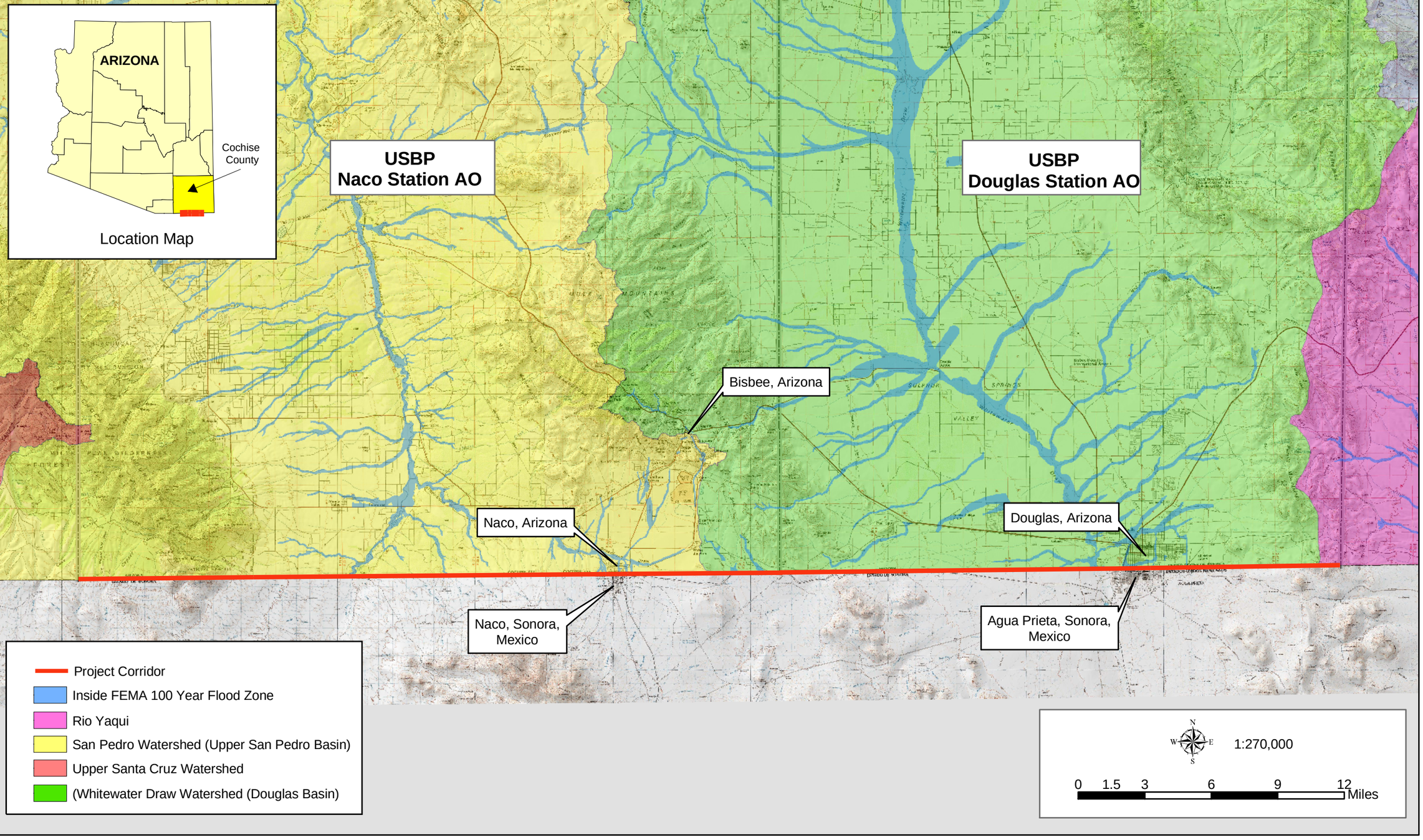

Figure 3-7: Naco/Douglas Project Corridor
Water Resources

Sources: USGS 1:100,000 Digital Raster Graphics
Water Resources from ANDWAR.
Project area data from GSRC, 2002.

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Like all sub-drainages within this basin, the San Pedro River is largely intermittent over much of its reach, meaning it flows during portions of the year (Arizona Department of Water Resources [ADWR] 2002).

Seepage studies conducted by the USGS during 1969 and 1970 indicated that the San Pedro River looses 1.7 cubic feet per second (cfs) stream flow due to infiltration to the alluvial aquifer between the U.S.-Mexico border and Palominas. The river then gains 8.5 cfs (stream flow is increased by groundwater discharge) from Palominas to Charleston, and then loses 0.4 cfs from Charleston to the mouth of the Babocomari River near Fairbank (Freethey 1982).

Groundwater supports base flow in the San Pedro River from both sides of the basin in the upper reaches (Palominas and Sonora, Mexico, etc.), but southward most of the recharge supporting base flow originates in the Mule Mountains on the east side of the basin (Pool and Coes 1999).

The gains and losses suggest that there are surface and groundwater withdrawals in the Palominas area and in Mexico, probably for mining and agricultural purposes that are influencing stream flow near the U.S.-Mexico border. The stream losses near Fairbank may reflect the large cones of depression resulting from groundwater withdraw at Fort Huachuca and Sierra Vista.

Another possible factor that may be reducing the base flow of the San Pedro is the increasing area of the entrenchment alluvium (unconsolidated soil in the upper alluvium of the stream bed). A series of large floods, perhaps beginning as early as 1881 eventually lead to the entrenchment of a channel 1.0 to 10 meters below the former floodplain. Prior to these events, the San Pedro River flowed in a shallow narrow channel in inner valley terrace deposits accumulated between A.D. 1450 and 1900. During this period the river was a relatively sluggish, low-energy fluvial system with extensive marshy reaches and a high water table (Hereford 1993).

The cause of flooding around 1890 is poorly understood but is probably related to extensive wood cutting for mine timber and fuel, the introduction of large cattle herds, and unusually heavy rainfall (Hereford 1993). The entrenchment alluvium acts as a very

large drain pipe buried just below the bottom of the channel that short-circuits surface flow downstream to the end of the entrenchment alluvium. If there was a large volume of base flow, this short-circuiting may not be important; but, when base flow is small it can be a direct cause of reduced flow and extending no-flow periods in that reach of the river and upstream. This drain pipe effect is greatest between the Town of Hereford and the Lewis Springs-Palominas areas.

3.12.1.2 Whitewater Draw

Another major surface water drainage intersecting the project corridor is Whitewater Draw (see Figure 3-7), which flows just west of Douglas and is a component of the Douglas basin. Whitewater Draw is ephemeral over most of its reach and only flows in association to local rainfall (ADWR 2002). The Douglas basin, which supplies water to the Whitewater Draw surface watershed, encompasses about 750 square miles. It is part of a northwest to southeast trough that extends from the Aravaipa Canyon to the northeastern portion of Sonora, Mexico.

3.12.1.3 Rio Yaqui

A minor part of the eastern most portion of the project corridor is the San Bernardino Valley basin, which feeds the Rio Yaqui surface watershed. Figure 3-7 depicts the major watersheds, drainages, and floodplains that influence this portion of the project corridor.

3.12.2 Groundwater Resources

Groundwater resources are available from both water table and artesian aquifer conditions. Groundwater is collected in the streambed alluvium and sediments that fill the valley areas. The basin is fed by direct rainfall and groundwater that follows faults and existing bedrock from the adjacent mountains. The direction of flow generally follows the surface flow northwesterly with the riverbed. There are two basins located within the project area, the Upper San Pedro basin and the Douglas basin. These basins are located within the Basin and Range Physiographic Province. The principal source of water for Town of Naco and the nearby Bisbee area was designated as a Sole Source Aquifer (SSA) by the USEPA on September 03, 1988 (53 CFR 38337) under Section 1424(e) of the Safe Drinking Water Act. The USEPA defines a sole or principal source aquifer as “one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative

drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water" (USEPA 2002).

The main use for groundwater in Cochise County is pumped irrigation. Other uses include public and industrial/mining. Most irrigation wells are located in the highly permeable streambed alluvium. Most industrial and domestic/public supply wells are located in the regional basin-fill aquifer (ADWR 2002).

3.12.2.1 Upper San Pedro Basin

The Upper San Pedro basin is located in southeastern Arizona. It is an intermontaine valley of about 1,875 square miles bounded on the west by the Huachuca, Whetstone, and Rincon Mountains, and on the east by the Mule, Dragoon, Little Dragoon, and Winchester Mountains (Barnes 1997). About 72 percent (1,175 square miles) lie within the U.S. mostly within Cochise County. The remaining 28 percent (700 square miles) lies within Mexico. The Upper San Pedro basin is a north-south trending trough formed by the uplift of the surrounding mountain blocks relative to the underlying valley floor. The mountain blocks are highly faulted and fractured and are composed of Precambrian to Tertiary crystalline granitic and metamorphic, volcanic, and consolidated sedimentary rock formations.

One of the largest water users in the San Pedro basin are the trees and shrubs growing in the alluvium along the San Pedro River. As part of the Semi-Arid Land-Surface-Atmosphere (SALSA) program, remote sensing was used to determine changes in habitat over a large part of the Upper San Pedro basin during the period of 1974 to 1987. It was determined that during this 13-year period, there was a 35 percent decrease in grasslands, an 11 percent increase in desert shrubs and a 50 percent increase in woodlands (Kepner et. al 1995). Reasons for this change vary; yet, it has been noted that after the 1880 entrenchment occurred, the channel of the San Pedro River widened removing grassland soils. Once the sod was broken, trees and shrubs had less competition and crowded out the grass (Todd 1959). Using field checking, Landsat satellite imagery, and multi-altitude aircraft sensors it was determined that 52 percent of the Upper San Pedro River corridor is composed of cottonwood, mesquites, and sacaton grasses. The evapotranspiration rates from these three types of vegetation communities (i.e., grasslands, desert scrub, and forested areas) were estimated to be

3.52, 33.8, and 1.86 ac-ft per day, respectively. The daily evaporative water loss for the entire riparian corridor was estimated to be 30.7 ac-ft per day. This suggests that vegetation along the San Pedro River use approximately 11,205 ac-ft/year (Qi et al 1998).

The total available groundwater in storage in the Upper San Pedro basin varies from source to source, and year to year, which is generally revised downward. The ADWR estimated that there was 56,700,000 ac-ft of water in aquifer storage (ADWR 1990). A recent Water Resources Inventory conducted for Cochise County, estimated that the total water in storage in the Upper San Pedro basin is 40,400,000 ac-ft (EEC 2002), all of which is contained within the Upper and Lower basin fill, unconfined to confined aquifer.

Recharge originates as rainfall from the two distinct rainy seasons in southeastern Arizona; a low intensity rainy season during the winter months and the summer "monsoon". Winter precipitation at Tombstone, Arizona from 1897 through 1997 averaged 3.2 inches (1 to 8 inches), and the summer wet-season precipitation averaged 9.6 inches (4 to 16 inches) (Pool and Coes 1999). Recharge occurs primarily during the winter season (Scott et. al 1998). Recharge reaches the water table and becomes groundwater flow that moves down gradient to points of discharge (pumping, stream flow, etc). In the Upper San Pedro basin, the base flow is apparently cyclic. Data observed from the U.S. Geological Survey (USGS) gage at Palominas for 1995 through 2002, suggests that the cyclic discharge trend has been on an increasing trend. While this 6 to 7 year trend represents a positive factor in increasing recharge, it only reflects a temporary change and could decrease in the future. However, it does suggest that current conditions are favorable for withdrawals from the aquifer.

Based on data provided in the Cochise County Water Resources Inventory, the average annual recharge is 29,744 ac-ft (EEC 2002). Determining an accurate total withdrawal from the system is difficult; however, an ADWR flow model suggested that during 1990 the total withdrawal (i.e., pumpage, evapotranspiration, and outflow) was 18,000 ac-ft (Corell, et.al 1996). Inflow from Mexico contributes an average of 900 ac-ft/year (ADWR, 1990). The recharge plus the inflow from Mexico equals 30,644 ac-ft (29,744 plus 900 ac-ft). These factors result in a surplus of recharge of 12,644 ac-ft/year. This

surplus is primarily the water that maintains vegetation and seasonal flow in the Upper San Pedro River. The result suggests that the Upper San Pedro basin experiences an annual surplus of approximately 1,439 ac-ft/year. It must also be noted that a significant gap in this data is the lack of available irrigation use data. Irrigation for agriculture can and most likely uses a significant amount of water. In fact, in a 1998 report prepared by the Center for Environmental Cooperation (CEC), a ground water budget for the U.S. portion of the Upper San Pedro River basin was reported at approximately 7,400 ac-ft/year deficit and a 12,670 ac-ft/year deficit was estimated by the year 2030 if conservation measures are not incorporated (CEC 1999). While data provided in this report included consumptive uses such as wells and irrigation, it must be noted that the data were intended as estimates and the actual deficit is unknown. Nevertheless, there is a consensus that the San Pedro Basin experiences an annual deficit to its recharge. Therefore, for the remainder of this SEA, a 7,400 ac-ft/yr deficit must be assumed.

There are 25 water utilities in the Upper San Pedro basin. The largest water users are associated with Fort Huachuca and Sierra Vista. Table 3-7 compares 1992 to 2000 pumpage from the major water utilities. Most of the water companies in the Upper San Pedro basin more than doubled their pumpage between the years 1992 and 2000. This was particularly true for water companies in the Fort Huachuca-Sierra Vista area. Such increases continuing into the future are undesirable when dealing with an essentially finite resource. The capture of surface water or groundwater anywhere in the basin affects the entire flow system. One desirable factor is that approximately 40% the water pumped by municipalities is put back into the system in one way or another; either by treated effluent discharged to a stream, discharged to a dedicated recharge system, put in ponds, sprayed on turf, etc.

3.12.2.2 Douglas Basin

The Douglas basin is located in the southeast corner of Cochise County and is contiguous to the east with the Upper San Pedro basin, and therefore, the two basins are closely related geologically and hydrologically. The mountains that bound the west side of the basin are the Dragoon and Mule Mountains (common watershed divide with the San Pedro basin to the west), and the Swisshelm, Pendregosa and Perilla Mountains to the east. The basin is drained by Whitewater Draw, a mostly ephemeral

Table 3-7. Water Company Pumpage and Treated Effluent in the San Pedro Basin

Company	Pumpage				Effluent
	1992		2000		2000
	(gal/yr)	(ac-ft/yr)	(gal/yr)	(ac-ft/yr)	(ac-ft/yr)
Fort Huachuca	926,982,936	**2,844.8**	600,502,478	**1,842.9**	**1,120**
Sierra Vista					**2,913**
Arizona Water Co.	579,913,200	**1,779.7**	644,743,400	**1,978.6**	
Bell Vista Water	971,086,000	**2,980.2**	1,048,444,570	**6,197.7**	
East Slope Water	63,361,000	**194.4**	82,481.820	**253.1**	
Pueblo del Sol Water	174,009,179	**534**	370,3000,000	**1,136.4**	
Naco	32,747,000	**100.5**	26,712,256	**82**	**56**
St. David	46,435,000	**142.5**	58,517,934	**179.6**	
Other 17 Water Co.'s	152,596,008	**468.3**	366,185,088	**1,123.8**	**1,073**
Total (ac-ft)		**9,044.4**		**12,794.1**	**5,162**

Source: EEC 2002

water course that flows southward and becomes the Rio de Aqua Prieta after it crosses the U.S. border into Mexico (Rascona 1993).

Groundwater is primarily available from the unconsolidated to poorly consolidated upper alluvial deposits and the aquifer is unconfined to semi-confined. Water-level measurements in 1990 ranged from 38 feet below land surface near Whitewater Draw to 399 feet at the base of the Dragoon Mountains. Large capacity wells have produced as much 1,600 gallons/minute (gpm), but most produce less than 1,000 gpm. Southward flow out of the basin is estimated to be between 1000 to 5000 ac-ft/year (Freethey and Anderson 1986). Groundwater recharge in the upper alluvium occurs mainly in washes along the mountain fronts. Very little recharge is attributable to direct rainfall on the valley floor, or from seepage in irrigated areas (Coates and Cushman 1955). Prior to development, total annual recharge to the aquifers in the basin was estimated to be about 22,000 ac-ft/year (Freethey and Anderson 1986). The current recharge to the Douglas basin is estimated to be 14,490 ac-ft/year (EEC 2002).

Water levels have declined throughout the basin since 1966. Generally, declines since 1966 are greatest in the northern part of the basin and decrease southward toward the U.S.-Mexico border. However, local declines have been noted in the area around the City of Douglas. Water-level declines at Douglas were 27 feet between 1978 and 1990 and 71 ft between 1966 and 1990. The City of Douglas has maintained a reasonably consistent amount of pumpage of about 3,000 ac-ft/year since 1966 (Rascona 1993).

A reduction in industrial pumping occurred in 1987 when copper smelting by the Phelps Dodge Corp. ceased operation. Phelps Dodge Corp. had pumped an average of 1,600 ac-ft/year since 1967 (Rascona 1993). Water level declines in the Douglas area are also probably increasing because of population growth in the nearby City of Aqua Prieta in Mexico.

About 540 square miles of the Douglas basin has been declared an "irrigation non-expansion area", in response to the area being designated the "Douglas Critical Groundwater Area" in 1965. Groundwater withdrawals in the basin have been primarily for irrigation, with additional small amounts for industrial, stock, and domestic use. Total pumpage in the basin was estimated to be about 43,000 ac-ft during 1990 (EEC 2002).

Public water supplies in the Douglas basin have generally shown a significant increase in pumpage between 1992 and 2000 (Table 3-8). Treated effluent discharged to local streams, recharged, or placed in ponds amounted to 638 ac-ft in the Douglas basin. In the Douglas basin, there is an estimated 22-million ac-ft of water in aquifer storage. According to data presented in the Cochise County Water Resources Inventory, recharge to the basin is estimated to be 14,490 ac-ft/year. Total pumpage in 1990 was estimated to be 43,000 ac-ft (ADWR 1993), plus about 2,500 ac-ft underflow to Mexico (Freethey and Anderson 1986). Therefore, these data suggest a deficit of 31,010 ac-ft/year. It must be noted again, that recent data is lacking and these statistics reflect mostly 1990 information.

Table 3-8. Water Company Pumpage and Treated Effluent in the Douglas Basin

Company	Pumpage			
	1992		2000	
	(gal/yr)	(ac-ft/yr)	(gal/yr)	(ac-ft/yr)
Clear Springs Utility	40,722,000	**125**	43,136,160	**132.4**
Coronado Estates	9,976,000	**30.62**	19,715,070	**60.50**
Naco	32,747,000	**100.5**	26,712,256	**82**
Elfrida Domestic Water Users Assoc.	15,664,000	**48.07**	38,050,493	**166.77**
Monte Vista Water	2,923,000	**8.97**	3,888,770	**11.93**
MWC	1,568,000	**4.81**	1,695,050	**5.20**
Total (ac-ft)		**217.5**		**326.8**

Source: EEC 2002

3.12.3 Floodplains, Waters of the U.S., and Wetlands

The project corridor is intersected by existing floodplains. These areas are either associated with the main channel of the San Pedro River or one of its tributaries and Whitewater Draw. Floodplains are low-lying areas adjacent to or within major watersheds that serve to contain excess water during rainfall events. Their limits are based on the amount of water that they can be stored during historic rainfall events. The 100-year flood is generally the standard utilized in management of these areas. This boundary is based on the elevation in which there is a one percent chance that floodwater would reach a designated limit during a rainfall event. Many factors may affect floodplain capacities. An example would be increased urban development that fills in floodplains and forces water into other areas. They can also be altered by excessive erosion into the floodplain. The Federal Emergency Management Agency (FEMA) is responsible for regulating these areas. Under 44 CFR 9, FEMA acts through local municipalities to avoid long- and short-term adverse impacts associated with the occupancy and modification of floodplains and the destruction and modification of wetlands.

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987).

Section 404 of the Clean Water Act (CWA) of 1977 (P.L. 95-217) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into Waters of the U.S., including wetlands. Waters of the U.S. (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters including interstate wetlands. Waters of the U.S. are further defined and may include waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas. Jurisdictional boundaries for Waters of the U.S. are defined in the field as the Ordinary High Water Marks (OHWM) which is that line on the shore established by the fluctuations of water and indicated by physical characteristics such as

clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

The Supreme Court ruling in the Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers case ("SWANCC", Case No. 99-1178) on January 9, 2001 restricted the Environmental Protection Agency and USACE's regulatory authority over waters of the U.S. under the Clean Water Act. The Court ruled that 33 CFR Section 328.3(a)(3) (1999) pursuant to the "migratory bird rule," 51 *Federal Register* 41217 (1986), exceeds the authority granted to these agencies under Section 404 of the CWA. Waters that could affect interstate commerce solely by virtue of their use as habitat by migratory birds are no longer considered "Waters of the U.S." under SWANCC. The ruling mainly affects those areas defined as Waters of the U.S. in 33 CFR Section 328.3(a)(3) (1999). Areas that are, or potentially are affected by SWANCC include: intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs prairie potholes, wet meadows, playa lakes, or natural ponds.

Past investigations have stated that there are no identified jurisdictional wetlands found within the project corridor (USACE 2000); however, recent in-depth surveys revealed that several washes and draws, including the San Pedro River, that occur within the project corridor could be considered jurisdictional Waters of the U.S. In fact, preliminary engineering estimations identify 60 low water crossings that may be required to accomplish construction of either of the action alternatives. Many of these areas have the potential to be inundated during rainfall periods and some have the ability to support wetland vegetation. During the April 2002 survey, approximately 8.3 acres of potential jurisdictional wetlands and 28.8 acres of unvegetated potential Waters of the U.S. were identified in the project corridor.

3.13 SOCIOECONOMICS

3.13.1 Population

The 2000 census estimated the population of Cochise County to be 117,755 (U.S. Census Bureau 2001). This is an increase of 15 percent over the revised 1990 census population of 97,624. Naco, Arizona (833) is the only community located in the Naco

Station's AO and within the vicinity of the project corridor. Douglas, Arizona (14,312) is the only major community located in the Douglas Station's AO and within the vicinity of the project corridor.

The racial diversity of the Cochise County comprised mainly of Caucasians (76%) and African-Americans (4.5%). The remaining 19.5% is split among Asian and Pacific Islanders, Native Americans and other races. Less than half of the total population (30%) claim to be of Hispanic or Latino race. This has changed slightly from the 1990 racial mix mainly comprised of Caucasians (82%) and African-Americans (5%) with the remaining 13% split among Asian and Pacific Islanders, Native Americans, and other races (U.S. Bureau of the Census 2001). Similarly, the Town of Naco is mainly comprised of Caucasians (63%) and African-Americans (0.5%). The remaining 36.5% claims some other race, with a small portion split among Asian and Pacific Islanders and Native Americans.

3.13.2 Employment and Income

The total number of jobs within Cochise County was 50,041 in 2000. This is a 19% increase over the 1990 total number of jobs of 40,633 (BEA 2002). The annual average unemployment rate for Cochise County was 4.6% in 2001 and 10.7% in 1994. This decrease is similar to the average unemployment rate in 2001 for the State of Arizona, which was 4.7%. When compared to a steady statewide unemployment rate of 5.6% in 1994, data suggests that Cochise County has seen a significant drop in the unemployment rate since the early 1990s (Arizona Department of Economic Security 2002).

In 2000 Cochise County had a total personal income (TPI) of $2.3 billion, which ranked 8th in the state and accounted for 1.8% of the state total (BEARFACTS 2002). In 1990, the TPI for Cochise County was $1.3 billion and ranked 7th in the state. The average annual growth rate for TPI over the past 10 years was 3.2%, which was lower than both the average annual growth rates for the state, 3.8%, and the nation, 4.2%. Per Capita Personal Income (PCPI) for Cochise County was $19,153 in 2000 (BEARFACTS 2002). This PCPI ranked 6th in the state, and was 77% of the state average of $24,988 and 65% of the national average of $29,469. In 1990 the PCPI of Cochise County was $14,015 and ranked 7th in the state. The average annual growth rate for PCPI over the

past 10 years was 3.2%, which was lower than both the average annual growth rates for the state, 3.8%, and the nation, 4.2%. The median household income, 1997 model-based estimate, for Cochise County is $29,295. This is lower than the median household income for the State of Arizona of $34,751. An estimated 23,611 people of all ages within Cochise County live below the poverty level (based on the 1997 model). This accounts for 21.7% of the population of Cochise County, which is greater than the 15.5% of people of all ages in poverty for the state (U.S. Census Bureau 2002).

3.13.3 Housing

The total number of housing units in Cochise County was 51,126 in 2000, representing roughly 2.31% of the total housing units reported for the State of Arizona (U.S. Census Bureau 2002). Of the housing units within Cochise County, 43,893 (86%) are occupied and the remaining 7,233 (14%) are vacant (U.S. Census Bureau 2002). Density of housing units within Cochise County is 8.3 units per square mile.

According to the Arizona Housing Commission, Cochise County has experienced a 2.6% growth rate in the Town of Naco, there are 298 housing units, which represent less than one percent of the total housing units for Cochise County. Of these, 260 (87.2%) are occupied and 38 (12.8%) are vacant. While, in the City of Douglas, 5,186 housing units represent 10% of the total housing units for Cochise County. Of these, 4,526 (87.3%) are occupied and 660 (12.7%) are vacant. The report, *The State of Housing in Arizona*, produced by the Arizona Housing Commission in 2000 states that Arizona is currently going through a housing crisis where housing prices are rising twice as fast as income statewide. This is of particular importance to low income and minority households. For both minority and non-minority households, the incidence of housing problems increases dramatically as income levels decrease. Since the percent of minority households that are low income far exceeds the proportionate number in the general population,

Households with Housing Problems Reported in *The State of Housing In Arizona*

- Persons and families living in units with physical defects (lacking complete kitchen or bath)
- Persons or families living in overcrowded conditions (greater than one person/room)
- Persons and families cost burdened (paying more than 30% of income for housing including utilities)

Source: Arizona Housing Commission 2000

minorities suffer disproportionately in terms of their basic need for adequate and affordable shelter. This is particularly alarming considering the growth rate of minority populations in Arizona (Arizona Housing Commission, 2000). It is estimated that 19% of the households within Cochise County have a housing problem.

3.14 NOISE

There are three common classifications of noise:

- General audible noise that is heard by humans;
- Special noise, such as sonic booms and explosions that can have a sound pressure or shock component;
- Noise-induced vibration typically caused by sonic booms and artillery blasts involving noise levels that can cause physical movement (i.e., vibration) and even possible damage to natural and man-made structures such as buildings and cultural resource structures.

Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as a sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB. Because of the logarithmic nature of the decibel scale, sound levels do not add and subtract directly. If a sound's intensity is doubled, the sound level generally increases by 3 dB, regardless of the initial sound level. For instance:

60.0 dB + 60.0 dB = 63 dB and 80.0 dB + 80.0 dB = 83 dB

The total sound level produced by two sounds of different levels is usually only slightly more than the higher of the two. For example:

60.0 dB + 70.0 dB = 70.4 dB

Generally, the human ear can hear frequencies from about 20 (Hertz) Hz to about 20,000 Hz. It is most sensitive to sounds in the 1,000 to 4,000 Hz ranges. When measuring community response to noise, it is common to adjust the frequency content of the measured sound to correspond to the frequency sensitivity of the human ear. This adjustment is called A-weighting (American National Standards Institute [ANSI] 1988). Sound levels that have been adjusted are referred to an A-weighted sound levels. The amplitude of A-weighted sound levels is measured in dB. It is common to denote the unit of A-weighted sounds by dBA or dB(A). The A-scale de-emphasizes the low and

high frequency portions of the sound spectrum and provides a good approximation of the response of the average human ear. On the A-scale, 0 dBA represents the average least perceptible sound, such as gentle breathing, and 140 dBA represents the intensity at which the eardrum may rupture, such as a jet engine at open throttle (National Research Council 1977).

Figure 3-8 is a chart of A-weighted sound levels of typical sounds. Some are continuous sounds (e.g., air conditioner, vacuum cleaner) whose levels are constant for some time. Some are the maximum sound during a vehicle passby (e.g., automobile, heavy truck). Some are averages over some extended period (e.g., urban daytime, urban nighttime). Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the USEPA (1972) and has been adopted by most Federal agencies (Federal Interagency Committee on Noise [FICON] 1992).

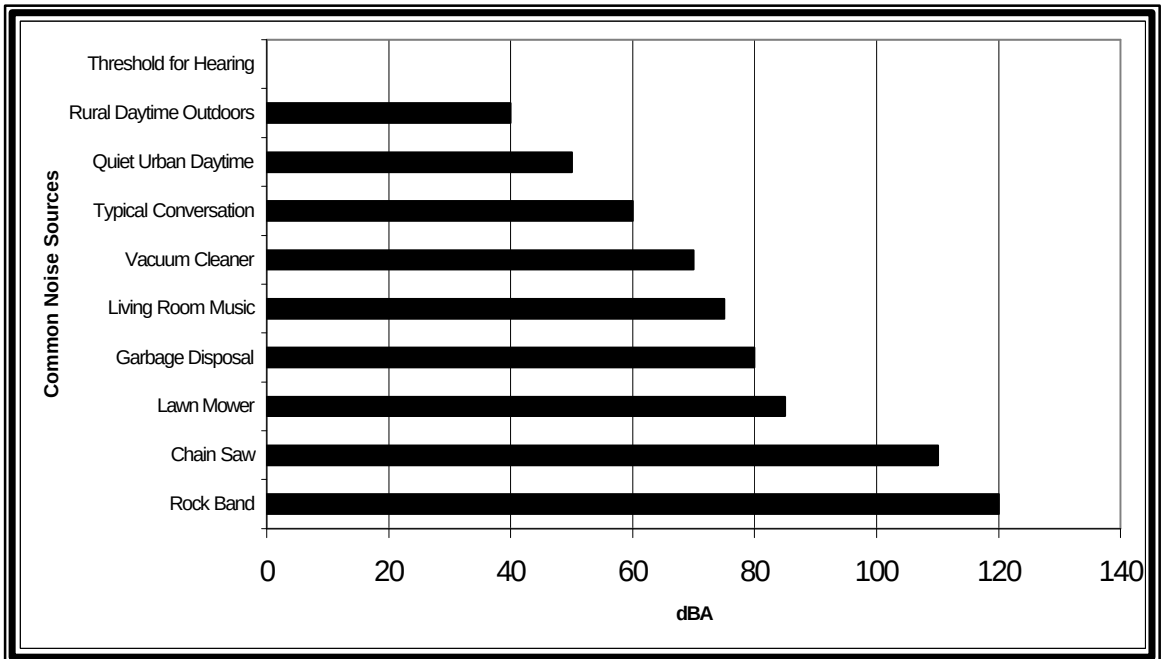

Figure 3-8. Typical Sound Levels of Common Noise Sources

A DNL of 65 dB is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction, which do cause noise. Areas exposed to DNL above 65 dB are generally

not considered suitable for residential use. A DNL of 55 dB was identified by the USEPA as a level below, which, there is effectively no adverse impact (USEPA 1972).

Of the three common classifications of noise, special noises such as explosion is not likely to occur during construction. However, this is dependent on whether or not soils can be moved with conventional equipment. The short-term effects associated with the DNL noise levels would be expected to be greater than 60 dBA and would be associated with the general area that construction activities would be taking place at a particular moment. Because infrastructure construction would move as construction activities are completed, peak DNL noise levels would not be centralized for an extended period of time.

Long-term effects associated with the DNL noise levels in rural areas of the project corridor are likely to range from a low of 35 dBA over the majority of the corridor to a high of less than 60 dBA. Near the Town of Naco, DNL could peak to greater than 60 dBA resulting from the accumulation of associated noise levels such as traffic noise associated with the urban area.

3.15 SOLID AND HAZARDOUS WASTE

The USEPA in 1996 listed approximately 15,000 uncontrolled hazardous waste sites in the U.S. The majority of the uncontrolled hazardous waste sites are waste storage/treatment facilities or former industrial manufacturing sites. The chemical contaminants released into the environment (air, soil or groundwater) from uncontrolled waste sites may include heavy metals, organics, solvents and other chemicals. The potential adverse human health impact of hazardous waste sites is a considerable source of concern to the general public as well as government agencies and health professionals.

Within the Naco-Douglas corridor Phelps Dodge Corporation owns and maintains a slag stockpile generated during previous copper smelting operations that ceased in 1987. In December 1999, Phelps Dodge Corporation acquired Cyprus Amax Minerals' Operations in Arizona making Phelps Dodge Corporation the second largest copper company in the world along with being the world's largest producer of SX-EW cathode copper. In support of the ongoing Whitewater Draw project (INS 2001d) a soil analysis was conducted in the

immediate vicinity of Whitewater Draw and proposed construction alignments (Kleinfelder 2002). The analysis concluded that arsenic and lead were detected in all seven of the samples taken. However, concentrations were below Arizona Department of Health Services soil remediation levels (SRLs) for non-residential in accordance with ADEQ requirement for remediation of heavy metals under the Arizona Administrative Code (AAC Title 18, Chapter 7, Appendix A). Since it was concluded that lead and arsenic concentrations were below regulatory limits in surface soils of the whitewater Draw Area, it was recommended that remedial action were not warranted at this time.

Outside the Phelps Dodge Corporation land, there are no known or suspected areas of toxic and/or hazardous material contamination within the proposed project corridor. However, due to the evidence of illegal and uncontrolled dumping in several areas of the corridor, it is possible that potentially hazardous wastes may have been dumped.

Section 4.0
ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

This section of the SEA addresses potential impacts to the affected environment within the project corridor for all three alternatives outlined in Section 2 of this document: the No Action Alternative, the Preferred Alternative and the Full Build Out Alternative. An impact (consequence or effect) is defined as a modification to the human or natural environment that would result from the implementation of an action. The impacts can be either beneficial or adverse, and can be either directly related to the action or indirectly caused by the action. The effects can be temporary (short-term), long lasting (long-term) or permanent. For purposes of this SEA, temporary effects are defined as those that would last up for the duration of the construction period. Long-term impacts are defined as those that would last five or more years upon completion of construction.

Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. The significance of the impacts presented in this SEA is based upon existing regulatory standards, scientific and environmental knowledge and/or best professional opinions. The significance of the impacts on each resource will be described as either significant, moderate, minor (minimal) insignificant or no impact. Significant impacts are those effects that would result in substantial changes to the environment (as defined by 40 CFR 1500-1508) and should receive the greatest attention in the decision-making process. The following discussions describe and, where possible, quantify the potential effects of each viable alternative on the resources within or near the project corridor.

While the entire project corridor across the Naco and Douglas Stations' AOs is 57 miles, the alternatives only entail activities across 49 miles of project corridor due to avoidance of the Coronado National memorial and Coronado National Forest. The USBP acknowledges the fact that all lands contained between fences and roadways, as well as illuminated areas would eventually be used, thus, being disturbed either directly (i.e., removal as habitat) or indirectly (i.e., impacts associated with surrounding infrastructure). Therefore, individual footprint impacts are not recognized as a total amount of impacted area alone. Table 4-1 provides a summary of the alternative and the acreage that would be impacted as a result of incorporating the proposed infrastructure components.

Table 4-1. Approximate Impacts from Infrastructure Component Systems to the Natural Environment for Each Alternative

Infrastructure Components	Calculated Area (Approximate)	Acres Impacted
No Action Alternative		
Primary Fence Projects Primary fence (pedestrian and vehicle)	2 feet by 13 miles (10 feet added for maintenance roads)	21
Roadway Projects All-weather patrol road upgrade and construction from original 8 foot wide road (25 miles in Douglas and 4 miles in Naco, including drainage structures)	20-24 feet by 29 miles	99
Lighting Projects Permanent lights installation	25 ft^2 every 225 feet by 16.5 miles	0.01
No Action Alternative Impact Total		**120**
Preferred Alternative		
60-foot secondary fence areas along the U.S.-Mexico border (inclusive of roads, drainages structures, fences and lighting)	60 feet by 11 miles	80
270-foot secondary fence areas along the U.S.-Mexico border inclusive of roads, drainages structures, fences and lighting) and all-weather maintenance road north of proposed secondary fence 270-foot secondary fence areas	300 feet by 7 miles	255
Areas with primary fencing (pedestrian and vehicle barriers) and all-weather surface upgrades to existing patrol roads widened from original width to 38 feet (28 feet for the surface and an additional 10 feet for slope and grade)	40 feet by 28 miles (10 feet added for maintenance roads)	191
Areas with all-weather surface upgrades to existing patrol roads	28 feet by 3 miles	16
Preferred Alternative Impact Total		**542**
Full Build Out Alternative		
60-foot secondary fence areas along the U.S.-Mexico Border (inclusive of roads, drainages structures, fences and lighting)	60 feet by 11 miles	16
270-foot secondary fence areas along the U.S.-Mexico border inclusive of roads, drainages structures, fences and lighting)	300 feet by 46.8 miles	1,543
All-weather maintenance road north of proposed 270-foot secondary fence area	30 feet by 46.8 miles	171
Full Build Out Alternative Impact Total		**1,730**

All data compiled from approximate totals provided in Section 2.0. Calculations based on actual impact alignments derived from GAP data and aerial photography
Table reflects only disturbance of construction alignments

Impacts vary depending on the alignments of infrastructure components and the presence of disturbed areas. Table 4-2 provides a summary of the total area directly impacted by each alternative and the amount of land that is currently disturbed.

4.1 LAND USE

4.1.1 No Action Alternative

Implementation of the No Action Alternative would affect 120 acres of the current land uses within the project corridor. However, as indicated in Table 4-2, 96 acres have been previously disturbed and most of this is currently used as border enforcement. Past and ongoing projects identified in the Corridor EA include road improvement, fence construction, and the light installation. All of these projects are proposed to be installed within the 60-foot Roosevelt Easement or within extant road Right of Ways (ROW).

Table 4-2. Acres of Impacts to Disturbed and Undisturbed Areas

INFRASTRUCTURE DESCRIPTION	AREA IMPACTED (Acres)
No Action	
Undisturbed	24
Disturbed Areas	96
No Action Impacts	**120**
Preferred Alternative	
Undisturbed	420
Disturbed Areas	140
Preferred Alternative Impacts	**542**
Full Build Out Alternative	
Undisturbed	1,486
Disturbed Areas	-244
Full Build Out Alternative Impacts	**1,730**

4.1.2 Preferred Alternative

Upon completion of the project under the Preferred Alternative, approximately 542 acres within the project corridor would be permanently changed from its current land use of rangeland, open space, and growth area to a restricted access area for border enforcement. Additionally, direct recreational land use impacts would occur to approximately 13 acres of the San Pedro Riparian NCA. It should be noted, however, that the majority of this area is currently used by USBP while conducting their enforcement activities.

Approximately 4.3 acres of land east of the Naco POE is designated by the Town of Naco as recreational open space, and another 2.9 acres west of the Naco POE are

designated as rural growth areas. In the City of Douglas, another 8.7 acres are designated as urban growth area. However, all of these areas exist entirely within the 60-foot Roosevelt Easement and are under Federal jurisdiction. Given this, these municipal land use designations are erroneous since construction is already restricted and utilized for enforcement operations. Therefore, in these areas, land use impacts would amount to approximately 24 acres, since this area is currently controlled by the USBP.

Construction of infrastructure components would also provide substantial indirect positive impacts to areas north of the project corridor. In much of the remote areas of the project region, residential and commercial properties, as well as livestock grazing activities have been subject to disruptive UDA-linked activities, such as fence cutting, water supply damage, and theft (INS 2002d). Implementation of an enforcement control system such as this would enhance USBP response time which would deter illegal crossings. Ultimately disruptive activities such as these would substantially decrease.

4.1.3 Full Build Out Alternative

The Full Build Out Alternative would result in the conversion of the entire area (1,730 acres) into a restricted access area for border control. Since secondary fencing would restrict access approximately 98 acres (inclusive of the 1,730 acres) of allotted grazing land leased by BLM to two private ranches along the border would be impacted. Although not significant to the region in the acres of recreational areas within Cochise County, this alternative would result in direct impacts and conversion of approximately 64 acres (0.11%) of the more than 58,000 acres that make up the San Pedro Riparian NCA. Conversion of these areas to restricted areas would result in direct impacts that would reduce public access of recreational land in the project region. Similar to the Preferred Alternative, no land use impacts would occur in urbanized areas under the Full Build Out Alternative.

Construction of infrastructure components would also provide substantial indirect positive impacts to areas north of the project corridor. In much of the remote areas of the project corridor, residential and commercial properties, as well as livestock grazing activities have been subject to disruptive UDA linked activities, such as fence cutting,

water supply damage, and theft (INS 2002d). Implementation of a completely enforceable system would provide the best available defense against these activities.

4.2 AESTHETIC AND VISUAL RESOURCES

4.2.1 No Action Alternative

Completion of the No Action Alternative would result in approximately 11 miles of additional illumination impacts that could be visible across the night skies. Yet, illuminated areas would remain in and near the more urban areas, thus avoiding direct impacts to recreational or conservation areas that occur in rural areas within the project corridor. Other impacts would result from construction of 17-foot high fences. These fences would break up the visual appeal of the landscape surrounding the U.S.-Mexico border. On the other hand, the continued influx (and possible increase) of UDA and smuggler traffic through the natural landscapes within the project corridor would continue to degrade the aesthetic values due to the creation of footpaths, illegal roads, wildfires, and litter. Furthermore, impacts related to trash cleanup incurred by land managers such as those estimated by the USFS (1.0 to 1.3 million pounds in FY 2002) in the Coronado National forest would continue.

4.2.2 Preferred Alternative

Illumination impacts would be limited to 18 miles in the project corridor. Furthermore, permanent lighting would not occur in recreational or conservation areas (i.e., San Pedro Riparian NCA). Currently an existing patrol road exists through the San Pedro Riparian NCA as well as through the river itself. Increased visual impacts resulting from construction activities would be temporary during the period of construction. Upon completion of patrol road upgrades visual resources would return to pre-existing conditions. Vehicle barriers would result in only minor increased visual impacts since these structures are transparent and low in profile. Furthermore, there would be no new construction of roadways, the existing patrol road that travels through the San Pedro NCA would be upgraded and effective low water crossings would be installed in the river. Minor temporary impacts to scenic values of this portion of the NCA would occur due to construction activities, yet would return to pre-construction levels upon completion of construction. The Class II VRM designation in which the Project corridor crosses in the NCA indicates that activities may be seen, but should not attract attention to the

casual observer. Therefore, the aesthetic values of recreational or conservation areas would remain within the BLM's Class II management objective and any impacts by this alternative would be minor.

Beneficial indirect impacts associated with reducing UDA traffic, and concomitant adverse effects would occur to the aesthetic value of the project corridor and the surrounding region. The implementation of this alternative would also result in long-term beneficial impacts by limiting and possibly eliminating UDA activities in protected areas to the north of the project corridor. Human induced fire, excessive amounts of litter, and illegal roads would be decreased, thus improving the scenic qualities of areas north of the project corridor. The amount of trash required to remove up by land managers such as USFS would be reduced. Thereby freeing up available budget's and manpower for enhancement rather than cleanup.

4.2.3 Full Build Out Alternative

Direct impacts created by this alternative would be similar in type to that of the Preferred Alternative; however, the magnitude would greatly increase. The Full Build Out Alternative would create direct adverse impacts to the aesthetic and visual resources within the project corridor, especially within the San Pedro Riparian NCA. Proposed fences, lighting, and roadways across 49 miles of the project corridor would be visible across the immediate area at all hours. The fences would only be visible in the immediate area unless the observer is located at much higher elevations (e.g., Huachuca Mountains, Montezuma Pass). Otherwise, the undulating terrain and desert vegetation would impede sight of the infrastructure. Conversely, permanent lighting would degrade the tranquil, dark skies for which southeastern Arizona is so well known. However, proper illumination shielding would minimize light trespass outside the corridor and would minimize costs associated with trash cleanup. Incorporation of this alternative would require close coordination with BLM since it would significantly conflict with the current VRM Class II designation for the riparian areas of the San Pedro River.

4.3 TRANSPORTATION

4.3.1 No Action Alternative

Implementation of the No Action Alternative would have only minor impacts to the area's transportation system. As discussed in Section 3.3, the only primary transportation routes intersect the project corridor at the Naco and Douglas POE's. These routes are currently controlled by a manned inspection station. Indirect impacts would result in continued increases in illegal vehicles. Furthermore, once the primary fence is breached there would be no obstacle or barrier (e.g., a secondary fence) to hinder the illegal entrants' northward movement use of major transportation routes by the Naco and Douglas stations' AOs. Thus, this alternative would ultimately require increases in USBP manpower to man and maintain current or additional checkpoints.

4.3.2 Preferred Alternative

Since there are only 2 legal access points across the project corridor and they are located at controlled POE's, no adverse impacts associated with traffic congestion or alteration would be anticipated upon completion of this alternative. Traffic congestion on U.S. Hwy 80 between the City of Douglas and the Towns on Naco and Bisbee would result in only minor increases during the period of construction to accommodate transportation of fill materials to construction sites.

Existing USBP patrol roads and a limited amount of access roads would be used to the maximum extent during construction activities to reduce or eliminate effects to public transportation routes. The magnitude of the indirect beneficial impacts would be decreased since this alternative would not be fully effective in deterring illegal UDA foot traffic.

4.3.3 Full Build Out Alternative

Impacts associated with this alternative are similar in nature to the Preferred Alternative. Similar minor and temporary traffic congestion impacts on nearby U.S. Hwy 80 between the City of Douglas and the Towns on Naco and Bisbee associated with transportation of fill material would result during the period of construction. However, the duration of these impacts would exist for a longer period since this alternative would take longer to complete. Indirect impacts would likely be beneficial to the region's transportation

system by reducing or eliminating illegal vehicles using public roads and highways during their attempts to escape. No rail or air service would be affected by this alternative. Once infrastructure is complete, USBP vehicles would be primarily contained within the enforcement corridor, except during shift change, emergencies, or other administrative duties.

4.4 GEOLOGY, SOILS, AND PRIME FARMLAND

4.4.1 No Action Alternative

Implementation of the No Action Alternative would limit direct disturbances to soils to 120 acres. Most of these soils (approximately 96 acres) have been previously disturbed. Since construction activities would occur along existing alignments, only 24 acres of undisturbed soils would be impacted. Furthermore, since only a small amount of new construction would occur, extant erosion problems (especially in the Naco Station AO, where only a limited amount of all-weather road surfaces would be constructed), would continue. USBP agents would continue to use the roads in their existing degraded conditions for patrol activities and only minimal drainage improvements would be implemented to control erosion. Soils found within the project corridor have a high silt content and pose slight to medium erosion hazards, depending on the slope. Implementation of the No Action Alternative would likely result in increased indirect negative effects, as the current roads become even more degraded and UDA/smuggler operatives gain knowledge that apprehension is affected by these poor road conditions. Furthermore, the illegal entrants would continue to create new footpaths and vehicle routes.

4.4.2 Preferred Alternative

All construction under this alternative would occur within the 300-foot project survey corridor and in close proximity to the border where soils have largely been disturbed by previous urban development, ranching, off-road enthusiasts, illegal foot and vehicle traffic, or prior USBP activities. Implementation of the Preferred Alternative would require direct disturbance of approximately 420 acres of previously undisturbed soils. The soils impacted in the project corridor would be within the Libby-Gulch Complex, Eloma-Caralampi-White House Complex, Blakeney-Luckyhills Complex, Sutherland-Mule Complex, Guest-Riveroad Association, and Tenneco Fine Sandy Loam (Table 4-3).

These soils account for 60% of the soils found within this corridor and have a relatively high sand and silt content which present erosion hazards of slight to medium depending on the slope. Therefore, construction activities on areas with high slopes must consider the potential for increased erosion. A Stormwater Pollution Prevention Plan (SWPPP) would be required for the entire project corridor prior to any of the construction activities proposed under this alternative. Best Management Practices identified in the SWPPP would be implemented to reduce erosion and sedimentation processes.

Table 4-3. Summary of Direct Impacts to Soils

Soil	Action Alternatives		
	No Action	**Preferred**	**Full Build Out**
Altar-Mallet Complex	0.02	0.4	2.7
Blakeney-Luckyhills Complex	16.7	56.1	202.3
Brookline-Fluvaqents-Riverwash Complex	0.02	2.6	2.4
Brunkcow-Chiricauhua-Andrada Complex	10	12.3	74.1
Courtland-Diaspar	0.36	9.6	55.8
Courtland-Sasabe-Diaspar Complex	0.02	5.6	2.8
Eloma Sandy Loam	2.5	3.2	18.5
Eloma-Caralampi-White House Complex	4.3	84.2	191.6
Gardencan-Lanque Complex		16.6	96.2
Guest-Riveroad Association	20.3	33.2	174.8
Kahn Complex	15	20.2	20.6
Libby-Gulch Complex	12.7	95.6	195.9
Luckyhills Complex-Mcneal Complex	14.8	3.6	17.8
Mabray-Chiricahua Rock Outcrop	2.7	15.2	79.9
Mabray-Rock Outcrop Complex	4.6	20	55.8
Nolam-Libby_Buntline Complex		19.6	150.4
Pits-Dump Complex		0	6
Riveroad and Ubik Soils	8.3	24.5	114.9
Riverwash-Bodecker Complex	0.4	0.5	4.9
Sasabe Complex		4	21.4
Sutherland-Mule Complex	7	46.1	135
Tenneco Fine Sandy Loam		38.2	59.4
Ubik Complex	0.05	1.5	8.5
White House Complex	0.3	30	38.4
TOTAL	**120 acres**	**542 acres**	**1730 acres**

Approximately 5 acres of prime farmland (Tenneco and Ubik) would be directly impacted by the implementation of this alternative. However, because these areas are not irrigated or currently used for agricultural production, impacts would not be significant since these areas would only be considered prime farmland if properly irrigated.

4.4.3 Full Build Out Alternative

Implementation of the Full Build Out Alternative would require approximately 1,730 acres of soils disturbance. Soils within the Blakeney-Luckyhills Complex, Libby-Gulch Complex, Eloma-Caralampi-White House Complex, Guest-Riveroad Association, and Nolam-Libby-Buntline Complex are the most impacted and account for approximately 60% of the potential soil impacts in the entire project corridor.

All of these soils have relatively high sand and silt content, which present erosion hazards of slight to medium depending on the slope. Of the 1,730 acres directly impacted, approximately 244 total acres have been previously disturbed. Therefore, only 1,486 acres of soils in a natural state would require disturbance under the Full Build Out Alternative.

As discussed in Section 3.4, approximately 13 acres of potential prime farmland would be directly impacted (see Figure 3-4). However, these soils are considered prime farmland only if properly irrigated. Furthermore, they are generally located within washes that are either not suitable for agriculture due to topography and flash floods or within the San Pedro Riparian NCA where they are preserved for habitat conservation. None of these soils are currently in agricultural crop production within the project corridor.

4.5 VEGETATION

4.5.1 No Action Alternative

Upon completion of the No Action Alternative, the majority of the remaining infrastructure projects would occur mostly within previously disturbed areas; thus, insignificant direct impacts (i.e. 24 acres) to vegetation associated with the construction corridor would occur. As documented in Section 1.2, vegetative communities within the project corridor would indirectly experience continued degradation by illegal foot traffic, increased

erosion, and dust from USBP and other vehicle traffic (INS 2002). Therefore, by increasing the control along the U.S.-Mexico border and limiting illegal foot traffic north of the project corridor, indirect beneficial impacts would occur. Illumination could affect photosynthesis but shields would serve to limit unwanted lighting.

4.5.2 Preferred Alternative

By implementing this alternative, a total of 420 acres of undisturbed vegetation would be permanently altered. Table 4-4 shows that the greatest effects would occur to the semi-desert grassland scrub community and the Chihuahuan scrub vegetation community. It should be noted that approximately 1.6 acres of interior riparian forest would be removed as well. This area consists primarily of mature cottonwoods and willows and is limited to the stream banks of the San Pedro River.

Indirect impacts would occur to the area between the upgraded or improved road surface and the proposed primary fence from illegal traffic and consequent enforcement actions. Due to the proximity of proposed infrastructure, this narrow strip is comprised mostly of semi-desert grassland scrub community that would likely undergo periodic degradation from USBP activities. Indirect benefits to vegetation communities north of the project corridor would occur by reducing or eliminating illegal traffic, brush clearing, burning, and trampling of sensitive resources. However, the extent of these beneficial impacts would depend on the USBP's ability to control UDA traffic in close proximity to the border.

Table 4-4. Summary of Direct and Indirect Impacts by Vegetation Community

Alternative	Vegetation Community Type (Acres)					Other Area "Non Vegetative"		Total
	SDGS	IRF	IC	CS	RS	WUS	DSTB	
No Action	11.3	0	0.74	10.4	1	0.4	96.2	**120**
Preferred Total	198.2	1.6	1.5	147.5	41.1	12.2	140	**542**
Full Build Out Total	738.9	1.78	18.5	579.1	116.9	30.65	244.5	**1730**

Legend
SDGS – Semi-Desert Grassland Scrub
IRF – Interior Riparian Forest
IC – Interior Chaparal
CS – Chihuahuan Scrub
RS – Riparian Scrub
WUS – Waters of the U.S.
DSTB – Previously Disturbed

As mentioned previously, the USBP cannot control or monitor the south side of the primary fence. In fact, with enough time and the monetary incentives to enter the U.S., the UDAs and smugglers would eventually breach the primary fence. The improved roads and ISIS components would facilitate detection and apprehension; but, without a secondary fence to impede their northward migration, the UDAs and smugglers would have a temporal advantage over the USBP. Therefore, it is certain that some persons would be successful in their attempts to illegally enter the U.S. and illegal traffic would continue to create long-term direct impacts to vegetation from trampling, burning, and cutting.

Conversely, vegetation communities on the western or eastern edges of the project corridor would potentially be indirectly impacted if the illegal traffickers shift their activities to areas without barriers. Quantification of those impacts is impossible because the routes, amount of traffic, and nature of these activities conducted by UDAs and smugglers is solely based upon their discretion and is beyond the control of the USBP. The amount of impacts associated with this possible shift in traffic patterns cannot be calculated at this time due to the unpredictable nature of UDA and smuggler activity.

Indirect effects to adjacent vegetation communities would occur during the construction of the infrastructure due to fugitive dust settling on leaves. The magnitude of this effect would depend upon several biotic and abiotic variables including the speed and type of construction vehicles, climatic conditions, success of wetting measures during construction, and general health of the vegetation communities.

Upon completion, the USBP operations would be expected to generate less fugitive dust that would potentially settle on adjacent vegetative communities since the roads would be surfaced and less traffic would be expected.

No illumination impacts are expected to vegetation communities outside the secondary fences and/or All-weather maintenance roadways since design measures would be implemented to ensure that no or negligible illumination trespass occurs. In order to eliminate concealment opportunities, only maintained grasses would be allowed to remain within the project corridor.

4.5.3 Full Build Out Alternative

With the implementation of the Full Build Out Alternative, the 49-mile portion of the affected project corridor would be cleared of vegetation entirely, thus directly impacting vegetative communities in the project corridor. Of the 1,730 acres contained within the 300-foot corridor, about 1,486 acres are currently in biological production and thus would experience direct and permanent impacts. The remaining 244 acres are currently classified as either disturbed or developed; therefore, no impacts would be expected to vegetative communities within these areas. The semi-desert grassland-scrub community would be impacted the greatest while the interior riparian forest would be least affected. Based upon GAP data (National Biological Survey 1993), these losses would represent less than one percent of the respective vegetation communities present within Cochise County (Table 4-4).

4.6 WILDLIFE

4.6.1 No Action Alternative

Under the No Action Alternative, about 24 acres of possible wildlife habitat would be impacted. The majority of the land (96 acres) that would be impacted by these remaining projects, has been previously disturbed. Nevertheless, since only a minimal amount of new infrastructure would be constructed, the continuation (and the possible increase) of illegal foot and vehicle traffic would continue to impact wildlife populations and habitat within the project corridor as well as surrounding areas.

4.6.2 Preferred Alternative

Implementation of the Preferred Alternative would result in the direct loss of 420 acres of undisturbed wildlife habitat within the project corridor. The remaining area is already disturbed or developed, and thus, is not suitable as wildlife habitat.

Much of the wildlife within the corridor would likely escape to adjacent lands. Mobile species would be able to escape to similar areas while slower species such as reptiles, small mammals, and amphibians would likely be lost during construction activities. Animal density data calculated from worst case loss estimates provided in the SPEIS for JTF-6 Activities along the U.S.-Mexico Border (INS 2001a), suggests that 804 to 5,628 lizards, 20 to 361 birds, and 109 to 229 small mammals would be lost as a result of

construction activities and habitat loss within the project corridor. Again, these are worst case estimates and assume that the entire project corridor would be completely altered and void of vegetation and wildlife upon completion of construction. Disturbed and developed areas are not included in these estimates.

There is also possibility that the trans-boundary migration patterns of larger animals would be hindered or halted near the urban areas or anywhere that primary pedestrian fencing would be positioned. The potential for fragmentation of wildlife habitat is high only these portions of the project corridor since vehicle barriers would not act to hinder migration. Nevertheless, environmental measures would be required to minimize potential impacts, as discussed further in Section 5.4.

Wildlife deaths, particularly reptiles and amphibians, due to vehicle traffic may increase due to the faster speeds in which the USBP agents would be able to travel on the all-weather road. Although, wildlife populations within the project corridor would not be significantly impacted. In fact, the proposed project would provide a positive impact to wildlife habitat, as the adjacent vegetative communities would increase in quality due to reductions in fugitive dust as a result of the proposed road improvements. Furthermore, due to the USBP being able to better monitor the project corridor, a reduction in footpaths, vehicle trails, and wildfires created by UDAs is expected to decrease, which would provide beneficial impacts to wildlife habitats.

Wildlife species that currently inhabit the surrounding area would be affected by the addition of lighting within the project corridor. Studies have been completed regarding wildlife and the effects of light on the circadian rhythms of wildlife species. Within several weeks under constant lighting, mammals and birds would quickly stabilize and reset their circadian rhythms back to their original schedules (Carpenter and Grossberg 1984). The long-term effect of an increased photoperiod on wildlife species therefore, is expected to be insignificant since backlight illumination to the surrounding habitat would not occur. The greatest impacts to wildlife from lighting would probably be to birds and insects that would be affected by the lights while migrating, causing them to alter their course or schedule. The tendency for nocturnal birds and other wildlife species (e.g., bats) to congregate around the lights to feed on insects attracted by the lights may increase. This change in behavior may make these species more vulnerable to

predation or injury. The fence and lights would also provide perches for raptors, which would indirectly alter the biological demand on the region's prey base.

Indirect impacts to wildlife would occur as UDAs and smugglers try to avoid areas with barriers or lights. These impacts, however, are not quantifiable because these activities are totally at their discretion.

4.6.3 Full Build Out Alternative

By implementing the Full Build Out Alternative, approximately 1,486 acres of undisturbed wildlife habitat would be permanently altered. The remaining areas within the project corridor are already disturbed, and thus, do not provide suitable habitat for wildlife species.

Again, mobile animals would be able to escape to areas of similar habitat; however, other slow or sedentary animals such as reptiles, amphibians, and small mammals would potentially be lost during construction. This displacement and/or reduction in the number of animals would impact animal communities on both sides of the border. Wildlife outside of the project corridor would experience temporary impacts due to dust, noise, and general construction activities during the construction of the enforcement systems. These effects are not considered significant since ambient noise and air quality levels would return to previous levels upon completion of the proposed project and construction activities would occur only during daylight hours.

The potential loss to wildlife estimates, based upon wildlife densities and habitat loss within the project corridor would be 2,972 to 41,608 lizards, 1,872 to 2,080 birds, and 288 to 505 small mammals based on animal density data estimates (INS 2001a). These are worst-case estimates and assume that the entire project corridor would be completely void of wildlife post construction. These estimates do not include those areas that are already disturbed, since such areas provide little, if any habitat for most wildlife species.

In addition to the potential for individual loss, there is a strong possibility that the trans-boundary migration patterns of larger animals would be hindered or halted due to the barrier fences. A seamless array of lights and fences would serve as psychological and

physical barriers to numerous species that migrate north and south of the border. For example, Beier (1995) observed an individual cougar's first encounter with a well-lit sand factory. The cougar took two hours and four attempts to select a route around the facility. He consistently moved into the darkest horizon in order to cross (Beier 1995). Consequently, the potential for fragmentation of wildlife habitat is high under the Full Build Out Alternative. Therefore, environmental measures would be required to minimize potential impacts, as discussed further in Section 5.4.

Wildlife species that currently inhabit the surrounding area would be affected by the addition of lighting within the project corridor. As noted, studies have been completed regarding wildlife and the effects of light on the circadian rhythms of wildlife species. The long-term effect of an increased photoperiod on wildlife species, is expected to be insignificant. The greatest impacts to wildlife from lighting would probably be to birds and insects that would be affected by the lights while migrating, causing them to alter their course or schedule. The tendency for nocturnal birds and other wildlife species (e.g., bats) to congregate around the lights to feed on insects attracted by the lights may increase. This potential change in the behavior of nocturnal species may increase their vulnerability to predation or injury.

Increased illegal foot traffic would occur in the areas east and west of the project corridor creating additional indirect effects to wildlife and their habitat. However, the extent of this possible increase in traffic is not quantifiable at this time because UDA traffic patterns are totally at their own discretion.

4.7 AQUATIC COMMUNITIES

4.7.1 No Action Alternative

The No Action Alternative would temporarily impact aquatic communities in Whitewater Draw. Installation of low water crossings is expected to impact approximately 0.16 acres for the construction of a culvert system. These actions have been addressed in the supplemental EA for Whitewater Draw, Douglas, Cochise County, Arizona (USACE 2001) and in an Individual Permit application under Section 404 of the CWA that has been submitted for the USACE, Los Angeles District. Any impacts would be short term in nature and current conditions would resume following the end of construction.

However, indirect effects would continue to occur in the San Pedro River basin and other riparian areas through the continued and possible increased degradation of aquatic habitat by UDAs and smugglers and consequent USBP enforcement activities.

4.7.2 Preferred Alternative

Direct impacts would occur to approximately 0.2 acres of actual streambed within the San Pedro River where low-water crossings would be employed. This area would be altered from its natural state of gravel bed with riffles and pool complexes to concrete surfaces with associated riprap.

Downstream temporary impacts associated with construction activities would include increased turbidity, erosion, and sedimentation within the river basin. Long-term impacts consist of loss of aquatic habitat from culverts and low-water crossings, and possible increased stream velocity. Increased velocity would scour stream banks downstream, thus altering the existing habitat of native species as well as increasing turbidity. Thus, energy dissipaters and sediment basins would be incorporated to reduce velocity and sediment load. All structures placed in aquatic habitat would be designed by professional engineers, to ensure that the natural flow of water is not impeded and impacts are minimized. All such designs would be submitted to the U.S. Section, International Boundary and Water Commission (USIBWC), ADWR, BLM, as well as USFWS for review and approval. Mitigation measures associated with these impacts are discussed in Section 5.

Although the project corridor is generally within 60 feet of the border, the existing alignment of the patrol road extends well out side of the 300-foot survey corridor used to analyze potential effects in this SEA. This alternative would make every feasible attempt to reduce impacts by remaining within existing roadway alignments and implementing appropriate BMPs. The specific BMPs are discussed in Section 5.1.

Indirect impacts associated with the implementation of this alternative would be the reduction or possible elimination of UDAs and illegal smuggler traffic through existing aquatic communities in the San Pedro River. The extent of these impacts is not known due to the fact that travel patterns and routes chosen by illegal traffickers is solely at

their discretion. However, in 2001 the daily average for UDA crossings in the San Pedro Riparian NCA was 200 entries (INS 2002d).

4.7.3 Full Build Out Alternative

By implementing this alternative, similar impacts (approximately 3 acres) to aquatic communities would occur as in the Preferred Alternative, while the magnitude of these impacts would be greater the impact would remain only minimal or moderate since the stream would not be significantly altered. Construction activities would be similar to that of the Preferred Alternative, yet on a larger on a larger scale. All such designs would be submitted to the U.S. Section, International Boundary and Water Commission (USIBWC), ADWR, BLM, as well as USFWS for review and approval. Mitigation measures associated with these impacts are discussed in Section 5.

The Full Build Out Alternative would provide beneficial indirect impacts as well. With the implementation of culverts and low-water crossings, erosion and sedimentation resulting from the USBP and the public driving through the river basin would be reduced and possibly eliminated thereby reducing possible pollutants (e.g., oil, grease, gas) washed off vehicles during crossings. Furthermore, the lack of litter, debris, and human waste normally left behind by UDAs would be decreased thus improving water quality, which in turn would have a beneficial effect on the aquatic community.

4.8 UNIQUE AND SENSITIVE AREAS

4.8.1 No Action Alternative

Implementation of this alternative would not directly affect any unique and sensitive areas within the project corridor. However, the continued and possible increases of UDA traffic within these areas have created indirect and adverse impacts.

4.8.2 Preferred Alternative

By completing the Preferred Alternative, direct impacts to unique and sensitive areas would occur. This alternative would directly impact the San Pedro Riparian NCA. Approximately 4.2 acres of habitat would be permanently altered through the installation of the vehicle barriers, maintenance roads, low-water crossings, and all-weather patrol road upgrades.

Since the existing patrol road alignment extends outside of the project corridor as it crosses the San Pedro River, indirect impacts would occur between the road and the border fence. These impacts would be associated continued enforcement operations throughout the project corridor. Beneficial impacts would also occur, as a result of reducing fugitive dust and possible elimination of trails created by illegal foot and vehicle traffic.

4.8.3 Full Build Out Alternative

The Full Build Out Alternative requires that the project corridor traverse the San Pedro Riparian NCA. Approximately 64 acres of the San Pedro Riparian NCA, which represents approximately 0.11% of the approximately 58,000 acres in the San Pedro Riparian NCA in Cochise County, would be altered.

Upon completion of construction activities, indirect impacts would occur. The possibility of UDAs and smugglers attempting to breach the U.S.-Mexico border west of the project corridor exists; however, the impacts associated with this possible shift are not quantifiable. The USBP has no control of activities south of the U.S. border and thus, cannot control these migration patterns.

The Full Build Out Alternative would indirectly benefit unique and sensitive areas by reducing or eliminating illegal traffic, brush clearing, trampling of sensitive resources, reducing the litter left behind, and fires caused by UDAs. Vegetation and wildlife habitat north of the project corridor would improve, therefore, creating a more scenic and natural environment for public viewing.

4.9 PROTECTED SPECIES AND CRITICAL HABITAT

4.9.1 No Action Alternative

No protected species would be directly impacted, as no new infrastructure would be constructed in areas that are associated with protected species or designated critical habitat. However, the continued (and possible increased) use of the project corridor by UDAs and illegal smugglers would have an adverse impact upon protected species north of the project corridor. No Federally listed threatened or endangered species were found in the project corridor during the biological survey or reconnaissance survey

performed for this project (April 2002) or during past investigations (INS 2000; USACE 1994, 1996).

Critical habitat designations for the Mexican spotted owl, spikedace and loach minnow occur within the project corridor. With the implementation of the No Action Alternative, there would be no additional impacts to designated critical habitat of the aforementioned species. However, indirect impacts caused by UDAs traversing these habitats would continue to occur.

4.9.2 Preferred Alternative

Designated critical habitat for the Mexican spotted owl does not occur within the proposed construction area under this alternative; therefore, no direct impacts are expected with the implementation of this alternative.

The only area of critical habitat designated for the spikedace and loach minnow that would experience impacts would be a portion of the San Pedro River near the U.S.-Mexico border. Due to the implementation of the Preferred Alternative, erosion, increased turbidity, and sedimentation would temporarily affect water quality. Proposed construction under this alternative would impact approximately 0.2 acres of critical habitat and would require mitigation or compensation measures directly coordinated with the USFWS and BLM. Indirect temporary impacts to critical habitat downstream would likely occur due to increased turbidity, yet would be minimized through BMPs. All structures placed within critical habitat would be designed by professional engineers and approved by BLM and USFWS, under the Section 7 consultation process. The maintenance of roadways created by this alternative would provide indirect beneficial impacts by decreasing the amount of erosion and sedimentation. Other indirect impacts to critical habitat would likely occur from the withdrawal of water from the regional aquifer, which supplies the San Pedro River and may affect the spikedace and loach minnow. There is also a possibility that lighting and USBP operations may affect the foraging lesser long-nosed bat. These effects would have to be addressed through the Section 7 consultation process. Conservation measures would be required to minimize impacts to, and incidental take of affected listed species.

4.9.3 Full Build Out Alternative

Since there is no designated critical habitat for the Mexican spotted owl within the proposed construction area under this alternative, no direct impacts are expected with the implementation of this Preferred Alternative.

Direct and indirect impacts to the critical habitat designated for the spikedace and loach minnow would be approximately 3 acres since the entire riverbed is aquatic habitat and designated critical habitat. These impacts are the same as described in Section 4.7.2 and would be converted to concrete and associated rip-rap, and, mitigation or compensation would also be required. Other indirect impacts would occur from the water withdrawal from the regional aquifer. However, similar Section 7 consultation with BLM and USFWS would be required. Conservation measures would also be required to minimize impacts and incidental take of affected listed species.

Indirect beneficial impacts would occur as a result of reducing UDA foot traffic since vehicle barriers, as proposed in the Preferred Alternative, do little to deter UDA crossings on foot. In addition, the maintenance of roadways created by this alternative would prove beneficial by decreasing the amount of erosion and sedimentation.

4.10 CULTURAL RESOURCES

4.10.1 No Action Alternative

Under the No Action Alternative, a total of three historic sites, four prehistoric sites and one site of unknown temporal and cultural affiliation would be affected by the No Action Alternative. However, only seven sites are considered eligible for listing on the NRHP. Two sites (AZ FF:10:22 and AZ FF:11:82) that are considered eligible for listing on the NRHP have already undergone mitigation previously for those portions within No Action Alternative corridor. Since the effected portions of those sites have already been mitigated no additional impacts to those sites are anticipated from the implementation of the No Action Alternative. As a result, five NRHP eligible sites would be directly and adversely impacted from the implementation of the No Action Alternative. Impacts to cultural resources under the No Action Alternative are also summarized in Table 4-5.

Table 4-5. Summary of Direct Impacts to Cultural Resources

Site Number	Site Type	Status	No Action	Preferred	Full Build Out
AZ EE:12:38	Prehistoric Procurement; Historic Sites	Eligible – D		✓	✓
AZ EE:12:60	Prehistoric Mogollon Village	Eligible - D		✓	✓
AZ EE:12:61	Corral Complex	Eligible - A, C		✓	✓
AZ FF:9:10	Prehistoric Mogollon/Western Pueblo, possible Archaic Component	Eligible – D	✓	✓	✓
AZ FF:9:12	Historic Dump; Poss. Machine Gun place.	Not Eligible			✓
AZ FF:9:13	Historic Corral	Not Eligible		✓	✓
AZ FF:9:14	Historic Dump	Eligible – D	✓	✓	✓
AZ FF:9:21	Historic Homestead	Eligible – D			✓
AZ FF:9:22	Historic Homestead	Eligible – D		✓	✓
AZ FF:9:26	Unknown	Eligible - C, D	✓	✓	✓
AZ FF:9:88	Historic Dump, 1880s-1910s	Not Eligible			✓
AZ FF:10:20	Historic Homestead, Early 20th century	Not Eligible			✓
AZ FF:10:22	Prehistoric Early Formative	Eligible – D	✓*	✓*	✓
AZ FF:10:23	Historic Dump, 1940's – present	Not Eligible			✓
AZ FF:10:24	Historic Dump, 1930's – 1950's	Not Eligible			✓
AZ FF:10:25	Historic Dump, 1930's – 1950's	Not Eligible	✓	✓	✓
AZ FF:10:26	Historic Dump, 1900's – 1950's	Not Eligible			✓
AZ FF:10:27	Historic Dump, 1930's – 1950's	Not Eligible			✓
AZ FF:10:31	Prehistoric Procurement/Camp Archaic	Eligible – D	✓	✓	✓
AZ FF:10:54	Historic Campsite, 1892	Eligible – D	✓	✓	✓
AZ FF:10:56	Historic Structure, built ca. 1900-1910	Eligible– A, C			✓
AZ FF:11:81	Prehistoric Habitation site, Archaic	Eligible – D		✓	✓
AZ FF:11:82	Prehistoric Settlement, Formative	Eligible – D	✓*	✓*	✓
AZ FF:11:84	Historic Dipping Station, 1930's – 1940's	Eligible– A, C		✓	✓
AZ FF:11:85	Prehistoric Procurement, Archaic	Not Eligible		✓	✓
AZ FF:11:101	Prehistoric Scatter, Mogollon	Eligible – D			✓
AZ FF:11:105	U.S.-Mexico border	Eligible– A, C		✓	✓

*Site is within the Preferred Corridor but a portion has been previously mitigated
Source: Aztlan 2002

If avoidance of these sites could not be possible under the No Action Alternative, mitigation measures would involve data recovery and testing at eligible and potentially eligible sites. A potential exists for additional visual impacts to nearby historic districts and buildings resulting from proposed fence and stadium lighting construction. A viewshed analysis may be necessary in order to determine the extent of visual impacts on these historic structures and districts.

4.10.2 Preferred Alternative

There are 14 potentially eligible archaeological sites present in the area of the project corridor affected by the Preferred Alternative. Six of the sites are historic, six are prehistoric, one is a multi-component site (with historic and prehistoric components), and one is of unknown temporal and cultural affiliation. Two of the eligible sites (AZ FF:10:22 and AZ FF:11:82) have already undergone mitigation previously for those portions within the Preferred Alternative corridor. Since the affected portions of those sites have already been mitigated, no additional impacts to those two sites are anticipated from the implementation of the Preferred Alternative. As a result, 12 NRHP eligible sites would experience direct adverse impacts from the implementation of the Preferred Alternative. A summary of eligible and not eligible cultural resources sites present under the Preferred Alternative are also provided in Table 4-5.

Since avoidance of these sites would not be possible under the Preferred Alternative, mitigation measures would primarily involve data recovery and testing at eligible and potentially eligible sites. Under the Preferred Alternative, a total of nine historic sites and one prehistoric site would be avoided when compared to the Full Build Out Alternative. Three of the sites avoided are considered eligible for listing in the NRHP and seven sites are considered not eligible for listing in the NRHP. A potential exists for additional visual impacts to nearby historic districts and buildings resulting from proposed fence construction.

A viewshed analysis may be necessary in order to determine the extent of visual impacts on these historic structures and districts.

4.10.3 Full Build Out Alternative

There are 17 potentially eligible archaeological sites within the Full Build Out Alternative corridor. There are eight historic sites, seven prehistoric sites, one multi-component site (with historic and prehistoric components), and one site of unknown temporal and cultural affiliation. Of the 27 archaeological sites, 17 are eligible for listing on the NRHP. Portions of two sites (AZ FF:10:22 and AZ FF:11:82) have undergone mitigation adjacent to the border for previous projects. Though portions of both sites have been mitigated, under the Full Build Out Alternative additional undisturbed areas of these sites, outside the previously mitigated areas, would be impacted. Thus, 17 NRHP eligible sites would experience direct and adverse impacts from the implementation of the Full Build Out Alternative (Table 4-5).

Since avoidance would not be feasible within the Full Build Out Alternative, mitigation measures would be required and would primarily involve data recovery and testing at the eligible sites. Mitigation measures are outlined in Section 5.0. In addition, potential visual impacts to nearby historic districts and buildings resulting from fence construction exist. A viewshed analysis may be necessary in order to determine the extent of visual impacts on these historic structures and districts.

4.11 AIR QUALITY

4.11.1 No Action Alternative

Increased air emissions are primarily expected during road construction. Air emissions due to routine patrol activities are expected to remain the same or possibly increase due to the need for additional patrols. While the Douglas Station would ultimately experience reduced fugitive dust emissions as a result of improved roadway conditions, increased amounts of fugitive dust associated with substandard patrol roads would likely result in the Naco Station's AO.

4.11.2 Preferred Alternative

Since Cochise County is classified as a nonattainment area for SO_2 and PM_{10}, emissions of those two pollutants were addressed as they related to the General Conformity Rule under the CAA. SO_2 emissions were calculated based on AP-42 Section 3.3 Table 3.3-1 (Providence Engineering 2002). However, an air quality impact and conformity analysis

was not needed in assessing the impacts of this alternative. Rather, one was performed for the Full Build Out Alternative, which focused on road construction activities across the entire project corridor. Discussion of this analysis is provided in the next section and the results are provided in Appendix D. It was found that total emissions resulting from construction of the Full Build Out Alternative, which requires substantially more construction activities is expected to be less than the *de minimus* thresholds. Thus, an air conformity analysis would not be required. The Preferred Alternative would result in far less emissions of both SO_2 and PM_{10}. While minor short-term impacts would result from the implementation of the Preferred Alternative, ambient conditions would be expected to return shortly after cessation of the construction activities. In fact, current air quality conditions would improve since surfaced patrol roads would reduce dust emissions made by USBP patrols and dragging operations.

Past projects have acquired fill material from a local source located approximately 5 miles north of the City of Douglas. It is likely that this same source would be utilized for fill material during the extent of this project as well. Based on the estimated fill requirements identified in Section 2.2.2.1, approximately 7,300 loads (17 CY trucks) could possibly be required. With an average 33 mile round trip from the local storage site to any site within the project corridor, it is estimated that trucks transporting fill material would log between 24,000 and 48,000 miles per year during the period of construction. Although these additional trips were not included in the air quality analyses, they would not result in emissions above *de minimus* thresholds since majority of the transportation of materials would occur on improved roadways (U.S. HWY 80) and then to access roads leading to the construction sites in both the Naco and Douglas Station AOs. Furthermore, construction emissions that were calculated in the air quality analysis could be quadrupled and not exceed *de minimus* thresholds.

4.11.3 Full Build Out Alternative

As noted, an air quality and conformity analysis was performed on the construction activities proposed under the Full Build Out Alternative to determine the total air quality emissions of both SO_2 and PM_{10} due to the construction footprint (see Appendix D). However, total emissions resulting from proposed construction are expected to be below the *de minimus* thresholds. Thus, an air conformity analysis would not be required.

SO_2 emissions were calculated based on AP-42 Section 3.3 Table 3.3-1 (Providence Engineering 2002). The AP-42 is a compilation of the recommended air pollutant emission factors for stationary point and area source emissions set by USEPA under the CAA. A summary of SO_2 emissions from construction activities is presented in Table 4-6.

Table 4-6. Summary of SO_2 Emissions from Construction Equipment

Construction Activity	SO_2 Emissions (tons/year)
Light Truck	0.001
Bus	0.001
Dump Truck	0.050
Heavy Truck (Tractor Trailer)	Negligible
Water Truck	0.070
Bulldozers/Grades	0.450
Scrapers	0.001
Total Emissions	**0.570**

Source: Providence Engineering 2002

Particulate emissions from unpaved roads were calculated using AP-42 Section 13.2.2 Equation (2). Particulate emissions from bulldozing and compacting were determined using AP-42 Sections 13.2.3 and 11.0. Particulate emissions from loading excavated material to trucks and truck dumping was determined using AP-42 Section 13.2.4 Equation (1). Particulate emissions from scraping operations were determined using AP-42 Section 13.2.3 where an empirical emission factor in pounds per vehicle mile traveled was given. A summary of PM_{10} emissions from construction activities is presented in Table 4-7.

Table 4-7. Summary of PM_{10} Emissions from Construction Activities

Construction Activity	PM_{10} Emissions (tons/year)
Vehicle Traffic on Unpaved Roads	13.560
Bulldozing and Compacting	2.110
Grading	0.240
Truck Loading and Dumping	0.040
Scrapers	0.620
Blasting	0.001
Total Emissions	**16.570**

Source: Providence Engineering 2002

Part of Cochise County is a moderate nonattainment area for PM_{10} and SO_2. Per 40 CFR 51.853(b)(1), the moderate nonattainment threshold value for General Conformity determinations is 100 tons per year for both PM_{10} and SO_2. The total emission rates as shown in Tables 4-6 and 4-7 are less than 100 tons per year for both SO_2 and PM_{10}; therefore, an air conformity analysis is not required. As a result, only short-term, minor impacts to air quality would be expected during construction.

Upon completion of the Full Build Out Alternative, USBP operations within the project corridor would produce only minimal impacts to the region's air quality. In fact, it would be expected to reduce current fugitive dust emissions since patrol roads would be surfaced and drag roads could be accessed via improved surfaces rather than current conditions that require agents to drag existing patrol roads.

The Full Build Out Alternative would require approximately twice the amount of fill material as the Preferred Alternative. The Full Build Out Alternative would require approximately 8 to 12 years to complete. Given this, it is estimated that trucks transporting fill material would log between 44,600 and 67,000 miles per year for the period of construction. Similar to that of the Preferred Alternative, annual PM_{10} and SO_2 of the Full Build Out Alternative are expected to remain below the *de minimus* thresholds.

4.12 WATER RESOURCES

4.12.1 No Action Alternative

Implementation of the No Action Alternative would have temporary impacts to water resources; however, it would result in indirect impacts to small portions of current floodplain located in the Whitewater Draw area and within the Town of Naco, as well as water quality within the surface watershed. By not implementing erosion control measures on existing sub-standard patrol roads and low-water crossings, erosion would likely increase. Over time, movement of large amounts of sediments during the traditional monsoon season would adversely alter the floodplain capacity. Additionally, increased erosion ultimately increases turbidity and lowers dissolved oxygen in downstream aquatic ecosystems. Under the SSA Protection Program any Federal financially assisted project that has the potential to contaminate the designated SSA are

subject to USEPA review. All alternatives discussed in this SEA would be entirely Federally funded, and therefore not subject to USEPA review under the SSA Protection Program.

Since, roadway improvements would not occur within the San Pedro River, long-term adverse impacts are likely to occur due to increased erosion of substandard roadways. To a lesser extent, similar impacts would occur to the subsequent washes in the Naco Station's AO. Alternatively, beneficial impacts would occur within the floodplain in the Douglas Station's AO since existing roadways would experience improvements.

It must be noted that under any of the alternatives presented in this SEA, roadway construction activity requires that workable soil moisture content be obtained in order to properly compact soils for roadbed construction. Additionally, in order to reduce air quality impacts water must be used to suppress fugitive dust at the construction site and along construction corridor routes. Based on worst-case estimates provided by preliminary engineering designs and water usage from a previous roadway project, a mile of all-weather surface would require approximately 66,000 gallons of water for construction and suppression of fugitive dust at the construction site and along the travel route to and from the staging areas and construction site.

Water usage requirements for any of the alternatives analyzed in this SEA would result in impacts to the annual recharge of both the Upper San Pedro and Douglas basins. The Douglas basin is estimated to have 22,000,000 ac-ft of water in aquifer storage with a recharge deficit of 31,010 ac-ft/year. The Upper San Pedro supports an estimated 56,700,000 ac-ft of water in aquifer storage (EEC 2002). The deficit in the Upper San Pedro is estimated at 7,400 ac-ft/year (CEC 1999). Water required for construction would be purchased from the respective basins. For example, for construction activities that occur within the Douglas AO, water would be purchased from sources in the Douglas basin. Similarly, for construction activities that occur in the Naco AO, water would be purchased from the Upper San Pedro Basin (Naco-Bisbee sole source aquifer).

Under the No Action Alternative, water requirements would result in approximately 1.9 million gallons of water (5.74 ac-ft) for construction activities. The period of construction is expected to take 3 to 5 years to complete, which would equate between 1.15 and 1.91

ac-ft/year required across the project corridor. Approximately, 0.79 ac-ft would be required for construction in the Naco AO and 4.95 ac-ft (1.0 to 1.65 ac-ft/year) would be required in the Douglas AO. The No Action Alternative would result in a minor impact, contributing a negligible increase to the yearly recharge deficit in both the Upper San Pedro and Douglas Basin. In either case, these impacts would be considered minor since the withdrawal would be a one-time withdrawal and could be minimized by distributing the usage over the period of construction.

4.12.2 Preferred Alternative

Implementation of this alternative would result in similar temporary construction impacts, such as increased turbidity, and water consumption due to compaction and dust suppression activities. These impacts would be minimized to the extent practicable with BMPs and an effective SWPPP, which would require control of sediment runoff (discussed in Section 5.1).

Water usage requirements would result in approximately 3.3 million gallons (10 ac-ft) of water for construction and dust suppression. Construction is expected to take 5 to 10 years to complete. Thus, it is estimated that approximately 5.3 ac-ft (0.5 to 1.0 ac-ft/year) would be withdrawn for construction activities from the Upper San Pedro basin and approximately 4.8 ac-ft (approximately 0.5 to 1.0 ac-ft/year) from the Douglas basin.

Based on the data provided in Section 3 and similar conditions, moderate impacts would occur within either basin. Water required from sources in the Douglas basin would increase the yearly deficit by 0.02% increase through out the period of construction. Water requirements from sources in the Upper San Pedro basin would result in a 0.07% increase to the annual deficit. While this reduction in available groundwater would be not be significant, relative to the aquifer storage in either basin, conservation measures would be identified and incorporated to mitigate the net loss.

The low-water crossings would generally consist of concrete pads placed in the bottom of the drainages at road crossings. Temporary effects would include increased levels of sedimentation and turbidity. The streambed would be permanently impacted by concrete paving, although the flow of water would not be impaired or impeded since streams in the project corridor are mostly intermittent. Impacts associated with

sedimentation and turbidity would only occur during periods of water flow. In addition, construction of these crossings would be planned during the dry season; therefore, only minimal erosion impacts would occur.

Approximately, 19 acres of floodplain and watershed area could not be avoided and thus, would be impacted. However, the result of impacts would be either insignificant or actually beneficial floodplain conditions. In addition, approximately 5 acres of potential wetlands and 12 acres of Waters of the U.S. would also be impacted. Consultation would be completed with the USACE (Los Angeles District) to confirm potential impacts to wetlands or Waters of the U.S. caused by the alternative. In the event that the proposed construction impacts wetlands and/or Waters of the U.S., BMPs (e.g., silt fences and hay bales) would be implemented and the proper permits (e.g., Section 404 permits) would be obtained. Coordination would also be required with local municipalities to ensure that construction activities do not adversely impact the floodplain. No action would be initiated that may affect wetlands and floodplains without compliance to the extent practicable, of Executive Order 11988 on Floodplain Management and Executive Order 11990 on Protection of Wetlands, respectively. The USBP would make every feasible attempt to minimize or reduce impacts to wetlands and floodplains. However, due to the general north/south orientation of these drainages and the need to place infrastructure parallel to the international border, impacts would be unavoidable.

Placement of primary and secondary fences is likely to create minor temporary impacts in the floodplain during construction. However, proven designs such as the bollard fence identified in Photograph 2-4 would be placed within floodplains and drainages. This type of fence design would allow for the free flow of water during local rainfall. All drainage structures would be designed by professional engineers, to ensure that the natural flow of water is not impeded and floodplain capacities are not decreased. All such designs would be submitted to the USIBWC, ADWR, USACE, USEPA, and BLM (for the San Pedro River) for review and approval.

4.12.3 Full Build Out Alternative

Implementation of this alternative would result in temporary direct impacts due to construction. Indirect impacts would be beneficial to the floodplain. As with the Preferred

Alternative, the surface watershed would only experience minimal increases in turbidity and consumption during construction periods, since the construction contractor or military unit would be required to strictly adhere to an effective SWPPP.

Under the Full Build Out Alternative impacts to the regional watershed would result from water usage totaling approximately 5.9 million gallons (18 ac-ft) for construction activities. However, a project of this magnitude would take 8 to 12 years to complete. Therefore, these estimates would be extended over time requiring between 1.5 and 2.3 ac-ft /year across the project corridor. Approximately 9.5 ac-ft (0.8 to 1.2 ac-ft/year) of water would be required from sources in the Douglas basin, increasing the yearly deficit by 0.06% throughout the period of construction. Water requirements from sources in the Upper San Pedro basin would total 8.2 ac-ft (0.7 to 1.0 ac-ft/year) and would result in a 0.1% increase to the annual deficit. While in most cases an increase in deficit of 0.1% would be considered moderate, because of the scarcity of available water in the region an increase in the annual deficit must be considered significant. However, the withdrawals would be distributed throughout the construction period and conservation measures would be incorporated to mitigate the net loss if required.

Infrastructure components of the Full Build Out Alternative are similar in type, to that of the Preferred Alternative. However, approximately 50 acres of floodplain and watershed area and 8.3 acres of potential wetlands and approximately 28.8 acres of Waters of the U.S. would likely be impacted. The result of impacts would also be either insignificant or actually beneficial to the area. However, similar consultation, as discussed in the Preferred Alternative, would be required prior to initiation of construction in these areas.

4.13 SOCIOECONOMICS

USBP activities generally result in beneficial impacts to local, regional, and national economies. The diversity of projects performed by the USBP implies that socioeconomic impacts would vary considerably. Some projects have very small construction and operational impacts while others are more substantial (e.g., construction costs, operational impacts, and project magnitude). The actual construction impacts are usually localized due to the temporary nature of the construction activities and the fact that the predominance of labor for these projects in the past has been provided by the Arizona

National Guard or Active/Reserve military units. Consequently, the purchase of construction materials and supplies (increase in local sales and income) is typically the primary, direct economic effect in the project vicinity.

Although construction impacts are temporary in nature, the effects associated with implementation of USBP projects are expected to continue for the economic life of the project. All actions provide socioeconomic benefits from increased detection, deterrence, and interdiction of illegal drug smuggling activities. Benefits include reduced enforcement costs, losses to personal properties, violent crimes, and entitlement programs. These actions can also have direct positive benefits from increased economic activity.

Effects to the aesthetics and/or quality of life would be incurred in certain regions that experience significant new construction actions or increases in patrolling activities. This would be of special concern in urban areas, as well as NRHP sites. These effects can be either positive or negative, depending upon an individual's judgment.

4.13.1 No Action Alternative

Socioeconomics in the area would generally remain the same as they are now for the No Action Alternative. Limited control of the border and access along the border would not result in a significant change in USBP response, which in turn would not increase the apprehension rate of UDA and drug smugglers. The No Action Alternative would not likely be beneficial for the Naco area since a very small amount of road improvements would occur; while it would be somewhat beneficial to the Douglas area.

4.13.2 Preferred Alternative

No significant effects, direct or indirect, would occur to population or employment, because of implementation of the Preferred Alternative. Under the Preferred Alternative, a total of approximately $36,447,520 would be spent during construction (INS 2002c). The exact amount of that total that would be spent in the local area is not known but can be assumed to be between 15% and 30%. These expenditures are subject to economic multiplier effects. The multiplier indicates the total impact of a project or action as estimated from direct expenditures. The economic multiplier for Cochise County, Arizona is 2.22 (U.S. Army 2002). Using this multiplier, the overall impact on local sales,

income and employment can be estimated to be between $12,027,681 and $24,055,363. National Guard or Active/Reserve military units from JTF-6 personnel would perform most construction activities; therefore, the overall area population would not be significantly impacted. Minor increases in local population would occur during periods of construction over a 5- to 10-year period. No housing impacts are anticipated since these units would be housed at camps situated at defined bivouac sites. Approximately 202 acres of private land would be removed from the tax base of the area. This would result in a $20,314 to $50,784 loss in annual property tax income.

Since the existing roadway alignment is located adjacent to the border within the Town of Naco and the City of Douglas, construction efforts would be limited to the Roosevelt Easement through these areas. As a result, no residential or commercial structures would be impacted. There would be no displacement of housing or any impact to neighborhood cohesion resulting from the implementation of this alternative.

The socioeconomic community would benefit from effective enforcement operations across the Naco and Douglas Stations' AOs. Overall, implementation of this alternative would reduce impacts that currently exist on local law enforcement and the emergency response community.

4.13.3 Full Build Out Alternative

No effects to population or employment would occur with the Full Build Out Alternative. If military personnel from the National Guard or Active/Reserve military units perform all of the construction activities, the unemployment rate within the area is not likely to be affected. A minor increase in the overall area population would occur periodically as units come in for construction during the 8 to 12 year period. Housing impacts are not anticipated, as the units would stay in camps at established bivouac areas. Therefore, the overall area population would not be significantly impacted. Labor and most materials would be brought into the local area; however, some expenditures are expected to occur within the ROI. The Full Build Out Alternative would involve approximately $93,809,480 in construction costs (INS 2002c). Assuming that between 15 and 30% are spent locally and the economic multiplier effects, the overall impact on local sales, income and employment can be estimated to be between $30,957,128 and $61,914,256.

As a result, short-term increases in local revenues for commercial establishments, trade centers, and retail sales would result from the purchase of supplies (e.g., concrete, water, fuel, lumber, etc.) and equipment rental can be expected during construction. Any potential impact from the implementation of this action alternative would ultimately be absorbed into the broader economy. A total of 518 acres of private land would be removed from the tax base of the area at the current property tax rate of 3.3521% (County of Cochise 2002), this change in ownership would result in a $52,091 to $130,229 loss in annual property tax income.

Within the communities of Naco and Douglas, construction efforts will be limited to the Roosevelt Easement (60 feet). As a result, no residential or commercial structures would be impacted from the implementation of this alternative. There would be no displacement of housing or any impact to neighborhood cohesion resulting from the implementation of this alternative.

The socioeconomic benefits from an effective enforcement corridor across the Naco and Douglas Stations' AOs would be decreased drug trafficking and smuggling. Overall, implementation of this alternative would reduce socioeconomic impacts and burdens that currently exist on the local law enforcement and emergency response communities.

4.14 ENVIRONMENTAL JUSTICE

Executive Order 12898 of February 11, 1994, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" required each Federal agency to identify and address, as appropriate, disproportionate adverse effects of its proposed actions on minority populations and low-income communities. As indicated earlier in Section 3.0 of this SEA, the racial mix of Cochise County is about 90% Caucasians. Cochise County has about 21% of its total population living at or below poverty levels. The 1997 PCPI was estimated to be about $17,000, which indicated a 28% increase since 1990.

Under both the Preferred Alternative and the Full Build Out Alternative, all construction would be limited to an area 60 feet north of the U.S.-Mexico border within populated and unpopulated areas. As a result, all work in the communities of Naco and Douglas would be within the Roosevelt Easement and there would be no direct impacts (i.e. relocation

or displacement) to any residential or commercial structures. Minor impacts to neighborhoods close to the border from noise and dust during construction is anticipated. Environmental design measures to mitigate impacts from noise and dust are given in Section 5.0 under the noise and air quality sections, respectively. As a result, there would be no significant impacts to neighborhood cohesion or environmental justice resulting from this alternative. A visual impact to some neighborhoods within Naco and Douglas from the construction of a second fence is possible. Mitigation measures for potential visual impacts are given in Section 5.0.

Alternatively, implementation of either of the alternatives would enhance the probability of success for the USBP although the levels of enhanced success would vary between the alternatives. This increased success in controlling illegal drug activity and decreasing the flow of UDAs through the project corridor would benefit all populations, regardless of income, nationality, or ethnicity. These benefits would be greater under the Full Build Out Alternative since this alternative would provide a much more effective enforcement corridor.

4.15 NOISE

The short-term effects associated with the DNL noise levels would be expected to be greater than 60dBA and would occur within the general area of construction activities. Because of the linear nature of the proposed projects, construction activities would be relocated as different components are completed. Therefore, peak DNL noise levels would not be located in a central area for an extended period.

Long-term effects associated with the DNL noise levels in rural areas of the project corridor are likely to range from a low of 35 dBA over the majority of the corridor to a high of about 60 dBA. Near the Town of Naco and City of Douglas, DNL would peak at levels greater than 60 dBA resulting from the accumulation of associated noise levels such as development and other construction noises.

4.15.1 No Action Alternative

Implementation of the No Action alternative would result in only minor temporary impacts to noise levels due to construction. Heavy equipment such as graders, bulldozers, and

dump trucks would cause temporary increases in noise levels. The magnitude of these effects would depend upon the time of year, proximity to sensitive receptors (e.g. schools, hospitals, churches, and residences), climatic conditions, type and number of equipment, and terrain. Based on past similar activities, construction would occur only during daylight, thus reducing the DNLs and the chances of causing annoyances.

4.15.2 Preferred Alternative

The Preferred Alternative would result in only temporary impacts to noise levels due to construction. Heavy equipment such as graders, bulldozers, and dump trucks would cause temporary increases in noise levels. No residences, schools, churches, or other noise-sensitive receptors are located beyond two miles on either side of the POEs. Thus, the potential to cause annoyances is greatly reduced.

Animals, particularly domesticated species, would be expected to quickly habituate to construction noise. Wildlife may be startled and flee the construction area; however, wildlife species, too, have demonstrated rapid habituation, even to loud and sudden noises, which cause panic responses. Bowles (1997) reported that habituation occurs with fewer than five exposures. Several other recent studies (Workman et al. 1992; Kraussman et al. 1993, 1998; Weisenberger et al. 1996) have indicated that wildlife habituate through repeated exposure without long-term discernible negative effects. Blasting activities, if required, would especially cause a startled response in wildlife. Because of the sporadic occurrences of these activities, if any, these effects are not considered significant.

4.15.3 Full Build Out Alternative

The types and magnitude of effects caused by implementation of this alternative would be similar, but would either be of greater magnitude or over a longer period of time than those described for the Preferred Alternative, primarily due to the increase of construction activity.

Although blasting is not proposed, conditions are likely to occur where it may be required on a limited basis. If required, blasting would occur only in remote and rugged areas where sensitive receptors are not likely to be affected. No blasting would be conducted near urban areas. Blasting would typically generate peak noise levels ranging up to 140

dBA; however, mitigation measures would be employed, such as blasting blankets or soil overburden, to reduce blast noise.

Construction activity would temporarily increase noise levels within the immediate vicinity of the construction site. However, ambient noise levels would return upon completion of construction work with no long-term, significant adverse impacts.

4.16 SOLID AND HAZARDOUS WASTES

4.16.1 No Action Alternative

Because of the random nature of illegal dumping along the border areas, it is difficult to determine the location and quantity of hazardous waste that may be present within the project corridor. If hazardous materials or wastes are present, there would be a potential for exposure during construction activities. Construction personnel would be informed about the potential to encounter hazardous wastes that may be present on the site from dumping and the appropriate procedures to use if suspected hazardous contamination is encountered.

An accidental release or spill could occur as a result of fuels, oils, lubricants, and other hazardous or regulated materials brought on site for the proposed construction activities. A spill could result in potentially adverse impacts to on-site soils, and threaten the health of the local population, as well as wildlife and vegetation. However, the amounts of fuel and other lubricants and oils would be limited, and the equipment would be located on site to quickly limit any contamination. A spill prevention and response plan would be developed and implemented as part of the Proposed Alternative.

During construction and installation activities, fuels, oils, lubricants, and other hazardous materials will be used. Additionally, a Spill Prevention, Control and Countermeasures Plan (SPCCP) would be in-place prior to construction, and all personnel briefed on the implementation and responsibilities of the plan. As a result, no impact is expected.

4.16.2 Preferred Alternative

Under the Preferred Alternative, impacts would be similar to those under the No Action Alternative. Since more construction activities would take place, there would be a

greater potential for accidental spills and encountering unknown deposits of hazardous waste. As under the No Action Alternative construction personnel would be informed about the potential for encountering hazardous wastes and the appropriate procedures to use if suspected hazardous contamination is encountered. Safety measures outlined under the No Action Alternative would be followed under the Preferred Alternative. Finally, as in the No Action Alternative, a SPCCP would be in place prior to construction.

4.16.3 Full Build Out Alternative

Under the Full Build Out Alternative impacts would be similar to those under the No Action alternative and Preferred Alternative. Since more construction activities would take place under the Full Build Out Alternative than under both the No Action and Preferred Alternatives there would be a greater potential for accidental spills and encountering unknown deposits of hazardous waste. As under the No Action and Preferred Alternatives construction personnel would be informed about the potential for encountering hazardous wastes and the appropriate procedures to use if suspected hazardous contamination is encountered. Safety measures outlined under the No Action and Preferred Alternatives would be followed under the Full Build Out Alternative. Finally, as in the No Action and Preferred Alternatives, a SPCCP will be in place prior to construction.

4.17 CUMULATIVE EFFECTS

This section of the SEA addresses the cumulative impacts associated with implementation of proposed USBP infrastructure, the No Action Alternative and other projects/programs that are planned for the region. A general discussion regarding cumulative effects that would be expected irrespective of the alternative selected is provided in the following paragraphs. The resources that would be impacted are addressed within each alternative discussion.

As discussed earlier, site densities for cultural resources are relatively high in the project corridor, as well as southeastern Arizona; consequently, there is a high potential to have cumulative impacts to these sensitive resources if adequate surveys and proper mitigation measures are not provided. Implementation of either of the alternatives would be required to follow a similar strategy of mitigation for NRHP-eligible properties so that the actions would result in no adverse impacts to historic properties. Construction

activities would be coordinated with the Arizona State Historic Preservation Office (SHPO) through the Section 106 review process, which has been initiated. USBP would be responsible for any mitigation required for the initial construction of the project, as well as that required for associated maintenance activities.

Other resources, such as soil and air quality would be temporarily impacted during and immediately after completion of major construction projects. These resources would be expected to incur only minor or possibly moderate cumulative impacts. The proposed construction would not cause a violation of air quality standards and, upon completion; fugitive dusts would be expected to be lower than ambient conditions due to all-weather surfaces.

Soils that are disturbed during construction activities would be vulnerable to erosion. However, an indirect beneficial impact of a majority of road construction projects would be reduced soil erosion; thus, the cumulative effect to soils would be beneficial. Reduced erosion rates would reduce turbidity and enhance water quality within local streams and drainages.

Groundwater resources within the Upper San Pedro Basin has been the subject of controversy for some time. However, the one time water usage required by the Preferred Alternative would likely result only moderate adverse cumulative impacts. In fact, once construction is concluded, it is possible that any resulting impacts could return to present conditions. However, the extent of impacts and the possibility of conditions returning to present conditions would be partially dependant on the water usage requirements of other projects in the foreseeable future. More importantly, conditions are highly dependant on whether the current available water in the San Pedro continues to increase. Furthermore, it must be noted that the present conditions do not reflect historical conditions of the riparian area. It has been suggested that recent declines in the Upper San Pedro basin are partially the result of changes in vegetation along the riparian areas caused by the 1880 entrenchment. Historically, the riparian areas were once predominantly grassland. Woody vegetation was either not present at all or very sparse. Once this woody vegetation became established along the river, it began to play a significant role in the available ground water conditions, due to a high evapotranspiration rate (approximately 30.7 ac-ft per day for the entire corridor).

Direct cumulative impacts on socioeconomics would be expected to be beneficial. The magnitude of these effects would depend upon the project costs and would be dependant on what is actually spent in the local economy (i.e., local expenditures), as well as the economic multipliers in the region. Cumulative indirect effects to socioeconomic resources (e.g., daily purchase of fuel) would also be beneficial, yet insignificant.

The USBP and other entities are currently conducting projects in the region. Other previously addressed or ongoing projects in the immediate vicinity of the project corridor include:

- A new USBP station located about 2 miles west of Douglas (approximately 15 acres);
- Vehicle barriers south of Montezuma Canyon (NPS) west of the Naco POE (approximately 1 acre);
- 30 to 50 portable lights in a 10.5 mile corridor near the Naco POE (approximately 0.5 acres);
- Improvements to 2 miles of Kings Ranch Road to provide north/south access from the new Douglas Station to the border (approximately 9 acres);
- Improve 4 miles of border road improvements and 9 miles of pedestrian fence west of Naco (Approximately 10 acres);
- USBP Naco and Douglas stations are installing 9 RVS systems (approx. 0.4 acres) and placing portable lighting in the area.

Numerous, past border road construction projects near the project corridor have already been conducted. The Preferred Alternative and Full Build Out Alternative proposed in this SEA would incorporate the previous designs and work addressed in the Corridor EA, as well as infrastructure assessed under other similar NEPA documents to the maximum extent practicable. The proposed actions would, therefore, either enhance effectiveness or encompass previously addressed projects identified in this SEA. The USBP intends to employ similar projects such as those analyzed in this SEA across the remainder of the U.S.-Mexico border in the Tucson Sector (USBP 2002f). Many of these projects have yet to be identified and therefore, the cumulative impacts cannot be fully analyzed at this time. However, it should be assumed that the cumulative effects of projects in the reasonably foreseeable future would have similar impacts as well as appropriate mitigation measures such as those analyzed in this SEA. Thus, future projects would likely add to the overall cumulative effect in the region.

An analysis of each component of the affected environment was completed from the existing EAs in order to identify which actions would have cumulative impacts because of the past and proposed operations. Additional information was considered, including real estate ownership, growth rates, and known future projects in the area. No long-term significant impacts have occurred based on analyses of these past project reports.

Cumulative benefits have resulted from past USBP activities. Road improvements and the installation of detection/deterrence systems have increased the USBP's apprehension and interdiction rates. The installation of drainage structures has probably improved downstream water quality, by alleviating erosion and consequent sedimentation.

Projects implemented by other agencies in the region, which would also affect the natural and human environment, include road improvements by Arizona Department of Transportation (ADOT). Table 4-8 provides a list of ADOT current and future projects planned in Cochise County. With the exception of the proposed widening project on State Route 92 (Carr Canyon Road) at Hunter Canyon located west of Naco, all other construction projects within the vicinity of the project corridor would occur along existing corridors and/or within previously disturbed sites. Land use would change along the ROW, and additional wildlife habitat would be lost. The magnitude of these effects would depend upon the length and width of the ROW at Carr Canyon Road and the extant conditions within and adjacent to the ROW.

As stated in Section 2.0, the No Action Alternative includes infrastructure projects previously identified in the 2000 Corridor EA that have been addressed and completed, are awaiting construction or require separate NEPA analysis. Therefore, since all infrastructure identified in this alternative have the potential to exist should the Preferred Alternative or the Full Build Out Alternative be implemented, the cumulative effects of the No Action Alternative activities require analysis in this SEA. The following sections provide a discussion of the culmination of impacts that would be associated with implementation of each of the alternatives analyzed in this SEA.

Table 4-8. ADOT Current and Future Projects

Arizona Department of Transportation Current and Future Projects			
Planned construction Project	**Action**	**Design**	**Construction**
State Route 80 - Silver Creek to Bernardino	3" Paving Overlay	2002	2003
State Route 80 - St. David to Clifford Wash	Extend cross drainage	2002	2003
State Route 82 - Cochise County Line to State Route 90	Paving Overlay	2002	2003
State Route 82 - Junction of State Route 90 to Junction of State Route 80	2" Paving Overlay	2002	2004
State Route 82 - Fairbank Historic Townsite	Widen Turn Out and Pave Parking Lot	2002	2003
State Route 90 - Sierra Vista to San Pedro River	Paving and Safety Improvements	2002	2003
State Route 90 - San Pedro River to the Junction of State Route 80	Safety Improvements	2002	2003
State Route 92 - Carr Canyon Rd. - Hunter Canyon	Widen and Improve Roadway	2002	2004
U.S. 191 - Segment I: I-10 to Mile Post 91.6 (Bowie Spur)	Construct Divided Highway	2002	2004
State Route 80 - Junction Double Adobe Rd. to Cochise Jr. College	Mill and replace pavement	2003	2004
I-10 - Pantano Railroad Underpass	Reconstruct Bridge	2003	2003
I-10 - Cienega Creek - Marsh Station:	Design Traffic Intersection and New Bridges	2003	2006
B-10 - San Simon	2" Paving Overlay	2003	2005
State Route 80 - Tombstone Courthouse State Park	Design park roads and Visitors Parking Area	2004	2005
State Route 80 - Benson South to the Clifford Wash	3" Paving Overlay	2004	2005
State Route 90 - Kartchner Caverns State Park	Roadway Design	2005	Undetermined
I-10 - State Route 90 to the Ocotillo T.I.	Construct Climbing Lane	2005	2006
I-10 - Fort Grant T.I.	Reconstruct Traffic Intersection	2005	2006

Source: ADOT 2002

4.17.1 No Action Alternative

The No Action Alternative would create temporary impacts due to construction maintenance activities. However, any impacts would be considered insignificant. Direct impacts that have resulted from past USBP activities and would occur as a result of the remaining infrastructure projects identified by the 2000 Corridor EA in the project corridor have been discussed. Briefly, these effects were calculated to have a total cumulative impact of approximately 120 acres. When other related infrastructure projects recently

completed or ongoing are included, an additional 36 acres is impacted across the project corridor. Therefore, the total cumulative impact across the project corridor is 156 acres.

No threatened or endangered species or critical habitats have been affected. Air quality has been temporarily affected by past construction activities, but due to good dispersion factors in the region and the short duration of most construction activities, impacts have been minimal. The fact that no SO_2 or PM_{10} violations have occurred in over 12 years is further evidence these past activities have not caused excessive emissions. However, water resources would continue to experience impacts across the Douglas basin as well as the Upper San Pedro Basin, as recharge deficits are likely to continue.

Cultural resources sites within the proposed alignments of the infrastructure would not be avoided under either of the alternatives. Burial and buffer zones are measures that would be considered to reduce or eliminate potential effects to these resources. If these measures were deemed impractical, mitigation through data recovery would have to be performed. All mitigation measures would be coordinated through the Arizona SHPO, appropriate THPO, and land manager.

Long-term indirect cumulative effects to wildlife and their habitat have occurred and would continue to occur. However, these effects, both beneficial and adverse, are difficult, if not impossible, to quantify. Reductions in habitat have obviously created inter- and intra-species competition for available food and shelter and, eventually would result in slight reductions in some wildlife populations.

Given the rural nature of the project corridor and the surrounding region, habitat that has been altered is considered a negligible loss. The existing and remaining installation of lights along the border have and would possibly produce some long-term cumulative effects, although the magnitude of these effects is not yet known. Some species such, as insectivorous bats, may benefit from the concentration of insects that would be attracted to the lights. However, circadian rhythms of other diurnal species, may be disturbed enough that breeding or feeding patterns are skewed, causing synergistic physiological changes. Increased USBP patrol activities would increase the potential for some wildlife specimens to be accidentally hit and killed. Such losses would not be expected to result in significant reductions to the populations.

Past and ongoing USBP activities have and will result in positive cumulative benefits as well. The region has undergone numerous surveys regarding threatened or endangered species and cultural resources, thereby increasing the knowledge base of these resources and how the regional ecosystem interacts with USBP operations.

4.17.2 Preferred Alternative

Implementation of this alternative would increase the amount of land and habitat that have been altered by 542 acres, about 140 of which is currently disturbed or developed.

Impacts on vegetation, protected species, and fish and wildlife due to lighting and fencing would be mitigated to avoid a significant impact under this alternative. While the magnitude of these effects depend upon the location, if left unmitigated, this action would certainly cause long-term detrimental effects to many migratory animal populations. Therefore, fragmentation and impacts to critical habitat would be minimized by incorporating mitigation measures such as effective wildlife corridors and or use of vehicle barriers in lieu of pedestrian fences along targeted areas of the project corridor. Further discussion on these measures is provided in Section 5 of this document. Close coordination and approval from USFWS, BLM, AGFD, and other affected land managers would be required to develop an effective wildlife corridor system that addresses both environmental and USBP operational concerns in order to ensure adverse effects would be avoided or substantially reduced to insignificance.

These impacts would generally occur within the Roosevelt Easement along existing roadway alignments. Although, one fence would act to the same degree as a physical and psychological barrier to wildlife as two fences would, similar mitigation measures and coordination would still be required along the proposed enforcement corridor in the more rural areas.

Impacts to cultural resources sites within the proposed alignments of the infrastructure would be unavoidable. Burial and buffer zones are measures that would be considered to reduce or eliminate potential effects to these resources. If these measures were deemed impractical, mitigation through data recovery would have to be performed. All mitigation measures would be coordinated through the Arizona SHPO, appropriate THPO, and land manager.

Future cumulative impacts in the area would also occur across the entire Tucson Sector, if similar infrastructure components are implemented. However, quantifying this worst-case scenario is impossible since each individual USBP station has not yet identified its own enforcement needs while minimizing environmental impacts to the greatest extent practicable. However, upon fruition, the cumulative effects of the Preferred Alternative and the impacts across the remainder of the Tucson Sector would be the largest impacts to date resulting from land disturbance.

Identifying the most defensible and enforceable areas along the U.S.-Mexico border (i.e., preferred approach) would result in the most beneficial long-term impacts to the local environment north of the border. The majority of the southeastern portion of Arizona's natural and human environment would experience a significant reduction in the influx of UDA and drug traffic activity. Additionally, sensitive habitat such as the San Pedro Riparian NCA, Coronado National Memorial, Coronado National Forest, Organ Pipe Cactus National Monument and the San Raphael National Wildlife Refuge would benefit through reduction of wildfires, litter and damage to vegetation due to illegal foot and vehicle traffic. Furthermore, real property would be protected and the general aesthetic appearance of the desert southwest would be improved. Mitigation measures associated with erosion control, wildlife corridors, protection of endangered species, critical habitat, water resources and sensitive and unique habitat would be implemented on a large scale in order to reduce direct adverse impacts to insignificance.

4.17.3 Full Build Out Alternative

Given that past projects would have disturbed about 156 acres of soils and vegetation, these impacts would be substantially increased upon implementation of the Full Build Out Alternative. While the total cumulative impacts would be significant to the entire region. It would be beneficial relative to the vast acres of wildlife habitat in the region that would be enhance through protection. This area would be protected from further erosion and habitat degradation caused by illegal vehicles.

Impacts to cultural resources sites are unavoidable. Burial and buffer zones be considered to reduce or eliminate potential effects. If deemed impractical, mitigation through data recovery would be performed. All mitigation measures would be coordinated through the Arizona SHPO, appropriate THPO, and land manager.

Direct cumulative adverse impacts would result in the reduction of biological production and would be the largest increase in impacts to date. This, too, is a worst-case scenario and does not entail the specialized intent of the Preferred Alternative across the remainder of the entire Tucson Sector. Rather, the only assumption that can be made is that the remainder of the Tucson sector would incorporate a highly defensible corridor where needed and minimize or avoid sensitive areas.

By creating highly defensible and enforceable areas along the U.S.-Mexico Border, long-term beneficial impacts to the regional environment would be provided as well. The majority of the southeastern portion of Arizona's natural and human environment would experience a significant reduction in the influx of UDA and drug traffic activity. Additionally, sensitive habitats such as the San Pedro Riparian NCA, Coronado National Memorial, and the San Raphael National Wildlife Refuge (Sonoita Station AO) would benefit through reduction of wildfires, litter and damage to vegetation due to illegal foot and vehicle traffic. Furthermore, real property would be protected and the general aesthetic appearance of the desert southwest would be improved. Mitigation measures associated with erosion control, wildlife corridors, protection of endangered species, critical habitat, water resources, and sensitive and unique habitat would be implemented on a large scale in order to reduce direct adverse impacts to insignificance.

Section 5.0
MITIGATION MEASURES

5.0 ENVIRONMENTAL DESIGN MEASURES

This chapter describes those measures that would be implemented to reduce or eliminate potential adverse impacts to the human and natural environment. Many of these measures have been incorporated as standard operating procedures by USBP on past projects. Environmental design mitigation measures would be presented for each resource category that would be potentially affected. It should be emphasized that these are general mitigation measures; development of specific mitigation measures would be required for certain activities implemented under the Preferred Alternative or the Full Build Out Alternative. The proposed mitigation measures would be coordinated through the appropriate agencies and land managers/administrators, as required.

It is policy, however, to mitigate adverse impacts through the sequence of avoidance, minimization, and finally, compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc. and is typically coordinated with the USFWS and other appropriate Federal and state resource agencies.

5.1 GENERAL CONSTRUCTION ACTIVITIES

BMPs would be implemented as standard operating procedures during all construction activities such as proper handling, storage, and/or disposal of hazardous and/or regulated materials. There would be no significant adverse impacts to onsite workers and adjacent floral and faunal populations. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents would be collected and stored in tanks or drums within a secondary containment system that consist of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery would be completed following accepted guidelines, and all vehicles would have drip pans during storage to contain minor spills and drips. Although it would be unlikely for a major spill to occur, any spill of 5 gallons or more would be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock, etc.) would be used to absorb and contain the spill. Any major spill of 5 gallons or more of a hazardous or regulated substance would be reported immediately to on-site environmental personnel who would notify appropriate Federal and

state agencies. A SPCCP would be in place prior to the start of construction and all personnel would be briefed on the implementation and responsibilities of this plan.

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

5.2 SOILS

Vehicular traffic associated with the construction activities and operational support activities would remain on established roads to the maximum extent practicable. Areas with highly erodible soils would be given special consideration when designing the proposed projects to ensure incorporation of various erosion control techniques; straw bales, aggregate materials, wetting compounds, and revegetation, where possible, to decrease erosion. In addition, erosion control measures, as required and promulgated through the SWPPP, would be implemented before and after construction activities. In cut and fill areas, topsoil would be removed and stored separately. The topsoil would be used as a top dressing on developed slopes to facilitate revegetation efforts with native plant species (mainly grasses) species that have a low water evapotranspiration rate.

5.3 VEGETATION

Native species would be used to revegetate slopes and other “unused” areas to comply with requirements under Section 7(a)(1) of the ESA. On developed slopes north of the secondary fence, shrub species would be used in an effort to compensate for some losses of the scrub-shrub community. Native plants, which are compatible with the enhancement of protected species, would be relocated to suitable areas to the extent practicable as required under Section 7(a)(1) of the ESA. In addition, a Notice of Intent to Clear Land would be filed in order to allow coordination with state agencies to relocate plant species as required under the Arizona State Plant Law. These specimens would also be relocated to the developed slopes north of the secondary fence. A qualified biologist or natural resource representative would be available to provide coordination with appropriate agencies and guidance as needed to interest groups, and individuals, regarding plant

relocation. Additional mitigation measures would include BMPs during construction to minimize or prevent erosion and soil loss. Vehicular traffic associated with engineering and operational support activities would remain on established roads and within the project corridor to the maximum extent practicable.

5.4 WILDLIFE

Wildlife specimens are expected to be lost during construction activities due to removal of habitat. Physical contacts to wildlife would be avoided to the fullest extent practical during construction, as well as post construction operations. A qualified professional biologist or natural resources representative would be available to provide guidance to construction crews or USBP agents on BMPs and supervise relocation of wildlife specimens when possible.

Habitat fragmentation would be minimized under the Preferred Alternative and is inherent in its design. Minimization would be accomplished through the incorporation of vehicle barriers, which augment the development of a safe and effective corridor system (wildlife pathways) and allows free movement of animals across the U.S.-Mexico border. Corridors act as a connection between two or more otherwise isolated habitats and provide for animal movement and reproduction (Tran 1997). In a general sense, an effectively designed corridor system would insure that an interconnected strip of compatible habitat (vegetation) that is sufficient to temporarily sustain animals would connect the two target habitats. This area would then be surrounded by a buffer zone that protects it from outside human and urban activity. The degree and size of this corridor would depend greatly on which species are targeted.

It must be noted that no one wildlife corridor design alone would completely mitigate the anticipated impacts. Furthermore, there are no specific designs absolutely proven to work for any one species. Rather, a series of pathways designed to target as many species as possible would be the best approach. However, the key factor to any effective pathways is to provide a vegetated corridor that bisects the project corridor and allows free access similar to that described above. Mitigation measures would be analyzed for effectiveness and feasibility to promote both wildlife corridors, as well as the mission of the USBP. However, they would not be limited to the following measures:

Wildlife Mitigation Measures

- Maximize vegetation within wildlife pathways to the maximum extent possible to include revegetation and reseeding where required.
- Restrict the use of lighting along pathways to an as-needed basis, or restrict lighting to pathways that are designed to target light tolerant species. Incorporate nearby RVS systems to detect UDA traffic.
- Bollard or Sandia style fencing equipped with reptile and small rodent tunnels at the base to allow small ground dwelling animals free access across the border.
- To the extent practicable, use a fence design such as Sandia style or bollard style that would be semi-transparent so that animals are not psychologically intimidated from crossing corridors.
- Incorporate the use of vehicle barriers wherever possible along the primary fence alignment to maximize large animal crossings and maintain 5-strand barbed wire fencing to protect pathways from degradation by grazing cattle.
- Reduce the footprint of proposed roads within the project corridor in targeted in order to minimize the effect that these would have as impedances to migration.

Actual design, amount, acreage and placement of this system would require close coordination and cooperation with appropriate Federal and state agencies, as well as involved land managers prior to initiation of construction. Implementation of this mitigation measure would require a specialized conservation plan that would target as many species as possible and protect it from degradation by UDA activity and other human induced factors.

5.5 PROTECTED SPECIES AND CRITICAL HABITAT

Through properly designed mitigation measures, impacts would be reduced to a “may affect but not likely to adversely affect” the spikedace and loach minnow or its critical habitat. It is policy to mitigate adverse impacts through the sequence of avoidance, minimization, and finally, compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc. and is coordinated with the USFWS and appropriate state resource agencies. The following potential

measures and conceptual plans would be analyzed by USBP for suitability to mitigate for potential losses and impacts.

Final mitigation plans shall be negotiated with the USFWS under the Section 7 consultation process.

Endangered Species and Critical Habitat

Mitigation Measures

- Construction of the low-water crossings would occur during the dry season so that actual aquatic habitat is not directly affected. Construction plans would also include erosion control measures, riprap to prevent long term scouring downstream, and maintain pre construction stream flow. Additionally, limited vegetation clearing along the riparian areas of the streambed would allow for protecting existing aquatic habitat.
- Incorporate additional RVS systems to enhance vehicular patrol traffic in both critical habitat areas and minimize possible physical encounters.
- Reduce the overall disturbance of critical habitat by reducing the footprint of the project corridor within critical habitat the extent practicable.
- Incorporate wildlife corridors to minimize potential habitat fragmentation in critical habitat, such as proposed in section 5.4
- Avoid long-term effects to the San Pedro River by revising low water crossing designs for patrol roads to a “Box Culvert with Grates” design.
- Develop project specific plans through a conservation agreement with appropriate Federal agencies designed to utilize proposed infrastructure to protect existing critical habitat north of the project corridor and/or mitigate restoration of additional critical habitat. These plans would be closely coordinated with, and approved by, the USFWS and appropriate state resource agency(s) prior to initiation of construction.

5.6 CULTURAL RESOURCES

Mitigation measures for cultural resources would primarily be in the form of data recovery since neither the Full Build Out Alternative nor the Preferred Alternative would allow for relocation of the project corridor or avoidance of historic sites. Additional testing would be conducted at sites where the NRHP eligibility status could not be determined during the initial survey. If these sites were determined to be eligible for listing in the NRHP, then data recovery or other mitigation measures would be

developed on a site-by-site basis to help minimize adverse impacts. Mitigation and data recovery plans would be developed in consultation with the Arizona SHPO and/or THPO. Archaeological monitors would be used when construction activities are taking place close to known sites to further minimize impacts to potentially significant cultural resources. Furthermore, if sites are revealed during the construction phase, all work would be halted and the Arizona SHPO would be notified. Work would not continue on the specific site until all appropriate testing, data recovery and authorization is obtained.

5.7 WATER RESOURCES

Any of the action alternatives would require a SWPPP as part of the National Pollutant Discharge Elimination System (NPDES) permit process. Similarly, wetlands or Waters of the U.S. are expected to be affected, so early coordination by USBP with the USACE Los Angeles District, Regulatory Branch and Arizona Department of Water Resources would be conducted. Applicable Section 404/401 permit procedures shall be completed prior to initiation of the construction activities within drainages. Mitigation and compensation measures would be implemented through the permit process to ensure no net loss of Waters of the U.S. including wetlands, as appropriate.

Conservation measures aimed at mitigating the withdrawal of water from the Upper San Pedro and Douglas basins would include approved measures that would reduce the water usage by USBP operations, measures that would promote the reduction of evapotranspiration, and mitigation funding to improve the recharge in the basins.

Since floodplains and wetlands are unavoidable, the following mitigation measures would be implemented as part of construction in order to minimize potential impacts, as required under Executive Order 11988 and Executive Order 11990, all planned mitigation measures would undergo coordination with appropriate Federal agencies and local municipalities to achieve final approval through the permit process, as well as the public involvement process prior to any construction within designated floodplains or wetlands.

Water Resources

Mitigation and Conservation Measures

- Silt fences would be erected outside of the wetland/non-wetland interface to minimize the siltation and subsequent degradation of jurisdictional wetlands.
- All structures would be designed by professional engineers to not adversely increase floodwaters in the floodplain, as a result of impeded flow or added fill.
- Construction storage or staging sites would be located at least 0.25 miles from wildlife and livestock tanks or other permanent surface water bodies to reduce potential effects of accidental spills.
- Allow limited vegetation on slopes and other "unused" areas in designated floodplains that would serve to minimize erosion and limit velocity of surface run-off in floodplains to pre construction conditions.
- Conservation measures would be implemented to preclude unnecessary waste of water supplies.
- Discharges of gray water and other wastes to drainages or other water courses/bodies would be prohibited. Portable latrines would be provided and maintained by licensed contractors and would be used to the extent practicable during construction and operational support activities.

Possible Measures to Mitigate Water Withdrawal

- Reduce evapotranspiration rates through removal of invasive plant species such as salt cedar throughout the project corridor and replace with low water use native species.
- Incorporate water conservation measures Naco and Douglas Stations that reduce the consumption of water due to USBP operations. These include replacing high water use fixtures such as faucets, and toilets with on demand faucets and waterless urinals.
- Provide mitigation funding to promote conservation measures across the Upper San Pedro basin such as obtaining conservation easements that reduce or set aside irrigated farmlands.

5.8 AIR QUALITY

Mitigation measures would be incorporated to insure that SO_2 and PM_{10} emission levels do not rise above the minimum threshold of 100 tons per year as required per 40 CFR 51.853(b)(1). Measures would include dust suppression methods to minimize airborne particulate matter that would be created during construction activities. Additionally, all construction equipment and vehicles would be required to be kept in good operating

condition to minimize exhaust emissions. Standard construction practices such as routine watering of the construction site and access routes would be used to control fugitive dust during the construction phases of the proposed project.

5.9 NOISE

During the construction phase, short-term noise impacts are anticipated. All Occupational Safety and Health Administration (OSHA) requirements would be followed. On-site activities would be restricted to daylight hours with exceptions of emergency situations. Construction equipment would possess properly working mufflers and would be kept properly tuned to reduce backfires. Implementation of these measures would reduce the expected short-term noise impacts to an insignificant level in and around the construction site.

If blasting is later determined to be required, appropriate permits would be obtained and notices would be sent to any residents/occupants within 0.25 miles of the blast area. Noise suppression methods, such as blasting blankets and soil overburden, would be used if noise-sensitive receptors are located within 0.25 miles of the proposed blast area.

5.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The Preferred Alternative would have minimal adverse environmental effects on minority populations, as indicated by the demographics of the ROI of the project area. Because over 50% of the affected area is comprised of minorities, the population affected by the proposed action is considered a minority population (EPA 1998). In order to mitigate from visual impacts of the proposed infrastructure construction a decorative fence would be used, to the extent practicable, in areas where it is plainly visible to residential and commercial areas.

Section 6.0
PUBLIC INVOLVEMENT

6.0 PUBLIC INVOLVEMENT

6.1 AGENCY COORDINATION

This chapter discusses consultation and coordination that has occurred during preparation of the draft of this document. Included are contacts that were made during the development of the action alternatives and writing of the SEA. Formal and informal coordination were conducted with the following agencies:

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Environmental Protection Agency (USEPA)
- Natural Resource Conservation Service (NRCS)
- National Park Service (NPS)
- Arizona State Historic Preservation Office (SHPO)
- Arizona Department of Transportation (ADOT)
- Arizona Game and Fish Department (AGFD)
- Arizona Department of Environmental Quality (ADEQ)
- Arizona Department of Agriculture
- U.S. Bureau of Land Management (BLM)

6.2 PUBLIC REVIEW

Prior to the development of the Draft SEA the public was afforded the opportunity to participate in the scoping process. Two public meetings were held by the USBP to solicit public comments and concerns in reference to the alternatives proposed in this SEA. Public notices were published in the local newspapers. Affidavits of publication are provided in Exhibits 6-1 through Exhibits 6-3. On November 18, 2002, the first meeting was held, in Naco, Arizona at the Naco Elementary School. Only minimal public participation was experienced and one comment was provided. A second meeting was conducted at the Cochise County Community College, Douglas Campus, Building 800, on November 19, 2002. However, no public participation occurred.

The draft EA would be made available for public review for a period of 30 days, and the Notice of Availability (NOA) would be published in the local newspaper. Proof of publication and comments received during the public review will be included in Appendix E.

Exhibit 6-1

The Daily Dispatch

530 11th Street, Douglas, AZ 85607 • (520) 364-3424

Marissa Rivera, being first duly sworn deposes and says that she is an agent of The Daily Dispatch, a daily newspaper, published in the City of Douglas, County of Cochise, State of Arizona:
That the Notice, a copy of which is hereto attached, described as follows:

Gulf South Research
Public Scoping Meeting

was published daily in the entire and regular issue of said THE DAILY DISPATCH, for 2 consecutive weeks, the FIRST publication of said notice being in the issue dated November 3, 2002 and the LAST publication being in the issue dated November 10, 2002

The deponent further says that the Notice was published in the newspaper proper, and not in a supplement thereof.

(SIGNED) Marissa Rivera

Sworn and Subscribed to me this 10 day of December, 2002

OFFICIAL SEAL
LAWRENCE L. BLASKEY
NOTARY PUBLIC - ARIZONA
COCHISE COUNTY
My Comm. Exp. Jun 2, 2003

Notary Public

My commission expires: June 2, 2003

PUBLIC NOTICE

PUBLIC SCOPING MEETING

This notice is to provide information about two public meetings scheduled in accordance with Section 102(2) (c) of the National Environmental Policy Act of 1969, as amended on the U.S. Immigration and Naturalization Service plan to environmentally assess and address the construction of a proposed enforcement zone system by the US Border Patrol in Douglas and Naco Stations, Arizona. The proposed systems would be along the U.S.-Mexico Border. Construction would be approximately 26-miles by 300 feet in the Douglas Station and, 31-miles by 300 feet in the Naco Station. Infrastructure components include primary and secondary pedestrian barrier fencing, patrol roads, drag roads, maintenance roads, permanent lighting, low-water crossings, and drainage structures.

There will be two separate public scoping meetings held in November for these projects. The dates and locations are:

- Naco, Arizona, November 18, 2002, at the Naco Elementary School Gymnasium. The address is: 1911 W. Valenzuela, Naco, AZ 85620, Arizona.
- Douglas, Arizona, November 19, 2002, at the Cochise College Campus, Little Theatre, Bldg. 800. The address is: 4190 W. State Hwy 80 Douglas, Arizona.

These meetings will begin at 7:00 p.m. (local time). These meetings help to identifying issues and concerns that should be addressed in the Environmental Assessments (EAs.) Members of the INS Headquarters and US Border Patrol, Douglas Station and Naco Station staff will be present to accept input from the public and to provide the public with information.

For more information, contact either: Mr. Charles Parsons, Regional Environmental Officer, INS Western Region P.O. Box 30080, Laguna Niguel, CA 92677 Fax (949) 360-2985 or Mr. Denver Heath, INS Architect-Engineer Resource Center, 819 Taylor Street, Room 3A28, Fort Worth, TX 76102, Fax (817) 885-8404.

Published: 11/3, 11/10/02

Exhibit 6-2

AFFIDAVIT OF PUBLICATION

Ref. No. 0306135 Scoping

STATE OF ARIZONA)
:ss.
COUNTY OF COCHISE)

KIMBERLY L. HICKS being first duly sworn, deposes and says: That (he) (she) is the Agent to the Publisher of the SIERRA VISTA HERALD and the BISBEE DAILY REVIEW newspapers printed and published six days a week in the County of Cochise, State of Arizona, and of general circulation in the cities of Sierra Vista and Bisbee, County of Cochise, State of Arizona and elsewhere, and the hereto attached

PUBLIC SCOPING MEETING

was printed and published correctly in the regular and entire issue of said SIERRA VISTA HERALD and BISBEE DAILY REVIEW for 2 issues, that the first was made on the 5th day of NOVEMBER 20 02 and the last publication thereof was made on the 10th day of NOVEMBER 20 02 that said publication was made on each of the following dates, to wit:

11/05/02
11/10/02

Request of
GULF SOUTH RESEARCH CORP.

Sierra Vista Herald
Bisbee Daily Review

By

Subscribed sworn to before me this 10th day of NOVEMBER 20 02

OFFICIAL SEAL
JOAN HANCOCK
Notary Public - Arizona
COCHISE COUNTY
My Comm Exp 5/21/2004

Notary Public in and for the County of Cochise, State of Arizona

My Commission Expires: 5/21/2004

PUBLIC NOTICE
PUBLIC SCOPING MEETING

This notice is to provide information about two public meetings scheduled in accordance with Section 102(2) (c) of the National Environmental Policy Act of 1969, as amended on the U.S. Immigration and Naturalization Service plan to environmentally assess and address the construction of a proposed enforcement zone system by the US Border Patrol in Douglas and Naco Stations, Arizona. The proposed systems would be along the U.S.-Mexico Border. Construction would be approximately 20-miles by 300 feet in the Douglas Station and, 31-miles by 300 feet in the Naco Station. Infrastructure components include primary and secondary pedestrian barrier fencing, patrol roads, drag roads, maintenance roads, permanent lighting, low-water crossings, and drainage structures.
There will be two seperate public scoping meetings held in November for these projects. The dates and locations are:
Naco, Arizona, November 18, 2002, at the Naco Elementary School Gymnasium. The address is: 1911 W. Valenzuela, Naco, AZ 85620, Arizona.
Douglas, Arizona, November 19, 2002, at the Cochise College Campus, Little Theatre, Bldg. 800. The address is: 4190 W. State Hwy 80 Douglas, Arizona.
These meetings will begin at 7:00 p.m. (local time). These meetings help to identifying issues and concerns that should be addressed in the Environmental Assessments (EAs.) Members of the INS Headquarters and US Border Patrol, Douglas Station and Naco Station staff will be present to accept input from the public and to provide the public with information.
For more information contact either: Mr. Charles Parsons, Regional Environmental Officer, INS Western Region P.O. Box 30080, Laguna Niguel, CA 92677 Fax (949) 360-2985 or Mr. Denver Heath, INS Architect-Engineer Passport Center, 819 Taylor Street, Room 3A08, Fort Worth, TX 76102, Fax (817) 886-6494.
PUBLISH: November 5, 10, 2002

Exhibit 6-3

Arizona Daily Star
www.azstarnet.com

Tucson Citizen
www.tucsoncitizen.com

TUCSON'S NEWSPAPERS
www.tucson.com

80305356

STATE OF ARIZONA
COUNTY OF PIMA

Janice Anderson, being first duly sworn, upon oath deposes and says:

That he/she is the agent of TUCSON NEWSPAPERS, publishers of THE ARIZONA DAILY STAR / TUCSON CITIZEN, newspapers of general circulation in the County of Pima, State of Arizona, published at Tucson, Arizona, and that the statement hereto attached is a true representation of the advertisement published in the said paper(s) 2 times on the following days:

Nov 5 2002 in class 918 T-Tucson Classifieds - Daily
Nov 10 2002 in class 918 T-Tucson Classifieds - Weekend

PUBLIC SCOPING MEETING

This notice is to provide information about two public meetings scheduled in accordance with Section 102 (2)(c) of the National Environmental Policy Act of 1969, as amended on the U.S. Immigration and Naturalization Service plan to environmentally assess and address the construction of a proposed enforcement zone system by the US Border Patrol in Douglas and Naco Stations, Arizona. The proposed systems would be along the U.S.-Mexico Border. Construction would be approximately 26 miles by 300 feet in the Douglas Station and, 10 miles by 300 feet in the Naco Station. Infrastructure components include primary and secondary pedestrian barrier fencing, patrol roads, drag roads, roadspace roads, permanent lighting, low-water crossings, and drainage structures.

There will be two separate public scoping meetings held in November for these projects. The dates and locations are:

• Naco, Arizona, November 16, 2002, at the Naco Elementary School Gymnasium. The address is: 1513 W. Valencia, Naco, AZ 85620, Arizona.

• Douglas, Arizona, November 18, 2002, at the Cochise College Campus, Little Theatre, Bldg. 600. The address is: 4190 W. State Hwy 80 Douglas, Arizona.

These meetings will begin at 7:00 p.m. (local time). These meetings help to identify key issues and concerns that should be addressed in the Environmental Assessments (EAs.) Members of the INS Headquarters and US Border Patrol, Douglas Station and Naco Station staff will be present to accept input from the public and to provide the public with information.

For more information, contact either: Mr. Charles Parsons, Regional Environmental Officer, INS, Western Regional P.O. Box 30080, Laguna Niguel, CA 92607 Fax (949) 360-2885 or Mr. Denver Heath, INS Architect-Engineer Resource Center, 819 Taylor Street, Room 3A26, Fort Worth, TX 76102, Fax (817) 836-6404.

Publish November 5, 10, 2002
The Arizona Daily Star
Tucson Citizen

Janice Anderson
Agent

Subscribed and sworn to before me this 10th day of November, A.D. 2002

OFFICIAL SEAL
MARY L. MARKWELL
Notary Public - State of Arizona
PIMA COUNTY
My Comm. Expires Aug. 9, 2005

My Commission Expires _____

Notary Public Mary L Markwell

M314113564301

6.3 PUBLIC SCOPING COMMENTS

The following excerpt is a copy of the official court reports transcript of the only comment provided during either of the public scoping meetings.

6.3.1 Mr. Ladd Comments to the USBP

MR. LADD: I don't have a lot to say, and I know everybody wants to go see the football game, anyway. The only reason I signed up, I anticipated that there would be people who would be against this sort of thing. And I wanted to at have some positive input. I'm not used to speaking to a group of people that are generally in agreement what I'm in agreement with. But anyway, I fully agree with everything that you want to do. I might add that when you're going through your statement, your mission statement, that one of the things you've pointed out, and I'm talking to the guy from Tucson, I'm sorry, I forgot your name, but you wanted to apprehend smugglers. You know, this is getting ridiculous. I was right in the middle of a chase yesterday. The ran a guy for 50 miles. And I don't know how many miles he was on flat tires, but nobody could catch him. Nobody. And you weren't involved in it, the Border Patrol. But the DPS and the Sheriff's Department were there. And they couldn't stop him. All they did was follow him and blow the sirens. That's great. Now, the Border Patrol wasn't there, but they don't have any different policy. So I think the only way that you're going to do anything at all to stop the drive throughs that we've had -- I forgot to say I'm a rancher. And I guess most of you know me. But we got the border from about a quarter of a mile west of Naco to riparian area it's about 10 miles, more or less. And we got drive throughs all the time. We've had -- by my son's count, we've had eight in the last two weeks. And all we do is go fix fence. Now, I think that a deterrent would be to put the rail barricades up along the border. And JTF-6 started it, and they got some in. And it works perfectly. Nobody drives through those. And all you need to do is finish that, and it will do it. And but my pitch to the people that were sympathetic toward illegal aliens coming in, and I anticipated there being some here today, I was going to tell them that isn't going to do anything to deter people coming across, but it's going to deter smugglers. And I can't believe that anybody would sympathetic toward drug smugglers. And what we need to do is get that barricade up. And I'm all for what you're doing, and I hope you can do it as soon as possible.

C E R T I F I C A T E

BE IT KNOWN that I, Steve L. Garwood, CCR# 50172, took the foregoing meeting at the time and place stated in the caption hereto; that I was then and there a Certified Court Reporter in and for the State of Arizona; and that the proceedings of said meeting was reduced to writing under my direction, and the foregoing pages contain a full, true and correct transcription of my notes of said meeting.

I FURTHER CERTIFY that I am not of counsel nor attorney for either or any of the parties to said action or otherwise interested in the event thereof, and that I am not related to either or any of the parties to said cause.

Dated this 20th day of November, 2002.

STEVE L. GARWOOD, CCR# 50172

Section 7.0
REFERENCES

7.0 REFERENCES

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Section 8.0
LIST OF ACRONYMS/ABBREVIATIONS

8.0 LIST OF ACRONYMS/ABBREVIATIONS

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
AHPA	Archaeological and Historical Preservation Act
ANSI	American National Standards Institute
AO	Area of operation
ATV	All Terrain Vehicle
BLM	Bureau of Land Management
BORSTAR	Border Patrol Search Trauma and Rescue Team
CAA	Clean Air Act
CFR	Code of Federal Regulations
cfs	Cubic ft. per second
CO	Carbon monoxide
CWA	Clean Water Act
CY	Cubic yard
dB	Decibel
dBA	Amplitude weighted decibel
DNL	Day-night average sound level
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ER	Export Restricted
ESA	Endangered Species Act
F	Fahrenheit
FEMA	Federal Emergency Management Agency
FICON	Federal Interagency Committee on Noise
FONSI	Finding of No Significant Impact
FY	Fiscal year
GAP	Geographic Analysis Program
Hertz	Hz
HR	Harvest Restricted
HS	Highly Safeguarded
ICAD	Intelligent Computer Aided Detection
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
INA	Immigration and Nationality Act
INS	Immigration and Naturalization Service
ISIS	Integrated Surveillance Intelligence Systems
JTF-6	Joint Task Force Six
$\mu g/m^3$	Micrograms per cubic meter
mg/m^3	Milligrams per cubic meter
msl	Mean sea level
NAAQS	National Ambient Air Quality Standards
NCA	National Conservation Area (San Pedro Riparian NCA)
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide

NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O_3	Ozone
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCPI	Per capita personal income
PEIS	Programmatic Environmental Impact Statement
PM_{10}	Particulate matter measuring less than 10 microns
$PM_{2.5}$	Particulate matter measuring less than 2.5 microns
POE	Port of Entry
ppm	Parts per million
ROI	Region of Influence
RNA	Research Natural Area
ROW	Right-of-Way
RVS	Remote Video Surveillance
SA	Salvage Assessment
SBNWR	San Bernardino National Wildlife Refuge
SEA	Supplemental Environmental Assessment
SHPO	Arizona State Historic Preservation Office
SIP	Site Implementation Plan
SO_2	Sulfur dioxide
SR	Salvage Restricted
SRL	Soil Remediation Levels
SSURGO	Soil Survey Geographic
SPCCP	Spill Prevention, Containment, and Countermeasures Plan
SWPPP	Storm Water Pollution Protection Plan
TNC	The Natural Conservancy
TPI	Total personal income
U.S.	United States
UDA	Undocumented Alien
USACE	U.S. Army Corps of Engineers
USBP	U.S. Border Patrol
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
USIBWC	U.S. Station, International Boundary and Water Commission
WC	Wildlife of Special Concern

Section 9.0
LIST OF PREPARERS

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The following people were primarily responsible for preparing this Environmental Assessment.

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